Reliably Managing the Electric Evolution

NCSL Legislative Summit

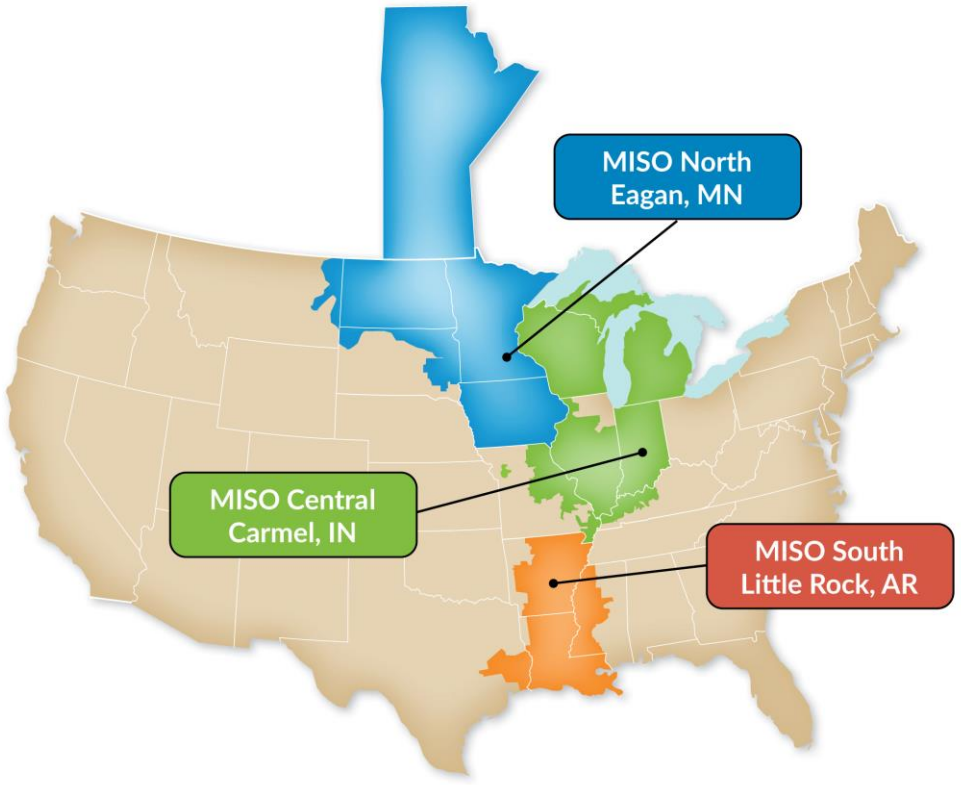
Andre Porter, General Counsel

August 14, 2023

Executive Summary

- Aggressive decarbonization goals and policies are driving rapid portfolio change, including the retirement of thermal generation units
- More variable resources on the system are increasing complexity and risk
- MISO is your partner in ensuring sustainability and affordability goals can be met reliably
- We must coordinate on a comprehensive transition plan, including ensuring timely generation and transmission build

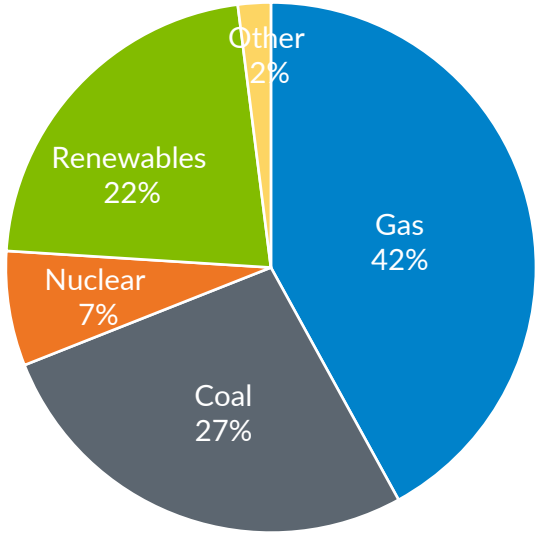
MISO is an independent, non-profit organization responsible for maintaining reliable and cost-effective delivery of power in 15 states and one Canadian province



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

MISO by the numbers	
High Voltage Transmission	68,000 miles*
Generation Capacity	190,000 MW
Peak Summer System Demand	127,125 MW
Customers Served	45 Million

