

MISO INITIATIVES TO SUPPORT RELIABILITY IMPERATIVE

Coordinating and executing on the priorities within the Reliability Imperative is required to address challenges to reliability

MISO Reliability Imperative	MARKET REDEFINITION	Forecast risks and provide market signals to address changing grid reliability needs
	TRANSMISSION EVOLUTION	Develop transmission plans and improve speed of generation interconnections
	OPERATIONS OF THE FUTURE	Modernize MISO's operational capabilities to ensure a reliable, efficient and resilient grid amidst the evolving energy landscape
	SYSTEM ENHANCEMENTS	Advance digital tools and architecture to securely drive grid and market evolution

MARKET REDEFINITION 5-YEAR INITIATIVES					
Strategic Objectives	2024	2025	2026	2027	2028
Clear price signals enabling reliable operations throughout the energy transition	✓ Design value of lost load updated ✓ Implemented dynamic daily short-term reserves ✓ Cold weather & seasonal outage modeling	• Design and sequence resource participation model enhancements (DER, DR, storage, and responsive load) • Update value of lost load • Wind uninstructed deviation • Real-Time Ambient Adjusted Ratings (AAR) system updates	• Dynamic ramp & regulation reserves • Uninstructed deviation settlement enhancement • Updated transmission constraint demand curve • Co-located resource participation model	• Distributed Energy Resource (DER) enrollment	• Integration of Distributed Energy Aggregated Resources (DEARs) • Ambient Adjusted Ratings (AAR)
Incentivize reliable supply and its performance	✓ Reliability-Based Demand Curve development ✓ Enhanced accreditation for generation resources approval	• Implementation of Reliability-Based Demand Curve	• Demand response measurement & verification implementation		• Implementation of accreditation reforms for all resources
Reflect evolving resource adequacy risks in assessments and outlooks	✓ Risk metric roadmap published	• Define requirements to update resource adequacy risk analysis • Enhanced accreditation communicated to market participants • Storage risk modeling	• Integrated MISO resource adequacy assessment	• Ongoing risk model and data enhancements	• Ongoing risk model and data enhancements

TRANSMISSION EVOLUTION 5-YEAR INITIATIVES					
Strategic Objectives	2024	2025	2026	2027	2028
Expand transmission system to meet future demand & resource mix	✓ Tranche 2.1 approved	• Competitive project solicitations • State siting proceedings • Triennial reviews	• State siting proceedings • Outage coordination	• State siting proceedings • Outage coordination	• State siting proceedings • Outage coordination • Competitive project solicitation • Triennial reviews
Interconnect energy sources to meet future demand	✓ Initial Queue Cap proposal ✓ Improved site control ✓ Financial commitment requirements	• Revise queue cap • Technology upgrades to automate (Phase 1) • Expedited Resource Addition Study (ERAS) • Improved merchant HVDC connection procedures	• Increase use of automation • Improve merchant HVDC connection procedures	• Continue use and application of automation	• Implementation of FERC Order 2023 penalties
Refine future planning processes and scenarios to guide MISO and its members in long-term decision-making	✓ Enhanced futures resource expansion tool implementation	• Futures refresh • FERC Order 1920	• Next stage LRTP/interregional planning & cost allocation	• Conclude 2026 next stage studies	• 2026 next stage studies analysis

OPERATIONS OF THE FUTURE 5-YEAR INITIATIVES					
Strategic Objectives	2024	2025	2026	2027	2028
Manage uncertainty in grid operations	✓ Initiate Uncertainty Management platform ✓ Area Control Error calculation backup method ✓ Design and sequence centralized outage processing system upgrade	• Continued buildout of the Uncertainty Management Platform • Centralized outage processing system integration layer implementation	• Intraday short-term reserve requirements • Centralized outage processing system implementation (phase 1)	• Automated outage study models and coordination analysis	• Fully automated Uncertainty Platform • Granular load forecasting capability
Build operator capabilities and automation	✓ Operator pipeline program (phase 1) ✓ Improved operator logging capabilities	• Operator pipeline program (phase 2) • Grid simulator design and scope • Automated operator logging • Prototype new performance monitoring	• Technology upgrades		

SYSTEM ENHANCEMENTS 5-YEAR INITIATIVES					
Strategic Objectives	2024	2025	2026	2027	2028
Adapt our technology and platforms to enhance our digital products and business outcomes	✓ Day-Ahead Market Clearing Engine (MCE) operationalized ✓ Customer gateway design	• Real-Time Market Clearing Engine (MCE) • Reliability and Assessment Commitment (RAC) engines site acceptance testing and parallel ops • Future settlement system design • Real-Time MCE & Look-Ahead Commitment (LAC) factory acceptance testing	• Real-Time MCE & Look-Ahead Commitment (LAC) site acceptance testing and parallel ops • Model Manager upgrade • Begin Energy Management Systems (EMS) upgrades and modernization	• Real-Time MCE Unit Dispatch System (UDS) Engine Site Acceptance Testing and Parallel Ops • Future settlement system launch • Energy Management Systems (EMS) upgrades and modernization	• Operationalize Market System Enhancements (MSE) systems • Complete Energy Management Systems (EMS) upgrades and modernization
Leverage advanced analytics and data-driven insights to enhance efficiency and elevate customer experience	✓ New machine learning models for system planning, outage prediction and uncertainty management created ✓ External data exchange platform implemented (phase 1)	• Machine learning and AI models framework scaled-up • Data platform cloud migration completed • Common Information Model (CIM) adoption plan & prototype completed	• Data estate upgraded for scalable, real-time, and secure access. • Enterprise data integration blueprint established • MISO internal API marketplace deployed	• External data exchange platform scaled-up (phase 2) • Common Information Model (CIM) implemented on MISO data	• Modern data integration platform implemented for interoperability
Establish the capabilities and mindset necessary to drive innovation and accelerate MISO's transformation and solution delivery		• Begin project to product transformation • Develop and deploy robotics process automation	• ServiceNow ITSM Implementation complete • Enhanced hybrid cloud/storage technologies	• Increase efficiency in ITSM processes using agentic AI	
Cyber and physical security minimizes risks of business continuity	✓ Redefine methodology to scope Critical Infrastructure Protection (CIP) systems (Phase 1)	• Control room modernization design (phase 1) • Implement infrastructure for Critical Infrastructure Protection (CIP) system redesign (Phase 2)	• Control room modernization Carmel (Phase 2) • Critical Infrastructure Protection (CIP) management system redesign (Phase 3)	• Control room modernization Carmel and Little Rock (Phase 3) • Member authentication improvements (Phase 3)	• Control room modernization Eagan (Phase 4) • Fully automated identity workflows (Phase 4)