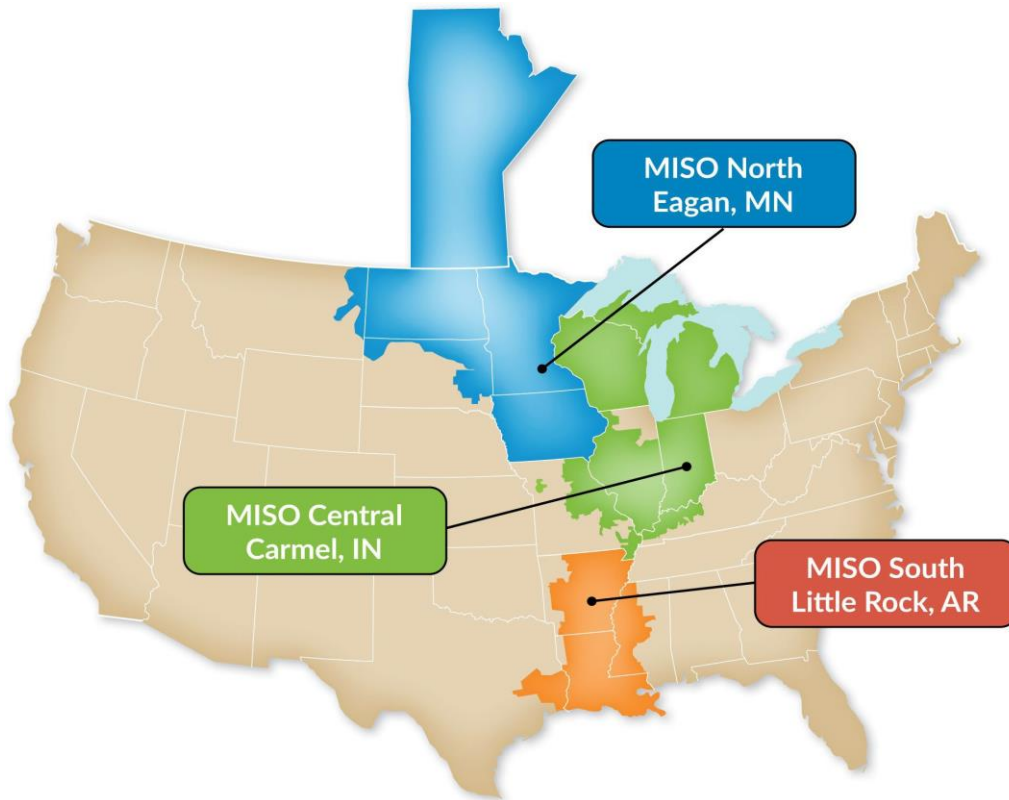




Indiana Utility Regulatory Commission  
*Winter Reliability Forum*

November 27, 2023

# MISO is an independent, not-for-profit Regional Transmission Organization serving 15 U.S. states and one Canadian province



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

Who we serve	
Members	197
Market Participants	500+
Customers Served	45 Million
Value Provided to Members	\$4 Billion

MISO by the numbers	
High Voltage Transmission	75,000 miles
Generating Units	6,800+
Generation Capacity	217 GW
Peak Summer System Demand	127 GW



