

The 2025 MTEP report contains local transmission projects
with regional and interregional updates

MTEP25

TRANSMISSION PORTFOLIO

MTEP25 Report

Highlights

- 435 projects totaling 1,934 miles of transmission address local reliability needs
- Load growth is the largest driver, with transmission supporting 11.6 GW of load
- 49 urgent projects were approved through the Expedited Project Review process



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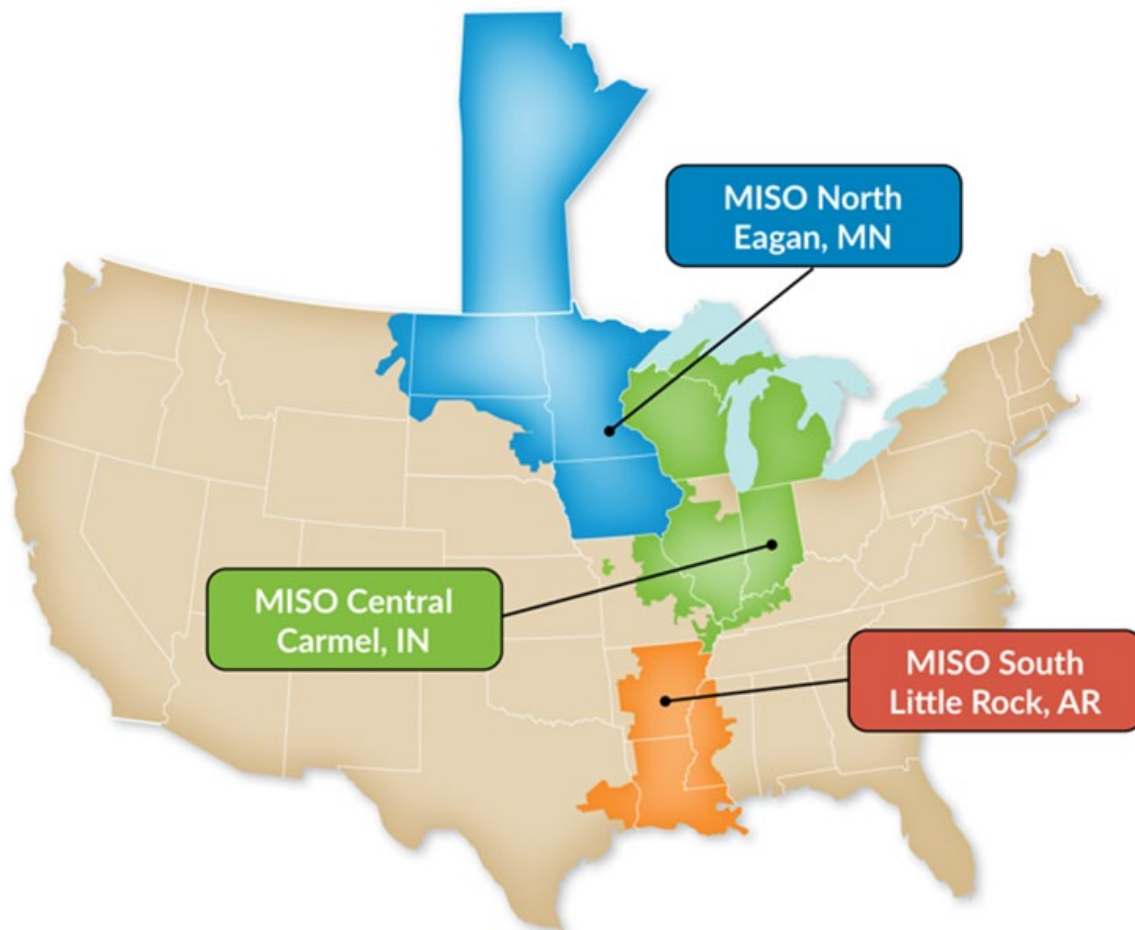
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About MISO

Midcontinent Independent System Operator (MISO) is an independent, 501(c)(4) not-for-profit, member-based organization, approved as a Regional Transmission Organization (RTO) by FERC in 2001, with responsibility for keeping the power flowing across its region reliably and cost effectively. The system MISO manages is the largest in North America based on geographical scope, with 471 market participants serving approximately 45 million people across all or part of 15 states and one Canadian province. The MISO energy markets are also among the largest in the world, with more than \$40 billion in annual gross market charges.

