



MTEP24 Table of Contents

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CHAPTER 3: INTERREGIONAL PLANNING

3.1 MISO-SPP Joint Targeted Interconnection Queue (JTIQ) Study

JTIQ Overview

Transmission has been at capacity along the MISO and Southwest Power Pool (SPP) seams, and both RTOs are undergoing a grid evolution that is driving the need for MISO's Reliability Imperative. Additional renewable resources and transmission capacity along the seams would benefit MISO and SPP markets as a whole but require costly network upgrades. Current study approaches have, historically, meant the needed network upgrade costs have been too costly for the small groups of interconnection customers to fund.

For several years, MISO and SPP have been coordinating to understand and address these transmission needs along the seams to meet FERC's Affected Systems Study (AFS) requirements. Both RTOs found that the AFS process limits our ability to appropriately address needs. Each RTO separately studies interconnection projects within its own cycles and the cycle of projects of its neighbors to determine their impact on their own system, with a focus only on issues caused by the projects in each individual cycle while impacts and potential benefits to subsequent queue cycles are out of study scope. The process is also subject to extensive delays because exact upgrades often change or get assigned to later cycles as customers exit the queue. Additionally, process, criteria and schedule differences between RTOs causes study delays and drives questions about the certainty of study results.

To tackle these challenges, MISO and SPP collaborated to initiate a new study process which reduces RTO differences and identifies more comprehensive, cost-effective and efficient upgrades that can meet the needs of multiple clusters of interconnection projects in both SPP and MISO. The JTIQ study kicked off in late 2020 with three key objectives.

1. Identify transmission constraints that limit or inhibit new generator interconnections in key locations along the MISO-SPP seams for which large transmission projects can lower the cost and improve the certainty of generator interconnections for multiple queue cycles.
2. Identify more comprehensive transmission projects to allow interconnection requests spanning multiple MISO and SPP queue cycles to connect at lower costs than what would be determined through an individual queue cycle. In doing so, the joint study identified projects that will better prepare both systems for future portfolio change.
3. Address barriers to study processes which negatively impacted customers by reducing the need for interconnection request-specific analysis.

JTIQ Portfolio and Benefits

Through collaboration between MISO and SPP, the JTIQ study identified five-transmission-projects. Those projects are noted in Table 3.2.1-1, with a projected cost of approximately \$1.65 billion.

The recommended JTIQ Portfolio is expected to fully address the set of transmission constraints evaluated in the JTIQ Study as being significant barriers to the development of new generation along the MISO-SPP seam. In addition to these substantial reliability benefits, an estimated 28.6 GW of interregional generation



enablement would be available to new generator interconnection projects near the seam. Additional benefits of the JTIQ framework include but are not limited to:

- Streamlined GI queue process to help ensure the timely build of projects and system reliability.
- Optimized network upgrades that enable more customers and reduce overall affected system costs.
- Greater cost certainty because the JTIQ Portfolio of projects is known, the amount of enablement (28GW) is known, and customers will pay their pro rata share of the JTIQ Portfolio.
- Greater timing certainty of projects as the unknown network upgrades, study costs and timing delays that are prevalent in the standard affected system study process are mitigated or are eliminated.
- Fewer delays because transmission construction can start before the portfolio is fully subscribed.
- Availability of U.S. Department of Energy (DOE) funding to reduce the overall costs of the projects in the portfolio (see below).



Figure 3.2.1-1: JTIQ Portfolio Map

JTIQ Portfolio	Location by RTO
Bison – Hankinson – Big Stone South 345 kV	MISO
Lyons Co.- Lakefield 345 kV	MISO
Raun – S3452 345 kV	MISO - SPP
Auburn – Hoyt 345 kV	SPP
Sibley - 345 kV Bus Reconfiguration	SPP
Total Cost of Portfolio of Projects	\$1.65B

Table 3.2.1-1: List of projects comprising the JTIQ Portfolio



DOE Grid Resilience and Innovation Partnership Grant

In collaboration with SPP, Minnesota Department of Commerce, Minnesota Commission, Transmission Owners and Great Plains Institute, MISO supported the application for partial funding of the JTIQ projects through the DOE Grid Innovation Program. On October 18th, 2023, the DOE announced approval of \$464 million in Grid Resilience and Innovation Partnerships (GRIP) program funds for the portfolio. This historic opportunity significantly reduces the estimated \$1.6 billion investment for the JTIQ projects and further enhances the value presented by completion of this portfolio.

