Winter Readiness 2025-2026

Indiana Utility Regulatory Commission

December 2, 2025

Bob Kuzman – Executive Director, External Affairs – Central Region

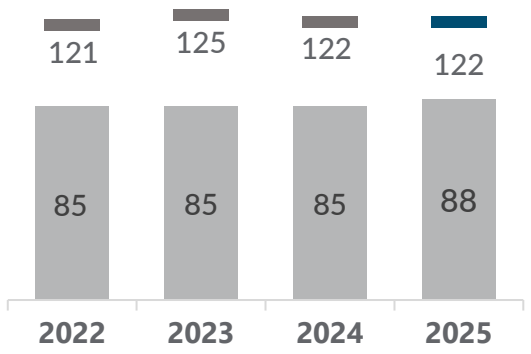
Summer Performance

Executive Summary

- MISO experienced an active summer driven by hot weather, high humidity and high outages
- Increased operational declarations were driven by tighter margins resulting from elevated demand and unplanned outages
- MISO projected adequate resources to meet demand this fall, but identified potential risks due to an active hurricane season forecast in the Atlantic

MISO's reliability, markets and operations performed as expected through a challenging summer

AVERAGE AND PEAK LOAD (GW)



SYSTEM-WIDE PEAK

122 GW

July 29

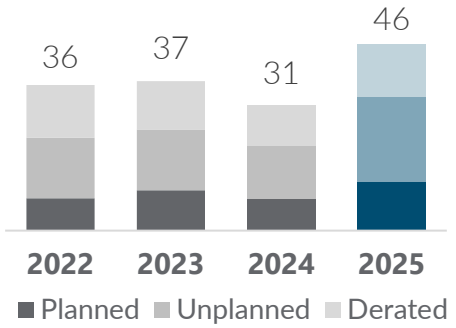
Summer Forecasted Peak: 123 GW

SOLAR PEAK

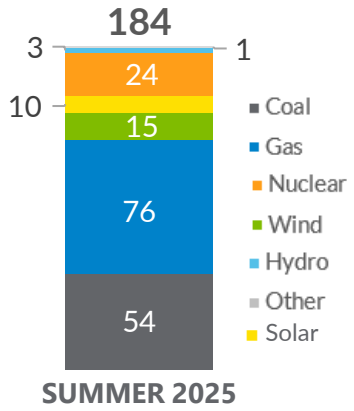
14 GW

August 3, 17% of Load

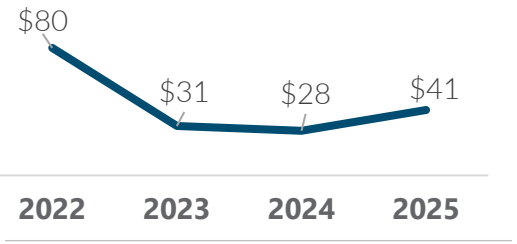
AVERAGE DAILY GENERATION OUTAGES (GW)



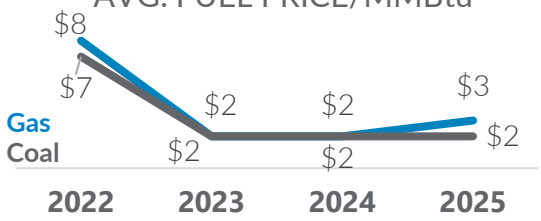
ENERGY FUEL MIX (TWh)



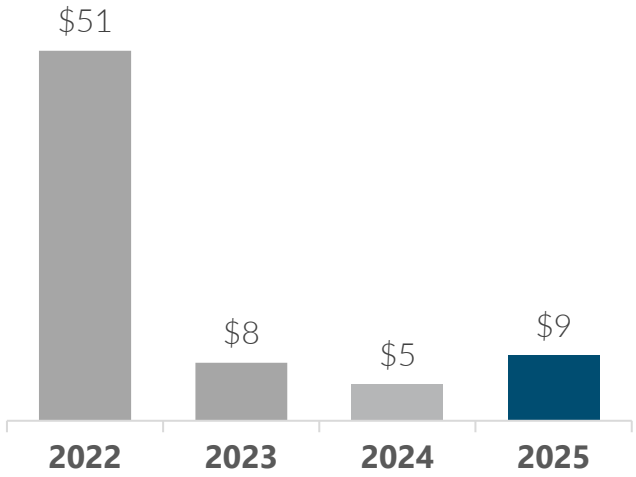
REAL-TIME LMP



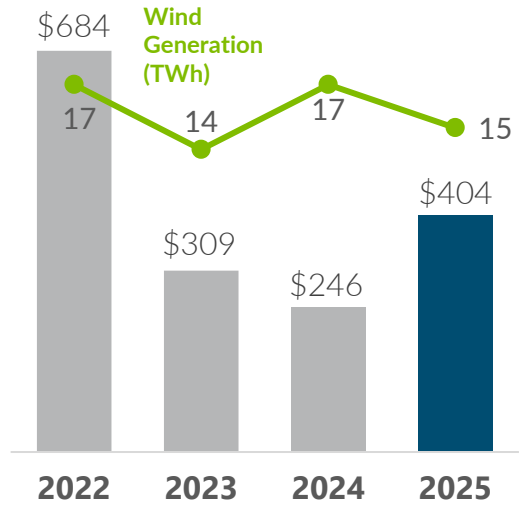
AVG. FUEL PRICE/MMBtu



REAL-TIME UPLIFT* PAYMENTS ($M)



