SPP-MISO 2024-25 Coordinated System Plan Study Scope

December 2025

Revision History

Date	Author	Change Description
12/16/25	SPP & MISO Staff	Updates throughout for clarity; model updates to incorporate recently approved MTEP and ITP 2025 transmission, MISO ERAS generation and large load EPRs, and SPP future loads; updated timeline
9/26/25	SPP & MISO Staff	Updated timeline and scope focus area graphic for clarity
8/26/25	SPP & MISO Staff	Updates throughout to study title and alignment with CSP process, including modeling, analysis, and transfers
3/25/25	SPP & MISO Staff	Updates to Transmission Planning Models section (4.3)
12/10/24	SPP & MISO Staff	Updates based on stakeholder feedback
8/4/24	SPP & MISO Staff	Initial Draft

Contents

1 Overview

This document presents the scope and schedule of work for the 2024-2025 SPP-MISO Coordinated System Plan (CSP) study. The SPP-MISO Joint Operating Agreement (JOA) states that a CSP study is required to be performed every two years. After reviewing feedback provided through the SPP-MISO Annual Issues Review Interregional Planning Advisory Committee (IPSAC) meeting held on February 22, 2024, as well as additional conversations with the MISO-SPP Joint Planning Committee (JPC) between March and August 2024, the MISO-SPP JPC mutually agreed to pursue a CSP study to focus on reliability and economic issues, as well as interregional transfer capability. This study will be conducted throughout 2025.

2 Purpose of Study

The Regional Transmission Organizations (RTOs) have a long history of performing coordinated interregional transmission planning with their neighboring grid operators. Interregional planning helps identify transmission projects that mitigate constraints, improve the ability to respond to extreme weather, and increase interregional transfer capability. MISO and SPP also recognize the value of planning a robust grid of the future, as evidenced by the current focus on enhancing long-term planning processes.

The RTOs are continually looking for opportunities to improve their planning processes for which interregional transmission planning is a key element and supported by recent FERC Order 1920. This broader study allows MISO and SPP to consider future system needs and will highlight opportunities to improve established processes to support the Long-Term Planning requirements of Order 1920.

The goal of this study is to identify transmission system enhancements that will improve reliability and resiliency in MISO and SPP; these solutions may also enhance the transfer capability between the two systems. These solutions could be considered for implementation once new interregional solution benefits evaluation and cost allocation approaches are adopted, following engagement with states and stakeholders. This would require filing Joint Operating Agreement and/or Tariff changes to establish a new or amended framework.

Specific goals of this study include:

- Develop a set of blended future study models reflecting both sets of RTO future assumptions
- Conduct a robust set of analyses identifying the top transmission issues along the RTOs' southern seam
- Identify transmission solutions that will reduce congestion, increase transfer capability, and/or improve reliability and resilience while balancing investment in each RTO

Continued efforts beyond the study timeline will include collaborating with stakeholders to:

- Draft a business case methodology, inclusive of multiple benefits, for MISO-SPP Interregional Projects to utilize in determining whether solution benefits exceed cost
- Develop Joint Operating Agreement (JOA) enhancements to support the recommendation of selected projects to the RTO Boards for approval, including RTO-RTO cost allocation

