

MTEP24

TRANSMISSION PORTFOLIO

Local

Regional

JTIQ

MTEP24 Executive Summary

Highlights

- The combination of local, Tranche 2.1 and JTIQ portfolios drove the largest investment in MISO history with 488 new projects totaling \$30 billion
- 24 Tranche 2.1 projects in the MISO Midwest provide a benefit-to-cost ratio between 1.8 and 3.5 and help ensure a reliable and resilient future grid
- The five-project JTIQ portfolio provides value to interconnection customers and load along the SPP-MISO seam, enabling approximately 28 GW of generation to interconnect



misoenergy.org



Contents

INTRODUCTION	1
MTEP24 TRANSMISSION PORTFOLIO AT A GLANCE	2
MISO'S RELIABILITY IMPERATIVE AND THE TRANSMISSION PLANNING LANDSCAPE	3
LOCAL PLANNING	5
MTEP24 LOCAL APPENDIX A PROJECTS ARE DEVELOPED THROUGH RIGOROUS REVIEW AND ANALYSIS	5
MTEP24 INCLUDES THE SECOND LARGEST LOCAL RELIABILITY PROJECT INVESTMENT IN MISO HISTORY	6
LOCAL MTEP24 PROJECT FACILITIES	8
LOCAL MTEP24 INVESTMENT BY STATE	9
TOP 10 PROJECTS IN LOCAL MTEP24 APPENDIX A	10
REGIONAL PLANNING	11
LRTP ENABLES MISO MEMBER PLANS AND POLICY GOALS	11
JTIQ PLANNING	17
JTIQ SOLUTIONS DEVELOPED THROUGH INNOVATIVE PROCESS ADDRESS INTERCONNECTION BARRIERS	17
LOOKING FORWARD	19



MTEP24 Executive Summary

The broad needs of the MISO system are dynamic and changing. Just as population booms, commercial redevelopment and city revitalization spur the need for transportation solutions that improve roads, simplify traffic patterns and optimize interstate highways, the drivers of grid evolution require MISO to respond to growing energy needs and demands. Since 2019, MISO has been leading the charge with its Reliability Imperative, ensuring the region is ready for the evolving energy landscape. The 2024 MISO Transmission Expansion Plan (MTEP24) marks a pivotal milestone in solidifying the region's future reliability. The plan's 488 projects address critical needs across the footprint and deliver significant value to MISO's customers. The highly anticipated Long Range Transmission Planning (LRTP) Tranche 2.1 Portfolio establishes a ground-breaking transmission backbone and delivers benefits that exceed costs. The SPP-MISO JTIQ Portfolio unlocks the potential for approximately 28 GW of generator interconnections, eliminating barriers to new capacity at the SPP-MISO seam. And traditional MTEP projects strengthen local transmission to meet the growing demand for electricity in an increasingly dynamic environment. Together with the existing grid, these new projects seek to ensure the lights stay on for 45 million people today and for years to come.

The MISO Transmission Expansion Plan (MTEP) is the culmination of comprehensive planning processes that develop and evaluate transmission solutions to ensure a reliable and economic electric infrastructure for the MISO region. Since MTEP's inception in 2003, more than \$67 billion in projects have been approved by MISO's Board of Directors. Approximately \$38 billion of those projects are now in service, supporting the reliable delivery of electricity across 15 states and Manitoba, Canada.

The MTEP is the output of coordinated planning processes that complement one another and are conducted transparently with stakeholder engagement. Annually, MISO reviews Transmission Owner projects, assesses reliability needs, and ensures compliance with NERC standards through the traditional MTEP process. These projects are typically scheduled to go in service over a three- to five-year timeframe following approval. Interregional planning is also performed to respond to transmission challenges shared with neighboring Regional Transmission Organizations (RTOs) based on shared system needs, with timelines driven by those needs. Finally, and as needed, regional or long-term planning tackles member goals, policy changes and other factors, identifying solutions that could take six to ten years to approve and build. In a given year, all of the solutions and outcomes of these planning efforts are detailed in the annual MTEP report which is approved by MISO's Board of Directors.

A highlight of MTEP24 is the LRTP Tranche 2.1 Portfolio

- 24 transmission projects across the MISO Midwest
- Benefits well exceed costs with benefit-to-cost ratios of 1.8 – 3.5
- Robust, least-regrets portfolio
- Helps ensure a reliable, resilient and cost-effective transmission system 20+ years in the future



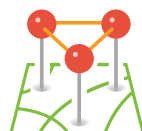
MTEP24

TRANSMISSION PORTFOLIO

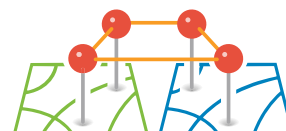
Local



Regional



JTIQ



TOTAL
INVESTMENT

\$6,727

\$21,868

\$1,650

PORTFOLIO INVESTMENT **\$30 BILLION**

TOTAL
PROJECTS

459

24

5

PORTFOLIO OF PROJECTS **488**

TOTAL
MILES

932

3,631

490

PORTFOLIO TRANSMISSION MILES **5,053**



MISO's Reliability Imperative and the Transmission Planning Landscape

Complex challenges to the electric system have been steadily materializing throughout the U.S. and within the MISO region in recent years. The challenges are driven by a combination of economic, technological, policy-related and extreme weather factors. Widespread retirements of dispatchable resources, lower reserve margins, more frequent and severe weather events and increased reliance on weather-dependent resources and emergency-only resources have altered the region's historic risk profile, creating risks in times that rarely posed challenges in the past.



MISO's Reliability Imperative seeks to address these challenges. Specifically, efforts within the Transmission Evolution body of the Reliability Imperative focus on transforming how MISO conducts system planning. These efforts are especially critical, as load growth and additions, resource evolution, and the overall velocity of change continue to pose challenges that MISO and its members must work through. Specifically:

- Resource capacity margins are tightening throughout the region as plans for existing resources to retire outpace the timing of equivalent new resource builds, which are experiencing delays from ongoing supply chain issues. Simultaneously, the volume of generator interconnection requests continues to drive complexity, despite progress from recent reforms which have helped to reduce the volume of requests and to process them more efficiently. Approximately 600 applications totaling 123 GW were submitted in the most recent cycle that closed in April 2024, bringing the total active Queue to over 350 GWs, which is more than twice MISO's peak load and not a viable volume of projects.



- Load growth and additions are increasing. A spike in large, single-site load additions from a manufacturing resurgence and incremental load growth from electric vehicles and other electrification trends pose new challenges for the grid. To complicate matters, potential large new loads, including manufacturing facilities and high-demand data centers, are not fully reflected in Load Serving Entity forecasts which are critical for planning and operations. Continued high numbers of MTEP projects submitted through the Expedited Project Review request, which are urgent projects that cannot wait for the next full MTEP cycle to proceed, are evidence of this faster paced load growth and additions.
- The overall pace of change is growing rapidly. This is reflected in the differences between MISO's recent Future scenarios, which bookend a range of resource and load expansions to inform planning. Projections based on more recent member plans show the Future 2A wind and solar resources, as completed in 2023, reaching 30% of the resource mix ten 10 years earlier than in the previous Future 2, completed in 2021. Additionally, planners now believe Future 2A, which was the focus of Tranche 2.1, does not reflect sufficient load growth under currently expected load growth trajectories, and as a result, understates the transmission required.