REAL-TIME CONGESTION ($M)**

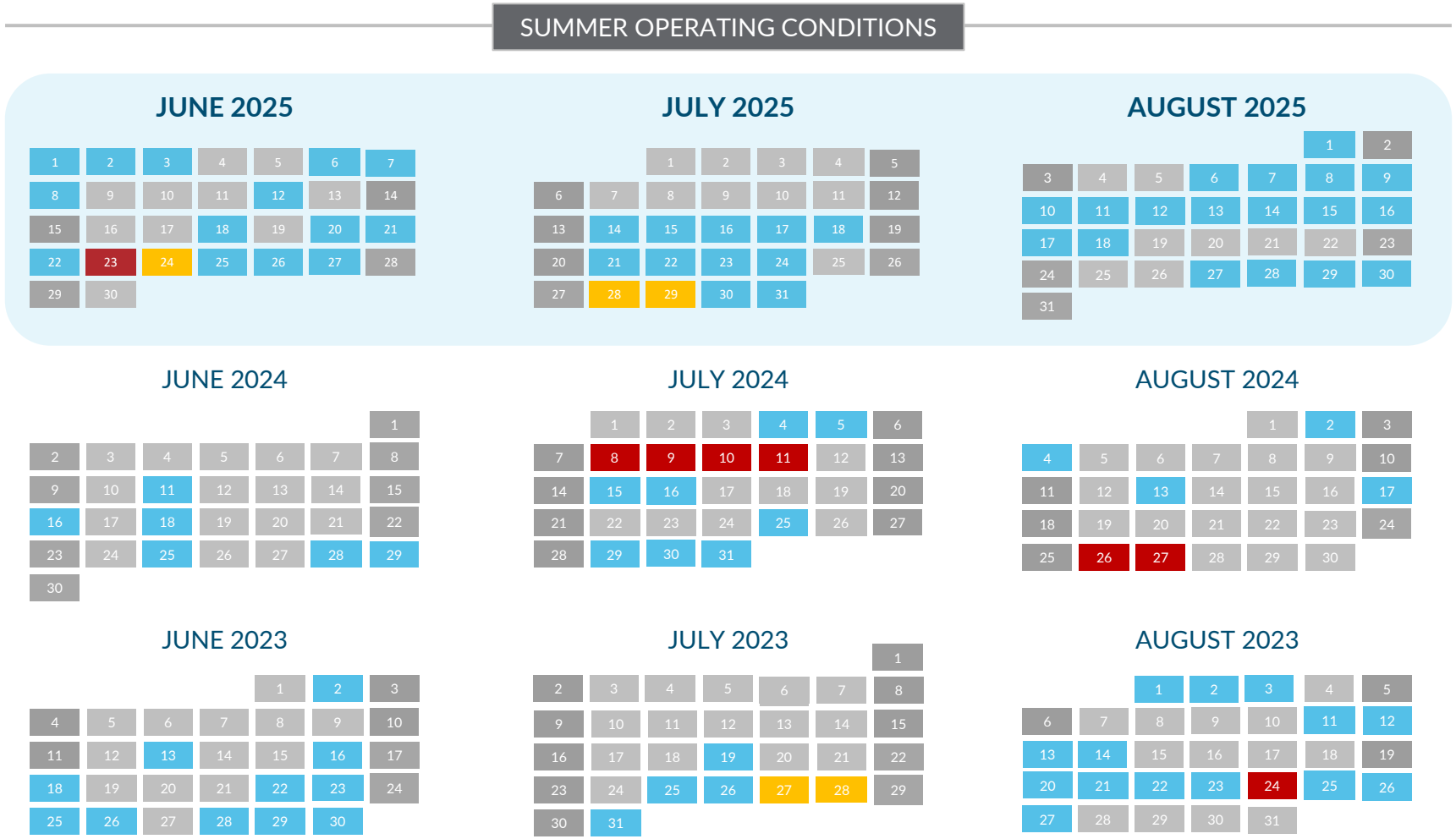


Data as of 8/31/2025

**Uplift is also known as revenue sufficiency guarantee (RSG); uplift values may change due to resettlement*

*** Real-time congestion cost includes external constraints*

MISO entered emergency procedures this summer due to hot weather and high demand



NOTE: MISO issued Capacity Advisories for South region load pockets to provide proactive notice of elevated reliability risk.