MISO Reliability Footprint and Regional Control Center Locations

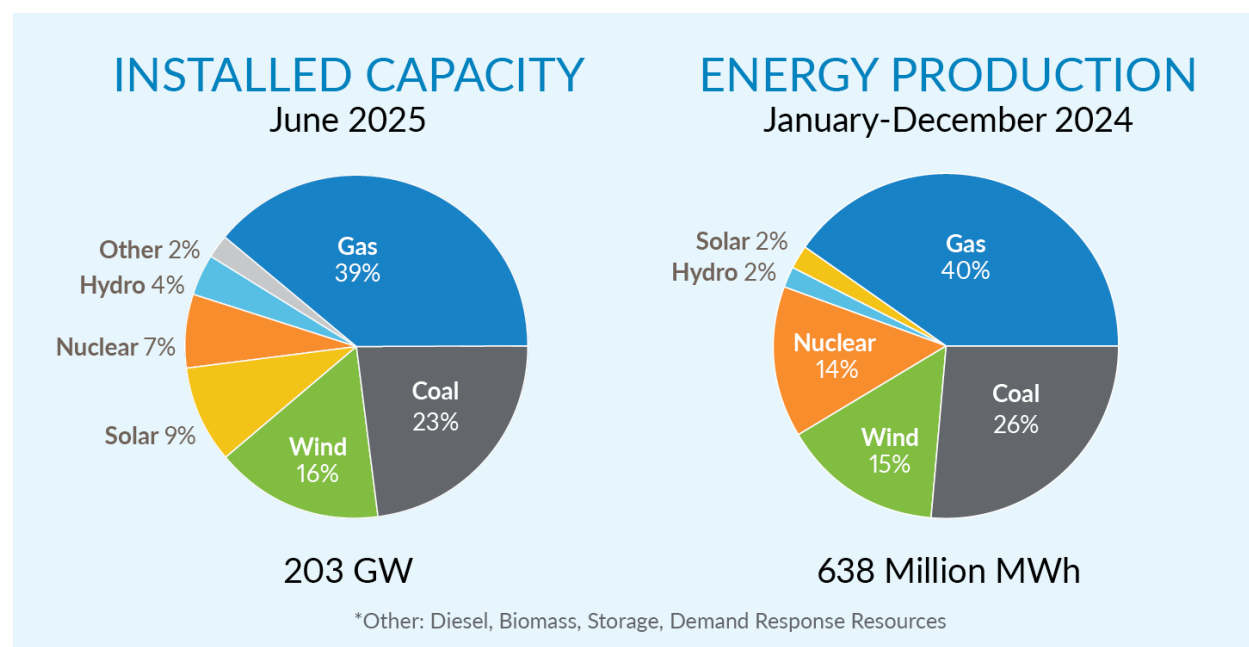




Currently, the MISO region contains nearly 79,000 miles of high-voltage transmission, as well as roughly 190,000 megawatts of electricity generating capacity. MISO does not own any of these assets. Instead, with the consent of our asset-owning members and in accordance with our FERC-approved tariff, MISO exercises functional control over the region's transmission and generation resources with the aim of managing them in the most reliable and cost-effective manner possible. The MISO region is predominantly comprised of traditionally structured, state-regulated utilities.

KEY FACTS

Area Served	15 U.S. States and Manitoba, Canada
Population Served	45 Million
Transmission Line	79,000 Miles
Generating Units (Commercial Model)	1,888
Record Demand	127.1 GW 7/20/2011
Wind Peak	25.6 GW 1/12/2024
Solar Peak	14.5 GW 9/7/2025
Members	56 Transmission Owners 173 Non-transmission Owners
Market Participants	550+
Carbon Reduction	Approximately 32% since 2014



[Corporate data](#) as of September 2025



CHAPTER 1: TRANSMISSION PLANNING OVERVIEW

1.1 Transmission Evolution

The electric grid is undergoing a fundamental transformation driven by a combination of economic, technological, policy-related and 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 altered the region's historic profile, creating risks in times that rarely posed challenges in the past. Now, change continues and additional challenges, such as large load integrations, are emerging. MISO's Reliability Imperative seeks to tackle these challenges. Specifically, efforts within the Transmission Evolution segment of the Reliability Imperative focus on transforming how MISO conducts system planning. These efforts are especially critical as the overall velocity of change continues to pose challenges that MISO and its members must address.

Resource adequacy risk: The significant uncertainty in projected resource adequacy underscores the urgent need for strategic planning. Resource capacity margins are tightening throughout the region as large load additions are forecasted, plans for resource retirements continue, the complexity of studying interconnection requests persists, and construction delays from supply chain issues continue. While efforts will continue to manage these challenges, MISO has made significant progress. MISO's temporary Expedited Resource Addition Study (ERAS) process to approve urgent resource needs, the Queue Cap, automation of early Queue phases and other efforts are helping to more quickly add needed resources to the system. Between November 2024 and August 2025, 100 Generator Interconnection Agreements totaling 17 GW (nameplate capacity) were processed and approved. During the 2024 calendar year, 7.5 GW of nameplate capacity (3.0 GW of accredited capacity) moved to commercial operation. In 2025 to date, 5.9 GW of nameplate and 3.2 GW of accredited capacity has come online.

Large load additions: Load growth and large load additions are increasing. A spike in large, single-site load additions from data center developments and other electrification trends pose new challenges for the grid. To complicate matters, potential large new loads are not always fully reflected in all Load Serving Entity forecasts which are critical for planning and operations, as these new load additions can transition from prospective to certain within a given planning cycle. As a result, MISO has worked with stakeholders to refine the Expedited Project Review (EPR) process to advance urgent transmission projects outside the standard MTEP cycle—with the increased use of this process acting as an indication of how quickly system needs are emerging.

Policy changes: Significant developments on the federal front are impacting the rate of change and have implications for both energy supply and demand. The One Big Beautiful Bill Act (OBBBA) was signed into law mid-2025 and included an accelerated end to Production Tax Credit and Investment Tax Credits for wind and solar units. This change will likely contribute to further shifts in fleet plans. Issuance of four executive orders aimed at reinvigorating the nuclear industry has resulted in two retired nuclear plants in the MISO footprint beginning the process to be repowered, and these orders could drive additional development of large plants and small modular reactors. Finally, the Department of Energy has become directly involved in plant retirements – with an order to delay the retirement of the Campbell coal plant in Michigan.



MISO, its members and states have a shared responsibility to address these urgent challenges and ensure continued reliability. MISO is addressing this Reliability Imperative – the term it uses to describe this shared responsibility – through several interconnected and sequenced initiatives that are grouped into four key initiatives or pillars:

- **Market Redefinition:** Adapt our markets to ensure we are incenting the needed resources and attributes, appropriately valuing or accrediting those resources, and that prices reflect actual conditions at all times and incent availability.
- **System Enhancements:** Transform our Market System to meet increasingly complex requirements also falls under the Reliability Imperative.
- **Operations of the Future:** Examine needs across skills, processes and technologies to ensure effective grid management in the face of that growing complexity.
- **Transmission Evolution:** Enhance planning process and identify solutions through long-term and interregional transmission planning that allow us to efficiently address both near and long-term system needs, including the optimal locations for generation to minimize the total cost between generation and transmission investment.