# Winter 2023-2024 Temperature Projections

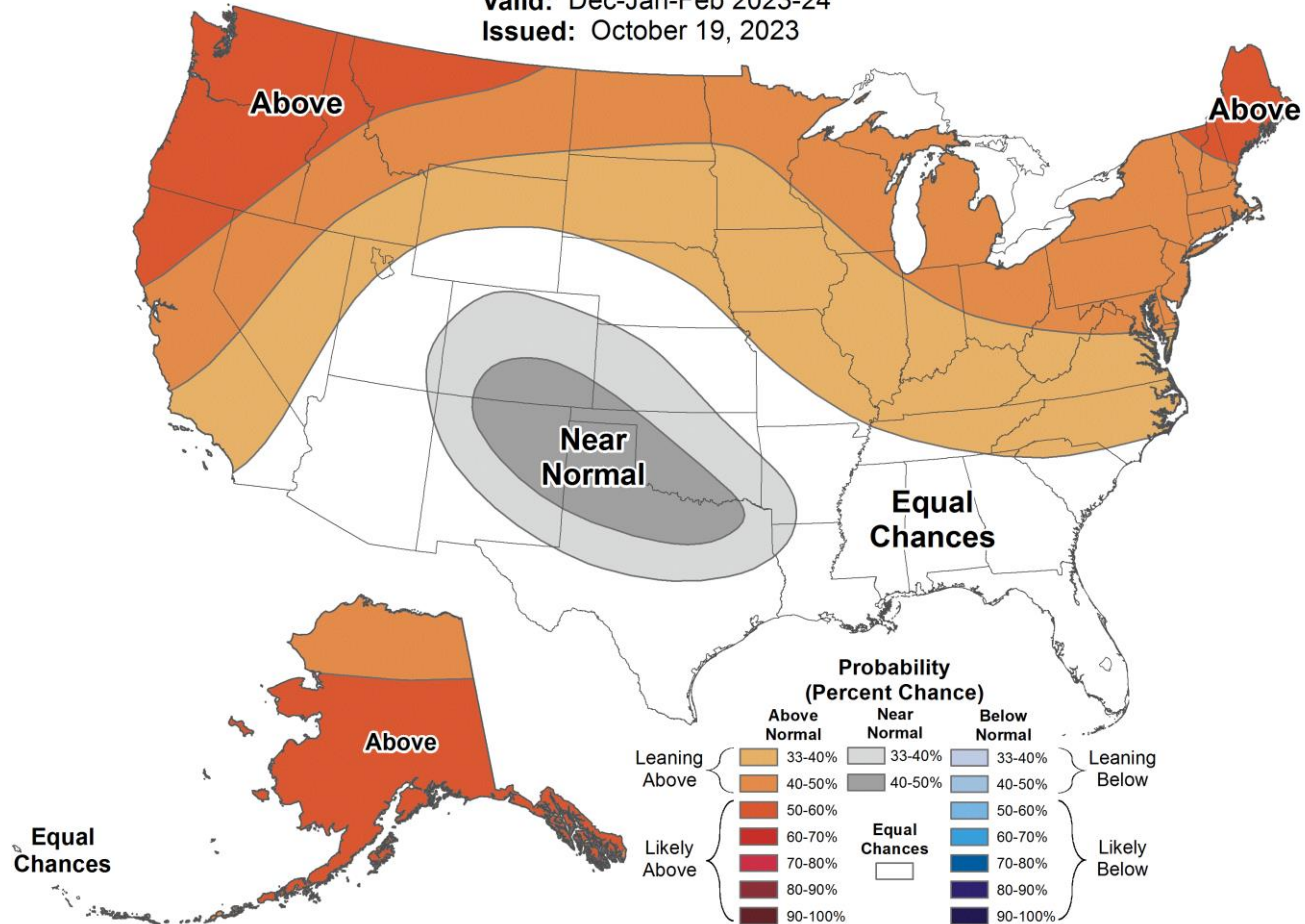


## Seasonal Temperature Outlook



Valid: Dec-Jan-Feb 2023-24

Issued: October 19, 2023



# Winter 2023-2024 Precipitation Outlook

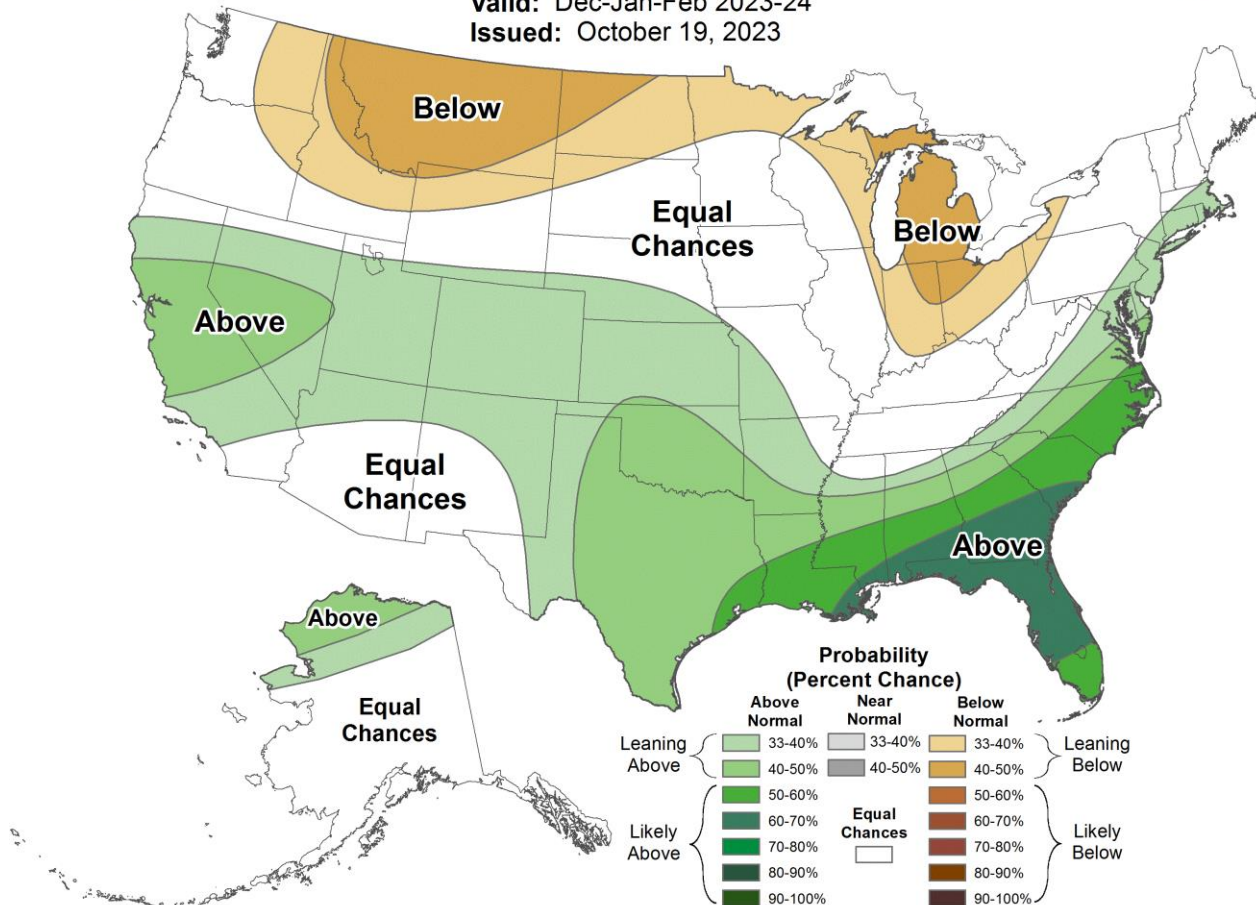