Transmission projects can help mitigate these risks and MISO expects a continued focus on potential solutions to meet system needs. As expected from interconnection request trends, Generator Interconnection Project (GIP) numbers show consistent growth. Projects submitted through MISO's Expedited Project Review show no signs of slowing down as load serving entities need to respond to large spot load additions, load growth and resource retirements. Additionally, increasing extreme weather events, coupled with a decreased reserve margin in the Eastern Interconnect intensify the need for greater transfer capability within the MISO region and with neighboring regions to ensure reliability and resilience is maintained. As transmission is paramount to preparing for grid evolution, MISO will continue studies needed to conduct comprehensive planning to ensure a reliable system while responding to the Reliability Imperative.

Market Redefinition

Aims to ensure that resources with needed capabilities and attributes will be available in the highest risk periods across the year

Transmission Evolution

Assesses future transmission needs holistically, reflecting utility/state plans for new generation; will also consider potential cost allocation changes



System Enhancements

Transforms MISO's legacy platform into a flexible, upgradeable, and secure system that can evolve for years to come; will also integrate advanced technologies to process increasingly complex information

Operations of the Future

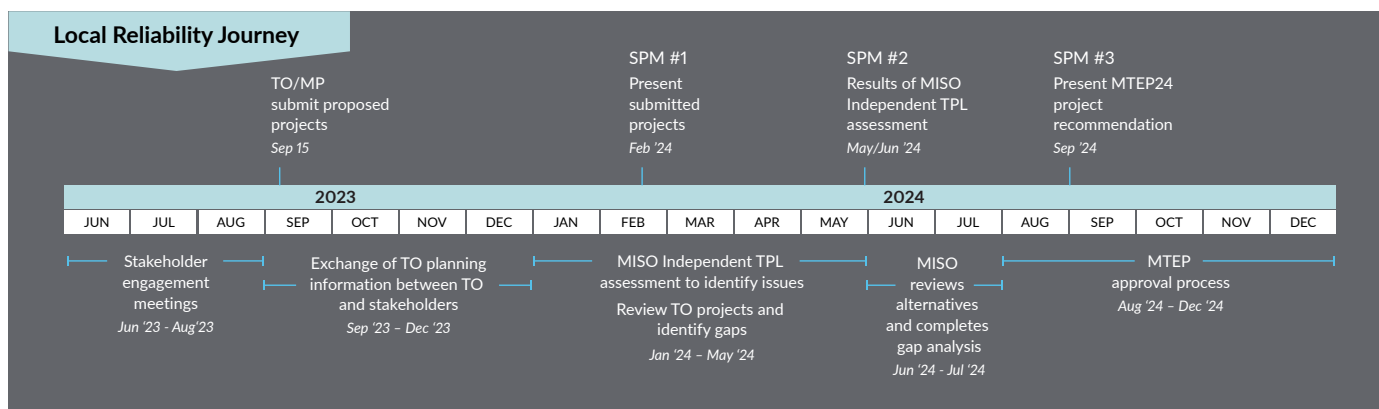
Focuses on the skills, processes, and technologies needed to ensure MISO Operations can effectively manage the grid into the future under increased complexity



Local Planning

MTEP24 LOCAL PROJECTS ARE DEVELOPED THROUGH RIGOROUS REVIEW AND ANALYSIS

MTEP24 local Appendix A projects were vetted through an 18-month process that included a series of public Subregional Planning Meetings (SPMs) and additional Technical Study Task Force (TSTF) meetings as required to discuss project details and analysis with stakeholders. MISO’s review of projects varies depending on project drivers, system needs and availability of potential alternatives. Submitted projects are typically analyzed to confirm they meet system needs and all applicable requirements and standards (Verify Need), or to ensure projects don’t create system issues when they’re not driven by requirements or standards (No Harm). Additionally, MISO focuses on select projects to determine if alternatives may be beneficial – these projects are typically selected due to their larger size, opportunities in the area, and/or stakeholder input.



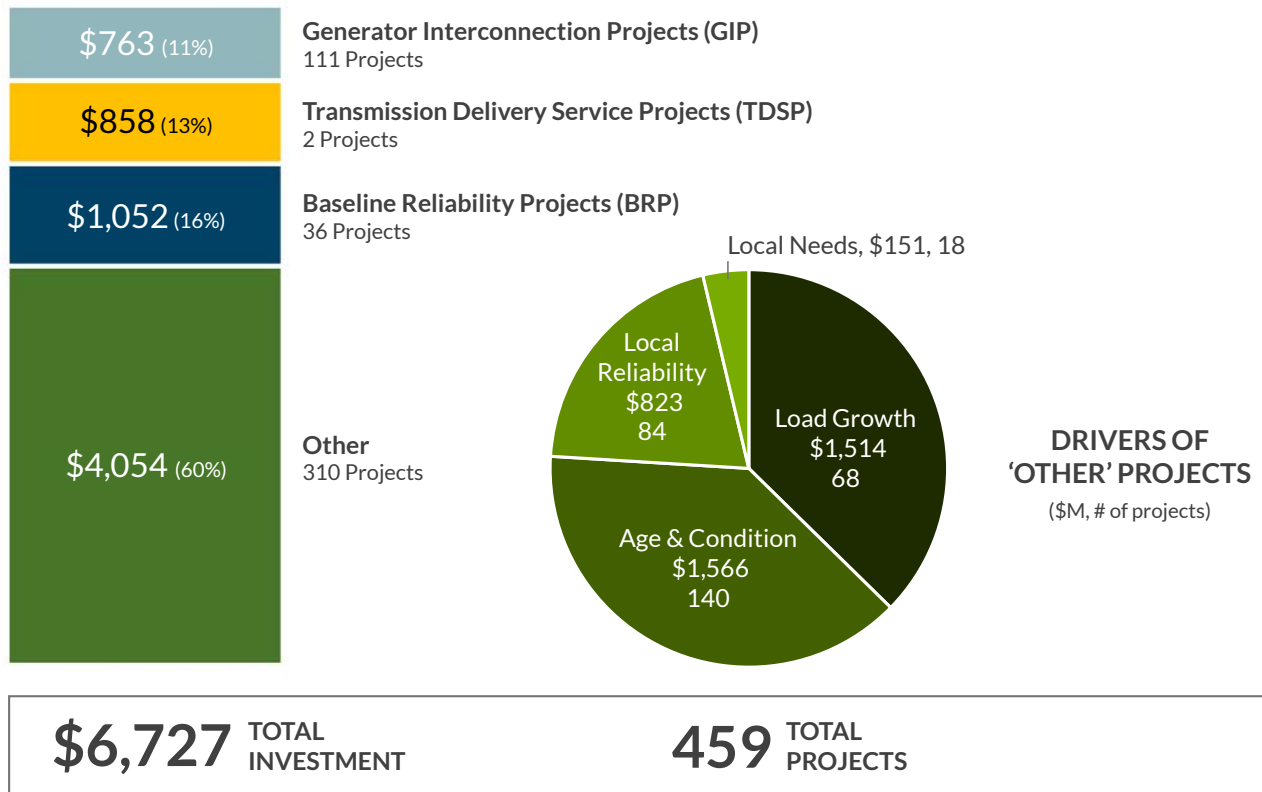
TO = Transmission Owners MP = Market Participants SPM = Subregional Planning Meeting
TPL is a NERC Reliability Standard for Transmission Planning



MTEP24 INCLUDES THE SECOND LARGEST LOCAL RELIABILITY PROJECT INVESTMENT IN MISO HISTORY

MTEP24 Appendix A includes 459 local projects totaling \$6.7 billion. This is the second largest investment in local reliability projects in MISO history. As in previous years, reliability and load growth and additions are the main drivers for these projects, totaling 50% of the total cost. The distribution of investment by subregion is generally consistent with typical MTEP cycles with 40% of the total in the West, 28% in the South, 21% in the Central and 11% in the East. Eighty-four percent of local MTEP projects are expected to go into service within the next three years. Two Transmission Delivery Service Projects, which represent Network Upgrades required to facilitate long-term, firm, point-to-point transmission service requests, are included in the West region. These projects are not cost shared through the Tariff, but instead are charged to the Transmission Customer and may be rolled into base rates in accordance with Attachment N of the Tariff.