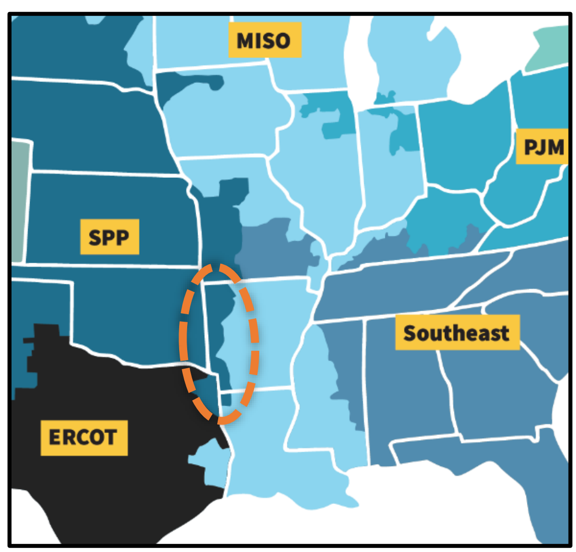
3 Drivers

SPP and MISO held the Annual Issues Review IPSAC meeting on February 22, 2024. At the meeting, MISO and SPP reviewed current RTO efforts and provided a forum for additional issues identified by stakeholders, which included various suggestions for MISO and SPP to perform a study. MISO and SPP jointly recommended performing a CSP study to allow for a broader look at system enhancements that will improve reliability. The JPC considered the feedback provided by the IPSAC[1], specifically from the Clean Energy Organization and the Missouri Public Service Commission, which focus on "an urgent need for more robust interregional transmission connections along the MISO-SPP seam," considering "project types that do not have a preset cost sharing arrangement between MISO and SPP." In addition, each RTO's regional planning processes and schedules as well as resource availability were considered when developing the SPP-MISO CSP study scope.

4 Scope

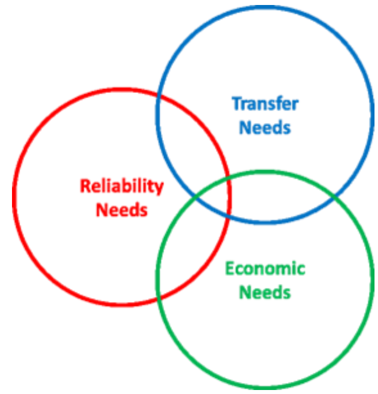
4.1 Study Area:

The study will monitor the Eastern Interconnection and focus on the southern seam of MISO and SPP which encompasses Oklahoma, Arkansas, Texas, and Louisiana.



[1] February 22, 2024 MISO-SPP Annual Issues Review IPSAC Meeting

4.2 Methodology



The RTOs will perform three types of analysis to determine issues: economic, reliability, and transfer capability analysis. Additionally, an extreme cold weather event scenario will be designed by each RTO which will inform issues analysis and solution robustness (reliability analysis only). This holistic planning approach will allow the RTOs to perform a robust assessment of needs along the southern seam.

4.3 Transmission Planning Models

The RTOs developed 'blended' or combined models built upon the latest available 10- and 15-year models, including future assumptions such as generation expansion and load growth. To the extent that significant regional transmission upgrades are approved during the study, the RTOs will update the blended models to reflect these additions. Each RTO analyzed determined scenarios using their respective models and the blended models developed for reliability and economic analyses.

To support CSP solution analysis and recommendations, model updates were applied to the CSP Blended Models to reflect recent and approved transmission system upgrades and changes in MISO and SPP. These updates include notable transmission upgrades proposed through regional transmission organization planning processes, including the ITP25 and MTEP25 projects at 230kV and above. It also accounts for impactful generation and load changes that have occurred since the finalization of MISO's Series 1A Futures. Specifically, the model includes all large load additions (EPRs) and all MISO South Expedited Resource Addition Study (ERAS) units and/or Generator Interconnection Agreement (GIA) units as of November 1, 2025. The model updates were applied in stages as the study progressed first incorporating transmission (December 2025) and then new generation and load (Q1 2016). Updates were applied to 10- and 15-year reliability and economic models.

Table A: Transmission Planning Models Summary

Models:	MISO	SPP	Blended/Combined Models
Reliability	2032 & 2037 LRTP F2A[2] Models: • Light Load (2032 Only) • Summer Peak • Winter Peak	2034 ITP[3] Models and 2039 forward projection: • Light Load • Summer Peak • Winter Peak	2034 & 2039 SPP-MISO Models: • Light Load (2034 Only) • Summer Peak • Winter Peak
Economic	2032 & 2037 LRTP F2A[1] Model	2034 ITP[2] Models and 2039 forward projection	2034 & 2039 SPP-MISO Model
Extreme Cold Event	2032 LRTP F2A[1] Winter Peak Reliability (Adapted)	2034 ITP[2] Reliability Model (Adapted)	2034 SPP-MISO Blended Winter Peak Reliability Model (Adapted)

4.3.1 Reliability Models

Blended Reliability Model Development

The RTOs developed a blended reliability power flow model for this study. As shown in Table A, the model reflects the respective RTO reliability planning models, joined at their seam. Details regarding the development of this model have been shared as part of the model review milestone.

