

1. What is MISO?

The Midcontinent Independent System Operator is a not-for-profit Regional Transmission Organization. MISO ensures reliable and least-cost delivery of electricity to 15 U.S. states and Manitoba, Canada. We manage nearly 200,000 megawatts of power-generating resources for our members. We also manage 65,000 miles of high-voltage transmission lines. The transmission lines deliver power to utility companies who then deliver that power to their customers.

2. What steps does MISO use to manage system demand in tight situations?

MISO operates under a set of carefully designed operating procedures that guide system operations during well-defined system conditions. These procedures allow us to adjust quickly 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. Our Emergency Operating Procedures guide operator actions when an event impacts reliability.

MISO operating conditions used to manage system demand include:

- **Cold/Hot Weather Alert** - provides situational awareness for MISO members as the Regional Transmission Operator works to ensure all necessary resources are available to meet energy demands.
- **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.
- **Emergency Operating Procedures** – escalate 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 Maximum Generation Events due to a shortage of capacity resources. Maximum Generation emergency procedures allow MISO greater flexibility to ensure system reliability. Among other steps, MISO coordinates available generation and transmission lines. We may make power purchases from neighboring systems. We also may activate demand-response or load-modifying resources (financial arrangements with organizations that can conserve energy), depending on level of emergency. In the most extreme situation, MISO would be able to coordinate controlled blackouts to maintain reliability of the bulk electric system to limit negative impacts to the larger electric system that serves our region.

3. What actions may MISO take to ensure reliability?

MISO follows established procedures during emergency operations. It works with member utilities and neighboring grid operators to maintain reliability.

4. What is the bulk electric system – and how is it different from local power lines?

The bulk electric system is the backbone of the electric-delivery system. It is the high-voltage transmission lines that move power from generation sources (power plants) to

substations. Power is then taken from the substation to the smaller distribution lines serving local neighborhoods. Energy flowing across the bulk electric system must remain in constant balance to maintain reliability and avoid large-scale blackouts.

5. How does MISO predict how much electricity will be needed by its members' customers?

MISO uses sophisticated computer models to forecast and schedule power resources daily, and in real-time as conditions change. Forecasting load helps MISO meet the energy needs of the system. MISO's load forecast horizon spans the next seven days and includes temperature, cloud cover, humidity, precipitation, other weather conditions and historic usage data, among other factors, to determine needed electricity supplies. Sudden or unpredicted changes in the weather pattern can impact the load forecast. A single degree difference on a hot summer afternoon can increase energy consumption by approximately 1,800 megawatts or more, or roughly the amount of power needed to serve a half-million people.

6. Does the need for emergency operations mean we need to build more power plants?

No. Under typical conditions, our region has ample electric supply. MISO uses many different energy resources across a large footprint to serve its load. Specific conditions, generally during extreme heat or cold, may cause emergency operating conditions that include requests for public conservation. MISO plans for these situations and if necessary, takes steps to protect the bulk electric system.

7. Does Emergency Operations include a public appeal to conserve electricity?

In some extreme situations, MISO may direct member utilities to issue public electricity conservation appeals. MISO operators communicate this direction directly to local utilities, who then communicate to their customers. Simple conservation measures can allow customers to help keep the lights on and avoid blackouts. Conservation appeals are part of MISO's emergency operating procedures that help protect the grid. The procedures also maintain the reliability of the bulk electric system. Specific reasons for a public appeal are usually due to a combination of things, including extreme heat or cold, unplanned generation outages, and/or unplanned transmission line outages.

8. In a public appeal, why should I conserve power when I pay an electric bill to be comfortable?

In an extreme situation, everyone can do a little to help keep the lights on. We encourage customers to follow their electric company's tips on conserving electricity. A few simple actions can help reduce demand on energy resources during public appeal situations. These include delaying a clothes-washing/drying cycle and/or moving the thermostat up or down a few degrees. Conserving power can also help lower your power bills by decreasing your usage.

9. Who makes the decision to issue a public appeal?

MISO makes that decision. We manage the reliability of the grid across our footprint and follow emergency procedures established by federal regulations.

10. How often have public appeals been used by MISO?

MISO directed public appeals in January and September of 2018 and August of 2020. These were only in the south region of our territory. In both cases, two conditions changed from what operators planned for, causing the need for conservation. They were:

- Extreme temperatures created more demand for electricity by customers.
- Unexpected generation outages reduced available power supply.

MISO provided the needed power by following its prescribed emergency operating procedures, which included a public appeal for conservation.

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