Local MTEP24 Appendix A Project Investment Summary
(Data as of August 27, 2024; \$M, % of total investment dollars)

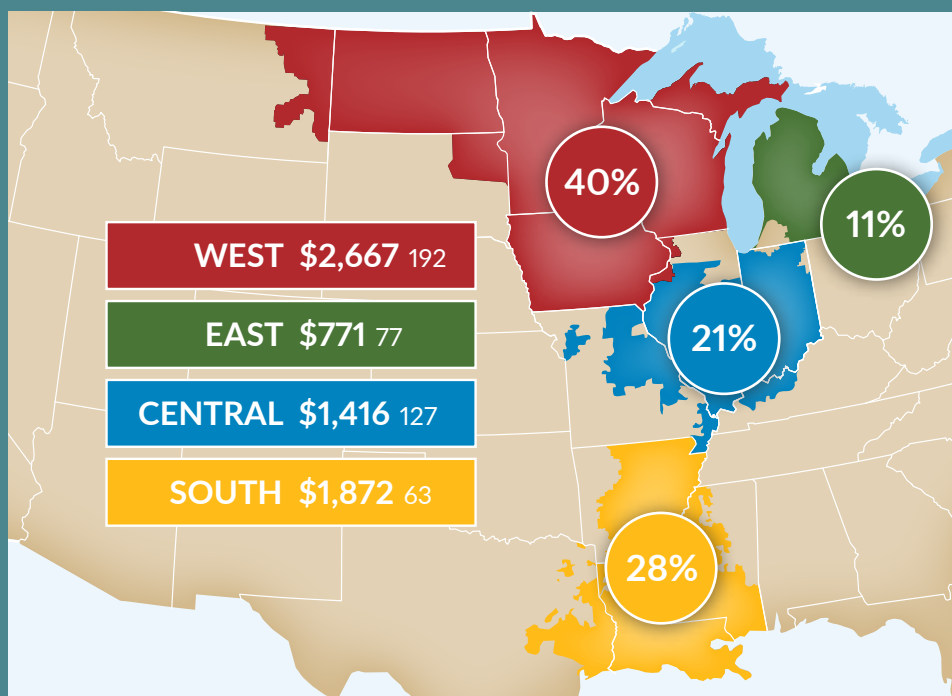




Local MTEP24 Appendix A Project Investment Summary (\$M)

Planning Region	Baseline Reliability Projects (BRP)	Generator Interconnection Projects (GIP)	Other Project	Transmission Delivery Service Project (TDSP)	Total	# of Projects
Central	\$77	\$190	\$1,149		\$1,416	127
East	\$155	\$178	\$438		\$771	77
South	\$737	\$232	\$903		\$1,872	63
West	\$83	\$162	\$1,563	\$858	\$2,667	192
TOTAL	\$1,052	\$763	\$4,054	\$858	\$6,727	459

Investment Planning Regions (\$M, and number of projects)

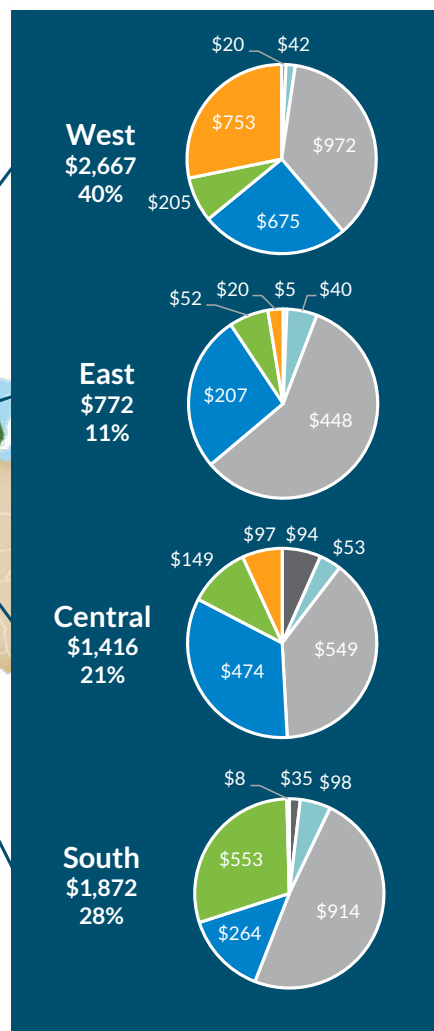
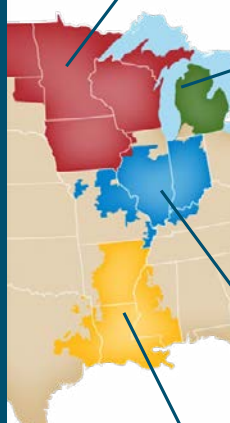
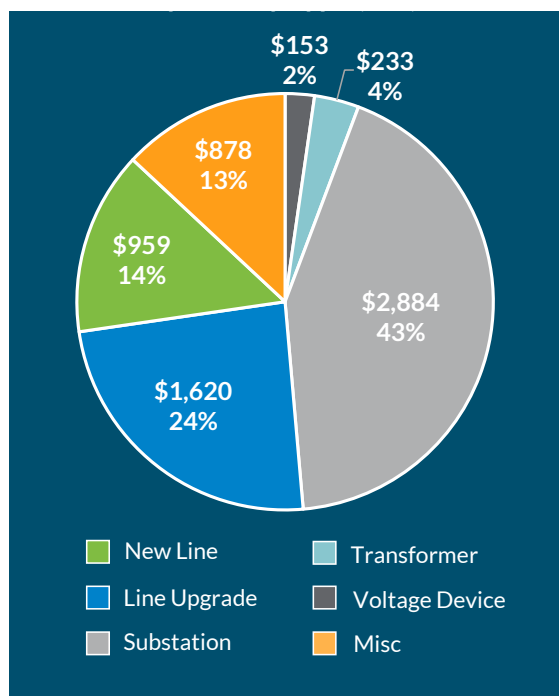




PROJECT FACILITIES

Each MTEP project is composed of one or more facilities. Forty-three percent of local MTEP24 facility investment is dedicated to substation or switching station improvements related to construction and maintenance. This includes completely new substations as well as terminal equipment work, circuit breaker additions and replacements. Twenty-four percent is dedicated to line upgrades which includes rebuilds, conversions, and relocations, and 14% is dedicated to new lines on new right-of-way in MISO. The remaining 19% of facility costs are dedicated between voltage devices, transformers, and miscellaneous categories.