- SPP's 2025 ITP base reliability models have been finalized and published. More information on these models can be found in the 2025 ITP assessment scope document. The 2024 ITP portfolio has been included in these models, and SPP has updated the models with any recently approved significant transmission facilities as needed. To maintain alignment with MISO's incorporation of forward-looking assumptions in its reliability models, SPP will incorporate reasonable future generation assumptions into the 2025 ITP reliability models. Future load assumptions will also be evaluated for inclusion as model updates are developed.
- MISO LRTP F2A core models are described in MISO's reliability study whitepaper. MISO has also updated the reliability models with recently approved, significant transmission facilities. These updates are described further in Section 4.3.3.

Extreme Cold Weather Event Model Development

MISO and SPP are jointly analyzing system performance under an extreme cold weather event scenario. The scenario is designed to reflect operating conditions observed during historic winter events that included high RTO-to-RTO transfers, elevated storm load levels, and significant

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[2] MISO F2A Models were updated to include approved transmission upgrades from MTEP23 and MTEP24 portfolios, including recent Expedited Project Reviews (EPRs), JTIQ portfolio, LRTP Tranche 2.1, Grain Belt Express, and topology improvements 138kV and above in Missouri, Illinois and MISO South Region.

[3] SPP Integrated Transmission Plan (ITP) Models includes 2024 projects and will be developed as part of the 2025 cycle.

generation outages. These models will be used as supplemental reliability cases to highlight solution performance against stressed system conditions.

- MISO developed a scenario that applies Winter Storm Uri–type system stress to the 2034 blended model. A high-level description of this model was presented at the October 24, 2025 IPSAC[4].
- SPP will apply the resiliency powerflow models developed for the 2025 ITP to this analysis, ensuring consistency with their ongoing resiliency planning framework.

4.3.2 Economic Models

Blended Economic Model Development

The RTOs developed a blended economic model for this study. As shown in Table A, the model reflects the respective RTO economic planning models, joined at their seam. Details regarding the development of this model were shared with stakeholders as part of the model review milestone.

- The 2025 SPP ITP market economic model set utilizes two futures with a model generated for each combination of future and target study year. For more information on future assumptions, please reference the market economic model overview section in the 2025 ITP assessment scope document. All the modeling assumptions used in SPP's models were decided through SPP's regional planning stakeholder processes.

MISO's reliability and economic models were based on the Series 1A Future 2A as the most complete and usable data set available for the study. More information regarding MISOs Series 1A Futures can be found in the Series 1A Futures report. MISO has also posted an economic planning whitepaper which summarizes MISO's Economic Planning methods. MISO has updated the economic models with MTEP25 transmission facilities.

4.4 Analysis

4.4.1 Reliability Analysis

The RTOs performed steady state reliability (*N*-1) analysis on the reliability base cases noted in Table A to identify thermal violations. Contingency sets were compiled from both RTOs and selected based on relevance to the MISO-SPP CSP study focus area. Contingencies were adjusted to remove errors due to topography changes caused by model blending. Analysis reported any loading over a 90% cut off in base case and post-contingent scenarios. Additional contingencies and scenarios such as NERC TPL Planning Events were also evaluated. Voltage stability analysis was not performed. All findings are subject to further validation.

[4] SPP-MISO IPSAC Presentation – October 24, 2025 (Slides 16-17)

