



Operations Report

Energy Regional State Committee
(ERSC)

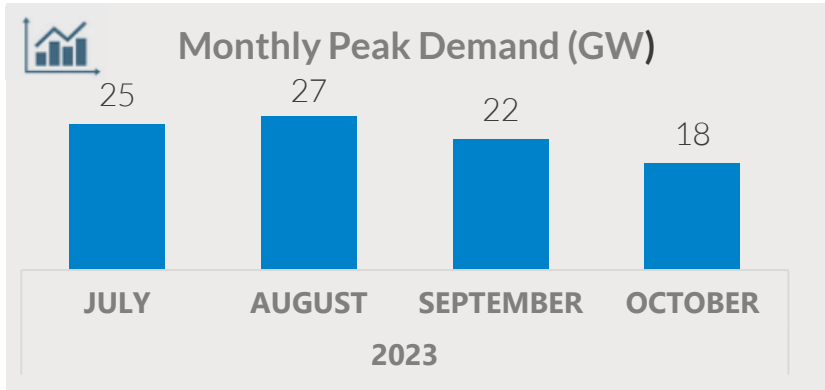
November 13, 2023



South Region Operations Report

- Operations Overview
 - Peak Demand Summary
 - Operating Conditions
- 2023-2024 Winter Preparedness
 - Weather Outlook
 - Winter Readiness
- Drills, Exercises & Workshops
 - Power System Restoration
 - Winter Readiness Workshop
 - GridEx VII

MISO's South Region reliability, markets, and operational functions performed as expected from July through October 2023**

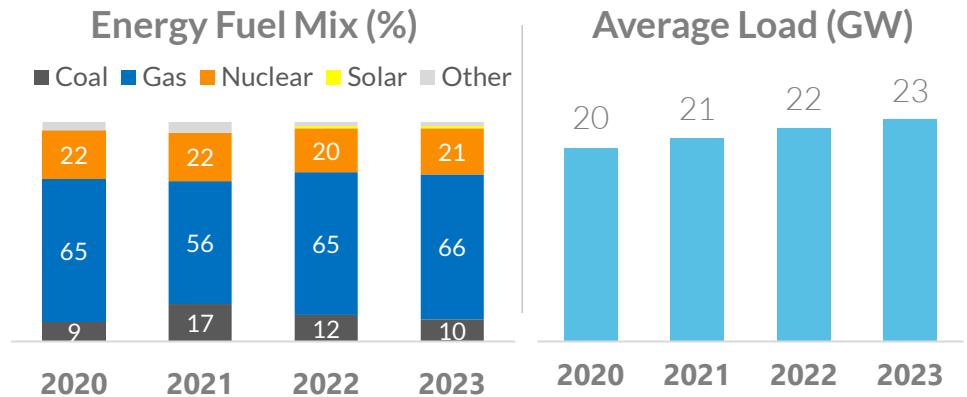


MISO System Peak – 124.9 GW (08/23/2023)
All-time MISO Load Peak 127,125 MW (07/20/2011)

MISO South Region Peak – 35.2 GW (08/23/2023)
NEW: All-time South Load Peak 35,226 MW (08/23/2023)