## Seasonal Precipitation Outlook



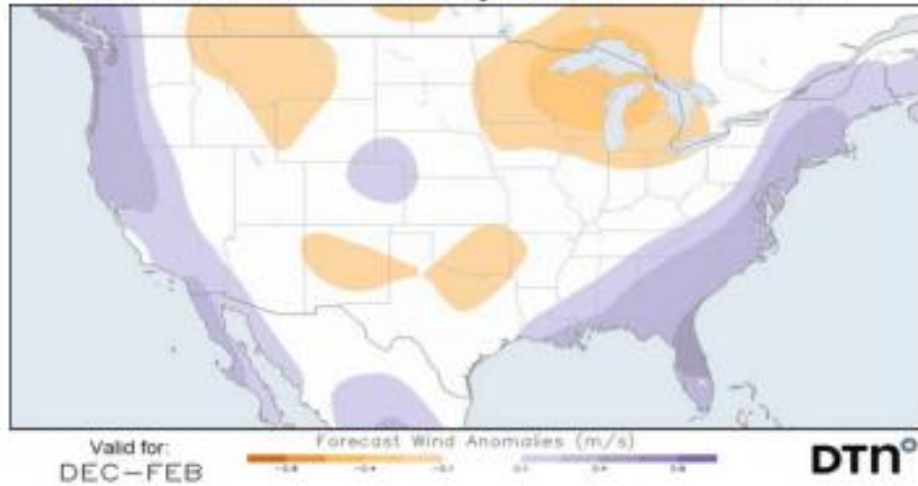
Valid: Dec-Jan-Feb 2023-24

Issued: October 19, 2023



# Renewable Outlook

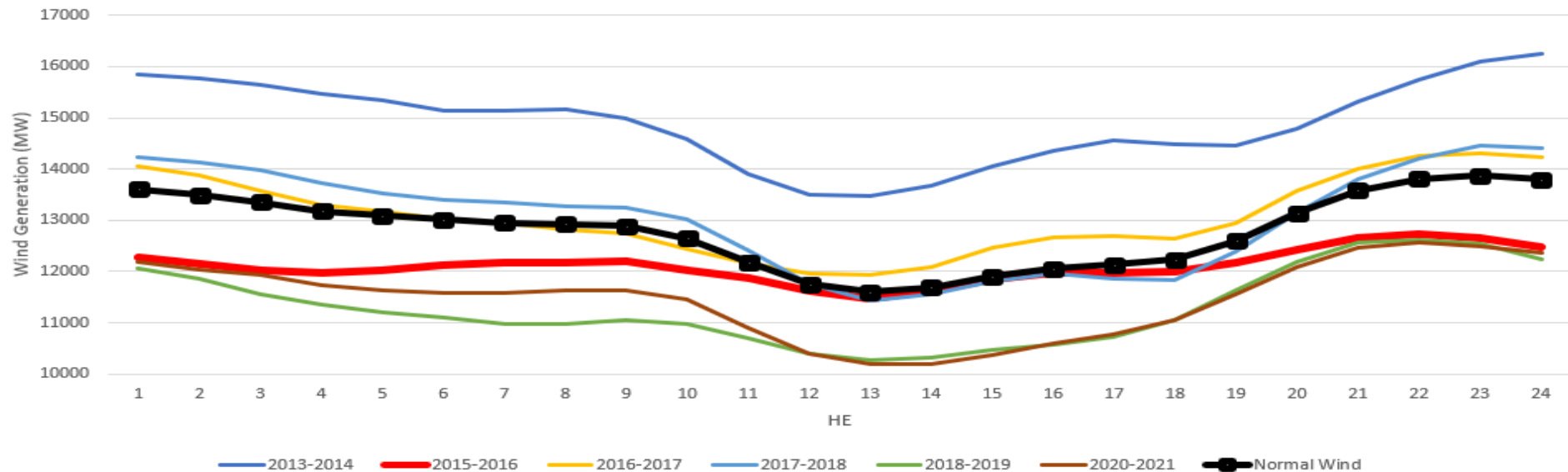
December 2023 to February 2024 Wind Anomalies