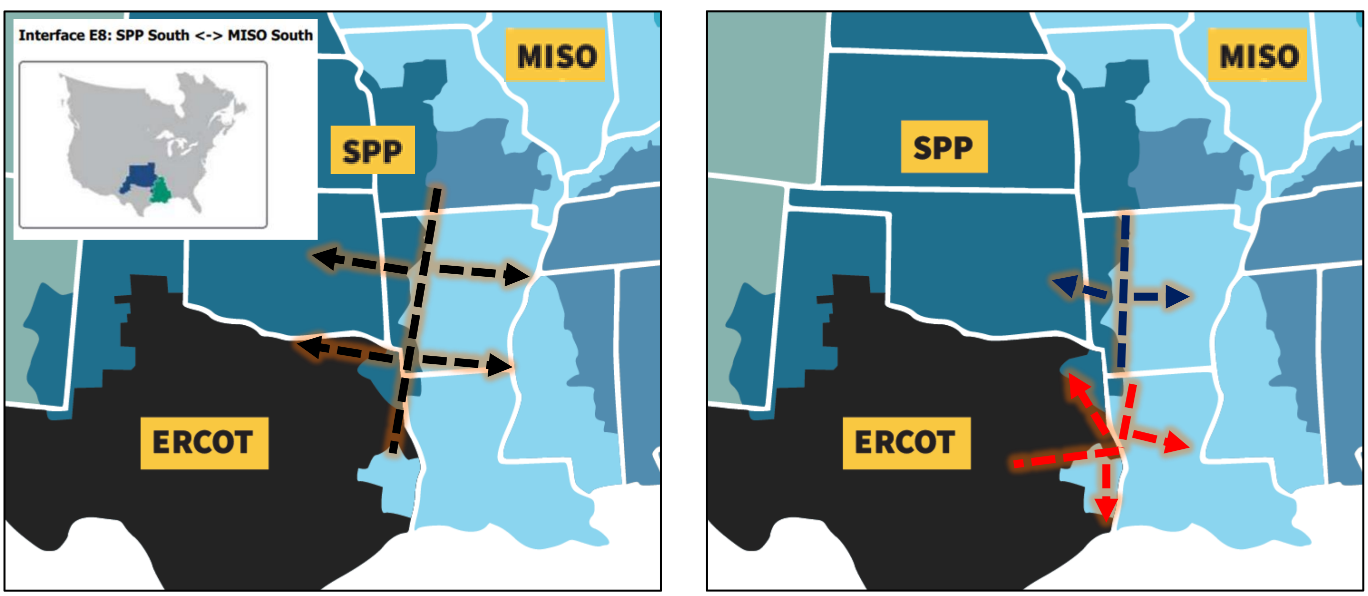
4.4.2 Transfer Analysis

Transfer analysis was conducted using reliability models to simulate power transfers across the MISO-SPP seam. The study evaluated three bi-directional transfers across three year-2034 seasonal models (Winter Peak, Summer Peak, and Light Load), resulting in a total of 18 transfer scenarios[5]:

- MISO South ↔ SPP South (Arkansas, Oklahoma, Louisiana, Texas)
- MISO LRZ 8 ↔ SPP Arkansas and Oklahoma
- MISO LRZ 9 ↔ SPP Louisiana and Texas

The transfers were implemented using TARA's proportional scale transfer function and executed in batch mode across all scenarios. Each transfer area was modeled as a subsystem, both source and sink. Generation was scaled up proportionally within each source to achieve the maximum transfer test level. The maximum transfer test level is capped at either 10,000 MW or the amount of available generation. Generation was scaled down proportionally in the sinks to induce flow from the sources, while source generation is increased. Nuclear generation, generation outside of the subsystem boundaries, and renewable and storage resources were excluded from scaling. The same contingency sets were used in both steady state and transfer analysis. Following execution, each scenario was analyzed to determine limiting elements, and results were ranked by transfer capability. All findings are subject to further validation.

Transfer Scenarios



[5] Year 2039 models will also be simulated when available (summer and winter only).

4.4.3 Economic Analysis

SPP and MISO developed a 'blended' economic model representing their respective regional economic planning models. Additionally, each RTO performed analysis using consistent scenarios with existing economic models to evaluate study needs and project proposals. Although no congestion measure/score cutoff is applied for needs classification, solutions will prioritize the most congested facilities within the study area.

4.4.4 Extreme Cold Weather Event Reliability Analysis

These models and analysis results will be used as supplemental reliability cases to highlight solution performance against stressed system conditions.

4.4.5 Screening Metrics

This section outlines the quantitative metrics used to perform an initial screening of potential interregional transmission solutions. These metrics help identify which proposals resolve issues (reliability, transfer capability, and congestion) in the study area and are likely to deliver meaningful benefits.

Across all metrics, the goal is the same: compare a base case to a change case to understand how each proposal affects system performance on the MISO-SPP seam.

The screening metrics fall into three categories:

- **Transfer Capability** (average import capability change) – This metric measures the change in import capability for each RTO averaged across seasons. Our approach is to first determine incremental transfer limit MW in the base case and the new first limit MW in the change case. Contingencies considered are NERC P0 and P1.
  - **Calculation:** Change case MW – Base case MW = Δ Avg. Import Capability
- **Reliability** (net issues resolved) – This metric quantifies the net change in the count of thermal loading issues in steady-state power flow analysis. It is calculated as the difference between the number of resolved reliability issues (mon./con. pairs) and the number of newly introduced reliability issues when comparing the change case to the base case.
  - **Calculation:** # resolved reliability issues – # newly introduced reliability issues when comparing the change case to the base case
- **Economic** (congestion relief) – This metric measures the change in total congestion measure within the study focus area summarized by RTO.
  - **Congestion Relief Calculation** (for each RTO): Base Case Total Congestion Measure – Change Case Total Congestion Measure
  - **Total Congestion Measure Calculation:** Avg Shadow Price * Binding Hours for all flowgates within the study focus area

4.5 CSP Solution Business Case Development and Evaluations

SPP and MISO will draft a business case framework for CSP solutions and associated benefit metric methodologies. The RTOs will review these methodologies in detail with stakeholders via the MISO-SPP IPSAC meetings throughout the first half of 2026.