Cost Allocation and Cost Sharing

Projects in the JTIQ Portfolio are Generator Interconnection Projects (GIP), as their sole purpose is to support the connection of interconnection projects. SPP's existing cost allocation method for Generator Interconnection Projects allocates 100% of the capital costs to the interconnection customers. MISO's methodology is the same for GIPs less than 345 kV, and those 345 kV or greater utilizing a 90% allocation to interconnection customers and 10% to load. Through negotiations with all parties and given the novel and innovative approach of JTIQ, it was determined that SPP's methodology would apply to this specific set of projects. This cost allocation methodology reflects the balancing of load and generation interests and accounts for the availability of DOE funding. Each generator interconnection customer included in the group and allocated costs of the JTIQ Portfolio will pay their share of capital costs based on the size of their facility in proportion to the total enabled MWs of the portfolio. Non-capital costs associated with the generator interconnection customer's share will be allocated consistent with each RTO's current regional Tariff.

Joint Operating Agreement (JOA) and Tariff updates

The proposed MISO-SPP JOA captures changes in the planning processes, Affected System Study process, and allocation of costs between the two RTOs. MISO and SPP, in collaboration with their stakeholders, have filed a number of changes to the JOA and respective regional tariffs. Once these changes are approved by FERC, the RTOs will seek approval by their respective Board of Directors.

Summary of MISO JOA/Tariff Changes:

- Joint Operating Agreement (JOA) revisions to establish the overall framework.
- Modifications to Attachment X and related Appendices Business Practice Manuals, and Generator Interconnection Agreement (GIA) have been or will be made.
- New agreements for JTIQ participation have been added as part of the pro forma GIA. Module A and Attachment FF are clarified and augmented to capture that the existing Generator Interconnection Project category and cost allocation applies to this JTIQ Portfolio.
- New Attachments and Schedules detail how costs will be charged to generator interconnection customers and MISO load.



3.2 MISO-PJM Interregional Transfer Capability Study

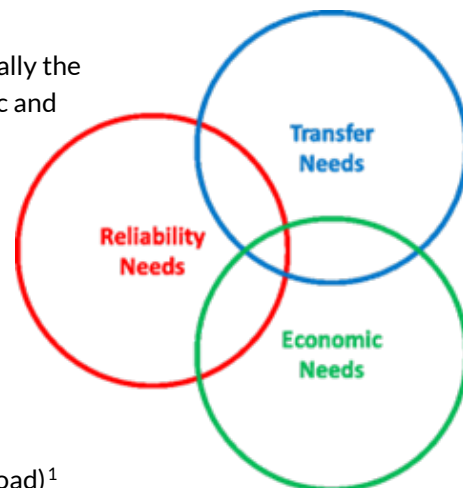
PJM and MISO have a long history of performing coordinated interregional transmission planning. Interregional planning helps identify transmission projects that improve the system’s ability to mitigate constraints, respond to extreme weather, and increase interregional transfer capability. This study was devised outside of pre-existing Joint Operating Agreement (JOA) procedures in order to evaluate a holistic set of future system needs along the seam. Study work began mid-2024 and the RTOs anticipate sharing results and discussing next steps with stakeholders in the first half of 2025.

Study Highlights:

- PJM and MISO designed a study to identify near-term upgrades that incrementally enhance transfer capability between the two RTOs, with a focus on both addressing near-term needs and building a framework for future long-term planning efforts along the PJM-MISO seam with Order 1920
- The study includes reliability, economic, and transfer analysis using forward-looking models and assumptions (2032 Models)
- Following the study, MISO and PJM will partner with states and stakeholders to identify and pursue JOA/Tariff adjustments as needed to bring solutions forward for implementation

Study scope and approach:

The analysis will focus on the transmission system along the RTO seams, specifically the MISO Classic and PJM West regions. The RTOs will evaluate reliability, economic and transfer-capability needs. No common model will be used; instead, consistent scenarios will be designed for each RTO’s models. The RTOs will analyze the scenarios using both PJM and MISO models. MISO and PJM are exploring the options of a blended model for joint modeling.