December 2023 to February 2024 Solar Anomalies



MISO Winter (Dec-Feb) Normal Wind Hourly Standardized Wind Generation (2023 Pmax Base)



# Winter Weather in Summary

- Above normal temperatures in MISO North and Central
- Slightly below normal/normal temperatures in the South Region
- Warmer *December*, warm *January*, warm *February*, but will monitor El Niño strength as *Feb* could be more variable if it weakens
- Active precipitation pattern in the South leading to below normal temperatures driven by daytime highs

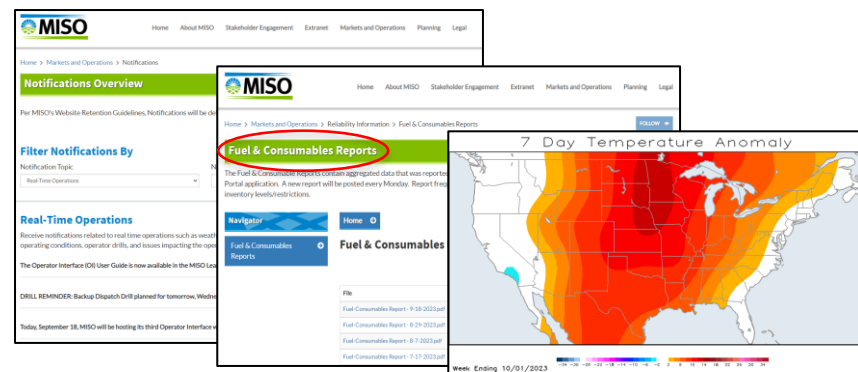


# Analytical assessments and additional data sources help measure uncertainty and pre-position the system for those risks

MISO uses its normal Multi-Day Forward Reliability Assessment and Commitment processes to pre-position commitments for extreme weather or other types of extreme events. Analytical assessments are performed to measure uncertainty and ensure adequate capacity for the footprint.

Additional sources of data are used to inform and help assess commitment decisions, such as:

- Gas pipeline bulletin boards
- Weather forecasts
- Weekly fuel & consumables data
- Annual winterization survey

