



Reliability: Managing Missouri's Evolving Energy Needs

Power Missouri Symposium

October 7, 2025

MISO Overview

MISO is an independent, not-for-profit, member-based organization responsible for keeping the power flowing across 15 U.S. states and Manitoba reliably and cost-effectively.



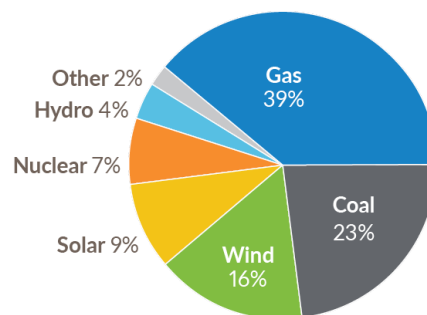
MISO's reliability footprint and regional control center locations

MISO STATISTICS

Population Served	45 Million
Transmission Line	77,000 Miles
Generating Units	1,460
Members	56 Transmission Owners
	173 Non-transmission Owners
Market Participants	> 550
Market Transactions	> \$33 billion in 2024
Carbon Reduction	Approximately 32% since 2014

INSTALLED CAPACITY

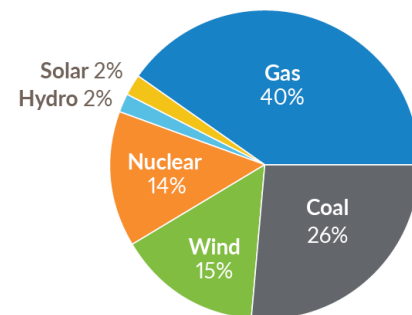
June 2025



203 GW

ENERGY PRODUCTION

January-December 2024



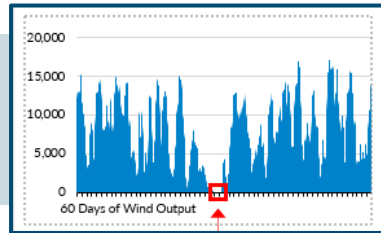
638 Million MWh

MISO has advanced the energy transition through its Reliability Imperative initiatives; as the transition continues, these efforts must stay aligned with evolving needs

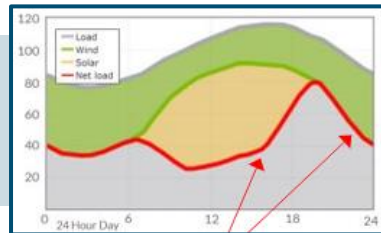
MISO's Operational Risk framework helped us prepare for the Energy Transition

An evolving risk environment is challenging us to ensure our plans are doing enough fast enough