The RTOs will explore the application of FERC Order 1920 benefits developing the business case for CSP projects. As stakeholder discussions continue, additional details will be provided.

The FERC Order 1920 benefits are as follows:

1. **Avoided/deferred piecemeal transmission investment**
   Comprehensively planned transmission can reduce the need for incremental reliability upgrades and replacement of aging infrastructure.

2. **Reduced Loss of Load Probability (LOLP) or Planning Reserve Margin (PRM)**
   Transmission capability reduces system outage risk (LOLP) and need for building generation capacity to manage outages (PRM).

3. **Production cost savings**
   Transmission capability enhances market efficiency by reducing congestion and using lower cost generation.

4. **Reduced transmission energy loss**
   Transmission capability reduces energy loss from overly congested grid.

5. **Reduced congestion due to transmission outages**
   An efficiently planned grid faces fewer transmission outages and less congestion from lines being down, and reduces production cost.

6. **Mitigation of extreme weather events and unexpected event impact**
   A proactively planned grid reduces risk of unserved load during extreme weather events and unexpected conditions, and reduces production cost.

7. **Reduced capacity cost from reduced peak energy losses**
   Transmission capability reduces energy losses during peak period and reduces new generation capacity investment.

4.6 Interregional Cost Allocation

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.

5 Stakeholder Involvement

The IPSAC has met during the study as needed to review and provide input, aiming for quarterly. Key milestones for IPSAC meetings include the following, on which RTOs expect to request stakeholder feedback:

i. Models finalization (Q2 2025)
ii. Analysis completion (Q3 2025)
iii. Transmission solutions evaluation (Q4 2025)
iv. Refined transmission solutions identified, developed, and recommended to IPSAC (Q1 2026)

To ensure continuous stakeholder involvement, the IPSAC will provide opportunities for feedback at critical stages of the CSP development. These feedback points and solution windows are designed to incorporate stakeholder insights into key decision-making processes and ensure alignment with shared goals.

The JPC will provide appropriate notice to stakeholders through the respective RTO websites of the dates and times of IPSAC meetings. All meeting materials will be maintained on each RTO's IPSAC webpage.

6 Communication Plan

Materials will be posted in advance of each IPSAC meeting on each RTO's respective webpage for IPSAC meetings. For email communication, SPP and MISO will use their applicable regional email lists. SPP will utilize the Seams Steering Committee (SSC) Exploder as the primary method of communication with stakeholders. MISO will utilize the MISO Planning Superlist distribution list as the primary method of communication with stakeholders.

7 Milestones and Timeline

SPP-MISO CSP Study Tasks
1. Determine study approach – **Completed August 2024**
2. Develop & finalize study scope – **Completed December 2024**
3. Review models progress – **Completed March 2025**^
4. Post draft models – **Completed April 2025**
5. Finalize models a. Finalize 10-year models – **Completed June 2025** b. Finalize 15-year models *[added due to waiver denial]* – **Completed November 2025**
6. Complete analysis & determine transmission needs – **Completed August 2025**^*
7. Develop & evaluate initial transmission solutions – **Completed September/October 2025**
8. Share draft solutions & initial screening results – **Completed October 2025**^
9. Provide solution evaluation results – **Completed December 2025**^
10. Provide recommendation(s) to IPSAC & complete CSP study – **March 2026**^

^ IPSAC meeting to be scheduled and stakeholder feedback request expected

** A stakeholder solution submission window will likely be opened during this time*

SPP-MISO CSP Study Results Implementation Task List
1. Develop business case methodology – **2026**
2. Propose interregional cost allocation; develop JOA changes and file at FERC – **2026**
3. Request approvals at MOPC (SPP), PAC (MISO), & RTO Board of Directors – **2026**