

MISO's carefully designed operating procedures ensure reliability and predictable outcomes during emergency or abnormal operating situations.

Protecting Reliability

To maintain the reliability of the electric system, MISO operates under a set of carefully designed operating procedures that define system conditions and guide system operator actions in a variety of conditions.

These procedures empower MISO to quickly adjust to system conditions as they unfold. For example, extreme weather patterns or unexpected increases or decreases in available electric generation can affect the balance of supply and demand on the transmission system.

Operating Conditions

- **Normal Operations:** MISO's Normal Operating Procedures (NOPs) guide our operation of the bulk electric system and are used during normal grid operations or, in some instances, to prevent an emergency. NOPs mitigate risk, facilitate the reliable and efficient operation of the electric system, and ensure compliance with federal and state regulatory requirements, reliability standards, and MISO's Tariff and contractual agreements.
- **Abnormal Operations:** MISO utilizes Abnormal Operating Procedures (AOPs) for events that deviate from normal but do not put the electric system at risk. Examples include malfunctioning software systems or other infrastructure problems affecting MISO or its members. The procedures help mitigate further risk and may include, but are not limited to, the back-up process used when a particular system fails.
- **Conservative Operations:** If conditions warrant, MISO will carefully transition from normal operating conditions to Conservative Operations to prepare local operating personnel for a potential event, and to prevent a situation or event from deteriorating. During conservative operations, non-critical maintenance of equipment is suspended or in some cases, returned to service. Operating personnel throughout the affected area are also in a higher state of alert. Conservative operation declarations may be initiated due to system conditions including severe weather, hot/cold weather, or geo-magnetic disturbance warning.
- **Emergency Operations:** Emergency Operating Procedures (EOPs) guide system operator actions when an event occurs on the electric system that has the potential to, or actually does, negatively impact system reliability. Emergency Operating Procedures are communicated in escalating order as advisories, alerts, warnings, and events. Advisories are provided for situational awareness of potential limited operating capacity. Alerts define the affected area and call to temporarily suspend generation unit maintenance in the defined area. During warnings, MISO may require external capacity resources to be available, or may curtail non-firm energy sales. MISO issues Max Gen Events due to a shortage of capacity resources. **During Emergency Events, MISO utilizes Emergency Pricing, which affects ex-post pricing, not system commitment or dispatch. Emergency Pricing will only be implemented during Max Gen Warnings, and Events, which may be caused by forced outages, higher than projected load, or other circumstances.**

Did you know?

- MISO has never issued a call for rolling brownouts or blackouts, despite some of the hottest summers on record in 2006 and 2012, and record cold during the polar vortex of 2014.
- To maintain reliability, Conservative and Emergency operating conditions require a successive series of remedial actions.
- MISO must implement emergency procedures to use demand management (load modifying) resources. There are more than 9,000 MW of these resources.

Reference Documents

Find MISO's Reliability Operating Procedures on the MISO website:

<https://www.misoenergy.org/markets-and-operations/reliability-operating-procedures/>



MISO Operating Procedures

General Guide to MISO's Emergency Operations Messaging

MISO's Emergency Operations messages define the area(s) involved, duration, and projections of system conditions. The table below is a summary, and does not replace or redefine MISO's Emergency Operations messages.

Message	Communication Intent	Potential Member/MISO Actions
Conservative Operations Declaration	Alert for Situational Awareness: Reliability issue possible for defined area.	<ul style="list-style-type: none"> • Potentially suspend transmission maintenance • Review outage plans for deferral, cancellation
Hot Weather, Cold Weather or Severe Weather Alert	Alert for Situational Awareness: MISO could be approaching tight supply conditions.	<ul style="list-style-type: none"> • Review outage plans for deferral, cancellation
Capacity Advisory	Advisory for Situational Awareness: Potential for limited operating capacity margins (<5%) in the next 2-3 days.	<ul style="list-style-type: none"> • Update facility and generation outages, including de-rates • Update generation offers • Update Load Forecast Values • Update LMR Availability and Self Scheduled MW values • Update EDR offers
Min Gen Alert	Alert for Situational Awareness: MISO is forecasting a potential supply surplus.	<ul style="list-style-type: none"> • Prepare for de-commitment (taking generation off line), reduction in purchases or other actions
Max Gen Alert	Alert for Situational Awareness: MISO is forecasting a potential capacity shortage.	<ul style="list-style-type: none"> • Declare Conservative System Operations • Prepare for possible Max Gen Event
Max Gen Warning	Warning to Prepare for Possible Event	<ul style="list-style-type: none"> • Curtail non-firm exports • Schedule all available external resources into the MISO Market • Implement Emergency Pricing Offer Tier 1. This is an ex-post pricing change, and does not affect system commitment or dispatch.
Max Gen Event (Step 1)	Actions Taken to Preserve Operating Reserves: NERC Emergency Alert 1	<ul style="list-style-type: none"> • All available resources in use • Generators instructed to start off-line resources. • Use of reserves not yet implemented. • Emergency Pricing Offer Tier 1 is still effective.
Max Gen Event (Steps 2, 3, 4)	Actions Taken to Preserve Firm Load: NERC Emergency Alert 2 (Step 3 declaration)	<ul style="list-style-type: none"> • Implement demand management programs • Utilize Contingency Reserves • Purchase Emergency Energy • Issue Public Appeals • Prepare for possible firm load shed • Implement Emergency Pricing Offer Tier 2. This is an ex-post pricing change, and does not affect system commitment or dispatch.
Max Gen Event (Step 5)	Event Occurring: NERC Energy Emergency Alert 3	<ul style="list-style-type: none"> • Shed firm load • Rolling brownouts or blackouts for defined area • Emergency Offer Tier 2 is still effective.



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System Status Levels

MISO also issues color-coded System Status Levels (SSL) based on the severity of the impact to the bulk electric system. For more information, see [MISO's Abnormal Operating System Status Levels Procedure, SO-P-AOP-00-203](#).

Operating Conditions			
SSL 0 Low - Green	SSL Level 1 Elevated - Yellow	SSL Level 2 High - Orange	SSL Level 3 Severe - Red
Description: System status is normal. No adverse impacts.	Description: Short, minor impact to system, can be quickly remedied. Examples: Temporary infrastructure issue.	Description: Longer term, major impact to system, cause unknown. Examples: Loss of monitoring data or member infrastructure	Description: Major impact on MISO's ability to reliably operate system or market. Examples: Hardware failure, bomb threat, sabotage, control center evacuation