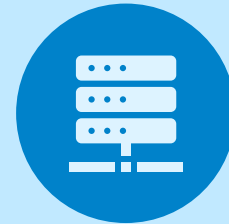
LONG-DURATION
OUTAGES



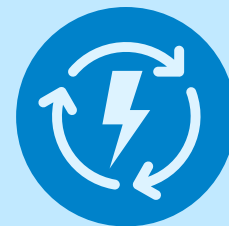
SHIFTING NET-
LOAD SHAPES



SYSTEM STABILITY
CHALLENGES

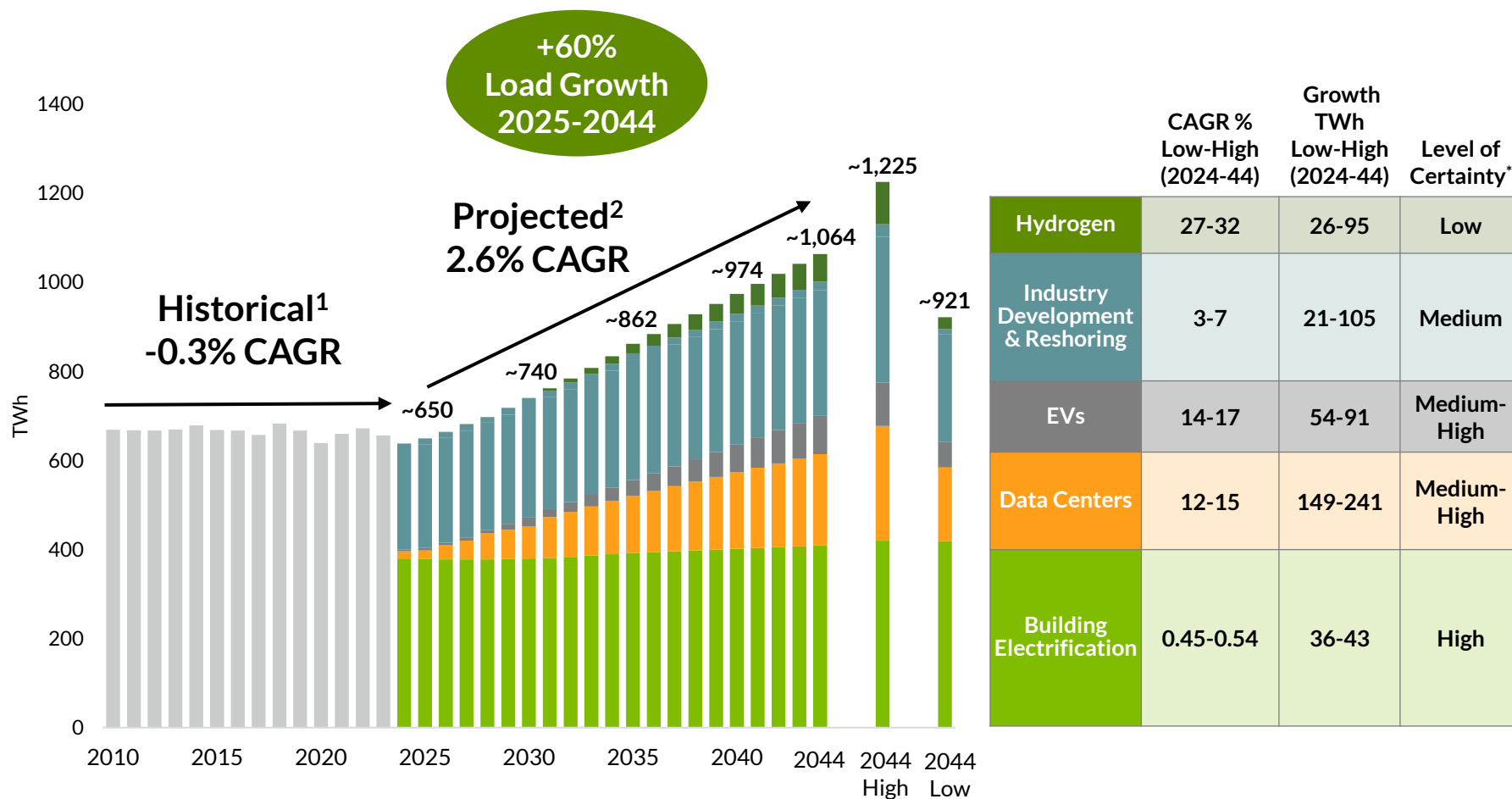


Large loads are interconnecting at an accelerating rate



Load Pocket reliability continues to be a focus

The MISO region expects load growth rates that have not been seen for decades, requiring additional firm, controllable resources



