



Reliability Imperative: Digital Technology Strategy

Technology Committee of the
Board of Directors

September 11, 2024

Executive Summary

- MISO's long-term Digital Technology strategy will continue to enable the Reliability Imperative, which focuses on the urgent and coordinated action needed to ensure grid reliability
- Recent accomplishments demonstrate how Digital Technology is supporting the Reliability Imperative as MISO prepares for the grid of the future
- MISO is progressing with key deliverables in the Market System Enhancement (MSE) program and the 2025 budget is set at ~\$12M, with the proposed major deliverables focusing on new products

MISO's Reliability Imperative guides the transformation needed to maintain reliability for the grid of the future



RELIABILITY IMPERATIVE

Market Redefinition

Develops significant market enhancements and optimizations to ensure continued reliability and value in anticipation of the changing resource mix, more frequent extreme weather events, and increasing electrification

Operations of the Future

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

Transmission Evolution

Assesses 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

System Enhancements

Creates flexible, upgradeable, and secure systems that integrate advanced technologies to process increasingly complex information and evolve with the industry

Digital Technology's strategic efforts will focus on key initiatives that enable the Reliability Imperative, ensuring grid reliability



Reliable and informed planning and operations



Safe and secure physical and technology environment



New generation of products

Progress on various initiatives demonstrates how Digital Technology is supporting the Reliability Imperative



Ambient Adjusted Line Ratings: Real-Time Adjusted Ratings work in process



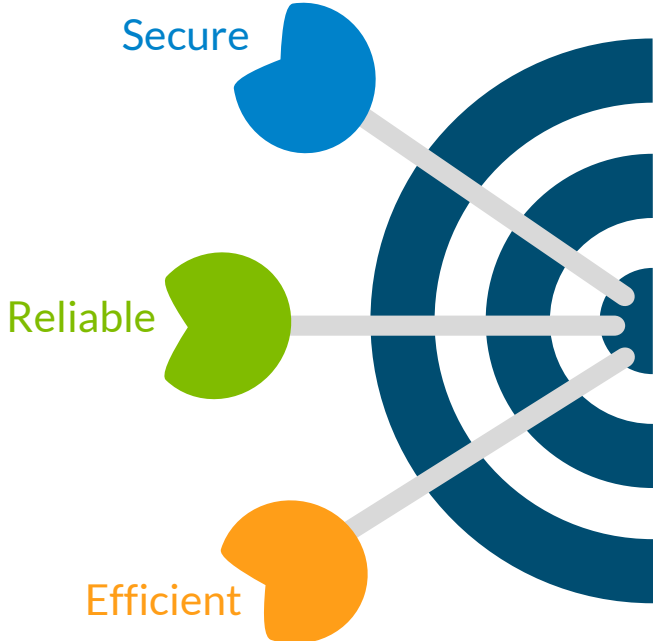
Reliability-Based Demand Curve (RBDC): Technology work to be completed this year and ready for auction in spring 2025



New Testing Environment for Market System Enhancement (MSE): Collaboration with vendor to make improvements



MSE program: Progressed key deliverables, with Day-Ahead Market Clearing Engine still on target to move into production during third quarter



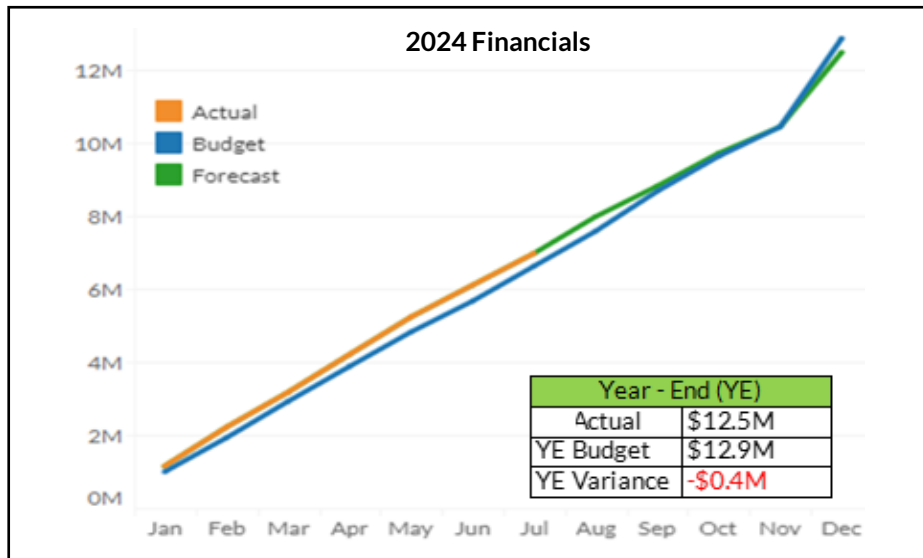
ADVANCED TECHNOLOGIES



MISO is making progress on the MSE program's major deliverables and remains on budget for 2024

#	Key Program Risks	Heat Map Index*	Trend	Mitigation
1	Program cost management	6 Moderate & Likely	↔	Evaluate Scope
2	Performance of key vendors	5 Moderate & Possible	↔	Leadership & Consortium Escalation
3	Acquisition and retention of key talent	5 Minimal & Likely	↔	Evaluating alternatives
4	Events impact operational plan	5 Minimal & Likely	↔	Update as needed
5	Scope complexity	4 Minimal & Possible	↔	Monitor