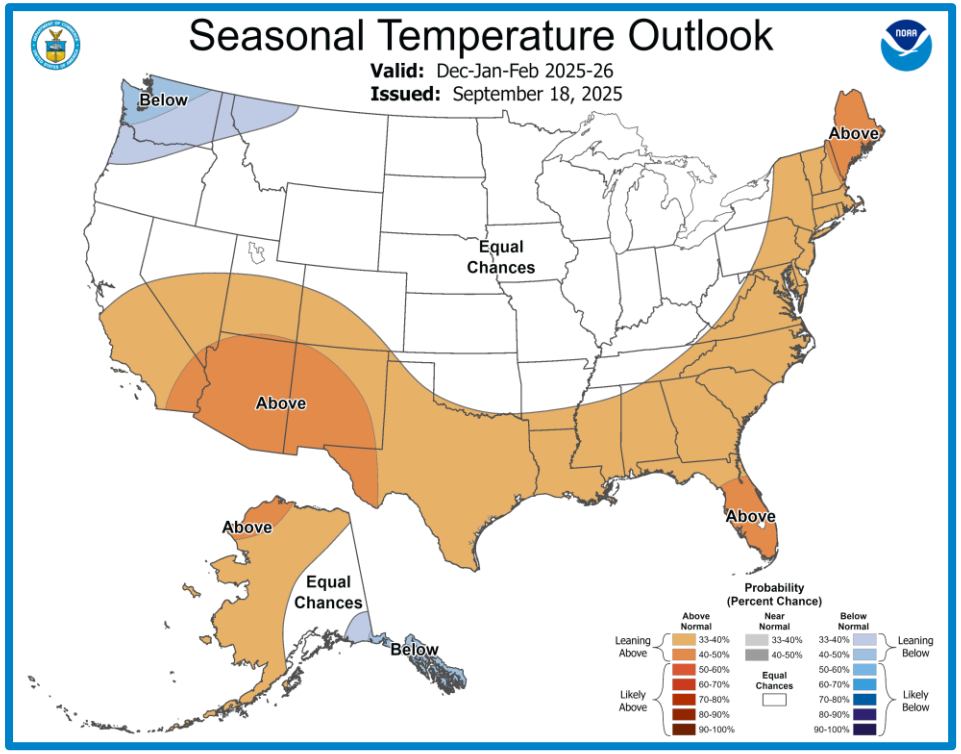
Winter Readiness

Executive Summary

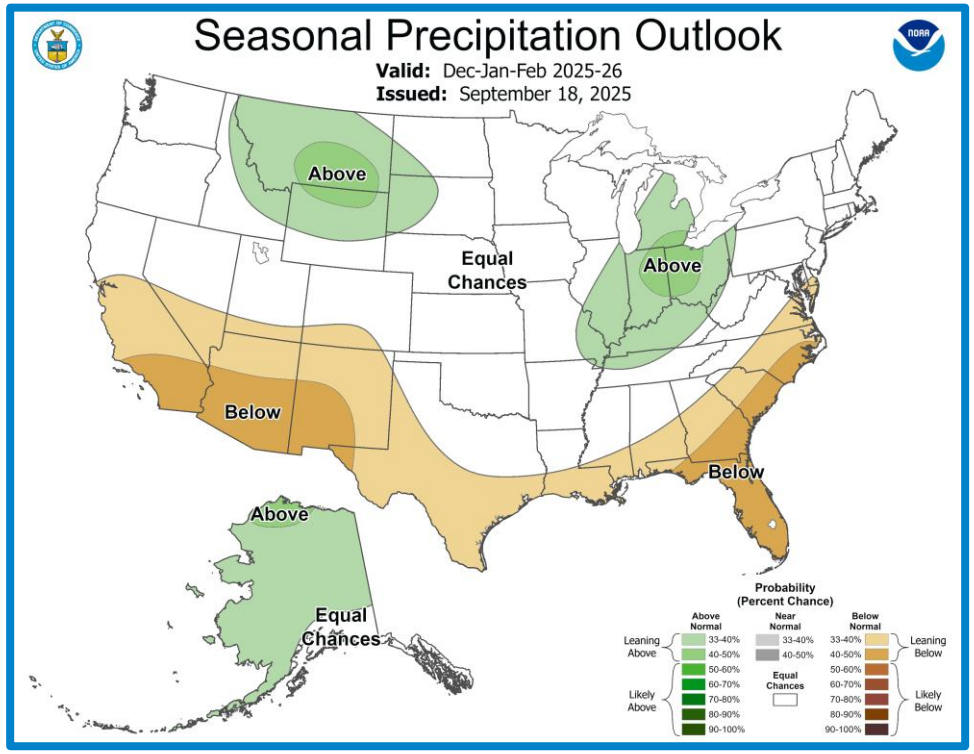
- North and Central Region temperatures expected to be normal to slightly below normal. Above normal temperatures are expected in the South Region on average
- An active storm pattern expected with above normal precipitation across the Great Lakes
- Precipitation is expected to be elevated in MISO's North/Central region which can increase icing and snowfall creating more renewable forecast difficulties
- MISO is well positioned to handle unplanned events for the upcoming Winter season

MISO forecasts show more variability and an increased chance of more frequent winter storms

Winter 2025-2026 Weather Projections



More variability in temperature is expected in the North and Central regions, while the South is anticipated to be above average.



Above-normal precipitation is forecast for the Great Lakes region and dryer along the Gulf Coast.

Seasonal outlook maps source: National Oceanic and Atmospheric Administration

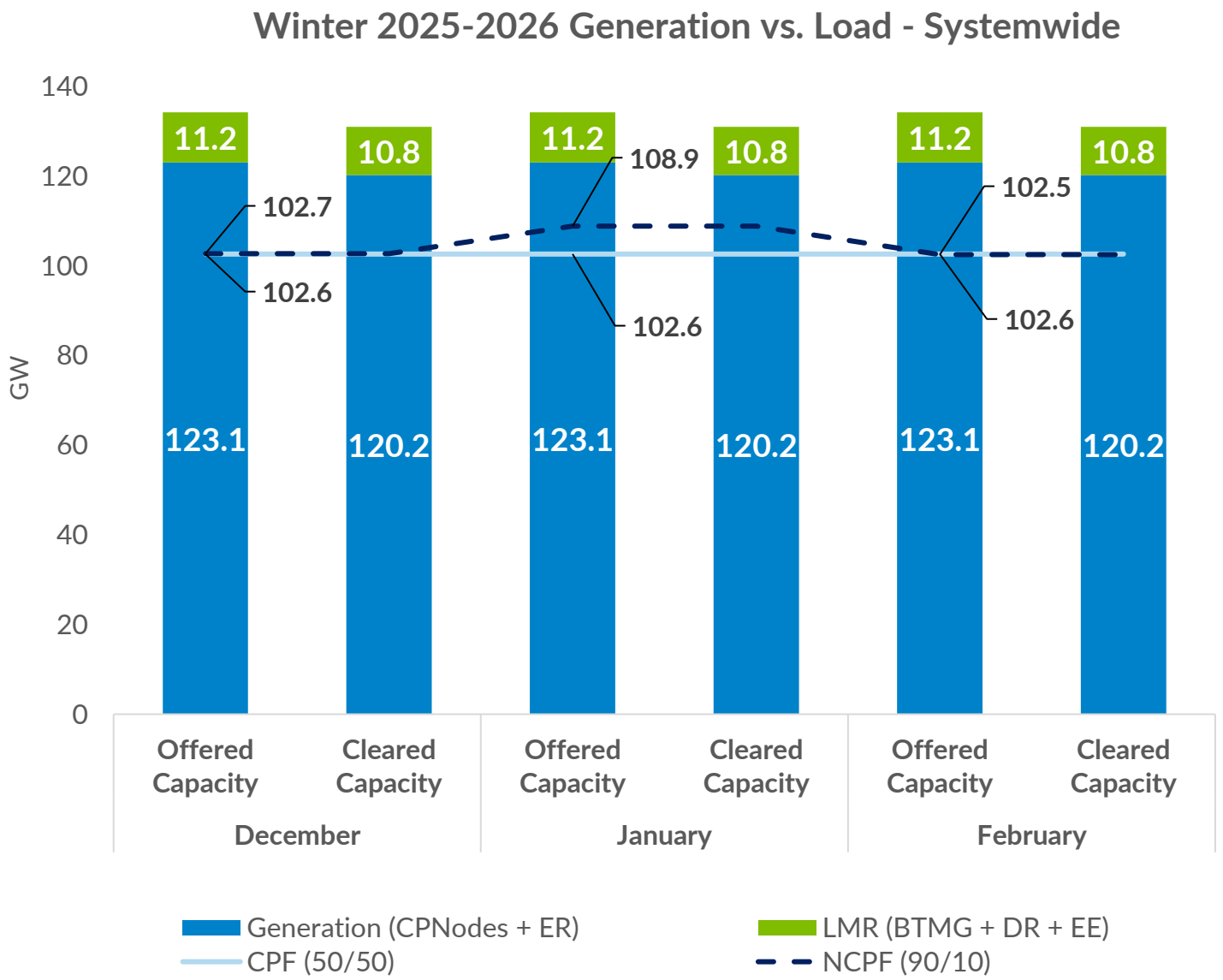
MISO projects sufficient capacity to cover both Coincident and Non-Coincident peak forecast load

Projected Winter Peak – 103 GW

Coincident Peak Forecast values are submitted by MISO Load Serving Entities, relative to MISO Seasonal peak.