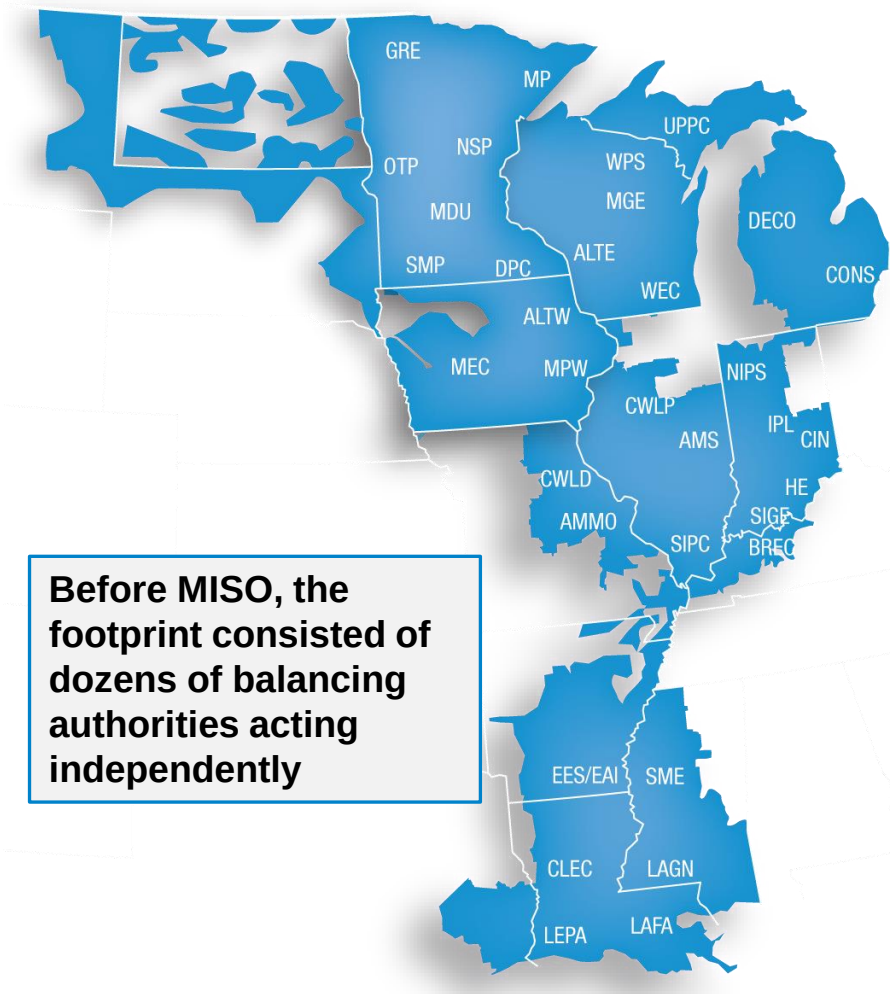
Generation Capacity Mix



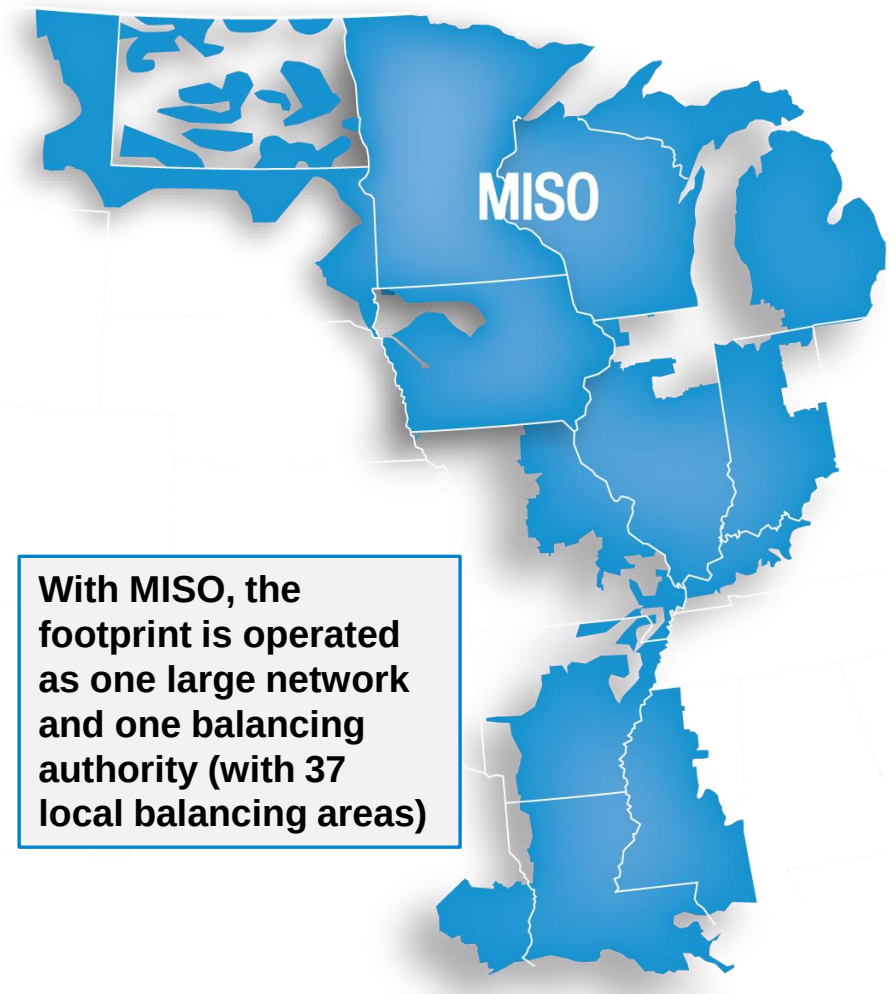
As of 01/2023

*72,000 transmission line miles including Manitoba

Regional Transmission Organizations (RTOs) were formed to operate the grid on a regional basis, removing transactional barriers across utility and state boundaries



Before MISO, the footprint consisted of dozens of balancing authorities acting independently

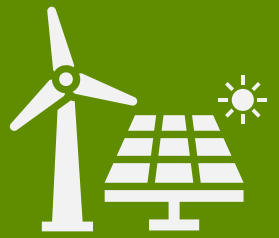


With MISO, the footprint is operated as one large network and one balancing authority (with 37 local balancing areas)

Transformation is progressing at an astonishing pace and will speed up over the next several years

Fleet Changes

MISO members and states have set ambitious goals to partially or fully decarbonize



Fuel Assurance

Availability of resources may be challenged by economic, supply chain or other issues