**MISO Footprint Local MTEP24
Transmission Investment by Facility Type
(\$M)**

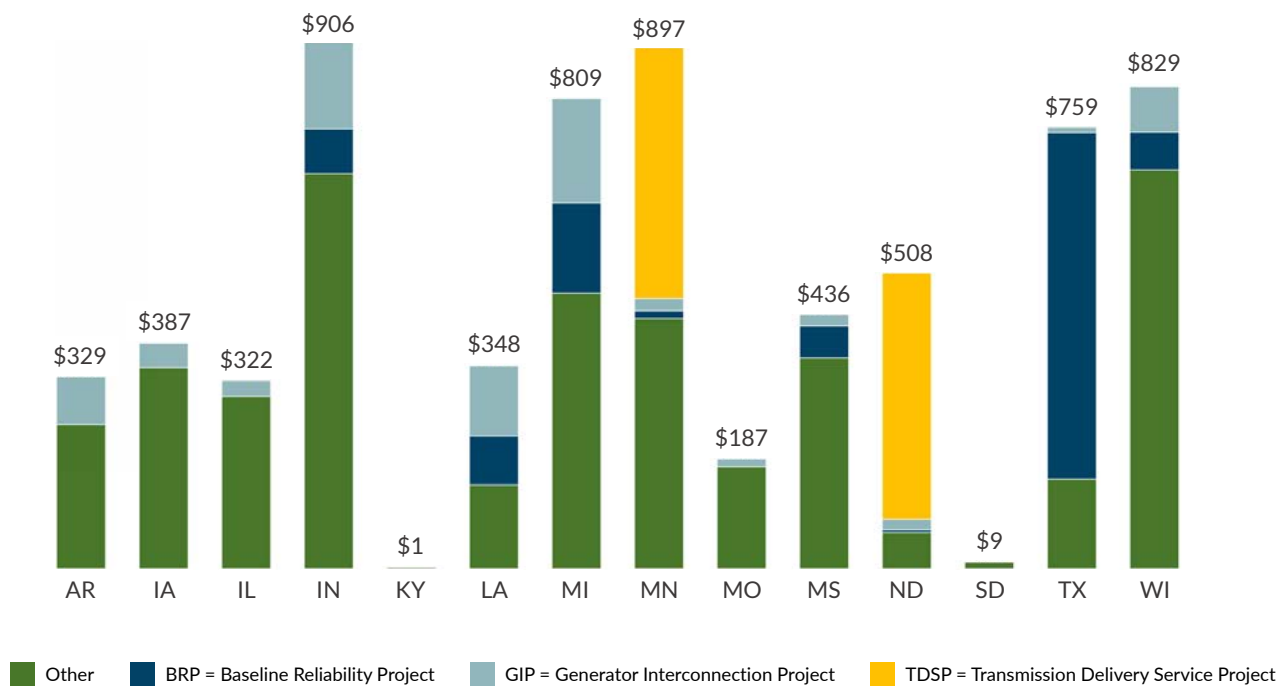




INVESTMENT BY STATE

Appendix A local projects are spread across MISO's footprint. Geographic investment trends can differ greatly from year to year due to the varied age of infrastructure or as new load or generation additions require new transmission build. This year, investment at the facility level is spread across all subregions.

Local MTEP24 Investment by State
(by facility; \$M)

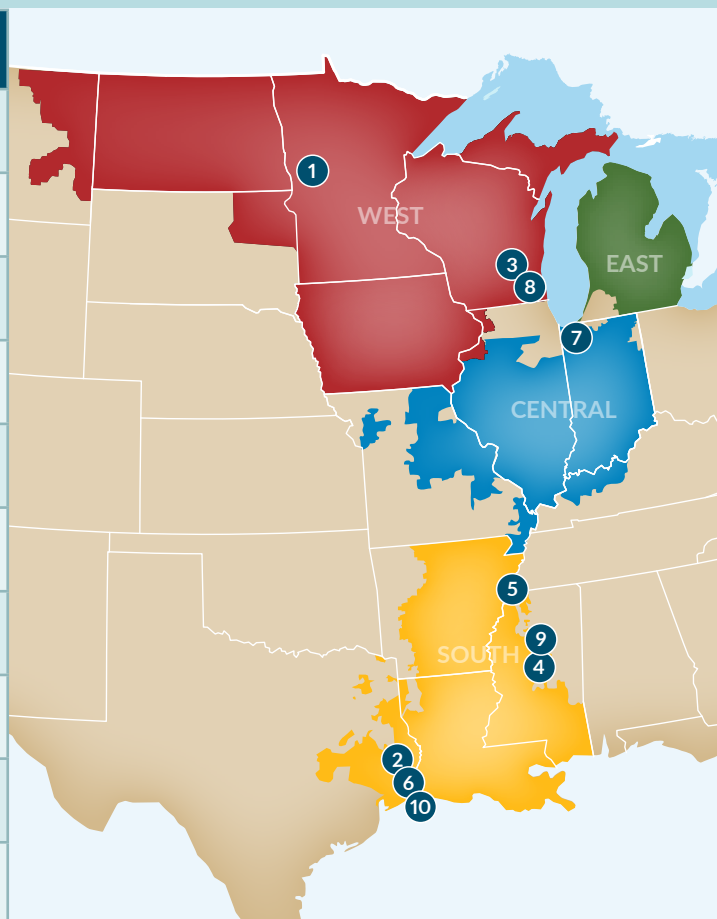




TOP 10 PROJECTS IN LOCAL MTEP24 APPENDIX A

The top ten projects based on investment represent 31% or \$2.1 billion of the total investment, with load growth and additions as key drivers. These top ten projects are located in three of MISO's four subregions, with six situated in the South subregion making up 46% of the top 10 projects investment cost. Additionally, 60% of the projects were also submitted through the Expedited Project Review process to urgently respond to emergent needs.

Rank	Project Name	Project Driver	Cost (millions)
1	HVDC Modernization Project	Transmission Delivery Service	\$800
2	Cypress to Legend 500 kV line	Baseline Reliability	\$406
3	Dodge County, DIC, New Substation	Other - Load Growth	\$161
4*	Andes 500/230 kV New Substation	Other - Load Growth	\$158
5	Galet 500/230 kV New Substation	Other - Load Growth	\$142
6*	Sandling 230 kV Customer Load Addition Project	Other - Load Growth	\$114
7*	Aetna Synchronous Condenser	Other - Local Reliability	\$91
8*	Racine County, DIC, Nimbus Substation	Other - Load Growth	\$89
9*	Virtilia 230 kV Substation	Other - Load Growth	\$80
10*	Legend to Sandling 230 kV Circuit 2 Project	Baseline Reliability	\$77



* Represents projects studied through Expedited Project Review (EPR) process

The top ten projects based on investment represent roughly 31% or \$2.1 billion of the total investment.