SOLAR PEAK
3.3 GW
 August 31, 2023,
 served 4.0% of load

WIND PEAK
24.1 GW
 November 30, 2022,
 served 30.1% of load



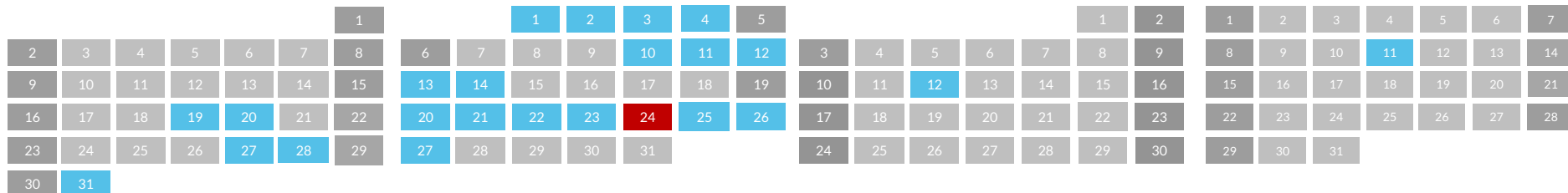
OPERATING CONDITIONS

JULY 2023

AUGUST 2023

SEPTEMBER 2023

OCTOBER 2023



**Data is for the South Region Only from July 1 - October 31, 2023 (unless noted)

Operating Conditions Summary: Week of August 21, 2023

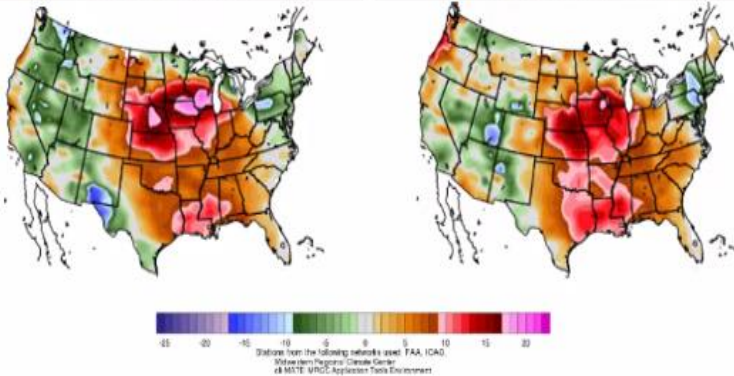


HEAT WAVE: WEEK OF AUGUST 21

Average Temperature: Departure from 30-Year Normal

AUGUST 23, 2023

AUGUST 24, 2023



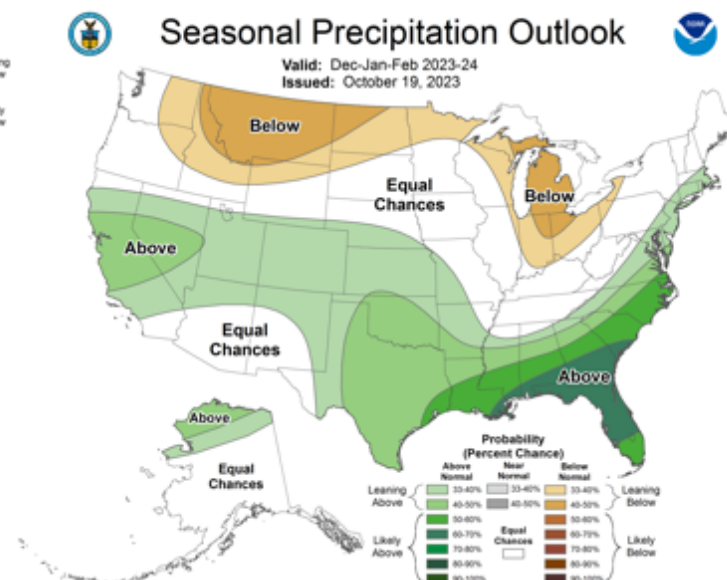
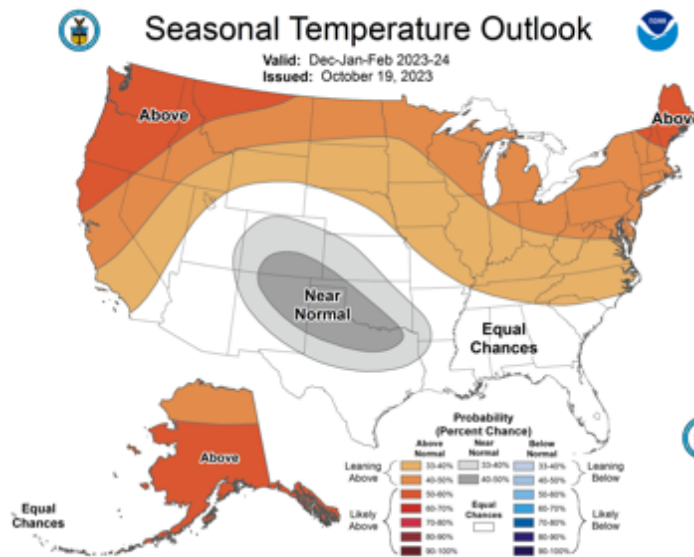
With footprint average temps at 95+ and potential record peaks for Aug. 24th, MISO issued the following alerts, advisories, & declarations:

- Capacity Advisory: 8/21
- Hot Weather Alert: 8/20 - 8/24
- Conservative Operations: 8/21 - 8/24
- Maximum Generation Alert: 8/24
- Maximum Generation Event (EEA-2): 8/24
 - Forced generation outages, above normal temps, & higher than forecasted load
- Neighboring BAs also observed similar system conditions throughout the week

*New South Region Peak – 35,226 MW on 8/23/23

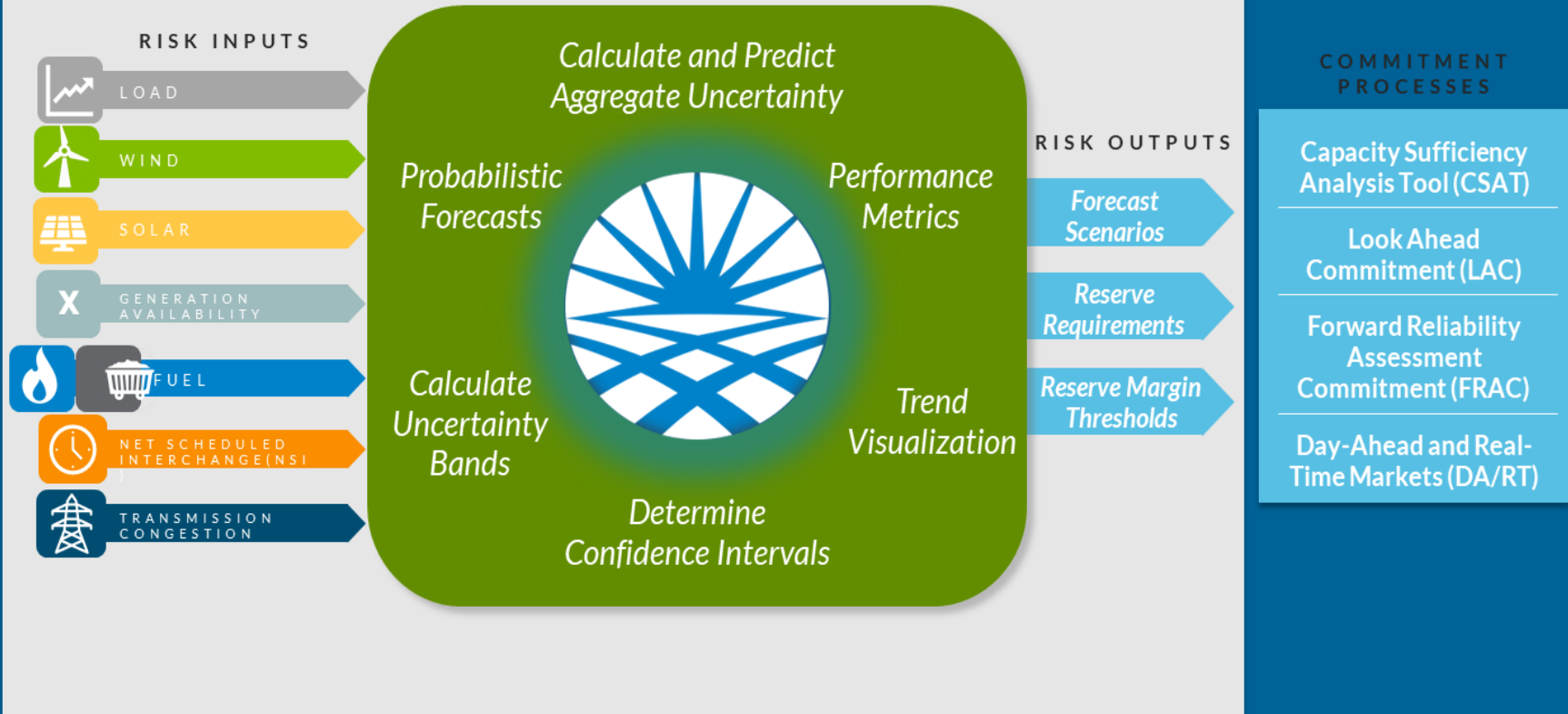
2023-2024 Winter Weather Outlook for MISO South