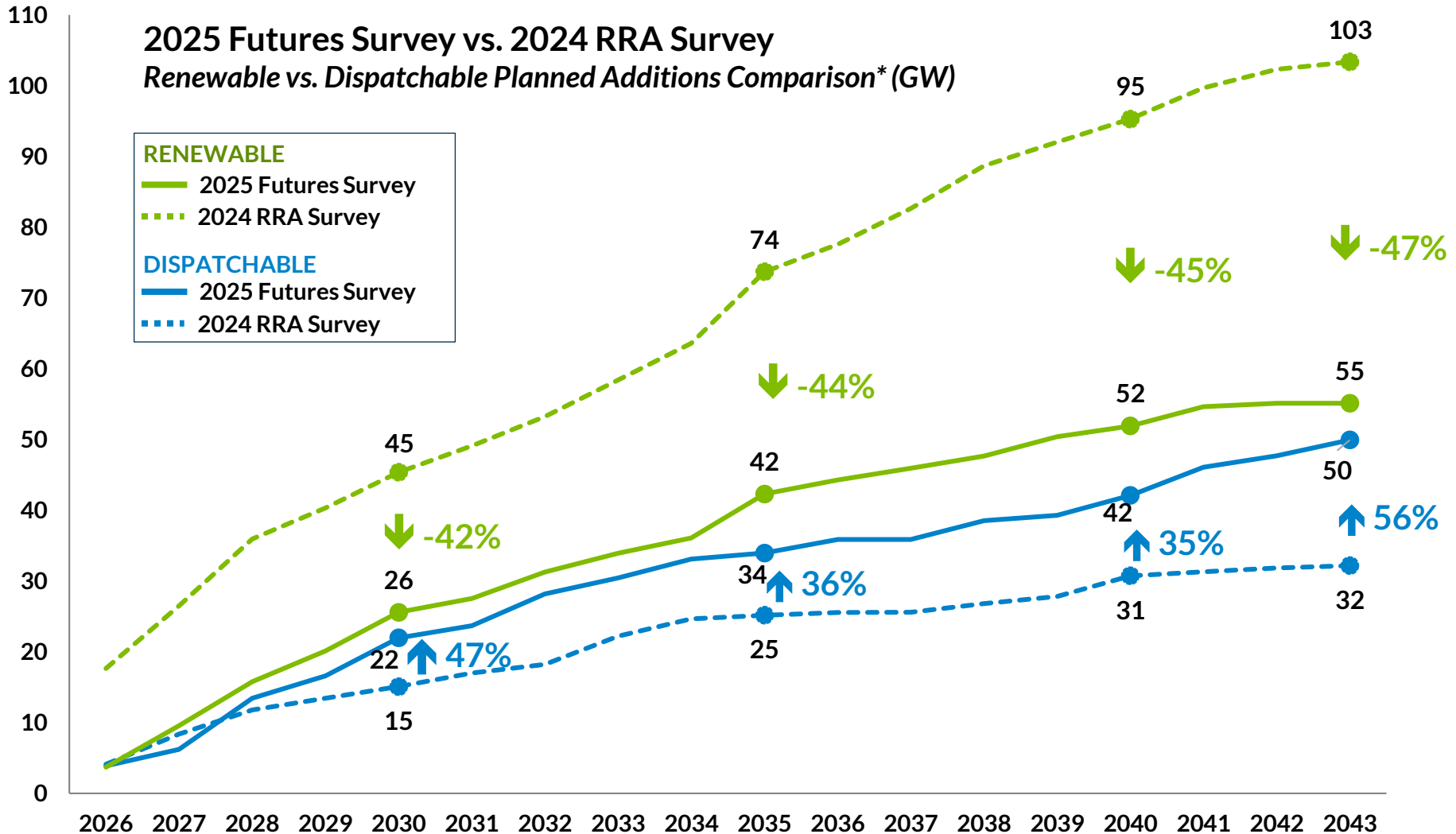
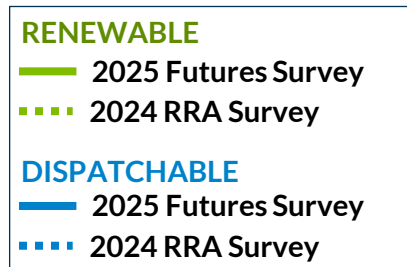
¹ Net Load ² Gross Load

* Expected likelihood of load growth materializing

Members are increasing focus on maintaining required essential reliability attributes