As MISO continues to respond to the Reliability Imperative, it will advance comprehensive planning studies, support urgent infrastructure development, and evolve its processes to ensure the grid remains reliable and resilient in the face of accelerating change.

1.2 Planning Principles

MISO, as the FERC-approved regional transmission planner, uses the MISO Transmission Expansion Plan (MTEP) to identify and support the development of cost-effective transmission infrastructure that is sufficiently robust to meet reliability needs, enable a competitive energy market, support policy goals and allow for competition among transmission developers in the assignment of transmission projects. MTEP is created through a Tariff-driven, inclusive, and open process which provides opportunities for stakeholder participation and input. MISO also works with its stakeholders and Board of Directors to adopt MISO's Planning Guiding Principles (Figure 1.2-1), which are shaped by state and federal policy, stakeholder needs and cost efficiency goals.

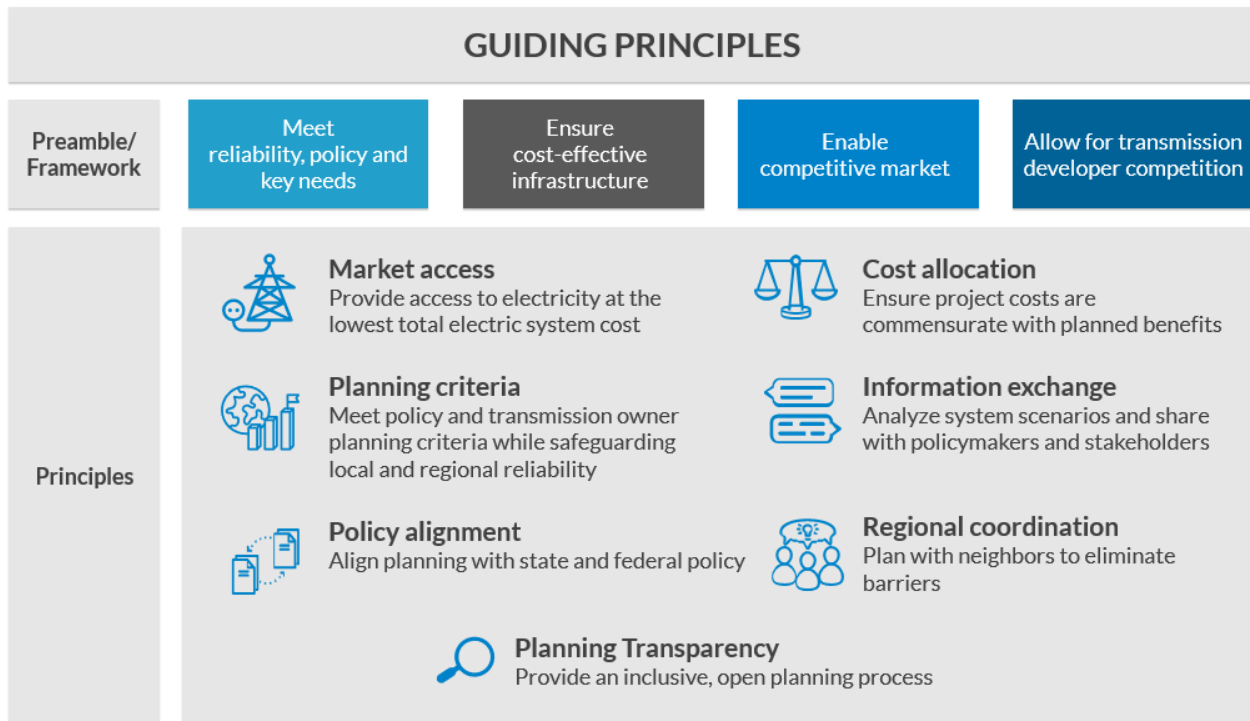


Figure 1.2-1: MISO's Planning Guiding Principles.

Comprehensive Planning Processes

These principles are enacted through MISO's value-based planning approach (Figure 1.2-2), which ensures local needs are integrated with regional requirements. Its processes consider a range of issues and viewpoints:

- For **local planning**, review and provide transparency on member plans, evaluate system against reliability standards, consider alternatives and verify needs as applicable.
- Evaluate long-term, broader system needs through MISO's **regional planning** processes, including its Long Range Transmission Planning efforts.
- Discuss the impact of policies on the transmission system and resource mix in **policy assessment**.
- Define system changes needed to accommodate new resources in **resource integration**.
- Identify planning issues and potential solutions shared with MISO neighbors in **interregional planning**.