- **Normal to slightly below** normal temperatures are expected for Winter across MISO South.
- It is imperative to note that these cooler temperatures are expected to be driven by **cooler daytime highs** with increased **cloud cover and precipitation, NOT** arctic air.
- **Above normal precipitation** is expected in MISO South with increased icing chances across Arkansas



Risk Modeling initiatives underway: MISO's Uncertainty Platform

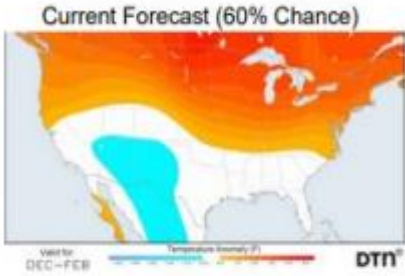
MISO UNCERTAINTY PLATFORM



An example of assessing risks leading into extreme cold weather

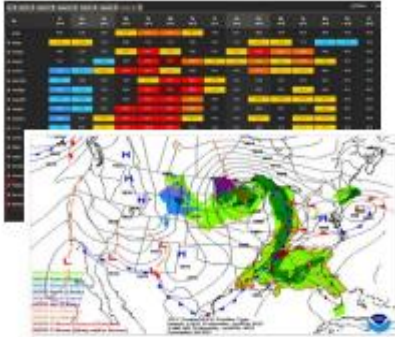
Seasonal Outlook

System Operations reviews seasonal risks and discusses the readiness plan



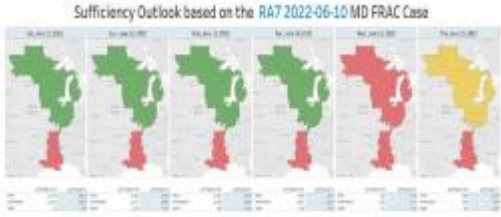
Week(s) ahead

Monitor upcoming weather system (extreme cold, icing, pressure system, etc.)



Day(s) ahead

- Evaluate Operating reserve margin based on 7-day FRAC
- Scenario analysis to account for uncertainty
- Pre-position for tight operation conditions



Hour(s) head

Update risks (e.g., wind drop, storm risk on load, etc.) and assess resource availability

- CSAT dynamically update available uncommitted and Emergency Resources



Lessons Learned applied from Winter Storm Elliott



Need for enhanced wind and load forecasting



Need for improved gas/electric coordination



Opportunity to improve staffing plans



Coordination with Neighboring RCs & Joint Parties

Fall Drills & Workshops completed

✓ 2023 Power System Restoration Drills

- Annual drills completed in October
 - Week 1 – 298 participants
 - Week 2 – 277 participants
- Drill included: System assessment, restoration plans, low voltage simulation, voltage & reactive table-top, etc.



✓ Winter Readiness Workshop

- Conducted on October 31st
 - Workshop was recorded
- Agenda & presentations can be found on the MISO website.



<https://cdn.misoenergy.org/20231031%20Winter%20Readiness%20Workshop%20Item%2002-06%20Presentation00001.pdf>

GridEx VII Exercise

- Happening **November 14th-15th** ~ 8am – 4pm ET
- National exercise hosted by NERC's E-ISAC that drives coordination between various industries that are dependent on each other for disaster response





Questions?