High Demand Projected Peak – 109 GW

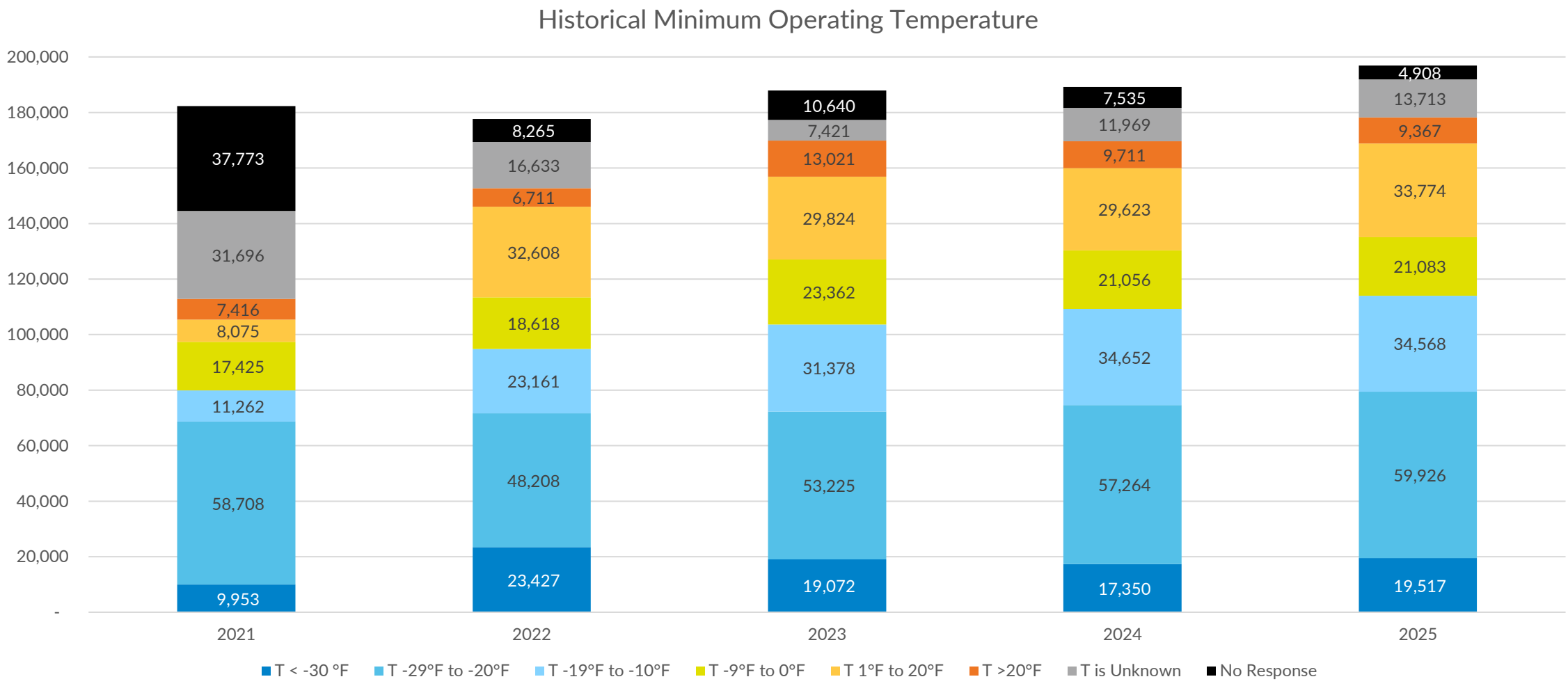
Non-Coincident Peak Forecast values are submitted by MISO Load Serving Entities, relative to each entity's monthly peak.



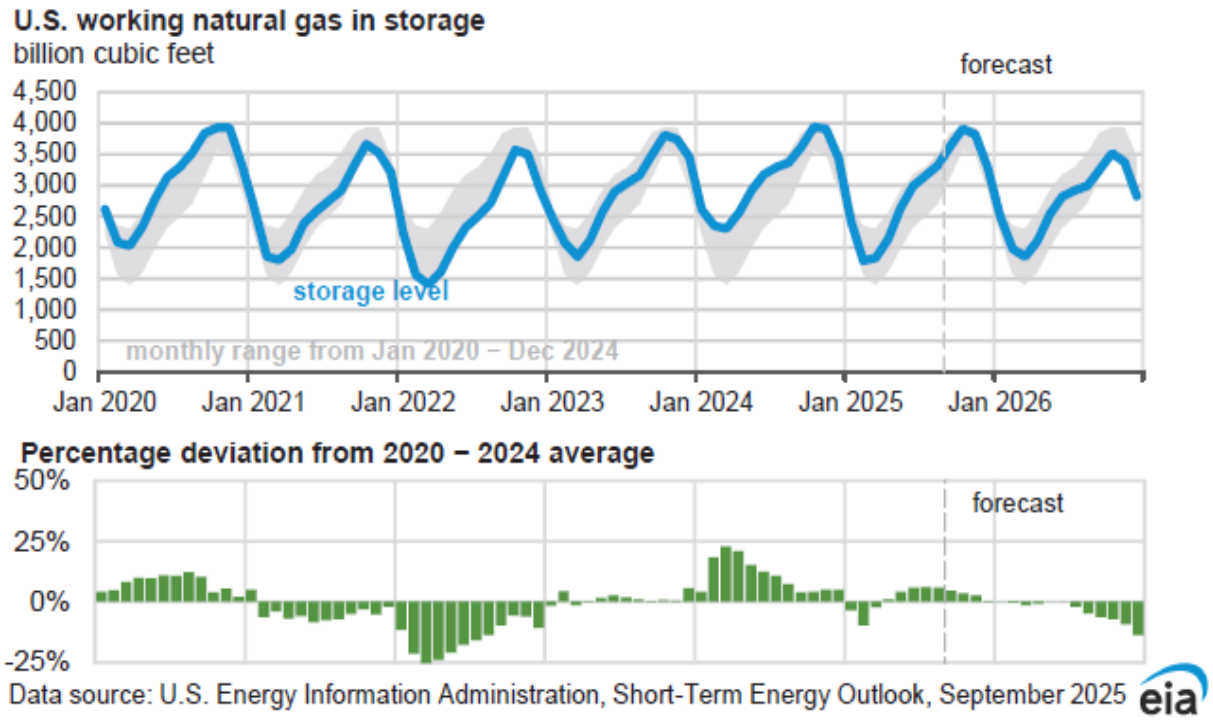
Source for CPF and NCPF data for Winter 2025-2026 is MISO PRA and load forecast submission process based on MISO Tariff, Module E-1.