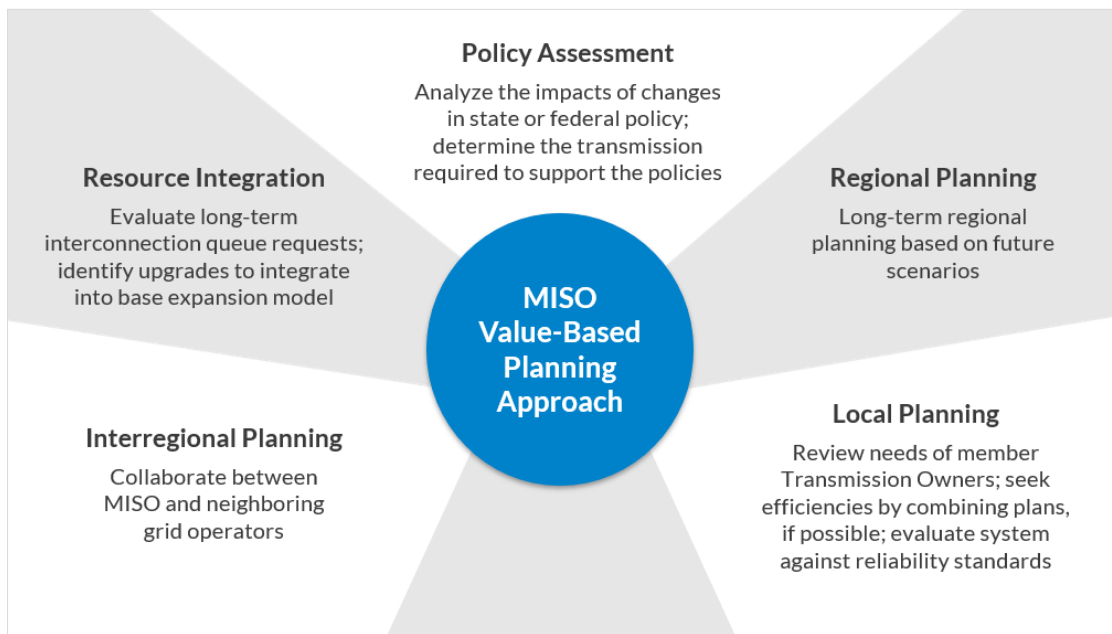


Figure 1.2-2: MISO's Value-Based Planning Approach.

MISO's various planning approaches cannot operate independently of each other. The goal of the transmission planning process is to identify a least-regrets outcome that meets its member plans, provides reliable power delivery, and appropriately balances local versus regional solutions to ensure a cost-effective outcome for customers. Each process informs the others to cover the entire planning horizon.

Using this comprehensive planning approach, the MTEP Report is structured into three main planning areas: local, regional and interregional. Local reliability planning, sometimes referred to as near-term planning, is highlighted in Chapter 4. Regional or long range transmission planning, inclusive of Futures, is covered in Chapter 2. Finally, interregional planning is highlighted in Chapter 3.

Process Timing and Stakeholder Coordination

MISO's Tariff defined planning process – with stakeholder input from Subregional Planning Meetings – evaluates needs throughout the cycle to develop expansion plans that support a reliable and efficient system. This collaborative process allows analysis of all projects for their combined effects on the Transmission System. Moreover, the design of this collaborative process ensures that the MTEP addresses transmission issues within the applicable planning horizon in an efficient and cost-effective manner, while considering the input of stakeholders.

These various planning functions occur at different times and begin the year before an MTEP report is finalized (see Figure 1.2-3). For example, assessments of generator interconnection and retirements occur on a continuous basis. Others repeat on a regular cycle, but the actual MTEP report is produced once every 12 months. Each MTEP cycle's scope definition actually begins in the summer of the prior year. The months of in-depth research and analysis, combined with many interactions between various work streams and stakeholders culminates in Appendix A.

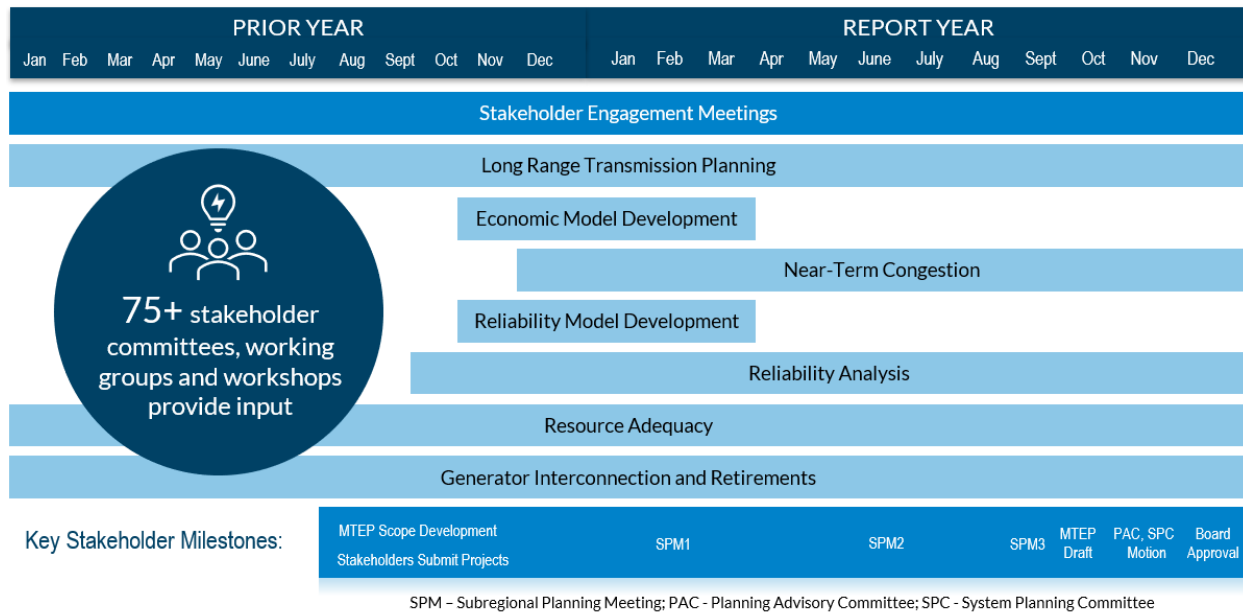


Figure 1.2-3: Typical MTEP cycle is developed in overlapping cycles and delivered annually.

Planning Analysis Methods and Modeling

Planning analyses performed by MISO test the transmission system under a wide variety of conditions using standard industry applications to model key items, such as steady state power flow, voltage stability, and economic parameters, as determined appropriate by MISO to be compliant with applicable criteria and the Tariff. MISO collaborates with Transmission Owners, other transmission providers, transmission customers, and stakeholders to develop appropriate planning models that reflect expected system conditions for the planning horizon. The local reliability planning process relies on known and committed inputs into the process, while the long-term planning process considers projected inputs (Figure 1.2-4).



Figure. 1.2-4: Summary of inputs into reliability and long-term planning processes.



Local Transmission Planning

[Models](#) are available to stakeholders with security measures as provided for in the Transmission Planning Business Practices Manual. MISO provides the opportunity for stakeholders to review and comment on the posted models before commencing planning studies.