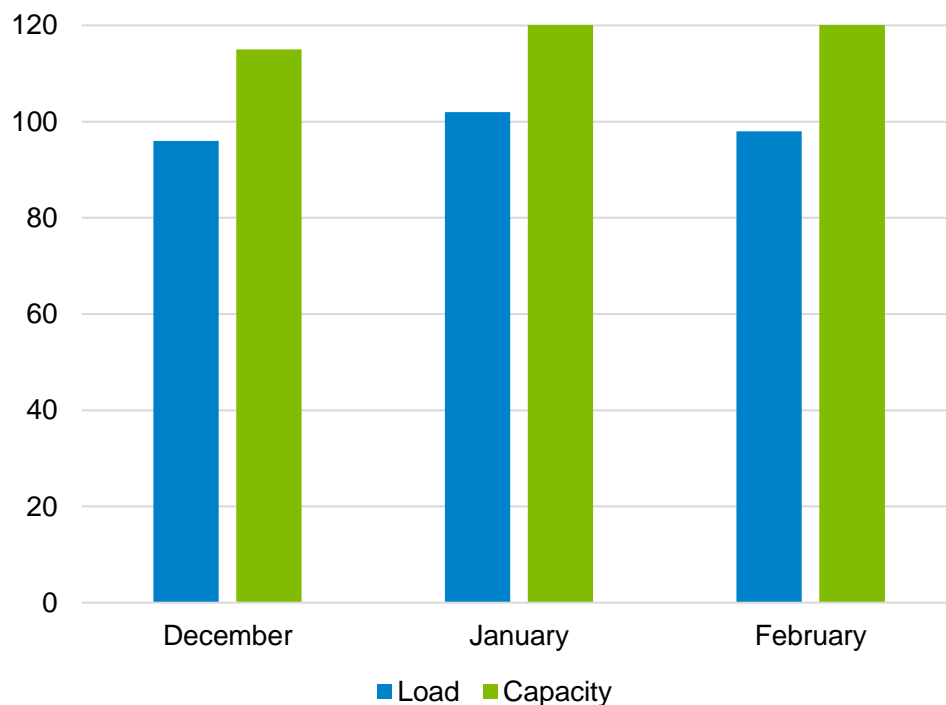


# Sufficient firm supply projected to cover seasonal peak load forecasts and typical generation outages

## MISO – System-wide

### MISO Base Winter 2023-2024 Forecast

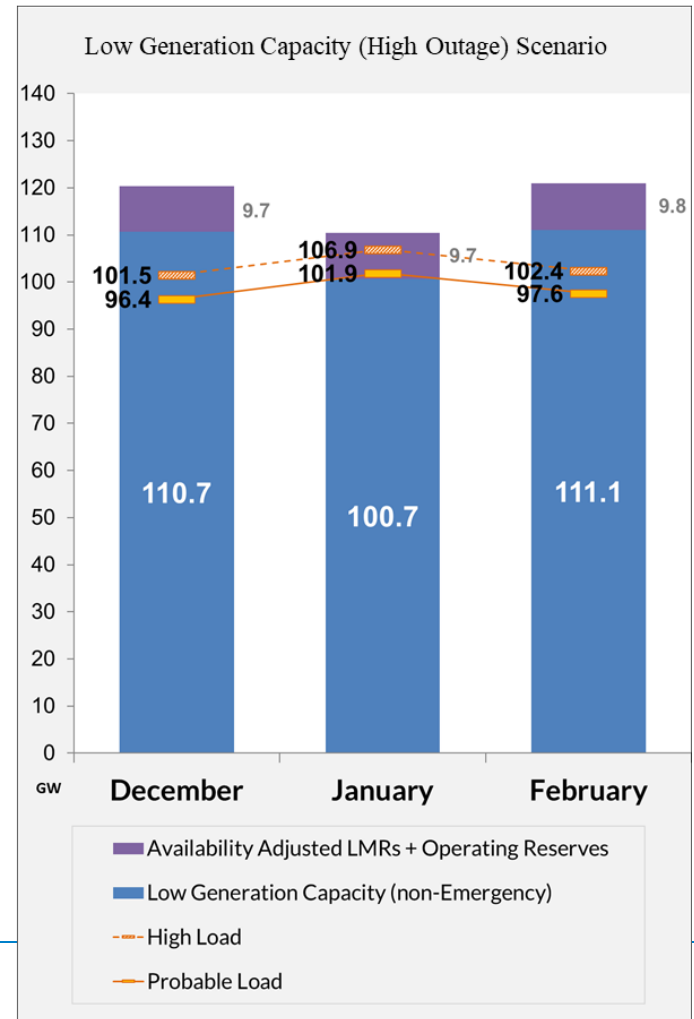
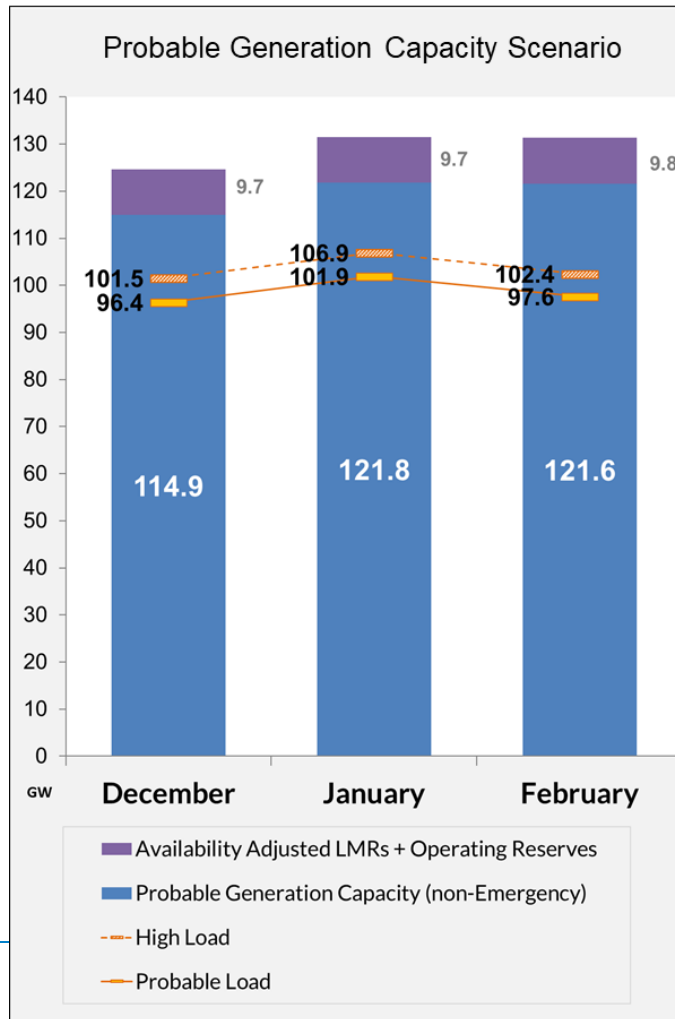
December Probable Peak Load Forecast	96 GW
December Probable Generation Capacity	115 GW
January Probable Peak Load Forecast	102 GW
January Probable Generation Capacity	122 GW
February Probable Peak Load Forecast	98 GW
February Probable Generation Capacity	122 GW