Program 2024 Major Deliverables	Due	Status
Complete DA-MCE parallel operations and initiate retirement of the legacy clearing engine	Q3 (2023)	Q3 2024
Model Manager Phase 3 Data Migration Stage Features completed for planning	Q3	On Track
Begin parallel operations of the Real-Time Market Clearing Engine (RT-MCE) for Reliability Assessment and Commitment (RAC)	Q3	At Risk
MISO completes Factory Acceptance Testing (FAT) and takes delivery of RT-MCE for the Look Ahead Commitment (LAC)	Q4	At Risk



Multi-Year Program Plan			
	2024	2025	Status
Day-Ahead Market Clearing Engine (DA-MCE)	<i>(Delayed from Q3 2023)</i>		●
Reliability Assessment & Commitment (RAC)			●
Look Ahead Commitment (LAC)			●
Unit Dispatch System (UDS)			●
Model Manager Phase 3			●

*Heat map index is the sum of risk likelihood (1-4 scale) and impact (1-4 scale)
 DA-MCE = Day-Ahead Market Clearing Engine; RT-MCE = Real-Time Market Clearing Engine

The program’s budget for 2025 is ~\$12M, and proposed major deliverables focus on new product implementation

2025 Proposed Deliverables	Project	Completion Timeframe
Complete data migrations and software features	Model Manager	Q1
Complete parallel operation and enter production with the new Reliability Assessment and Commitment (RAC) engine	Real-Time MCE	Q2
Complete Factory Acceptance Testing (FAT) of the integrated planning model	Model Manager	Q3
Complete key portions of Site Acceptance Testing (SAT) for the Look-Ahead Commitment (LAC) study modes*	Real-Time MCE	Q4

**Preliminary 2025 Short-Term Incentive Plan items*



APPENDIX

The Market System Enhancement program transforms MISO's market technology into a more flexible, secure system that allows for faster adoption of new technologies



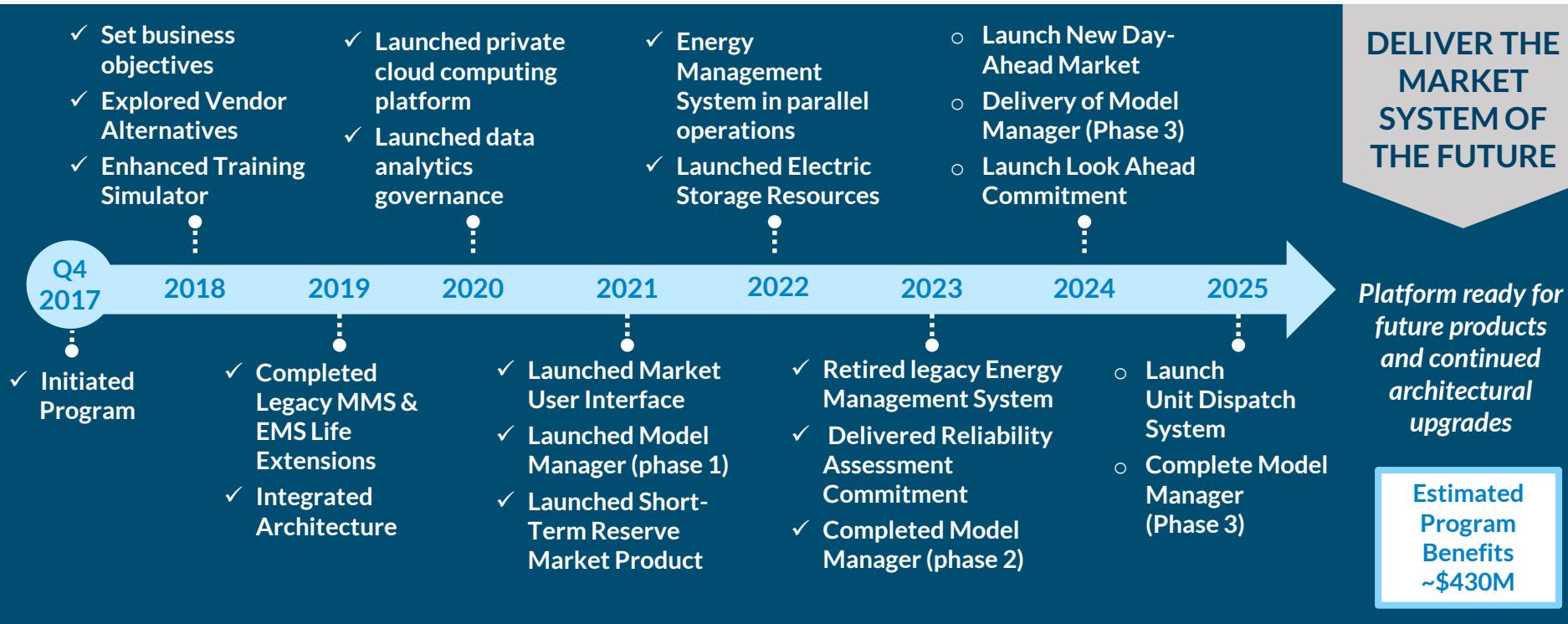
Extend the life of the current system



Design a flexible, scalable, adaptable system



Upgrade, build and launch a new market system



EMS = Energy Management System; MMS = Market Management System