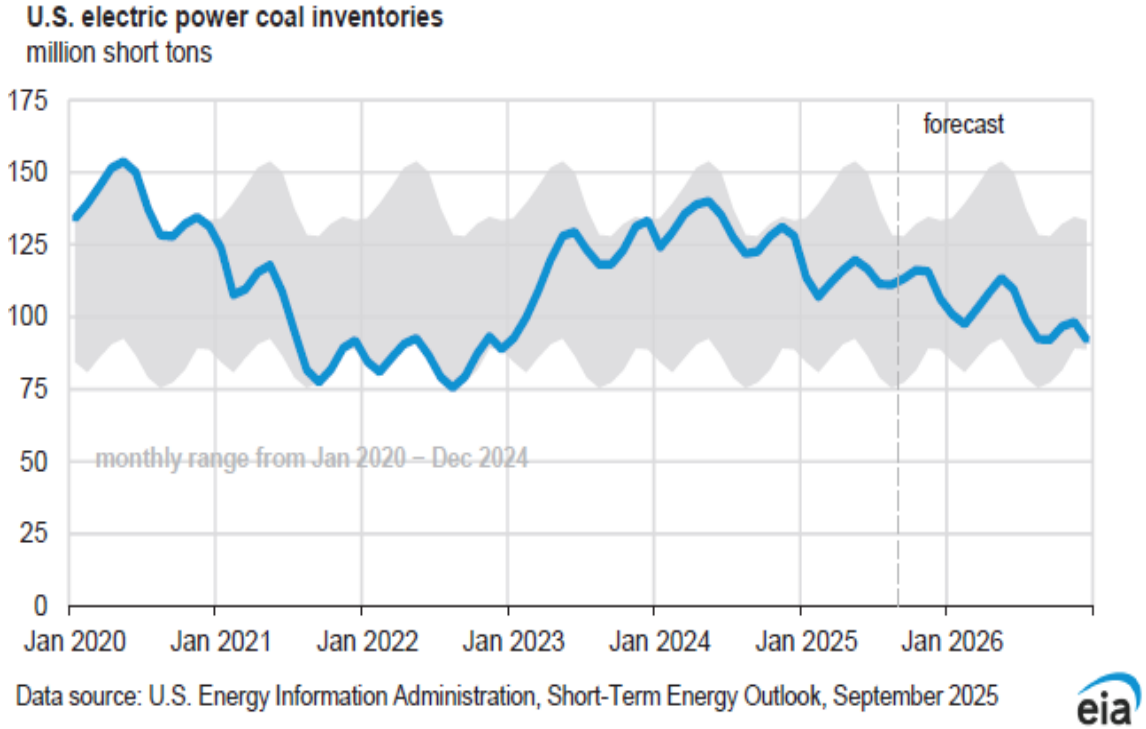
LMR: Load Modifying Resource CPNodes: Commercial Pricing Nodes ER: External Resource BTMG: Behind the Meter Generation
DR: Demand Resource EE: Energy Efficiency CPF: Coincident Peak Forecast NCPF: Non-Coincident Peak Forecast

Cold Weather Operating Capability Continues to Improve



Dispatchable Thermal Generation Fuel Supply Outlook

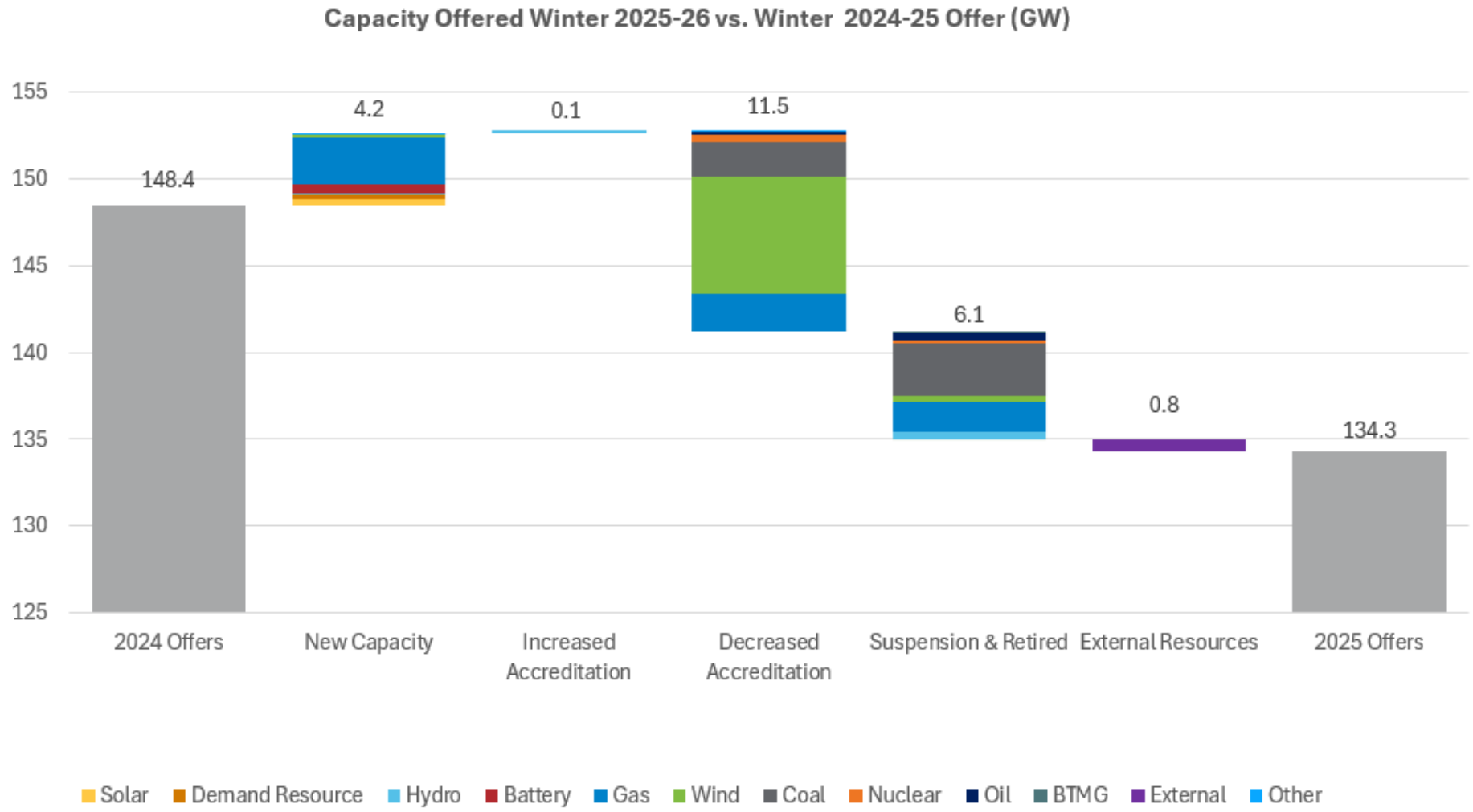




The balance between natural gas and coal generation will depend on fuel availability and delivery. Natural gas storage is projected to be lower than the 5-year average each month.

Coal inventories at power plants are expected to be lower than last winter and on the lower end of the 5-year average.

