

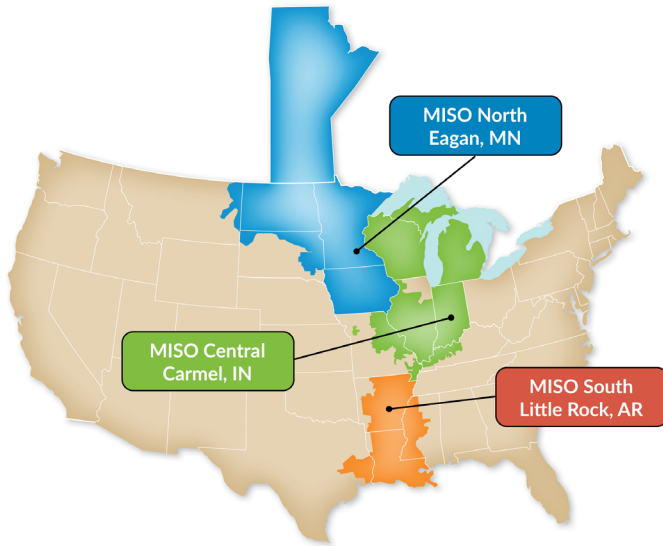


CSG Midwestern Legislative Conference

July 9th , 2023

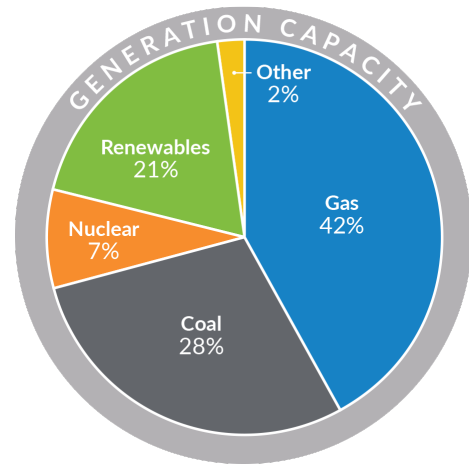
About MISO

MISO drives value creation through efficient and reliable markets, operations, planning, and innovation



MISO's reliability footprint and locations of regional control centers.

MISO by the numbers	
High Voltage Transmission	65,800 miles*
Generation Capacity	184,287 MW
Peak Summer System Demand	127,125 MW
Customers Served	42 Million



As of 01/2022

MISO manages flows on the transmission system by directing generator usage

MISO COORDINATES TRANSMISSION USAGE AND TRANSMISSION-CONNECTED GENERATION

MEMBER UTILITIES OPERATE DISTRIBUTION SYSTEMS AND SERVE END USERS

1 GENERATION

Power is generated from many fuel sources including coal, natural gas, nuclear and renewable power. MISO does not own generators; rather, it distributes the power over the bulk electrical grid.

2 TRANSMISSION

Allowing the flow of electricity to bridge long distances, MISO's member transmission lines and towers support more than 65,800 miles of electricity flow.

MISO manages transmission (part of the **Bulk Electric System**), which is federally regulated by the Federal Energy Regulatory Commission (FERC).

3 DISTRIBUTION

Allows energy to be moved from transmission lines closer to end users, ensuring reliability and power quality.

4 END USERS

As travel distance increases, smaller power lines are used to reach business, industrial and residential end use customers

The **distribution system**, which brings power to homes and businesses, is managed by local utilities and is under state jurisdiction.

Membership value is captured annually in the Value Proposition



Improved Reliability

MISO exceeds industry standards to improve reliability



Added customer value

MISO members have lower planning reserve margins - over 15,000 MW are deferred.



Policy enablement

MISO's regional planning allows customers, cities, states and utilities to meet their decarbonization goals.

Transitioning to the Grid of the Future

Multiple policy drivers are leading to an accelerated transformation of the resource fleet



Environmental regulation and enforcement



Federal Policies (Inflation Reduction Act; Department of Energy)