Regional Planning

L RTP ENABLES MISO MEMBER PLANS AND POLICY GOALS

Long Range Transmission Planning (LRTP) continues to be an important part of the Reliability Imperative's Transmission Evolution. Ultimately, the LRTP process assesses the effectiveness and efficiency of the transmission plan against potential load and generation outlooks (represented by the Futures) and seeks to identify a least-regrets transmission build-out that improves the system's ability to effectively and efficiently move energy from where it is generated to where it is needed in all hours of the year. It is also intended to reliably enable member resources and load serving goals while minimizing the total cost of the fleet transition.

To manage workload and complexity, LRTP is developing through multiple phases or "tranches" of new backbone transmission that will provide a wide range of value to support MISO member plans. In July 2022, the MISO Board of Directors approved the \$10.3 billion Tranche 1 portfolio focused on MISO's Midwest Subregion. The 18-project portfolio maximized usage of existing right-of-way, and will provide a 2.2 benefit-to-cost ratio for all MISO Midwest cost allocation zones through benefits that span a variety of value streams.

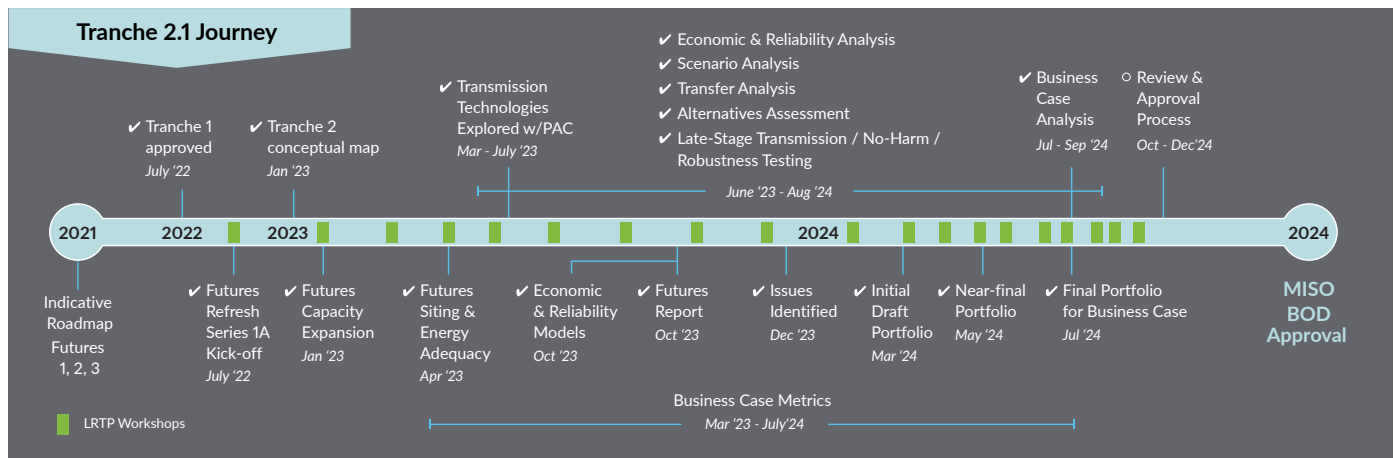
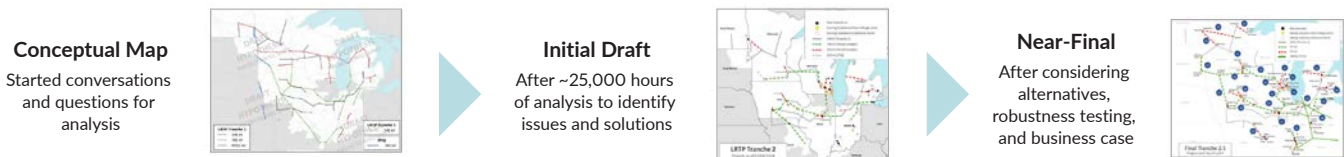
While the experience MISO gained from Tranche 1 might suggest Tranche 2.1 was an easier endeavor, the magnitude of the planned resource mix and load growth changes is now more significant than it was just a few years ago. First, there is more load growth, and thus more incremental generation required in Future 2A than in Future 1 which was used as the basis for Tranche 1. This made managing uncertainty more difficult, especially given an increase in transfers exacerbated by more frequent extreme weather events and the increased use of renewable resources. This required MISO staff to plan with additional tools and consider how to maintain energy adequacy. Second, the transmission needs identified in Tranche 2.1 weren't conducive to leveraging existing right-of-way as much as in Tranche 1, as these increased transfers drove the inclusion of a significant amount of new 765 kV transmission. Third, with a system that is operating at its reserve margin, planning a system that maintains reliability and delivers energy where it is needed while balancing cost-effectiveness is even more critical.

As with Tranche 1, MISO followed its iterative seven-step process for Tranche 2.1 to build models, identify issues and test potential solutions, with over 40,000 staff hours invested in the study. Stakeholders were engaged in the process, with more than 300 meetings in various formats and forums, numerous one-on-one discussions, email exchanges and more. A reliability study whitepaper, economic study whitepaper, business case analysis whitepaper, models, scenarios, data inputs, and analysis results were posted and reviewed by stakeholders. Additionally, formal and informal feedback was received and considered throughout the process, and appropriate updates were implemented based on feedback.



Tranche 2.1 began in 2022 with a refresh of the Futures to reflect recent policy changes, economics, and plans of states, utilities and members. Based on the indicative LRTP roadmap, Tranche 1 analysis, stakeholder discussions and engineering judgment, MISO developed an initial conceptual map for Tranche 2.1. This map kicked off conversations with stakeholders to help determine the scope for the study. In part, MISO reviewed the impacts of transmission technology concepts with stakeholders, including 345 kV, 765 kV, High Voltage Direct Current (HVDC) and Grid Enhancing Technologies (GETs). Models were also completed in parallel in the fall of 2023 to represent credible system conditions with likely and possible dispatch patterns determined following a data-driven process.