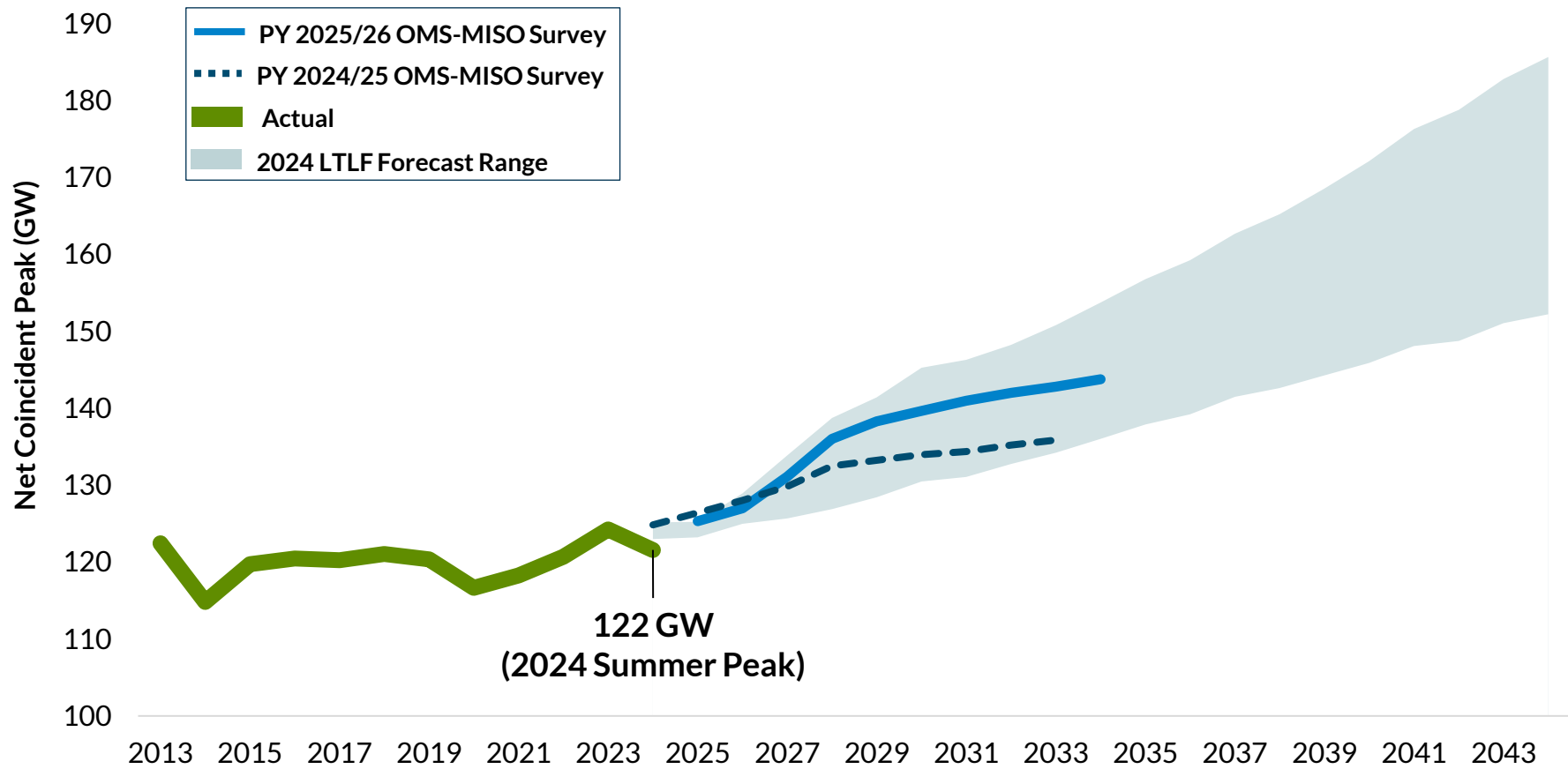
2025 Futures Survey vs. 2024 RRA Survey

Renewable vs. Dispatchable Planned Additions Comparison* (GW)



*Renewable includes solar and wind; Dispatchable includes gas and storage
RRA - Regional Resource Assessment

With member load forecasts rising and trending towards the high end of MISO’s range, continued diligence with resource planning is critical to support economic development



Many initiatives underway and in process are expected to address near-term needs and improve long-term processes

Reliability-Based
Demand Curve

(FERC Approved)

Non-Emergency
Resource
Accreditation

(FERC Approved)

Shortage Pricing

(FERC Approved)

Expedited Resource
Additions Study
(ERAS) Process

(FERC Approved)

Demand Response and
Emergency Resource
(DRER) Reforms*

(Awaiting FERC Decision)

Generator
Interconnection
Software (SUGAR)
Implementation

(In-Progress)

Long-Range
Transmission Planning
(LRTP)

(Ongoing)

Futures Planning
Scenarios

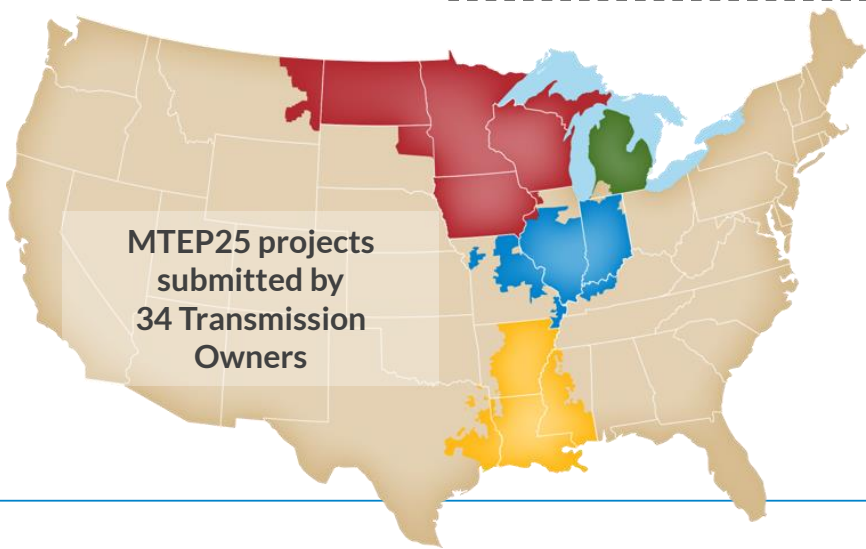
(In-Progress)