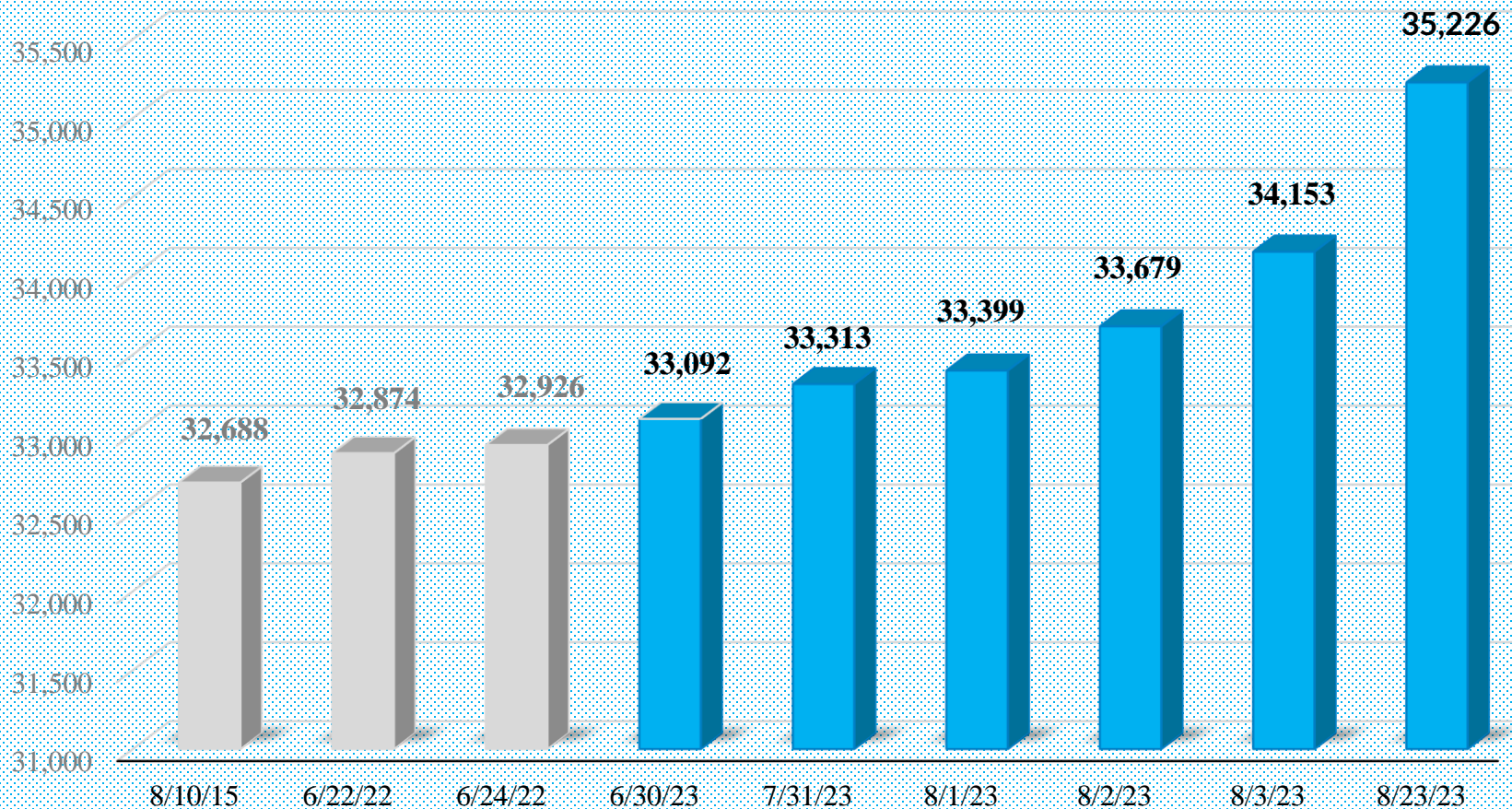
tshort@misoenergy.org



Appendix

South Region All-time Peaks

(Values displayed in MW)