The Winter 2025/26 Planning Resource Auction (PRA) resulted in a decrease in surplus ZRCs in comparison with the Winter 2024-2025 PRA



MISO Cold Weather Drill

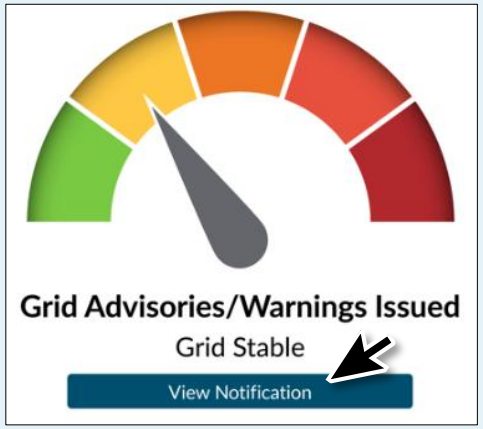
- Summarize the events and effects of a major winter storm's impact on the BES.
- Explain the impacts of severe weather on generation and the effects of generation loss.
- Explain the effects of large scheduled increases through MISO's footprint.
- Analyze lessons learned from a recent major winter storm event and how to apply those lessons to future events.

MISO Power System Restoration Drill

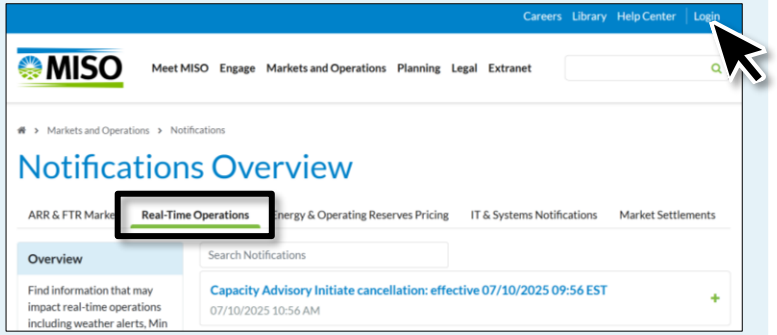
- Assess system conditions, communicate using 3-part communication and practice implementing system restoration plans
- Describe actions to restore identified critical transmission, generation, loads and transmission paths to nuclear plants
- Assess readiness for connecting to neighboring systems
- Resync systems to neighboring TOPs and the Interconnection

Several ways to view MISO's real-time grid status and subscribe to notifications

Website



Grid Conditions Guage
(Homepage)



Real-Time Operations Notifications
(Markets and Operations > Notifications > Real-Time Operations)
Login to subscribe to email notifications

MISO App

Enable notifications

Grid Conditions Gauge
(My Dashboard)

Real-Time Operations Notifications
(Notifications > Real-Time Operations)

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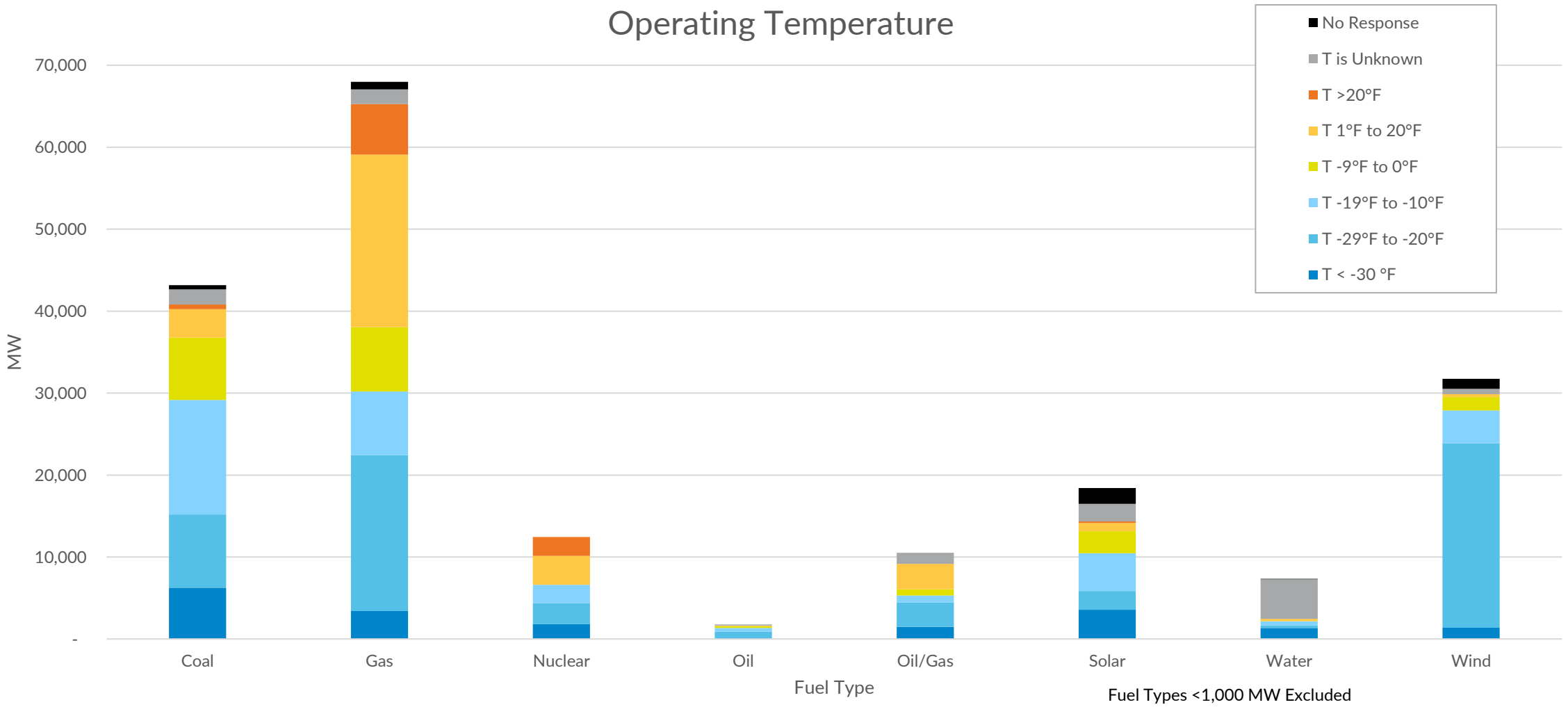
Appendix

Cold Weather Operating Capability by Fuel Type



Fuel Types <1,000 MW Excluded

The grid conditions gauge on MISO's website reflects active market capacity conditions for members and the public

Green	Yellow	Orange	Dark Orange	Red
Grid is stable and conditions are normal	*Grid is stable and advisories or warnings are issued*	*Grid is stable and power demand could exceed supply available*	*Grid is stable and emergency power and/or reduced demand is needed*	*Power interruptions imminent or happening*
Hot Weather Alert	**Capacity Advisory**	**NERC Energy Emergency Alert 1 (EEA1)**	**NERC Energy Emergency Alert 2 (EEA2)**	**NERC Energy Emergency Alert 3 (EEA3)**
Cold Weather Alert	**Conservative Operations**			
Severe Weather Alert	**Maximum Generation Alert**			
	Maximum Generation Warning			

Grid Conditions Gauge vs. Capacity Emergency Notifications

The gauge needle moves when an alert, advisory, warning, event or termination *takes effect*, not when a notification is sent. Notifications take precedence over what is seen on the gauge.