* Previously referred to as Load Modifying Resource (LMR) Reforms

MTEP25 includes a record number of Expedited Project Requests and supports significant large load additions

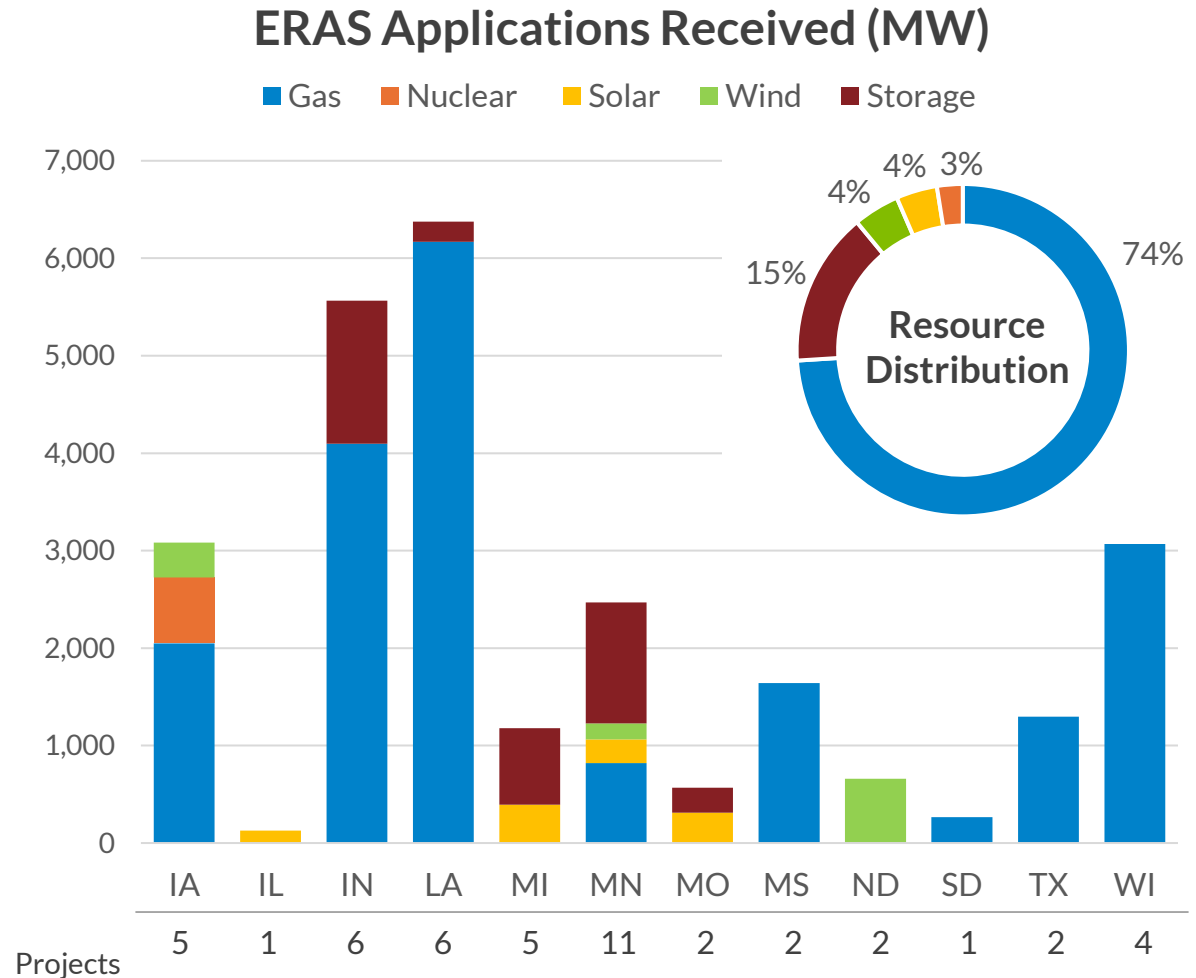
MTEP21 MTEP22 MTEP23 MTEP24					Preliminary MTEP25				
					Total	West	East	Central	South
Toal line miles	3,707	801	767	4,743	1,930	849	139	572	370
Large load additions (GW)	0.21	0.35	1.19	2.97	11.65	2.38	.02	4.33	4.92
Expedited projects	15	16	32	21	49	10	1	24	14
Project count	327	355	544	478	434	218	30	136	50