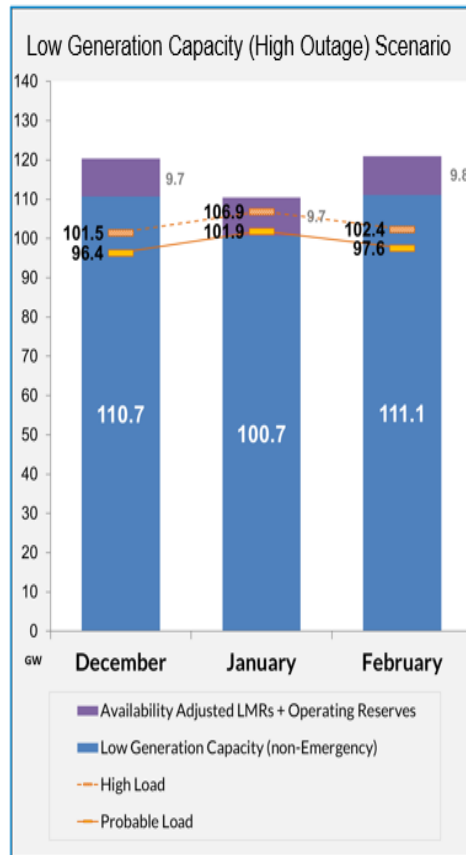
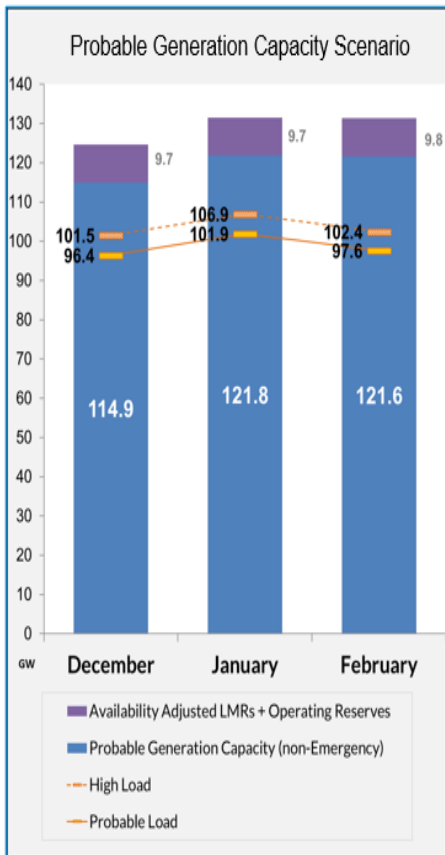


Note: Blue reflects 2023 Peaks



Winter 2023-2024 Resource Adequacy Projections

MISO System-wide



- Under typical demand and generation outages, MISO is projecting sufficient firm resources to cover winter peak load forecasts
- A combination of both high load and high outage scenario could cause a strain on the system in the month of January. LMRs and other Operating Reserves would most likely need to be called upon in that scenario

April 8, 2024: Total Solar Eclipse



- 31 million people in the U.S. live inside the path of the total eclipse. A few cities encountering total obscuration include:
 - Indianapolis, IN – 3m 46s, total duration
 - Poplar Bluff, AR – 4m 08s, total duration
 - Little Rock, AR – 2m 33s, total duration
 - Mt Vernon, IL – 3m 40s, total duration
- MISO has captured lessons learned from the 2017 and 2023 solar eclipses
 - Temperatures drop around 2-6°F ranging from 70% to 95% obscuration
 - Cloud cover mitigates the eclipse effect to load when $\geq 70\%$ (lower thick clouds)
 - Balancing and congestion management are the most challenging areas
 - MISO's actions to include:
 - Increasing Regulation Reserves
 - Increasing Short Term Reserves
 - MCS messages before and during the operating day of the eclipse
 - Further analysis prior to eclipse

Updated MISO Website Coming December 2023



Energy Emergency Alert 2 (EEA2)
Emergency power and/or reduced demand necessary

NEW: Grid Conditions Gauge

MISO Meet MISO Engage Markets and Operations Planning Legal Extranet

Managing today's grid reliably, cost-effectively

10/23/2023 12:20:00 PM EST

Today's Outlook
76.378 73.445 \$26.17 -2.013

Grid Conditions **Fuel Mix**

Energy Emergency Alert 2 (EEA2)
EMERGENCY POWER AND/OR REDUCED DEMAND NECESSARY

71,571 MW Total Megawatts

- Coal 22,563 MW
- Nuclear 7,253 MW
- Natural Gas 27,895 MW
- Wind 10,250 MW
- Solar 2,388 MW
- Other 1,317 MW