Wall Street criteria



State and large customer decarbonization goals

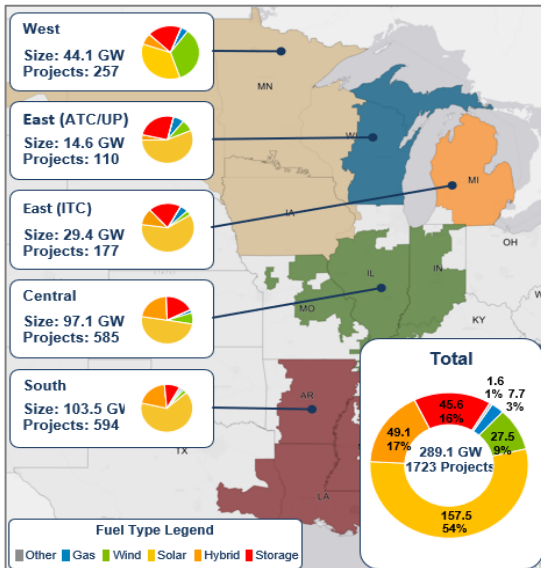


Electric Utilities



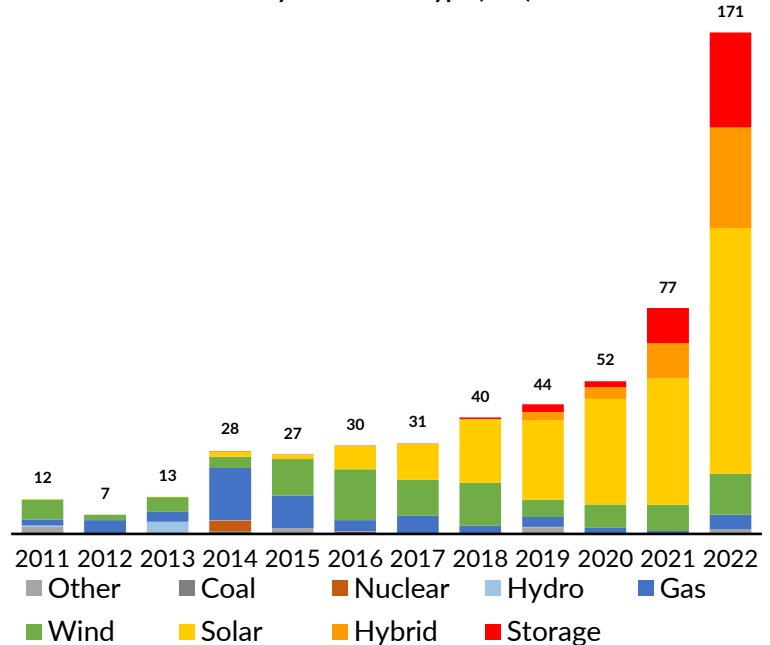
The 2022 queue is dominated by more than 96% renewable or storage resources while traditional resources continue to decline

MISO Active Queue plus 2022 Applications*



9/13/2022

MISO Queue Applications* by Generation Type (GW)



*Not all project applications will enter the active queue. Historically, 10% to 30% have been withdrawn/removed during the application review phase.

To mitigate significantly higher future complexity, we must collectively think about and approach issues differently

Past

- Primarily controllable resources
- Ample reserve margins
- Predictable resource outages
- Relatively predictable weather
- Focus on providing energy in *the worst peak load hour* during the summer

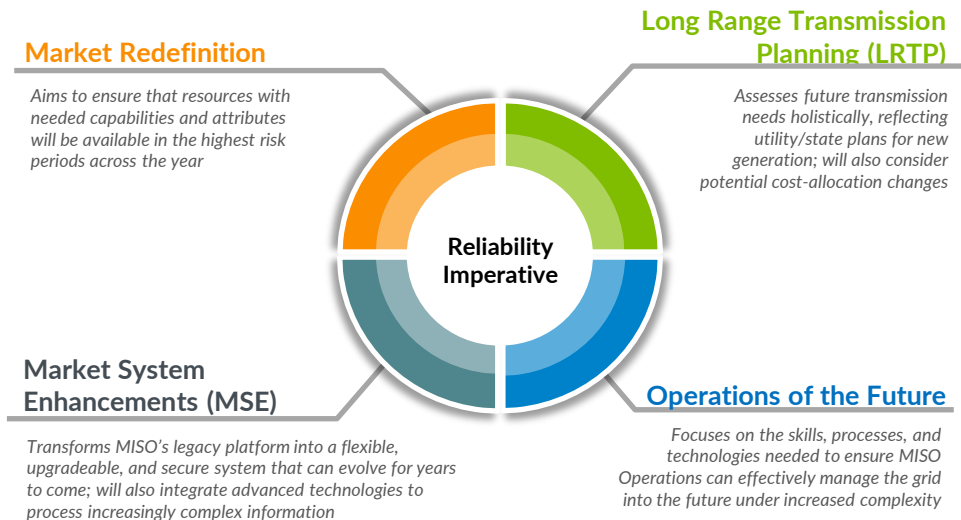
Present

- Transitioning resource mix
- Tightening reserve margins
- Less predictable resource outages or unavailability
- Growing uncertainty in weather conditions
- Greater inter-dependence between utilities, states, and RTOs
- Focus on providing energy on *the worst day in each season*

Future

- Primarily weather-dependent resources
- Risk-adjusted reserve margin requirements
- Less predictable resource outages or unavailability
- Less predictable weather
- Increasing scarcity of essential reliability attributes
- Increasing electric load
- Increasing importance of accurate load and renewable forecasting
- Focus on providing energy for *the worst week in each season*

MISO's Reliability Imperative defines the changes that are necessary to reliably manage the evolving resource portfolio



[MISO Response to the Reliability Imperative](#)

MISO's workplan includes the work needed to evolve our plans and processes to meet the Reliability Imperative

Issue	Challenges	Mitigation
Fleet Change	Declining accredited capacity, declining reserve margins, and changing risk profile	<ul style="list-style-type: none"> • Continue developing attributes criteria and improved accreditation for resources
Reliability Planning	Reliability is not a yes/no criteria, it's a continuum that considers numerous factors and range or risk tolerance	<ul style="list-style-type: none"> • Update loss-of-load assessments • Develop Reliability Based Demand Curve • Ensure alignment of market and reliability procedures during extreme events
Forecasting	Load and intermittent generation forecasting needs to be more accurate	<ul style="list-style-type: none"> • Improve forecasting data and methods, including uncertainty forecasting. • Enhance control room automation
Intraregional and Interregional Support	<p>Increased reliance on geographic scope</p> <p>Increased reliance on gas industry performance during critical events</p>	<ul style="list-style-type: none"> • Continue developing transmission (JTIQ and LRTP Tranche 2) • Improved agreements with neighbors for emergency scenarios • Improve gas/electric coordination



Questions?