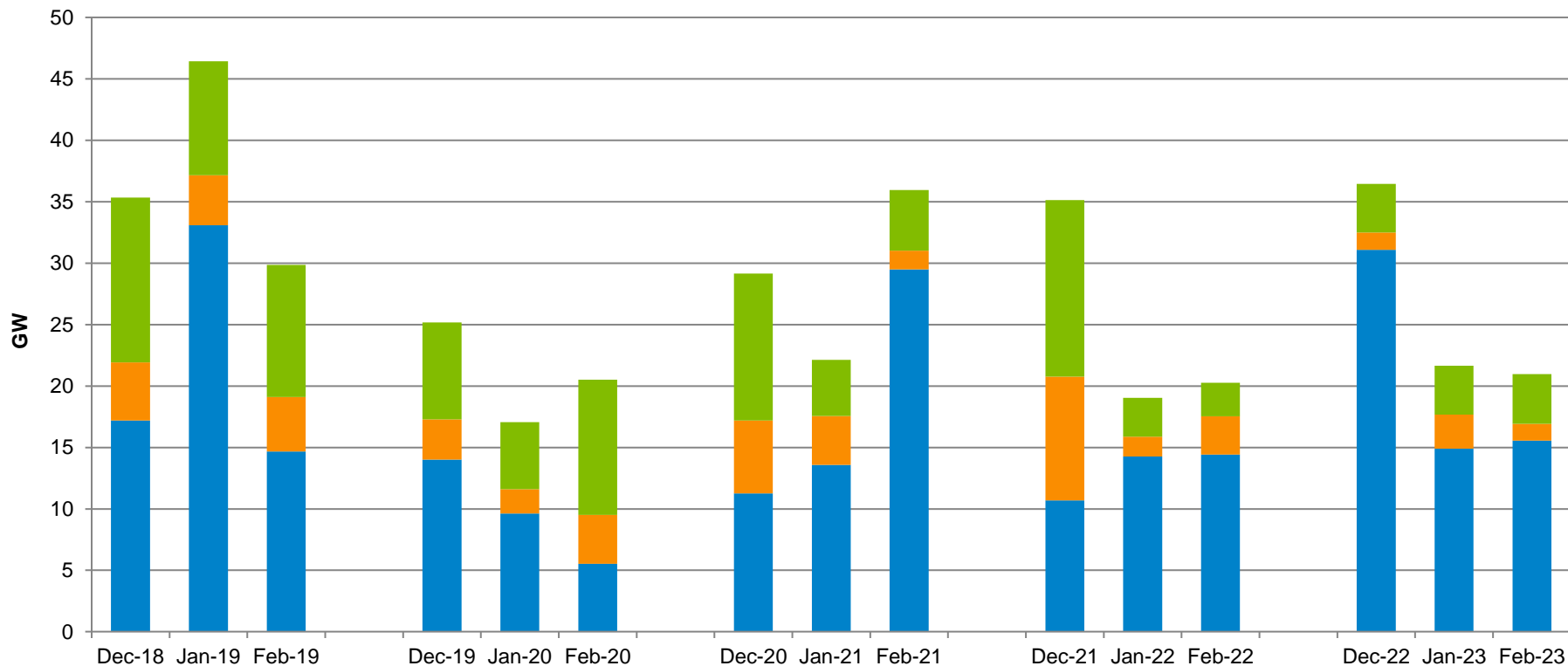


# Coordination with Resource Adequacy

## Winter 2023-2024 Resource Adequacy Projections – MISO System-wide



# Historical Generation Outages on Monthly Peak



- Forced Outages
- Maintenance Outages
- Planned Outages

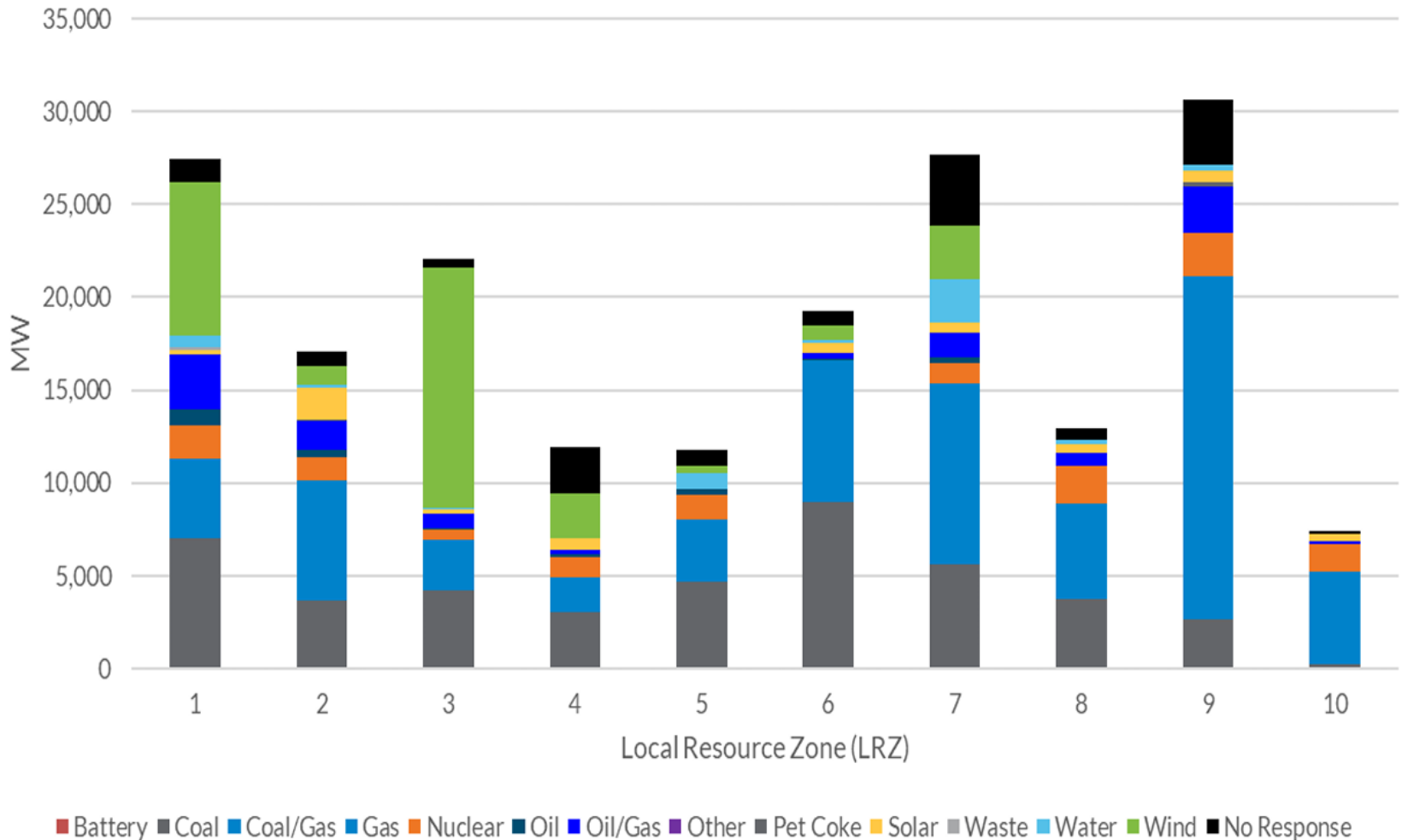
	Forced Outages (GW)	Total Outages (GW)
Average of 15 monthly peaks	16.6	27.7
Maximum seasonal peak	33.1	46.4

# Generator Winterization Preparations

Notable results for units responding to winterization survey

- 97% have a plan to prepare for winter
- 97% have reviewed NERC's Guidelines for Unit Winter Weather Readiness
- 96% have a severe cold weather checklist
- High level of preparedness with general increase in improvement from 2022

# Survey Responses by LRZ and Fuel Type



# Real-Time Market and Operations Displays are available via the MISO website and the Mobile App

**Markets Displays**

LMP Contour Map  
11-Oct-2023 - 9:45 EST

ExAnte LMP  
11-Oct-2023 - Interval

Name	MLC
ARKANSAS.HUB	-2.78
ILLINOIS.HUB	-0.25
INDIANA.HUB	1.44
LOUISIANA.HUB	-1.35
MICHIGAN.HUB	1.11
MINN.HUB	-1.45
MS.HUB	-1.95
SWPP	-3.24
TEXAS.HUB	-1.03

**Grid Status**

Demand  
09:50:00 EST  
70,736 MW  
Actual Demand  
70,452 MW  
Forecast Demand

Fuel  
Coal, Natural Gas, Nuclear, Wind, Other, Solar  
67,133 MW Total Megawatts