Increased line miles in MTEP21 and MTEP24 attributed to L RTP



The Expedited Resource Additions Study (ERAS) process is being maximized to accelerate approval of critically needed resources

- 68 projects allowed; 10 processed per quarter
- 47 applications received in first period
- First 10 projects include 5 natural gas, 3 solar, 1 wind and 1 battery totaling 5.3 GW of installed capacity, covering all 3 MISO regions, from Minnesota to Louisiana



MISO has implemented interconnection reforms to help reduce study cycle time to one year

Interconnection Queue Cap

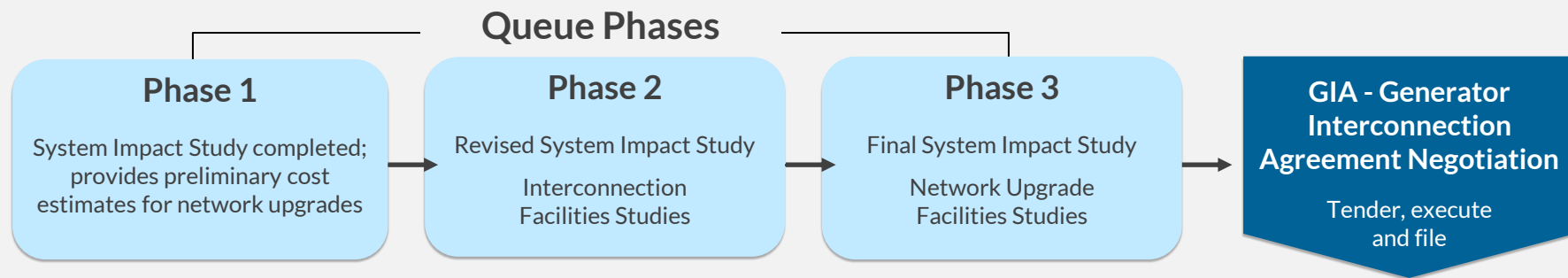
- Queue Cap is 50% of each Queue region's non-coincident peak load
- Will be applied beginning with the 2025 cycle
- Projects over Cap will be first in line for the next cycle, per submission timestamp
- Achieves more realistic resource dispatch, models and analysis
- Helps reduce constraints and needed network upgrades, resulting in fewer studies