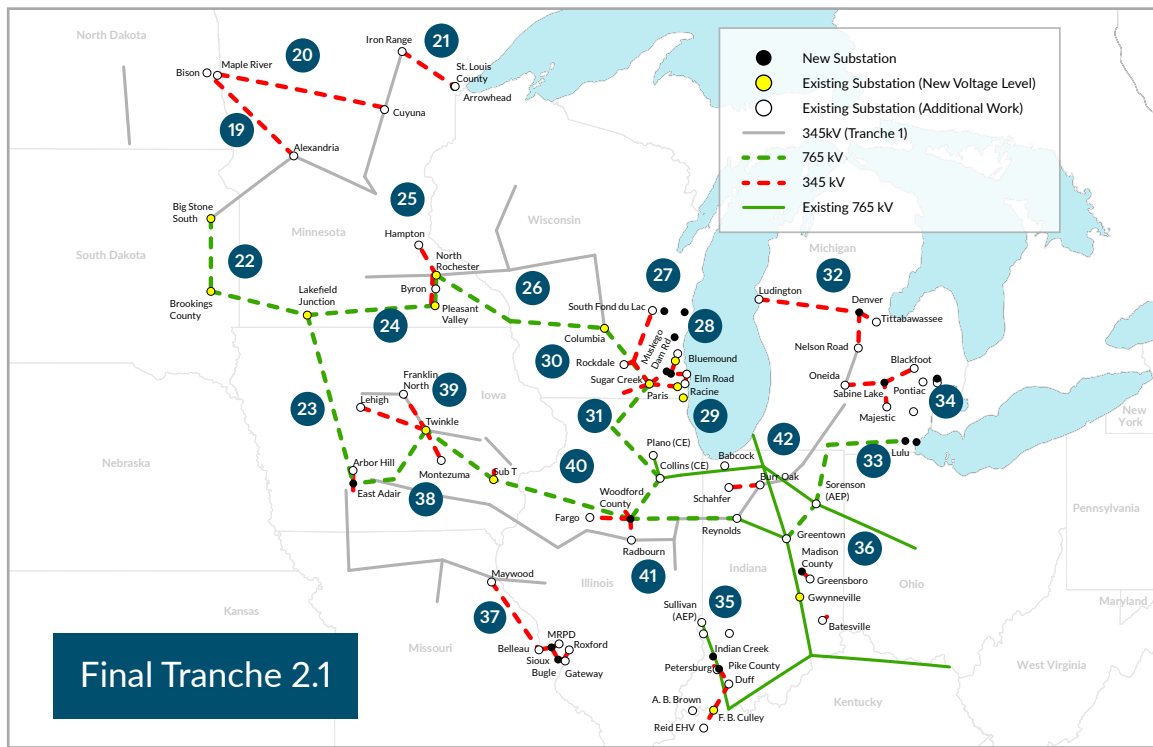
Once the models were completed, reliability analysis was performed to ensure transmission system performance is adequate before and after contingencies (disturbances) occur. Economic analysis was also performed to evaluate congestion, generation curtailment, regional price separation and overall costs to serve load, and to understand the adjusted production cost savings. An initial draft map resulted from these analyses which was refined after stakeholder-submitted alternatives were evaluated, with seven new projects incorporated into the draft Tranche 2.1 portfolio. Staff also conducted robustness testing to determine the potential impact of key projects (i.e., MTEP23, MTEP24, JTIQ and Grain Belt Express) that had already been approved or were under consideration after LRTP power flow models were completed in October 2023, and determined these projects do not negate or alter the need for the Tranche 2.1 portfolio, in whole or in part. Finally, benefit metrics were calculated for the final portfolio based on a business case methodology that was developed with stakeholders from March 2023 through July 2024.



*PAC = Planning Advisory Committee



The Tranche 2.1 portfolio includes 24 projects and 323 facilities across the MISO Midwest subregion



ID	Project Name	Predominate kV	Targeted ISD	Est. Cost (\$M, 2024)
19	Bison - Alexandria	345	2032	\$216
20	Maple River - Cuyuna	345	2033	\$908
21	Iron Range - Arrowhead	345	2032	\$428
22	Big Stone South - Brookings County - Lakefield Junction	765	2034	\$1,459
23	Lakefield Junction - East Adair	765	2034	\$1,375
24	Lakefield Junction - Pleasant Valley - North Rochester	765	2034	\$1,195
25	Pleasant Valley - North Rochester - Hampton Corner	345	2032	\$222
26	North Rochester - Columbia	765	2034	\$1,924
27	Rocky Run - Werner - North Appleton	345	2032	\$212
28	South Fond du Lac - Rockdale - Big Bend - Sugar Creek - Kitty Hawk	345	2033	\$1,102
29	Bluemond - Arcadian - Waukesha - Muskego - Elm Road - Racine	345	2032	\$731
30	Columbia - Sugar Creek	765	2034	\$743
31	Sugar Creek - Collins	765	2034	\$733
32	Ludington - Denver - Tittabawassee & Nelson Road	345	2032	\$1,553
33	Greentown - Sorenson - Lulu	765	2033	\$1,310
34	Oneida - Sabine Lake - Blackfoot & Majestic	345	2032	\$600
35	Southwest Indiana-Kentucky	345	2032	\$743
36	Southeast Indiana	345	2032	\$578
37	Maywood - Belleau - MRPD - Sioux - Bugle	345	2032	\$881
38	East Adair - Marshalltown - Sub T	765	2034	\$1,583
39	Lehigh - Marshalltown - Franklin North & Montezuma	345	2032	\$588
40	Sub T - Woodford County - Collins & Reynolds	765	2034	\$2,298
41	Woodford County - Fargo & Radbourn	345	2032	\$422
42	Burr Oak - Schahfer	345	2032	\$68
TOTAL TRANCHE 2.1 PORTFOLIO COST				\$21,868

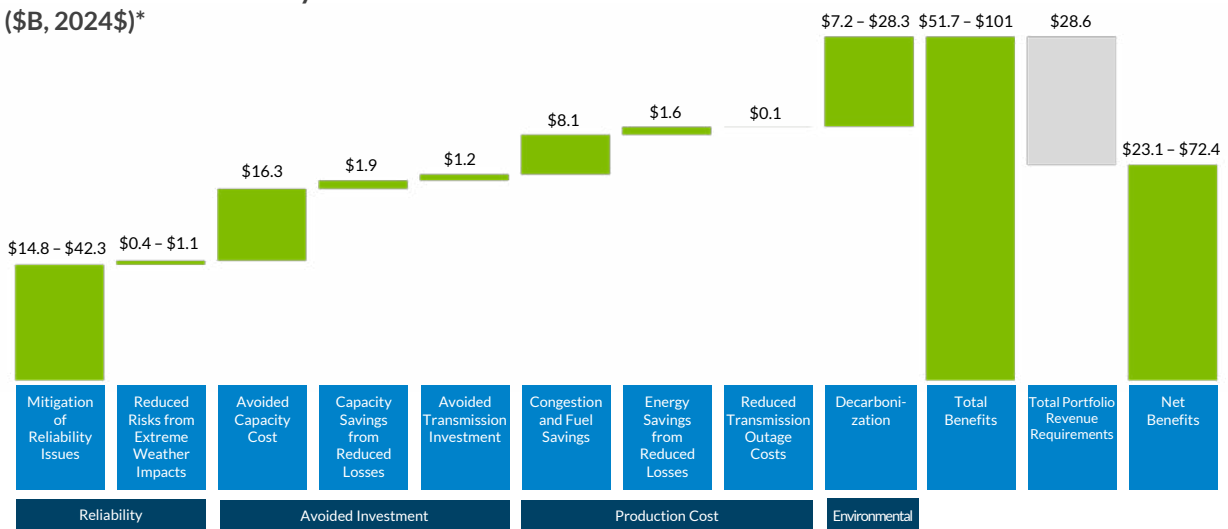


Tranche 2.1 provides a benefit-to-cost ratio between 1.8 and 3.5 for the total portfolio, with each zone seeing benefits at least 1.2 times their costs. The proposed projects and costs are spread across the entire MISO Midwest subregion, benefiting multiple states, MISO members and customers. MISO quantified the monetary benefits of the LRTP Tranche 2.1 portfolio using nine benefit metrics:

- **Mitigation of Reliability Issues** – Provides reliability value by mitigating thermal overloading of transmission facilities that would otherwise present a risk of unserved load.
- **Reduced Risks from Extreme Weather Events** – Reduces the risk of unserved energy during periods of extreme weather that can result in loss of available generation.
- **Avoided Capacity Costs** - Reduces need for more resource investment by increasing transfer capability and enabling access to resources across the broader MISO Midwest subregion.
- **Capacity Savings from Reduced Losses** – Reduces need for more resource investment by decreasing system losses in the season of peak capacity requirements.
- **Avoided Transmission Investments** – Avoids the cost of future age and condition replacement of existing transmission facilities where LRTP transmission is co-located.
- **Congestion and Fuel Savings** – Provides production cost savings by alleviating congestion and allowing more economical dispatch of resources.
- **Energy Savings from Reduced Losses** – Delivers energy savings by redistributing power flow and lowering system losses in the subregion.
- **Reduced Transmission Outage Costs** – Provides additional cost savings by alleviating higher levels of congestion that results with additional transmission outages.
- **Decarbonization** – Reduces carbon emissions by alleviating congestion and enabling more efficient dispatch of lower carbon resources.