MISO's review of projects varies depending on project drivers, system needs, opportunities for alternatives, among other factors. Specific to local planning, MISO may verify the need, complete a no-harm analysis, or post information for stakeholders.

- **Verify need:** Confirmation of system need, including consideration of applicable National Electric Reliability Organization reliability standards and reliability standards adopted by Regional Reliability Organizations, and applicable within the Transmission Provider Region. MISO must also verify the need for alternatives to adequately examine their effectiveness.
- **No harm:** Ensure a submitted project does not create a system issue. Includes projects that create model changes like contingency definitions, line ratings, or line impedances.
- **Post only:** Provided for FERC Order 890 transparency provisions. May include controls equipment to communicate remotely with the facility. This information is not able to be represented with model changes.

MISO considers alternatives in multiple forms, including like-for-like replacement, regional reliability projects, the combination of multiple local solutions, and other options identified through either MISO analysis or submitted by stakeholders. Alternative assessments for projects may be completed by Transmission Owners prior to project submission to MISO, proposed by MISO, or proposed through stakeholder submissions. Some of the criteria to select an alternative considers cost comparisons, avoidance of known constraints from local, state and federal permitting or challenges due to the terrain of the proposed transmission right of way, and how reliability needs are resolved. Alternatives do not always result in one project replacing another, and may instead be additive to the original project, even when submitted with the thought that they would directly compete.

Long Range Transmission Planning

Long Range Transmission Planning (LRTP) is an essential element of planning the regional grid to be reliable and efficient with a focus on the long-term (i.e., 20 years) planning horizon. LRTP efforts are launched periodically when needed to understand and address significant changes to future conditions that the grid must be prepared to address. Long Range Transmission Planning may result in regional backbone facilities needed to move bulk power reliably and efficiently within MISO, depending on identified needs. While they provide for a reliable and efficient grid based on forecasted resource developments, they are not intended to resolve all connection issues and avoid resolving anything associated with precise siting of future generation or load.



Long Range Transmission Planning follows MISO's well-established seven-step value-based planning process and is part of MISO's overall MTEP process. Outlined below are the high-level descriptions of each step:

- 1 **Develop Future Scenarios** – develop scenario-based Futures with resource forecast and siting
- 2 **Develop Resource Plan and Site Future Resources** – development of planning models utilizing Futures
- 3 **Identify Transmission Issues** – identify potential transmission issues
- 4 **Integrated Transmission Development** – proposals for solutions to issues
- 5 **Transmission Solution Evaluation** – evaluate the effectiveness of various solutions
- 6 **Project Recommendation and Justification** – recommend preferred solutions for MTEP implementation
- 7 **Project Cost Allocation** – apply appropriate cost allocation

Through this process, MISO works to identify potential grid needs in support of a range of potential resource and load scenarios, building from our members' resource plans. These scenarios are codified in the MISO Futures, which represent long-term load and generation scenarios which 'bookend' potential 20-year out conditions for use in transmission and resource planning. The LRTP process includes extensive stakeholder engagement, including regularly scheduled workshops and periodic discussions at the Planning Advisory Committee. Project recommendations resulting from this process are presented for Board of Director review and approval.

Interregional Coordination and Planning Studies

MISO works with the neighboring transmission planning regions, including Southwest Power Pool (SPP) and PJM Interconnection (PJM), to identify issues on the seams, perform studies, and jointly evaluate transmission solutions that may address newly identified interregional needs or be more efficient or cost effective than a corresponding regional solution. While MISO has a separate Joint Operating Agreement (JOA) with both SPP and PJM that details specific processes and criteria, the high-level interregional coordination activities are similar on each seam:

- 1) Exchange modeling data and other system information.
- 2) Review identified historic issues or propose reliability, economic, or transfers analysis to determine forward-looking issues on the seam.
- 3) Evaluate whether to perform an interregional study based on historic or forward-looking issues.

MISO performs joint studies with SPP and PJM on a regular basis, in accordance with the timelines and frequencies dictated in their respective JOAs, or as needed. Studies may have a targeted or a more complex scope requiring a longer study period, and can include reliability, economic and/or public policy issues along with analysis of interregional transfer capability and extreme weather events. Interregional issues and study efforts are coordinated through a public Interregional Planning Stakeholder Advisory Committee (IPSAC) consisting of representatives and interested parties from each RTO community.

In addition to the joint study efforts with SPP and PJM, MISO performs studies, as needed, with neighboring entities of the Southeastern Regional Transmission Planning (SERTP) group and the Independent Electricity



System Operator of Ontario (IESO). While the study process is less formal, MISO and these entities still meet regularly to review interregional issues and possible areas of collaboration.

Details on planning procedures, on-going studies and stakeholder meetings can be found on the [Interregional Coordination](https://misoenergy.org/interregional-coordination) page of the MISO public website (misoenergy.org).

Project Types and Approval

MTEP Appendix A projects are vetted by MISO through the planning process and project types are determined by criteria in MISO's Tariff. Below is an overview of Tariff-defined project types¹:

- **Baseline Reliability Project (BRP)** - Projects are Network Upgrades identified in the base case as required to ensure that the Transmission System is in compliance with applicable North American Electric Reliability Corporation reliability standards and reliability standards adopted by Regional Reliability Organizations, and applicable within the Transmission Provider Region. Baseline Reliability Project costs are allocated to the local Transmission Pricing Zone(s) and recovered through Attachment O by the Transmission Owner(s) developing the projects.
- **Generator Interconnection Project (GIP)** - Projects are New Transmission Access Projects that are associated with interconnection of new generation or the capacity modification of existing generation. Costs are primarily paid for by the interconnection customers with certain exceptions as specified in Attachment FF. Costs of network upgrades rated at 345 kV and above are eligible for 10 percent cost recovery from load on a system-wide basis.
- **Market Efficiency Project (MEP)** - Projects meet Attachment FF requirements for reduction in market congestion and are eligible for regional cost allocation. Projects qualify as Market Efficiency Projects based on cost and voltage thresholds and are developed to produce a benefit-to-cost ratio of 1.25 or greater. Costs are distributed to benefiting pricing zones, in accordance with Attachment FF of the Tariff.
- **Market Participant Funded Project (MPFP)** - Projects are defined as Network Upgrades fully funded by one or more market participants but owned and operated by a Transmission Owner.
- **Multi-Value Project (MVP)** - Projects meet Attachment FF requirements to provide regional or subregional public policy, economic and/or reliability benefits. Costs are shared with loads and export transactions in proportion to energy withdrawals or export schedules. One example of this type of project is the LRTP Tranche 2.1 portfolio.
- **Other** - Projects to address local reliability issues and/or provide local economic benefit, which do not qualify as Baseline Reliability Projects, New Transmission Access Projects, Targeted Market Efficiency Projects, Market Efficiency Projects, or Multi-Value Projects. Project costs are allocated to the local Transmission Pricing Zone(s) and recovered through Attachment O by the Transmission Owner(s) developing the projects.
- **Targeted Market Efficiency Project (TMEP)** - Projects are designed to alleviate historical market-to-market congestion between MISO and PJM Interconnection, while meeting certain cost and construction requirements. The costs of Targeted Market Efficiency Projects are allocated first between MISO and

¹ Additional details on project types are in Section 2.3.1 of the Business Practice Manual.



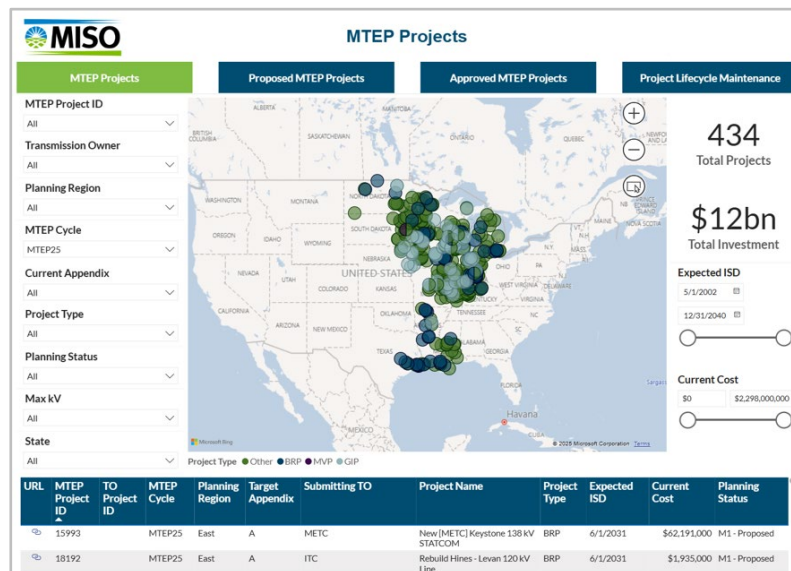
PJM Interconnection by the ratio of each RTO's Day-Ahead and Excess Congestion Fund congestion, offset by historical market-to-market payments. The MISO share of costs for the project is then allocated to beneficiaries using historical nodal load congestion contribution data.

- **Transmission Delivery Service Project (TDSP)** - Projects are required to satisfy a transmission service request. The costs are generally assigned to the requestor.

MISO staff formally recommends a set of projects to the MISO Board of Directors for review and approval after all projects have been posted for transparency, MISO has completed its independent review of proposed projects for need or no-harm as applicable, and staff has addressed any stakeholder feedback received. These projects make up Appendix A of the MTEP report and represent the preferred solutions to the identified transmission needs of the MISO transmission planning process.

MTEP Portal

In late 2023, MISO launched a new MTEP Portal through the Help Center. The MTEP Portal provides a robust, user-friendly experience that supports the submission and management of MTEP projects throughout their lifecycle while enabling the integration capabilities for future MISO technologies. Within the MTEP Portal, users can use interactive dashboards to view projects based on various filters. Because this report is simply a snapshot of project information as of August 28, 2025 (or other date as listed), the [MTEP Portal](#) has the most up-to-date project information.



During the July 2025 MTEP Workshop, MISO introduced further enhancements to the MTEP Portal. With the growing number of Expedited Project Review requests and spot load additions, new dashboards (Figures 1.2-5 and Figure 1.2-6) are now available, offering additional insights.



Figure. 1.2-5: New dashboard showing approved expedited project review (EPR) requests.

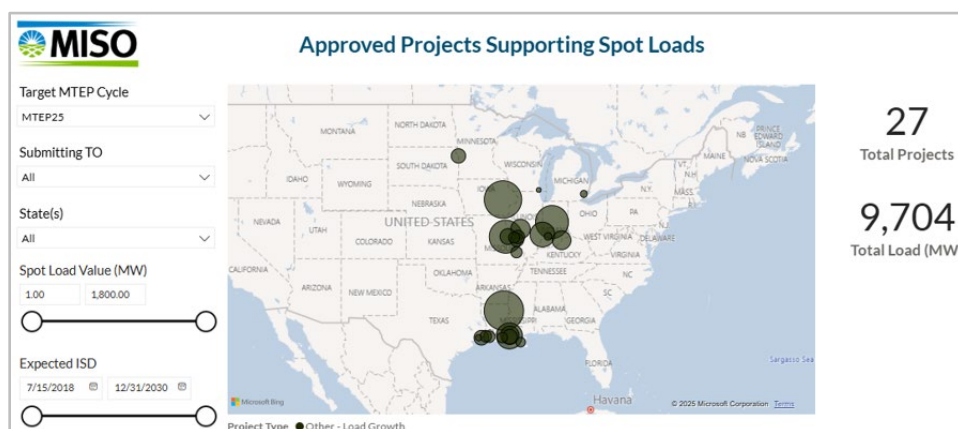


Figure. 1.2-6: New dashboard showing approved projects supporting spot load growth.