Interconnection Process Improvements

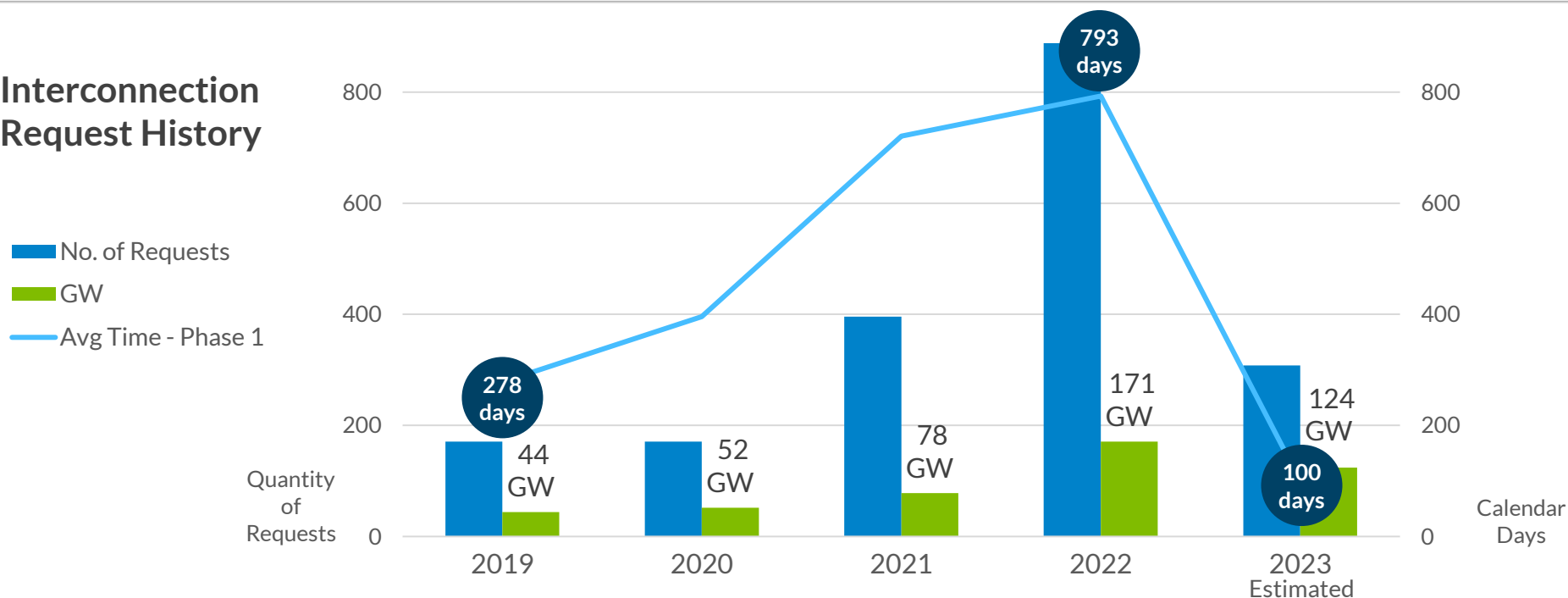
- Implementing Phase 1 study automation with SUGAR[®]* software
 - Yields accurate results and substantial time savings
 - Provides customers cost estimates more quickly
 - First use begins with 2023 cycle
- New application portal available in summer
 - Provides simplified, intuitive experience for customers
 - Workflow automation reduces administrative burden
 - Improves data storage and management; enables integrations

*SUGAR[®] - Suite of Unified Grid Analyses with Renewables

MISO's efforts to reach a more manageable number of interconnection requests and improve early phase processing are producing results



Interconnection Request History



MISO and stakeholders are prioritizing Reliability Imperative initiatives

MARKET REDEFINITION

- Provide Accreditation Data and Risk Metrics
- Illustrate Energy Adequacy Risks Across Time Horizons and Locations
- Implement Dynamic Locational Reserve Products

TRANSMISSION EVOLUTION

- Revise MISO Futures
- Refine Probabilistic Load Forecasts
- Reform Queue to Achieve 365 Day Cycle
- Execute Expedited Resource Additions Study Process

SYSTEM ENHANCEMENTS

- Implement Real-Time Market Clearing Engine
- Enhance Systems to Accommodate New Rules (e.g., Order 881)
- Expand Data & Analytics Modeling Capabilities

OPERATIONS OF THE FUTURE

- Advance Platform to Improve Risk Assessment & Evaluation
- Evolve Operator Training and Development
- Enhanced Scenario Manager for Operations Simulator





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Midcontinent-iso



MISO_energy

The LRTP Tranche 2.1 portfolio is an example of the beneficial regional transmission investments that will be required to support new large loads and operate the future fleet reliably

Building
Electrification
(36-43 TWh)

Hydrogen
(25-95 TWh)

Electric Vehicles
(54-91 TWh)

Industry
Development
& Offshoring
(21-205 TWh)

Data Centers
(149-241 TWh)