Grid Conditions at a Glance

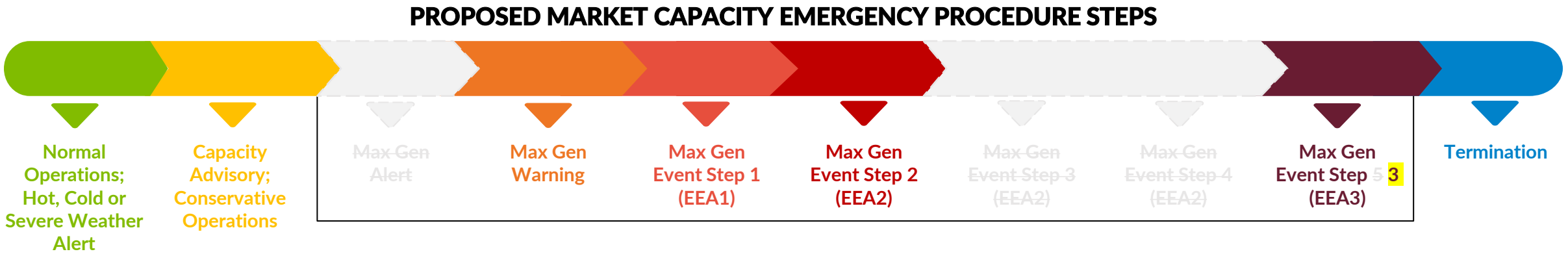
The emergency operating procedures address adverse conditions by signaling conditions to MISO's members and allowing or requiring certain actions

MARKET CAPACITY EMERGENCY PROCEDURE STEPS

STATUS	COMMUNICATION TO MEMBERS	ACTION	PRICING
Normal Operations			
Hot, Cold, or Severe Weather Alert	**Alert for situational awareness:** Could be approaching tight supply due to weather-related circumstances	Review outage plans for deferral, cancellation	Normal
Conservative Operations	**Alert for situational awareness:** Reliability issue possible for defined area (may be capacity-driven or caused by other abnormal circumstances)	Potentially suspend transmission maintenance; review outage plans for deferral, cancellation	
Capacity Advisory*	**Advisory for situational awareness:** Capacity is tight, or shortage is forecast	Request stakeholders update offer data	
Alert*	**Alert for situational awareness:** Capacity is tight and may require emergency procedures	Define boundaries; suspend maintenance; prepare for potential event	Emergency Tier 0 Offer Floor
Warning*	**Warning to prepare for possible event:** Reserve margin* shortage is forecast	Schedule all economic resources; limit exports; reconfiguration	Emergency Tier 1 Offer Floor
Event* Step 1 (EEA1)	**Take action:** Reserve requirements cannot be met through normal economic resources	(1a) Commit emergency-only resources (1b) Activate emergency operating ranges	
Event Step 2 (EEA2)	**Take action:** Demand cannot be met through emergency resources	(2a) Implement LMRs* (2b) Commit EDR* resources (2c) External purchases and public appeals	Emergency Tier 2 Offer Floor
Event Step 3 (EEA2)	**Take action:** Operating reserves depleted, attempting to maintain minimum contingency reserves	(3a) Spinning and supplemental reserves request environmental waivers (3b) Emergency demand reductions	
Event Step 4 (EEA2)	**Take action:** All available MISO resources used	Initiate external emergency energy purchases	
Event Step 5 (EEA3)	**Event occurring:** Requirements cannot be met	Coordinated load shed	VOLL*
Termination	Max Gen and, possibly, Capacity Advisory termination	Update stakeholder market data	Normal

*See appendix for definitions

Proposed changes for spring 2026: Maximum Generation procedures simplify to align with NERC EEA steps



PROPOSED CHANGES

Currently in the MISO stakeholder process

- Eliminates Maximum Generation Alert
- Moves procedure Step 1a (commitment of emergency-only resources) from Step 1 to Maximum Generation Warning
- Maximum Generation Steps 3 and 4 merge with Step 2
- Maximum Generation Event Step 5 renamed to Event Step 3

