



RELIABILITY IMPERATIVE

MARKET REDEFINITION + OPERATIONS OF THE FUTURE
TRANSMISSION EVOLUTION + SYSTEM ENHANCEMENTS

FEBRUARY 2024 UPDATE

Urgent and coordinated action needed to ensure continued grid reliability

Electric system reliability is vital for society. The U.S. power grid has long been one of the most reliable in the world. But due to a confluence of factors, including a looming mismatch between new generation resources coming online and older resources retiring, our “reliability risk profile” is changing in rapid and profound ways. As a result, our grid now faces a number of imminent and complex reliability challenges, including:

- **“Reliability attributes” are becoming scarce.** Weather-dependent resources such as wind and solar do not provide the same critical reliability attributes as conventional coal and natural gas resources that are retiring. Emerging technologies such as long-duration battery storage, small modular reactors, and hydrogen systems may someday offer solutions, but they are not yet viable at grid scale.
- **Extreme weather events** have become more frequent and severe, impacting both generation and transmission, and exacerbating other reliability risks.
- **Supply chain and permitting issues** that are beyond the control of electricity providers, states, and MISO are delaying many new generation projects that are otherwise fully approved.
- **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.

- **Investor preferences** for financing new energy projects are creating economic headwinds to build new dispatchable generation resources, even if they are critically needed for reliability purposes.
- **Fuel-assurance issues** with natural gas pipelines and other energy infrastructure can hamper consistent deliveries of fuel to reliability-critical generators.

Call to action: We must work together and move quickly

In the MISO region, the responsibility for grid reliability is shared among MISO-member electricity providers, states, and MISO. MISO calls this shared responsibility the “Reliability Imperative.” In light of the urgent and complex reliability risks we face, MISO calls on its members and states to work together to:

- Refine generation resource plans across MISO by accelerating the addition of reliability attributes and moderating retirements to avoid undue reliability risk
- Maintain transition resources as reliability “insurance” until promising new technologies become viable at grid scale
- Identify areas of risk in which electricity providers, states, and MISO must coordinate

► [Read the full report on misoenergy.org](https://misoenergy.org)



MISO’s Reliability Imperative framework supports numerous initiatives that are organized into four primary pillars. Below are high-level descriptions of each of the pillars along with some of the key initiatives within each.

RELIABILITY IMPERATIVE PILLAR	KEY INITIATIVES <i>(partial list)</i>
MARKET REDEFINITION Enhance and optimize MISO’s markets to ensure continued reliability and efficiency while enabling the changing resource mix, responding to more frequent extreme weather events, and preparing for increasing electrification	• Ensure resources are accurately accredited • Identify critical system reliability attributes • Ensure accurate pricing of energy and reserves
OPERATIONS OF THE FUTURE Focus on the skills, processes and technologies needed to ensure MISO can effectively manage the grid of the future under increased complexity	• Manage uncertainty associated with increasing reliance on variable wind and solar generation • Prepare control room operators to rapidly assess and respond to changing system conditions • Use artificial intelligence and machine learning to enhance situational awareness and communications • Evaluate interdependency of neighboring systems
TRANSMISSION EVOLUTION Assess the region’s future transmission needs and associated cost allocation holistically, including transmission to support utility and state plans for existing and future generation resources	• Develop “Futures” planning scenarios using ranges of economic, policy, and regulatory inputs • Develop distinct “tranches” (portfolios) of Long Range Transmission Plan (LRTP) projects • Enhance joint transmission planning with seams partners • Improve processes for new generator interconnections and retirements
SYSTEM ENHANCEMENTS Create flexible, upgradeable and secure systems that integrate advanced technologies to process increasingly complex information and evolve with the industry	• Modernize critical tools such as the Day-Ahead and Real-Time Market Clearing Engines • Fortify cybersecurity and proactively address the rapidly evolving cyber threat landscape • Develop cutting-edge data and analytics strategies

MISO and its stakeholders have made important progress under the Reliability Imperative in recent years. But despite this progress, fleet change and other risks are accelerating more than we anticipated, so we must act and execute with urgency and resolve.

None of the work we face is easy — but it is necessary. The region’s 45 million people are counting on ALL of us — electricity providers, states, and MISO — to work together and get it right. Please read MISO’s full updated Reliability Imperative report at www.misoenergy.org