Models:

- MISO 2032 LRTP F2A Reliability Core Model set (summer, winter, light load, and average load)
- MISO 2032 LRTP F2A Economic (PROMOD Model)
- PJM 2032 LTRTP Blended Reliability Model (summer, winter, and light load)¹
- PJM 2032 LTRTP Blended Economic Model (PROMOD Model)¹

¹ PJM developed a blended reliability and economic model consisting of MISO footprint F2A and PJM footprint Long-Term Regional Transmission Planning (LTRTP) Assumptions



Scenarios/Analysis:

- Economic/PROMOD: Congestion analysis
- Reliability Analysis: Steady state reliability analysis
- Informational Transfer Analysis: Reliability Base Case to improve incremental transfer capability
- Informational Extreme Weather Analysis: scenario in the winter, for example Winter Storms Uri and Elliott including high RTO-RTO transfers, storm load levels, and generation outages

Solutions Guidance:

PJM and MISO will share summarized results and issues with stakeholders. Potential solutions will address needs using existing right-of-way, terminal equipment or transformers. This study, along with Order 1920, will pave the way for future studies focused on longer-term needs and greenfield solutions.²



Interfaces considered for transfer analysis

3.3 MISO-SPP Interregional Study

SPP and MISO have a long history of performing coordinated interregional transmission planning. Interregional planning helps identify transmission projects that improve the system's ability to mitigate constraints, respond to extreme weather, and increase interregional transfer capability. This study was devised similar to the PJM study effort in order to evaluate a holistic set of future system needs along the seam. To pursue this study in place of a Coordinated System Plan (CSP) as defined in the MISO-SPP Joint Operating Agreement (JOA), MISO and SPP must seek relief from FERC from their interregional planning requirements to conduct a CSP every two years. Scope revisions and study work will continue thru 2025, and the RTOs will share progress and discussing next steps with stakeholders throughout the process.

Study Highlights:

- SPP and MISO designed a study to identify near-term upgrades that incrementally enhance transfer capability and yield multiple benefits across the two RTOs
- The study includes reliability, economic, and transfer analysis using forward-looking models and assumptions
- SPP and MISO will partner with states and stakeholders to identify and pursue JOA/Tariff adjustments as needed to bring solutions forward for recommendation and approval
- The RTO's study work will continue through 2025

Solutions Guidance:

- Solutions will increase transfer capability incrementally by a range of future determined GWs

² The RTOs are also monitoring pending industry interregional transfer capability studies including the NERC ITCS

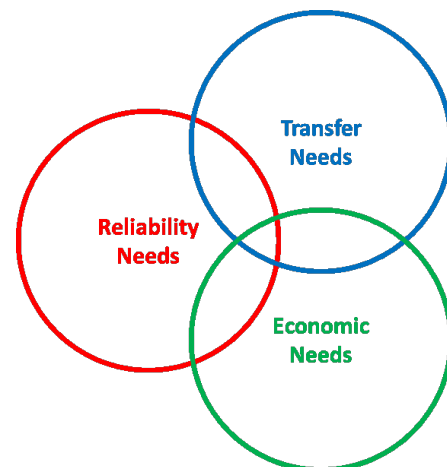


- Seek a balance of investment in each RTO
- Priority will be immediately actionable enhancements such as upgrades that use existing right-of-way, terminal equipment, or transformers
- Greenfield transmission development may be considered as appropriate

Planning Models:

RTOs will pursue use of blended models in parallel with existing SPP and MISO regional models for Economic (PROMOD) and Reliability models. Three to four Reliability Base Case Models (e.g. winter, summer, average load, and light load) will be targeted:

- MISO 2032 LRTP F2A Reliability Core Model set
- SPP 2025 ITP Model set (2029; 2034)
- MISO 2032 LRTP F2A Economic (PROMOD Model)
- SPP 2025 ITP Model set (2029; 2034)



Scenarios/Analysis:

- Economic/PROMOD: Congestion analysis
- Reliability Analysis: Steady state reliability analysis
- Transfer Analysis: Study to improve first contingency incremental transfer capability (FCITC)
- Extreme Weather Analysis: scenario in the winter, for example Winter Storms Uri and Elliott including high RTO-RTO transfers, storm load levels, and generation outages
- Others to be determined, if/as needed, for final scope direction

JOA and Cost Allocation Considerations:

- The RTOs will pursue JOA revisions regarding project types and cost allocation in parallel with study work
- A multi-benefit style project type and cost allocation is desired by both RTOs to draw on a broader set of benefits for project recommendations
 - Utilizing guidance/direction from FERC Order 1920