LRTP Benefits vs. Cost
Based on Future 2A - 20 yr Present Value
 (\$B, 2024\$)*

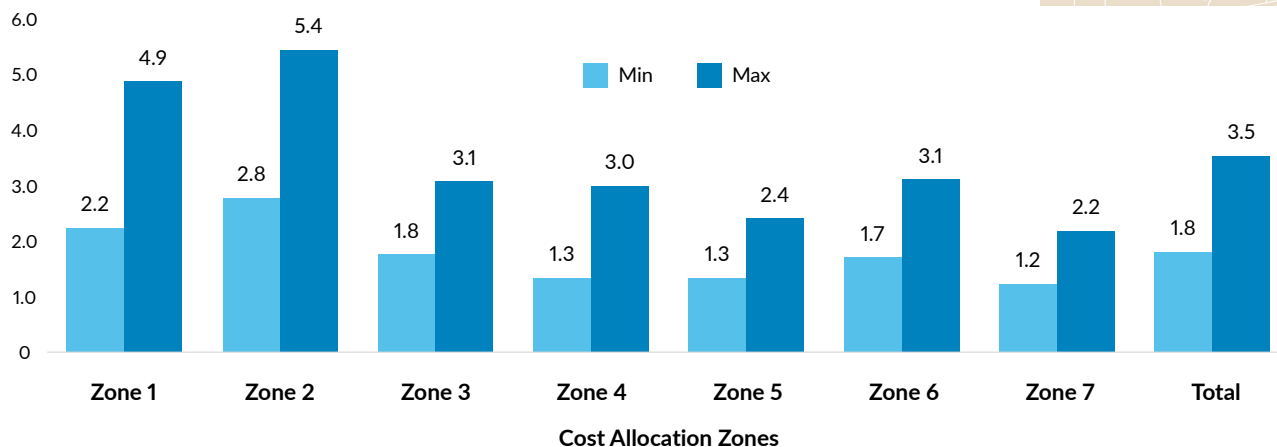
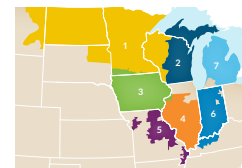
F2A Total benefit/cost ratio ranges from 1.8 to 3.5



*Estimated costs as of 9/24/2024. Assumes 7.1% discount rate. Benefit ranges reflect changes in assumptions for the value of lost load (mitigation of reliability issues/extreme weather impacts) and carbon reduction values (decarbonization). Additional details on the methodology for each LRTP Tranche 2.1 metric available in whitepaper.



Range of Benefit/Cost Ratio by Cost Allocation Zone* Based on Future 2A (20-yr Present Value, 7.1 Discount Rate)



*Estimated costs as of 9/24/2024. Range reflects changes in the assumptions for the value of lost load (mitigation of reliability issues/extreme weather impacts) and carbon reduction values (decarbonization). [Link to L RTP Tranche 2.1 metrics whitepaper.](#)

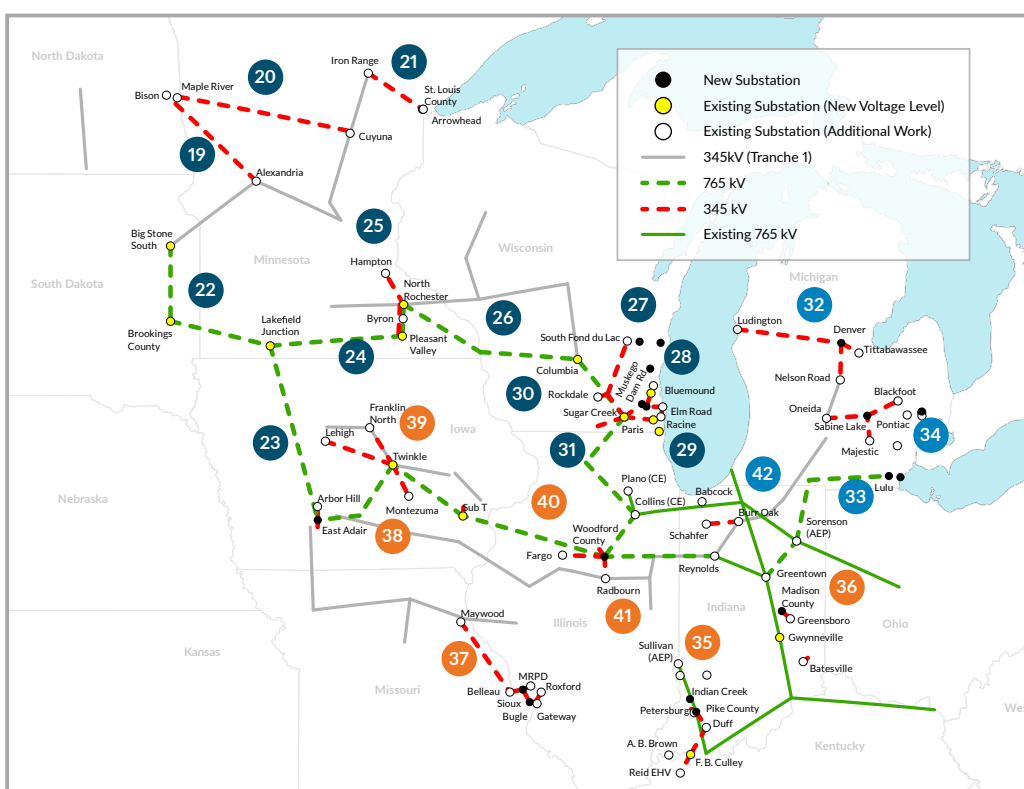
In addition to these economic benefits, Tranche 2.1 provides reliability, transfer ability, and economic value throughout the footprint. In the West region of MISO, this includes creating an outlet for North Dakota and South Dakota exports, providing transfer ability through Minnesota, Wisconsin, and Iowa, and reducing congestion throughout the area while increasing import ability to key load centers. In the Central region, a strong 765 kV path enables East – West and West – East transfers required under different weather patterns, while relieving congestion and resolving local constraints throughout the region. Finally, in the East region, Tranche 2.1 will better tie into the existing 765 kV network, unlocking generation and allowing greater transfer ability into and across the region.





In its final analysis and consideration of stakeholder feedback, MISO concluded the Tranche 2.1 portfolio complies with its Tariff, improves reliability and economic value, enables member fleet transitions, load growth and regional power transfers within MISO when geographic diversity must be relied upon to maintain reliability. This conclusion is based on the collective reliability, economic, and business case results, which are themselves the results of a robust process refined and improved by stakeholder input. For example, MISO sought input and made appropriate revisions to generation sites in our Future 2A expansion, to the transmission topology and generation attributes in the LRTP reliability and economic models, to the transfer scenarios used for the portfolio evaluation, and to the business case methodology.