Price  
\$56.08 per MW hour

**Real-Time Displays** View All

Fuel Mix  
11-Oct-2023 - Interval 09:50 EST

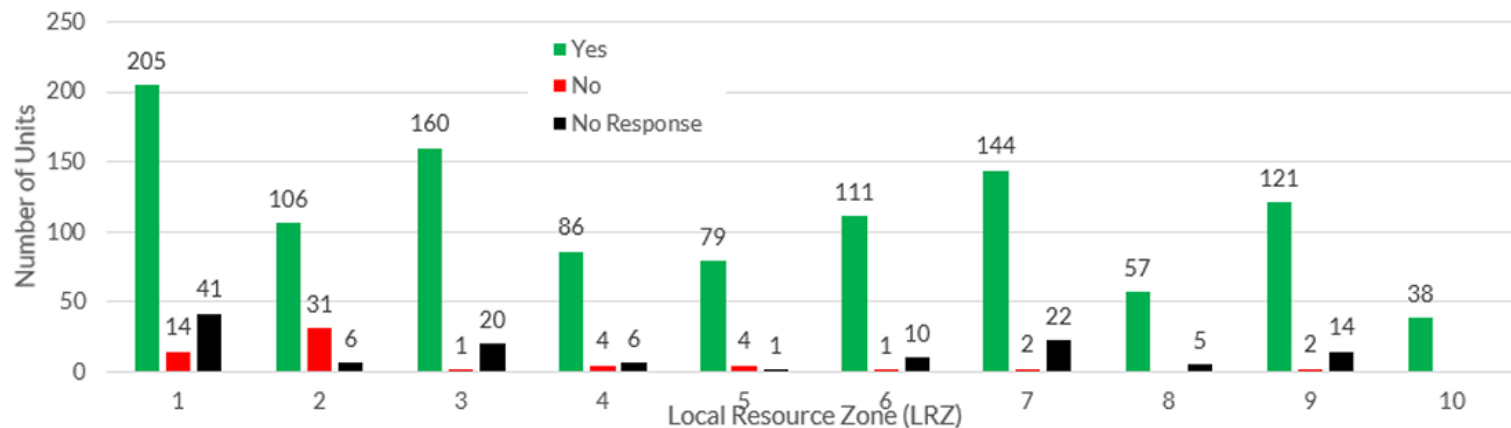
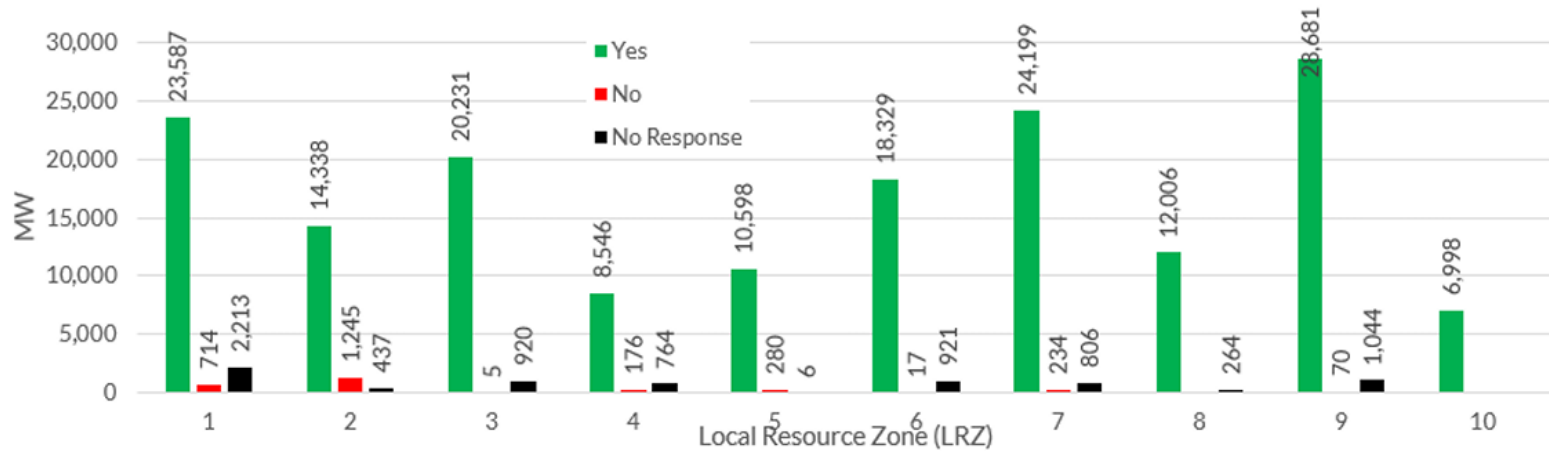
Total Megawatts  
67,133 MW

- Coal - 25,664 MW
- Natural Gas - 23,520 MW
- Nuclear - 8,485 MW
- Wind - 6,866 MW
- Other - 983 MW



Questions?

# Respondents with a plan to prepare for the winter





# Respondents with procedure for Extreme Cold Weather Events