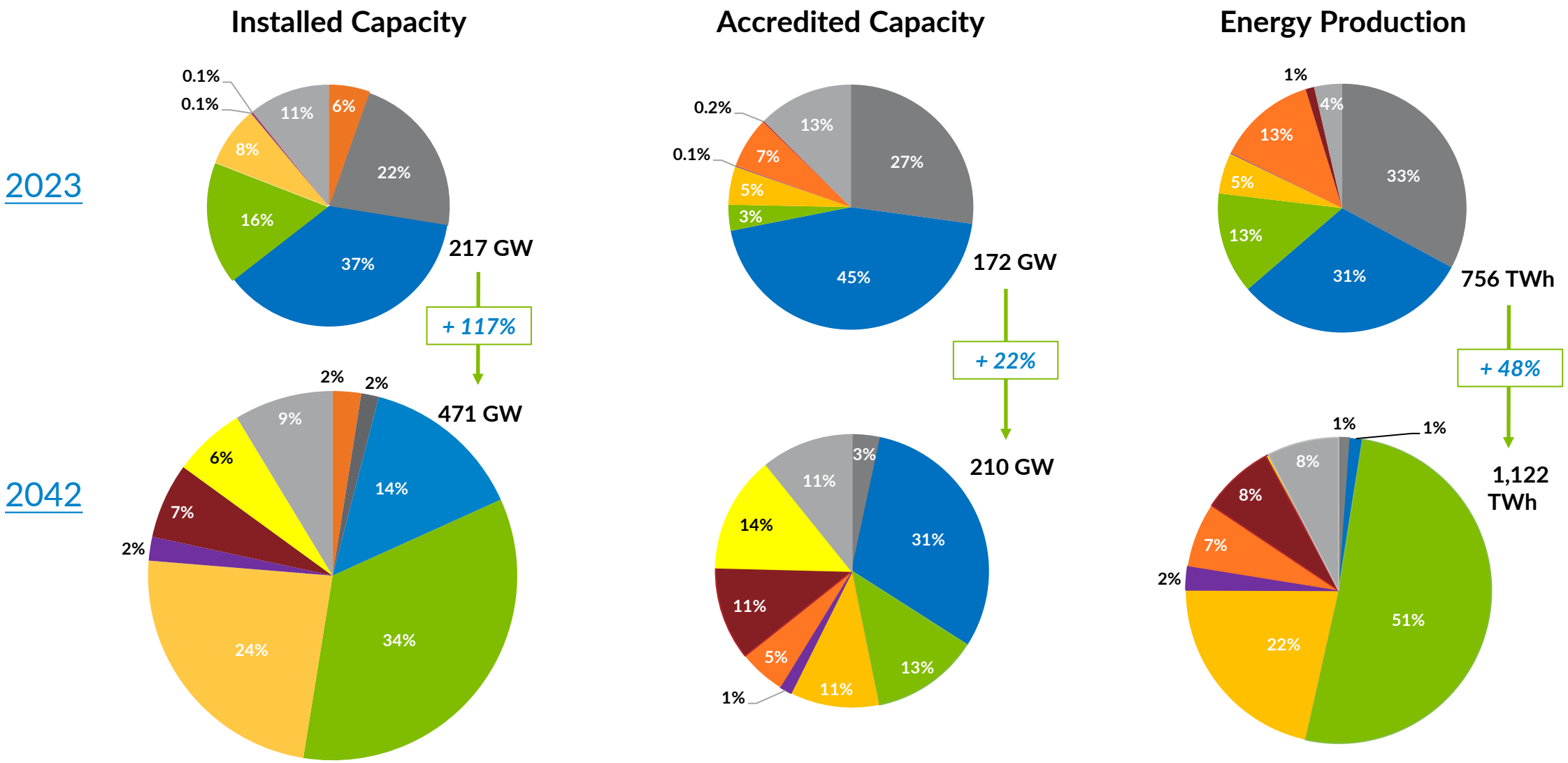
Extreme Weather

Severe weather events are becoming more extreme and occurring more frequently

Electrification

Demand for electricity will grow as electric vehicles increase, industry sectors trend towards renewables

The transition of the generation fleet will have key implications that must be accounted for in policy decisions



MISO is making transformational changes to reliably enable state and utility goals, but broad support is needed to drive optimal outcomes