1.3 Historical Background

MISO Transmission Infrastructure Investment

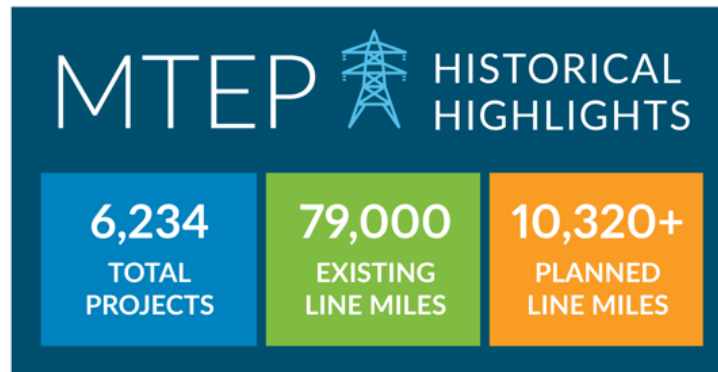
MISO's transmission planning responsibilities include the monitoring of previously approved Appendix A projects. Each quarter, MISO surveys all TOs and Selected Developers to track progress, reporting these updates to the MISO Board of Directors and posting them publicly on the MISO Transmission Expansion Plan website. In addition, all detailed project information is available in real time through the interactive MTEP Portal, and full archives of past MTEP Reports can be accessed on the public website.

Since the first MTEP in 2003, MISO has fully embraced becoming the most reliable, value-creating Regional Transmission Organization (RTO). Through a collaborative and transparent planning process, MISO and its Transmission Owners (TOs) have advanced solutions to strengthen the grid today while preparing for the challenges of tomorrow.

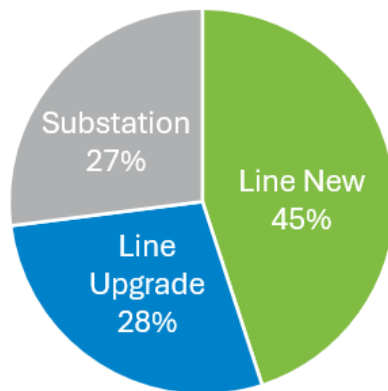
This iteration of the MTEP report highlights 22 years of transmission planning, encompassing 6,234 projects across 15 states. Of these, 45% are already in service, while the remaining 55% are still awaiting to be fully



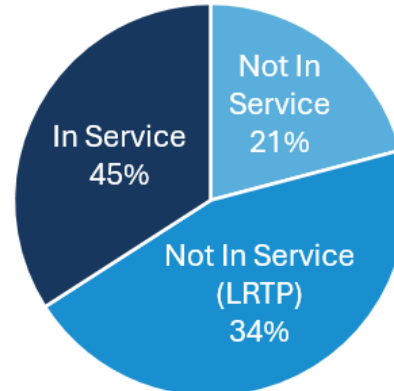
placed into service, with the majority tied to recent Long Range Transmission Planning (LRTP) initiatives. Looking back in total (MTEP03–MTEP24), asset investments reflect 45% in new lines, 28% in line upgrades, and 27% in substations. Looking ahead from 2025-2034, approximately 10,321 circuit-miles of planned new or upgraded transmission lines are projected in Appendix A. See Figure 1.3-1 for a quick highlight of prior approved and active MTEP projects.



FACILITY INVESTMENT
(by investment)



PROJECT STATUS
(by investment)



PLANNED LINE MILES

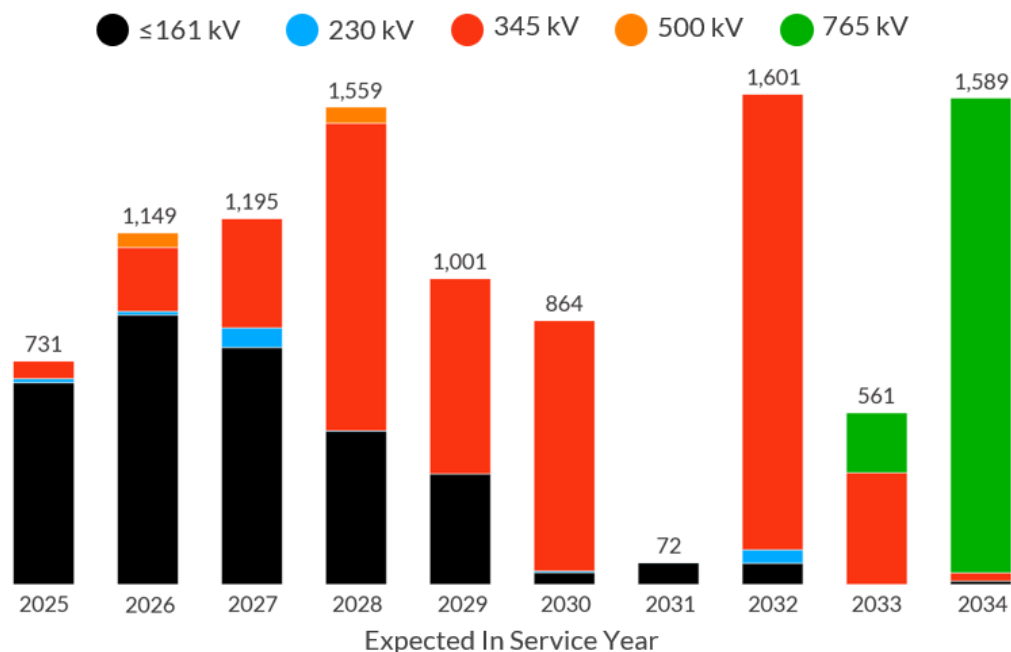


Figure 1.3-1: Appendix A project facility investment dollars in all MTEP historical cycles.



