Proactive preparations support reliable operations during challenging conditions
Additionally, MISO coordinates with members and neighbors to meet challenges and ensure the integrity of the electric grid

- Communication, Coordination, and Planning
- Situational Awareness
- Operational Tools and Procedures
- Education, Drills, and Workshops
- Engagement with state officials
- Electric-Gas Coordination
2017 summer weather forecast is for higher than normal temperatures

- Summer 2017 is currently forecasted to be warmer than normal
  - Precipitation is expected in the normal range

- Above normal temperatures are forecasted for most of the United States, with higher probabilities for the MISO south region
MISO projects adequate footprint-wide reserves to meet 2017 summer peak demand

- Negative load growth from last year’s forecasts combined with an increase in demand response resources has resulted in an increase in reserves

<table>
<thead>
<tr>
<th></th>
<th>Demand Forecast (GW)</th>
<th>Reserve Margin Requirement (GW)</th>
<th>Supply (GW)</th>
<th>Reserves (GW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015/16 PY</td>
<td>127.3</td>
<td>145.5</td>
<td>150.3</td>
<td>23.0 (18.0%)</td>
</tr>
<tr>
<td>2016/17 PY</td>
<td>125.9</td>
<td>145.1</td>
<td>148.8</td>
<td>22.9 (18.2%)</td>
</tr>
<tr>
<td>2017/18 PY</td>
<td>125.0</td>
<td>144.8</td>
<td>148.5</td>
<td>23.5 (18.8%)</td>
</tr>
</tbody>
</table>

2017/18 Minimum Reserve Requirement: 15.8%
MISO engages with its state officials to maximize preparation during emergency conditions

MISO State Official Communication Protocols will be initiated anytime there is a projection of, or actual loss of load that may undermine public health, safety, and welfare.

- **Capacity Emergencies** requiring firm load curtailments
- **Transmission System Emergencies or Forced Transmission Outages** requiring firm load curtailments
- **Severe risk of terrorist attack, man-made or natural disasters** with potential to cause loss of firm load
In summary, MISO is well prepared to handle operational challenges this summer

- MISO projects adequate reserves, 18.8% reserve margin, to meet 2017 summer peak forecasted demand of 125.0 GW
- No identified issues with the transmission system
- MISO partners with members, drills on emergency procedures, and builds on past lessons learned to ensure operational readiness for summer
- MISO engages with its state officials to maximize preparation during emergency conditions
Contact Info

Tim Aliff

taliff@misoenergy.org
Questions?
Appendix
Higher reserves for summer 2017 are primarily driven by reduced load forecast.
Probabilistic study analyzes the risk for Real-Time margins to reach a level of emergency.

Probable Reserve Margin Scenario

- **Pre-Outage**
  - Base Reserves: 23.5
  - Energy Only (N/C), AttY Under Study: 1.2
  - Probable Reserves (Pre-Outage): 24.6

- **Post-Outage**
  - Total Outages (Gen and BTMG): 15.6
  - Probable Reserves (Post-Outage): 11.2

*Trapped South capacity

**Assumes some of trapped South capacity could be offline outages**
To gain access to certain resources, MISO must progress through its Maximum Generation Emergency Procedures.

**Event – Step 1:**
- a) Commit AME
- b) Implement Emergency Max Limits
- c) Declare NERC Energy Emergency Alert (EEA) 1 - All available non-emergency resources in use

**Event – Step 2:**
- a) Declare NERC EEA 2 - Load Mgmt procedures in effect
- b) Implement LMR (BTMG & DR) & Load Management Measures (LMM) – Stage 1
- c) Commit Emergency Demand Response (EDR)
- d) Implement Emergency Energy Purchases

**Event – Step 3:**
- a) Utilize Operating Reserves
- b) Instruct load reduction of Load Management Measures (LMM) – Stage 2

For more information - MISO Operating Procedures One-Pager and Appendix