MISO

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

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

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

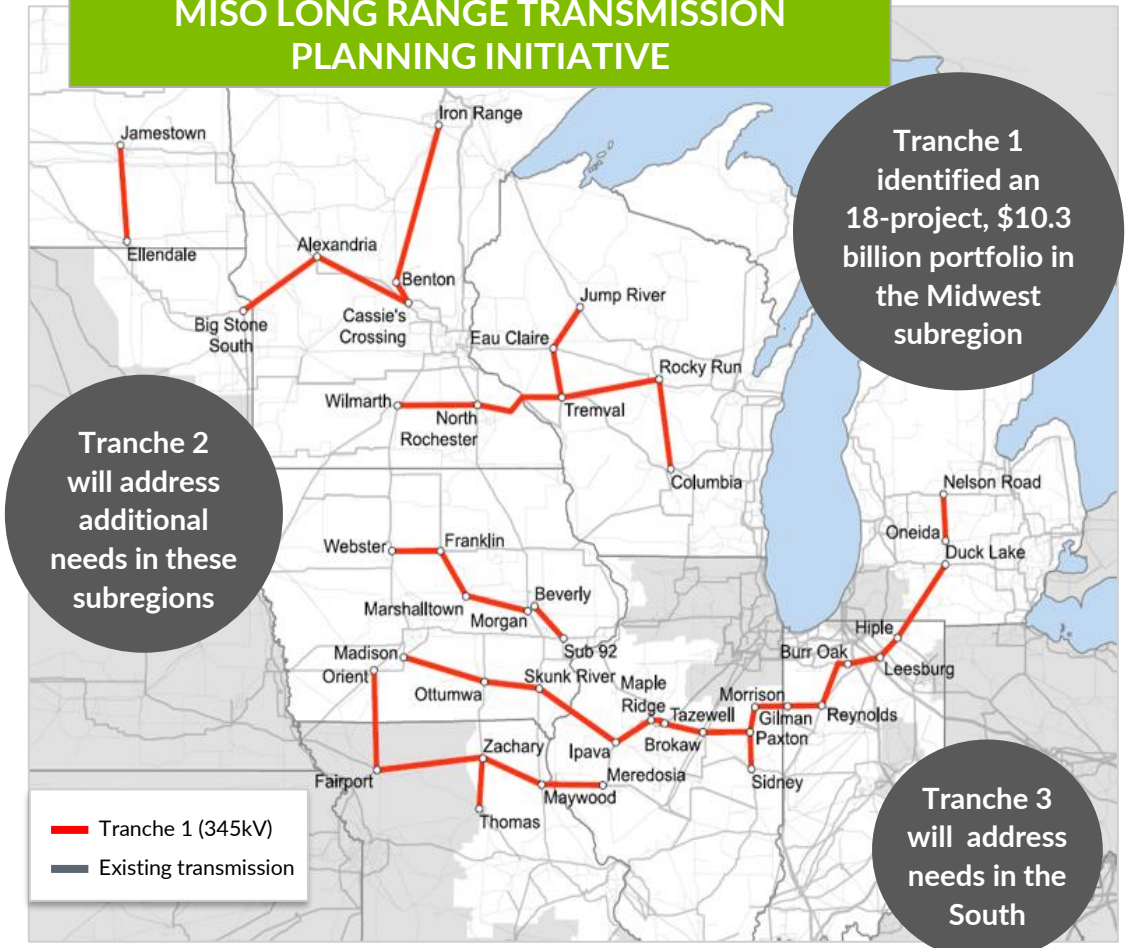
System Enhancements

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

MISO Reliability Imperative (misoenergy.org)

This includes the facilitation of transmission investments within our region and with our neighbors that are required to enable reliable operation of the increasingly variable generation fleet

MISO LONG RANGE TRANSMISSION PLANNING INITIATIVE



Tranche 1 identified an 18-project, $10.3 billion portfolio in the Midwest subregion

Tranche 2 will address additional needs in these subregions

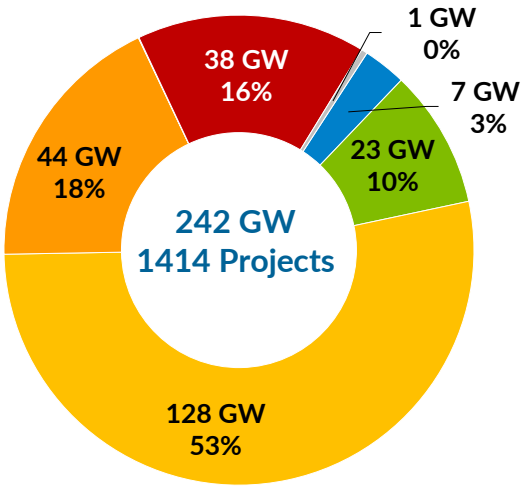
Tranche 3 will address needs in the South

SPP-MISO JOINT TARGETED INTERCONNECTION QUEUE STUDY

However, many new generators that have been approved are awaiting construction, having delayed operation by an average of more than 650 days, and very few natural gas fired units are being planned

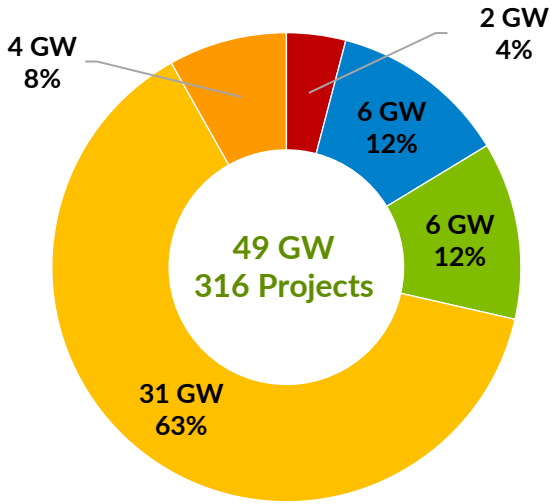
ACTIVE PROJECTS

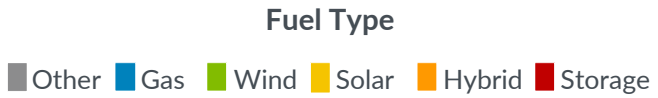
In addition to 242 GW of active projects in the queue process…



APPROVED BUT DELAYED PROJECTS

…49 GW of MISO approved projects with a Generator Interconnection Agreement are not yet in-service…





REASONS FOR DELAY

…primarily due to supply chain, regulatory, and contractor issues