Supply & Demand

View data in real time **Real-Time Displays**

Upcoming Events View Calendar

All times are displayed in Eastern Time

TODAY

- Stakeholder Governance Working Group (SOWG) - October 23, 2023 12:30pm Register

WEDNESDAY, OCTOBER 25, 2023

- Planning Compliance Agreement Task Team (PCATT) - October 25, 2023 2:00pm Register

THURSDAY, OCTOBER 26, 2023

- FERC Order 881 Coordination with Impacted Members Workshop Closed - October 26, 2023 10:00am Register
- Organization of MISO States (OMS) Board of Directors - October 26, 2023 2:00pm Register

FRIDAY, OCTOBER 27, 2023

- MISO PJM IPSAC - October 27, 2023 1:00pm Register

MONDAY, OCTOBER 30, 2023

- Formula Rate Protocols - Annual Regional Cost Sharing Meeting - October 30, 2023 10:00am Register
- Stakeholder Governance Working Group (SOWG) - October 30, 2023 12:30pm Register

TUESDAY, OCTOBER 31, 2023

- Identification of Sufficient System Reliability Attributes
- Winter Readiness Workshop - October 31, 2023 2:00pm Register
- NERC FAC-011 Std Change Impacts - SOL Limits Task Team - October 31, 2023 2:00pm Register

MISO and DER
Ensuring Grid Reliability Through Visibility and Communication
READ THE 2020 REPORT

NOW MISO IS REALLY MOBILE
Download on the App Store | GET IT ON Google Play

2023 MISO BOARD VOTE
Sept 21 - Oct 27
CLICK HERE FOR MORE DETAILS.

MISO's Mobile App:

Your source for MISO's Market & Grid Awareness

- Real-Time Data
 - LMP
 - Contour Map
 - Real-Time Total Load
 - Fuel Mix
 - ACE Chart
 - Wind & Solar Forecast
- News & Notifications
 - Weather
 - System declarations
 - Market information
- Available on both the Google Play store for Android and the Apple App store

MISO Mobile 4+
 Energy Market & Grid Awareness
 Midcontinent Independent System Operator, Inc.
 Designed for iPad
 ★★★★★ 5.0 • 23 Ratings
 Free

Screenshots iPad iPhone

Grid Status
 Demand 11:00:00 EST: 74,341 MW
 Actual Demand: 74,990 MW
 Forecast Demand: 70,321 MW
 Fuel: Coal, Natural Gas, Nuclear, Wind, Other, Solar
 Price: \$42.13 per MWh hour

Real-Time Displays
 Fuel Mix 17 Nov 2021 - Interval 11:00 EST
 Total Megawatts: 70,321 MW
 Coal: 21,135 MW
 Natural Gas: 17,289 MW
 Nuclear: 13,422 MW
 Wind: 19,131 MW
 Other: 1,063 MW

LMP Contour Map
 09 Nov 2021 - 11:30 EST
 Map showing LMP contours across the MISO region with color-coded values (e.g., \$44.90, \$63.73).

Real-Time Displays
 Real-Time Total Load 09 Nov 2021 - Interval 12:25 EST
 Cleared Demand (MW): 71,963
 Actual Load (MW): 74,415
 Medium Term Load Forecast (MW): 74,415

News & Notifications
 [MISO] LMPs/MCPs: 11/04 Data Approved
 MISO has approved Real Time Ex post LMPs/MCPs for the following operating day:
 November 4, 2021 approved at 06:25 EST on November 7, 2021. No change.
 11/7/2021 7:30 AM

MISO's operating procedures ensure reliability and gain access to additional resources during extreme situations



MARKET CAPACITY EMERGENCY PROCEDURE STEPS