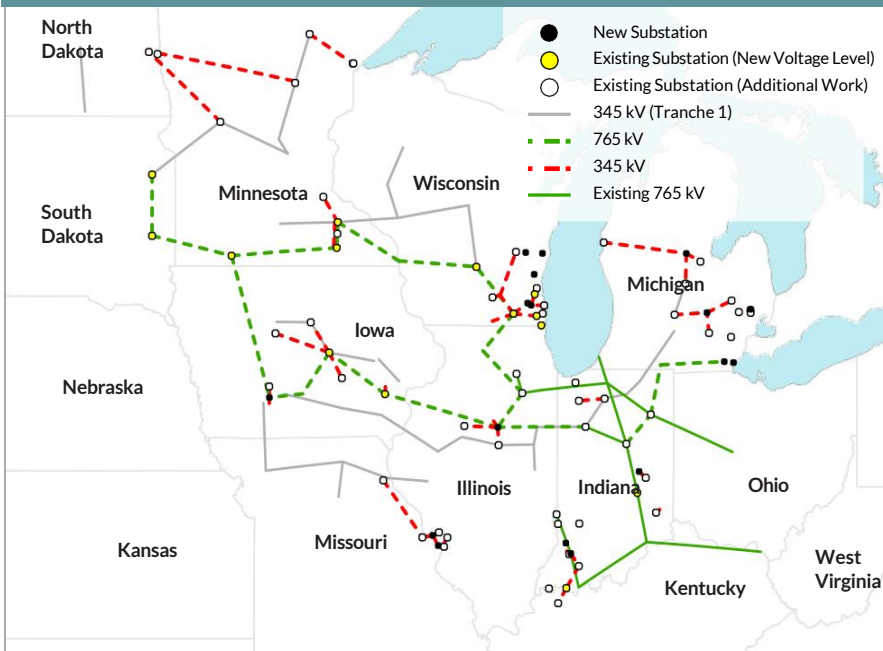
LOW

Anticipated Load Growth Impact in MISO's Region (2024-2044)

HIGH

Long Range Transmission Plan Tranche 2.1

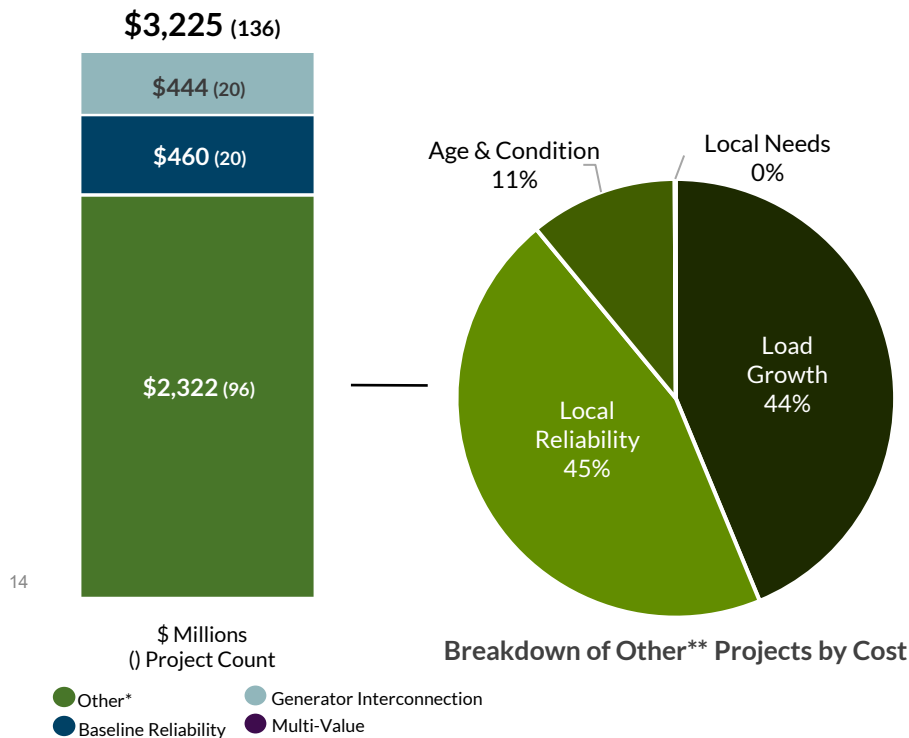
24 Projects in the Midwest Portfolio



Delivers Broad, Measurable Benefits

- Improves and protects grid reliability
- Reduces energy costs over time
- Delivers consumer cost savings
- Strengthens the economy
- Supports energy demand, data centers and industrial growth

Central: Summary of MTEP25 Appendix A Projects



Insights

- Most investment addresses reliability and load growth needs
- Other – Local Reliability projects represent 45% of Other Projects; 67% of that investment is in Missouri
- 80% of Other – Load Growth investment is in Indiana
- Over 572 total transmission miles; 45% within Indiana
- Top 10 projects represent 56% of total Central region investment
- 24 approved EPRs accounting for 4.3 GW and totaling \$1.2B
- Nearly 60% of projects and over 50% of the spot load growth located in Indiana

MTEP25 proposed Appendix A & Appendix B projects can be viewed in greater detail on the [TO Dashboard within the MISO Portal](#).
 Project information as of 8/20/25. *Other = Projects based on local needs, including reliability, economics, equipment age and condition, environmental, etc.
 **Breakdown categories are informational only and do not indicate new project types for cost allocation.