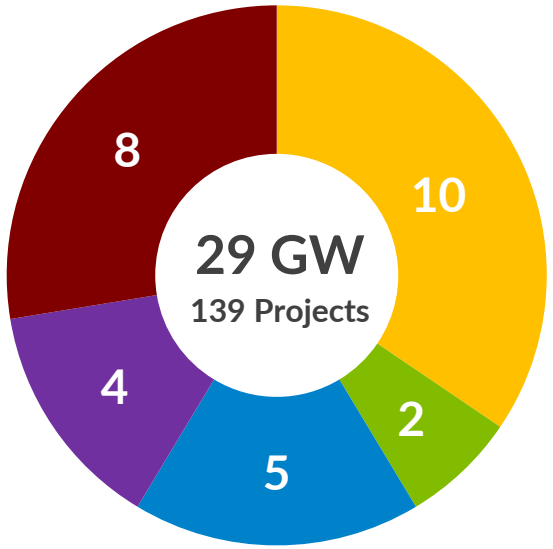
Definitions

Contingency Reserves	A type of operating reserve that is held to address the loss of a significant generating unit or transmission line. At MISO, this is the sum of supplemental and spinning reserves.
Emergency Demand Response (EDR)	Load reductions, behind the meter generation, and other demand resources that are available to reduce demand or increase generation in exchange for guaranteed recovery of costs associated with the response in accordance with Schedule 30 (EDR Provisions) of the Tariff. EDRs are operated outside the Operator Interface (OI) by the shift manager by using the EDR Tool.
Energy Emergency Alert Level 1 (EEA1)	A NERC-mandated alert when all available generation resources are in use. It means MISO is experiencing conditions where all available generation resources are committed to meet firm load, firm transactions, and reserve commitments and is concerned about sustaining its required contingency reserves. Non-firm wholesale energy sales (other than those that are recallable to meet reserve requirements) have been curtailed.
Energy Emergency Alert Level 2 (EEA2)	A NERC-mandated alert when load management procedures are in effect. It means MISO is no longer able to provide its expected energy requirements and is an energy deficient. MISO has implemented its operating plans to mitigate emergencies and is still able to maintain minimum contingency reserve requirements.
Energy Emergency Alert Level 3 (EEA3)	A NERC-mandated alert when firm load interruption is imminent or in progress. It means MISO is unable to meet minimum contingency reserve requirements.
Interconnection Reliability Operation Limit (IROL)	A NERC System Operating Limit that, if violated, could lead to instability, uncontrolled separation, or cascading outages that adversely impact the reliability of the Bulk Electric System.
Load Management Measures (LMM) Stage 1	Load management actions that can be taken to reduce demand to preserve or maintain operating reserves that are NOT included in EDRs or LMRs.
Load Management Measures (LMM) Stage 2	Load management actions that can be taken to reduce demand including voltage reductions and reducing loads that, by contract, can NOT be interrupted until reserves are being or are expected to be depleted and energy from emergency offers by market participants are being or are expected to be depleted. These do NOT include EDRs or LMRs.
Load Modifying Resource (LMR)	These are either demand resources or behind-the-meter generation that have an obligation to reduce demand or increase generation during declared system emergencies
Reserve Margin	The difference between total operating reserves and the operating reserve requirement. MISO is required to keep a certain reserve margin to ensure there is enough capacity to meet peak demand, plus a buffer.
Short-Term Reserve (STR)	A 30-minute rampable generation capacity product. It's designed to address short-term needs for managing system reliability.
Spinning Reserves	Reserves held that are synchronized to the system and available immediately.
Supplemental Reserves	Reserves for abnormal supply deficiencies that must be ready within 10 minutes.
System Operating Limit (SOL)	The NERC value (such as MW, Mvar, amperes, frequency or volts) that satisfies the most limiting of the prescribed operating criteria for a specified system configuration to ensure operation within acceptable reliability criteria. System Operating Limits are based upon certain operating criteria.
Value of Lost Load (VOLL) Pricing	The price at which MISO values the cost of unserved energy; essentially, what customers would be willing to pay to avoid an outage.

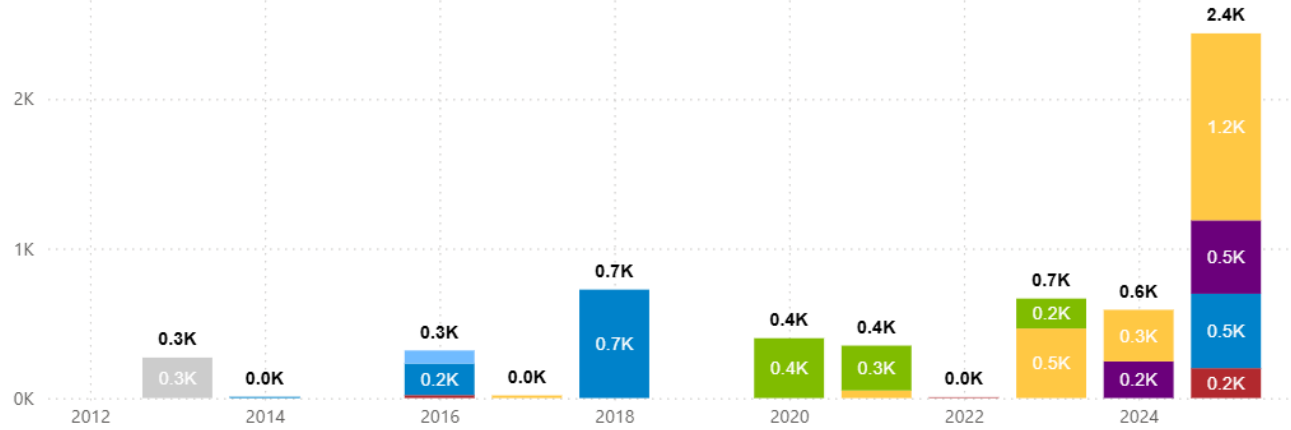
Generation is being added in Indiana, but delays driven by non-queue factors persist

Active Queue for Indiana Projects

Nameplate Capacity (GW)

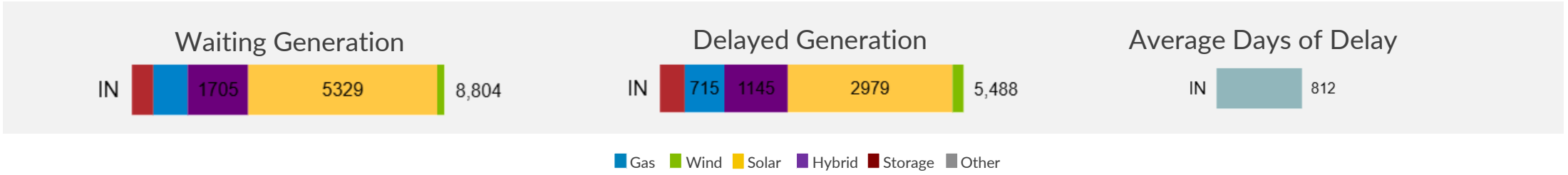


Nameplate Online Generation by Year (MW)



11 GW of generation has been approved since 2014

Waiting and Delayed Generation with Signed Generator Interconnection Agreements



Data as of 11/13/2025

Acronyms

ACP: Auction Clearing Price

ARC: Aggregator of Retail Customers

BTMG: Behind the Meter Generator

CIL: Capacity Import Limit

CEL: Capacity Export Limit

CONE: Cost of New Entry

CPF: Coincident Peak Forecast

DLOL: Direct Loss-of-Load

DR: Demand Resource

ELCC: Effective Load Carrying Capability

EE: Energy Efficiency

ER: External Resource

ERAS: Expedited Resource Adequacy Study

ERZ: External Resource Zones

FRAP: Fixed Resource Adequacy Plan

ICAP: Installed Capacity

IMM: Independent Market Monitor

LBA: Load Balancing Authority

LCR: Local Clearing Requirement

LOLE: Loss of Load Expectation

LMR: Load Modifying Resource

LRR: Local Reliability Requirement

LRZ: Local Resource Zone

LSE: Load Serving Entity

OMS: Organization of MISO States

PO: Planned Outage

PRA: Planning Resource Auction

PRM: Planning Reserve Margin

PRMR: Planning Reserve Margin Requirement

RASC: Resource Adequacy Sub-Committee

RBDC: Reliability-Based Demand Curve

SAC: Seasonal Accredited Capacity

SREC: Sub-Regional Export Constraint

SRIC: Sub-Regional Import Constraint

SRPBC: Sub-Regional Power Balance Constraint

SS: Self Schedule

UCAP: Unforced Capacity

ZIA: Zonal Import Ability

ZRC: Zonal Resource Credit