Executive Summary

• Aggressive decarbonization goals and policies are driving rapid portfolio change, including the retirement of thermal generation units
• More variable resources on the system are increasing complexity and risk
• MISO is your partner in ensuring sustainability and affordability goals can be met reliably
• We mustcoordinate on a comprehensive transition plan, including ensuring timely generation and transmission build
MISO is an independent, non-profit organization responsible for maintaining reliable and cost-effective delivery of power in 15 states and one Canadian province.

### MISO by the numbers

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Voltage Transmission</td>
<td>68,000 miles*</td>
</tr>
<tr>
<td>Generation Capacity</td>
<td>190,000 MW</td>
</tr>
<tr>
<td>Peak Summer System Demand</td>
<td>127,125 MW</td>
</tr>
<tr>
<td>Customers Served</td>
<td>45 Million</td>
</tr>
</tbody>
</table>

**Generation Capacity Mix**

- Gas: 42%
- Coal: 27%
- Nuclear: 7%
- Renewables: 22%
- Other: 2%

*72,000 transmission line miles including Manitoba*
Regional Transmission Organizations (RTOs) were formed to operate the grid on a regional basis, removing transactional barriers across utility and state boundaries.

Before MISO, the footprint consisted of dozens of balancing authorities acting independently.

With MISO, the footprint is operated as one large network and one balancing authority (with 37 local balancing areas).
Transformation is progressing at an astonishing pace and will speed up over the next several years

**Fleet Changes**
MISO members and states have set ambitious goals to partially or fully decarbonize

**Fuel Assurance**
Availability of resources may be challenged by economic, supply chain or other issues

**Extreme Weather**
Severe weather events are becoming more extreme and occurring more frequently

**Electrification**
Demand for electricity will grow as electric vehicles increase, industry sectors trend towards renewables
The transition of the generation fleet will have key implications that must be accounted for in policy decisions.

**Installed Capacity**
- 2023: 217 GW
- 2042: 471 GW
- + 117%

**Accredited Capacity**
- 2023: 172 GW
- 2042: 210 GW
- + 22%

**Energy Production**
- 2023: 756 TWh
- 2042: 1,122 TWh
- + 48%
MISO is making transformational changes to reliably enable state and utility goals, but broad support is needed to drive optimal outcomes.

**Market Redefinition**
Develops significant market enhancements and optimizations to ensure continued reliability and value in anticipation of the changing resource mix, more frequent extreme weather events, and increasing electrification.

**Transmission Evolution**
Assesses the region's future transmission needs and associated cost allocation holistically, including transmission to support utility and state plans for existing and future generation resources.

**Operations of the Future**
Focuses on the skills, processes and technologies needed to ensure MISO can effectively manage the grid of the future under increased complexity.

**System Enhancements**
Creates flexible, upgradeable, and secure systems that integrate advanced technologies to process increasingly complex information and evolve with the industry.
This includes the facilitation of transmission investments within our region and with our neighbors that are required to enable reliable operation of the increasingly variable generation fleet.

MISO LONG RANGE TRANSMISSION PLANNING INITIATIVE

Tranche 1 identified an 18-project, $10.3 billion portfolio in the Midwest subregion

Tranche 2 will address additional needs in these subregions

Tranche 3 will address needs in the South

SPP-MISO JOINT TARGETED INTERCONNECTION QUEUE STUDY
However, many new generators that have been approved are awaiting construction, having delayed operation by an average of more than 650 days, and very few natural gas fired units are being planned.

**ACTIVE PROJECTS**

In addition to 242 GW of active projects in the queue process...

- **242 GW**
  - 1414 Projects
  - 128 GW (53%)
  - 44 GW (18%)
  - 38 GW (16%)
  - 23 GW (10%)
  - 1 GW (0%)

**APPROVED BUT DELAYED PROJECTS**

...49 GW of MISO approved projects with a Generator Interconnection Agreement are not yet in-service...

- **49 GW**
  - 316 Projects
  - 31 GW (63%)
  - 4 GW (8%)
  - 6 GW (12%)
  - 2 GW (4%)
  - 4 GW (8%)

**REASONS FOR DELAY**

...primarily due to supply chain, regulatory, and contractor issues

- **Other** 16%
- **PPA** 4%
- **Regulatory** 21%
- **Economic** 6%
- **Contractor** 14%
- **Supply Chain** 39%