Historical MISO Queue Trend

The MISO Generator Interconnection (GI) queue provides an active and competitive mechanism to enable resource interconnections that will serve future energy and capacity needs. Projects submitted in the annual queue cycle are evaluated by MISO through an iterative study process to determine the reliability impacts and to identify transmission upgrades needed to support resource integration. Project viability is often tied to the costs of network upgrades, with the most viable candidates successfully executing a Generator Interconnection Agreement (GIA).

The Generator Interconnection queue has experienced extremely high volume over the last several years (see Figure 1.3-2). These high volumes create study cycles with more requests than MISO has load, resulting in significant delays in completing these cycles. As cycle sizes have increased, so has the time required to complete the studies. These delays can impact the ability of our utilities and states to meet their resource adequacy needs. In the 2023 Study Cycle, MISO received 600 individual project requests totaling roughly 124 GW. Solar, storage, and hybrid applications make up the bulk of the queue. Additionally, as of September 2025, the current state of the queue had 1,071 projects representing 202 GW of total capacity (see Figure 1.3-3). This rising volume of requests has resulted in MISO implementing a cap on the number or requests studied at one time.

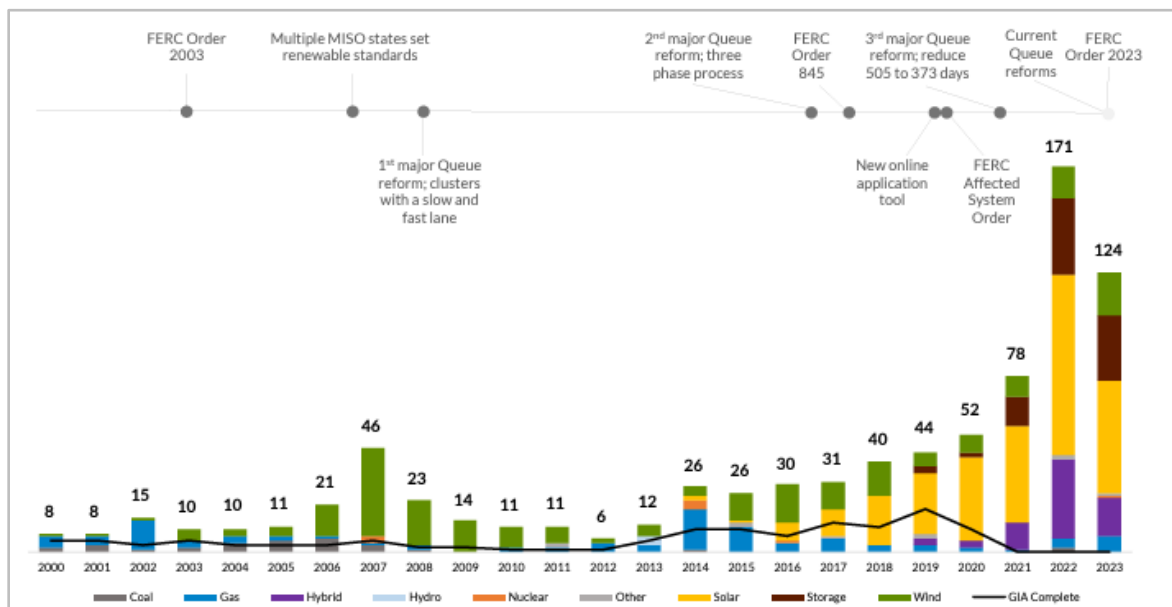


Figure 1.3-2: Historical view of MISO's Generator Interconnection Queue. Values are displayed in GW.

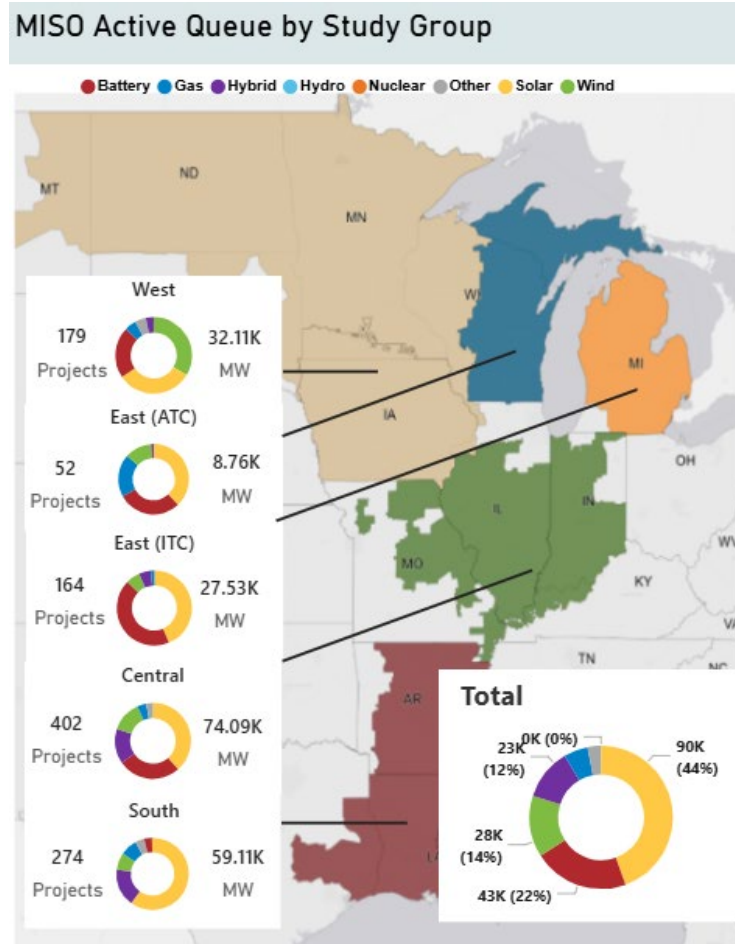


Figure 1.3-3: As of September 2025, the queue consists of 1,071 projects representing 202 GW of total capacity.