Tranche 2.1 projects provide reliability, transfer ability and economic value throughout the footprint



WEST REGION
Creates outlet for North Dakota and South Dakota exports, provides transfer ability through Minnesota, Wisconsin, and Iowa, and reduces congestion throughout the area while increasing import ability to key load centers

CENTRAL REGION
Establishes a strong 765 kV path which enables East - West and West - East transfers required under different weather patterns, while relieving congestion and resolving local constraints throughout the region

EAST REGION
Ties into the existing 765 kV network, unlocking generation and allowing greater transfer ability into and across the region



JTIQ Planning

JTIQ SOLUTIONS DEVELOPED THROUGH INNOVATIVE PROCESS ADDRESS INTERCONNECTION BARRIERS

The transmission system is at capacity for new generation along the SPP-MISO seams, and both RTOs are experiencing a resource mix evolution which drives the need for new generation to interconnect. In 2021, a new study approach was jointly conducted by SPP and MISO to more effectively analyze issues along the seam, which are normally addressed by Affected System Studies. The study identified a \$1.65 billion portfolio of five transmission solutions that will provide value to interconnection customers and load. The portfolio addresses significant barriers to the development of new generation along the SPP-MISO seam, enables approximately 28 GW of generation to interconnect, and is expected to provide ancillary benefits to load.

Stakeholders were engaged in the process to develop the portfolio and cost allocation between December 2020 and early 2023. JTIQ projects are, essentially, MISO Generator Interconnection Projects (GIP) with cost allocation that accommodates U.S. Department of Energy (DOE) grant funding that would have otherwise been allocated to load. \$464 million of DOE's Grid Resilience and Innovation Partnerships program funds will offset costs, and generator interconnection customers will pay the remaining capital costs for the projects (current cost reflects this grant).

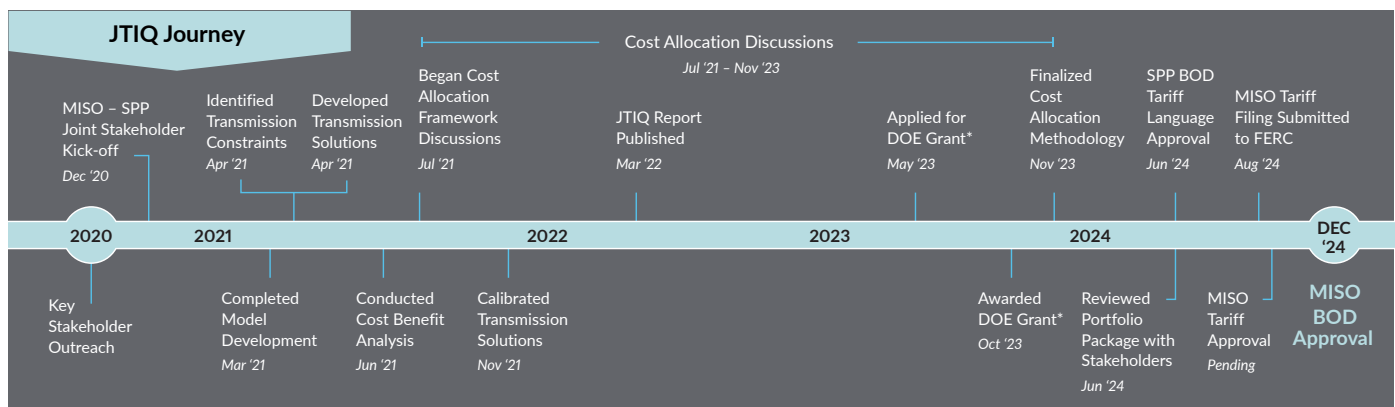
Initiated New Study Process
Began new study process to test improved interregional planning approach



Developed JTIQ Portfolio
Developed a portfolio of larger solutions to seams issues and enable more affordable projects in the future



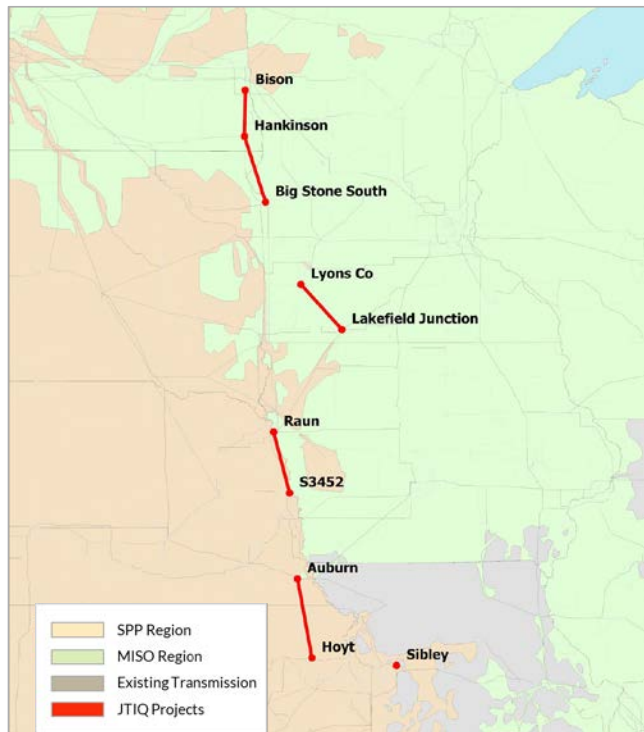
Submitted Tariff Filings
Requested changes to allow for new process and cost allocation



DOE = Department of Energy. Grant = Grid Resilience and Innovation Partnership Program (GRIP)



JTIQ Map and Project List



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 Recinfiguration	SPP
Total Cost of Portfolio Projects \$1.65B	



STUDY FRAMEWORK

The first of its kind – required a lot of innovative thinking and collaboration

A critical tool for improving queue processing efficiency, providing more cost and timing certainty to interconnection customers near the SPP-MISO seam and enabling lower-cost energy in each region

An excellent example of interregional cooperation, setting the stage and providing a template for future work



Looking Forward

In 2025 and beyond, MISO looks forward to working with stakeholders on both traditional MTEP planning activities, as well as activities that position the grid to best serve the broader regional needs identified in the future resource plans of MISO members and state policies. This parallel near and long-term evaluation will ensure that the transmission system is well situated for regional and interregional opportunities, while maintaining the ability of our members to reliably and efficiently serve their load in the near term. A more interconnected system is stronger, and transmission planning, in conjunction with the Reliability Imperative, will help our members reliably and efficiently serve their load.

The copyright in all material published in this report by the Midcontinent Independent System Operator, Inc. (MISO), including all portions of the content, design, text, graphics and the selection and arrangement of the material within the report (the "material"), is owned by MISO, or legally licensed to MISO, unless otherwise indicated. The material may not be reproduced or distributed, in whole or in part, without the prior written permission of MISO. Any reproduction or distribution, in whatever form and by whatever media, is expressly prohibited without the prior written consent of MISO.

© 2024 MISO. All rights reserved.



misoenergy.org