MISO is an independent, non-profit organization in 15 U.S. States and one Canadian province

**Mission**

Work collaboratively and transparently with our stakeholders to enable reliable delivery of low-cost energy through efficient, innovative operations and planning.

**MISO by-the-numbers**

<table>
<thead>
<tr>
<th>Category</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Voltage Transmission</td>
<td>65,853 miles</td>
</tr>
<tr>
<td>Installed Generation</td>
<td>177,388 MW</td>
</tr>
<tr>
<td>Installed Generation</td>
<td>1,594 Units</td>
</tr>
<tr>
<td>Peak System Demand</td>
<td>127,125 MW</td>
</tr>
</tbody>
</table>
MISO manages flows on the transmission system by directing generator usage.

1. Generation
Power is generated by turning an energy source into electricity. In MISO, sources include coal, natural gas, nuclear and renewable power.

2. Transmission
Allowing the flow of electricity to bridge long distances, MISO’s member transmission lines and towers support more than 65,787 miles of electricity flow.

3. Distribution
Allows energy to be moved from transmission lines closer to end users, ensuring reliability and power quality.

4. Final Delivery
As travel distance decreases, smaller power lines are used to reach business, industrial and residential end use customers.
The Balancing Act

- Day-to-day MISO reliably and efficiently balances the needs of customers with available supply through centralized, competitive energy markets

- Long-term reliability (resource adequacy) is assured through mandatory reserve margin requirements (planning reserve margin)
  - Flexibility is provided for States to set higher or lower than MISO determined reserve margin requirements
  - Flexibility is provided for Load Serving Entities to meet there requirements
MISO’s Resource Adequacy Construct

• Annual Obligation for LSE’s
  – Planning Year period is from June 1\textsuperscript{st} to May 31\textsuperscript{st}
  – Multiple methods of achieving and demonstrating resource adequacy, including self-supply, bilateral contracting and market-based acquisition via the Planning Resource Auction.

• Overview of Planning Resource Auction
  – Occurs two months ahead of Planning Year
  – Residual Auction - allows buyers and sellers to balance resource portfolio prior to Planning Year
  – Includes a locational requirement indicating the amount of capacity that must be secured from resources within each zone to meet reliability standards
  – If there are insufficient resources to meet demand in the auction, Resource Adequacy may not be achieved.
MISO is projecting declining reserve margins primarily driven by unit retirements

*2010-2014 actual reserve margins; 2015-2025 from MISO-OMS surveys
Additional actions are required in the near term to ensure sufficient resources in future years.

2017 Capacity Projections

- 2017 Outlook, ICAP GW (% Reserves)
  - 2.7 (17.4%) 1.8 0.9 (15.9%)

Projected Capacity against Reserve Requirement* (ICAP GW)

- One day in ten prior (15-20k)
  - 1.1 0.9 to 1.0 0.2 0.5 0.6 1.2 0.7 to 0.8 0.9 to 1.5

2021 Capacity Projections

- 2021 Outlook, ICAP GW (% Reserves)
  - (15.5%) 0.5

Projected Capacity against Reserve Requirement* (ICAP GW)

- One day in ten prior (15-20k)
  - 0.4 0.3 0.0 0.2 -0.5 -1.7 -0.8 to -0.3 -0.6 0.9 0.8 to 0.9 0.5 to 1.4

- Data from 2016 MISO OMS Survey

*Positions include reported inter-zonal transfers

Low Certainty Resource Impact on Surplus / Deficit Surplus / Deficit with High Certainty Resources

Shading represents total low certainty resources when there is a deficit of high certainty resources.
Changes to MISO’s Resource Adequacy processes are needed with reserves closer to the reliability requirement

Proposal: Stronger forward price signals in retail choice areas; no change for regulated entities

Why are changes needed?

For loads not under retail choice, no changes are needed
- Adequacy ensured by State and local jurisdictional processes that ensure timely resource investments
- Auction used to balance incremental supply and demand
- Auction prices reflect incremental value of existing capacity

For retail choice loads
- As reserve margins tighten, misalignments in capacity market timing and price signals for competitive retail areas of the MISO footprint pose resource adequacy challenges
- Action is required in the near term to ensure sufficient resources in future years
# Competitive Retail Area Forward Proposal Meets Future Resource Adequacy Needs

<table>
<thead>
<tr>
<th>Preserves Existing Construct</th>
<th>• Planning Resource Auction remains unchanged</th>
</tr>
</thead>
</table>
| Fair Treatment of All Consumers and Suppliers | • All supply resources inside and outside of MISO may sell capacity in the proposed auction  
• Maintains fungible capacity product throughout MISO – does not differentiate between merchant or non-merchant resources |
| Builds on Existing Market Designs | • Foundational design components are consistent with FERC precedent and have been adopted by other RTOs  
• Process familiar to Michigan and Illinois, which already utilize forward procurement in other portions of their jurisdiction  
• All supply and demand receive the same clearing price for a given auction differentiated only by their location (Local Resource Zone) |
| Improves Reliability and Decreases Price Volatility | • According to the analysis by The Brattle Group, the CRA Forward proposal achieves greater reliability and lower price volatility than the status quo or Hybrid System-Wide Prompt proposal |
MISO Resource Adequacy

Existing Resource Adequacy Process

- Planning Resource Auction**
- Fixed Resource Adequacy Plan**

Competitive Retail Solution (CRS)

- Prevailing State Compensation Mechanism (PSCM)
- Forward Fixed Resource Adequacy Plan (FFRAP)
- Forward Resource Auction (FRA)

These processes will continue unchanged for traditionally regulated portions of the footprint.

** Both options allow for entities to self-supply resources.

The Competitive Retail Solution applies to portions of the footprint with competitive retail choice that do not have long-term planning processes.
Prevailing State Compensation Mechanism

- Election of Prevailing State Compensation Mechanism
  - Relevant Electric Retail Regulatory Authority (RERRA) makes the election of the PSCM alternative on behalf of Load Serving Entities (LSEs) subject to its jurisdiction
  - RERRA: The entity that establishes the retail electric prices and any retail competition policies for customers
    - Examples include state public utility commissions, governing board of cooperative utilities, or the city council for a municipal utility

- PSCM is an alternative to participating in the Forward Resource Auction
  - Removes Competitive Retail Demand from the Forward Resource Auction
  - An alternative retail LSE can either procure capacity on its own behalf through a Forward Fixed Resource Adequacy Plan, or can have capacity procured on its behalf through the PSCM
Questions?

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