MISO Market: Current & Future Landscape

Presented by
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Outline

- WPPI
- MISO Overview
  - Midcontinent Independent System Operator, Inc.
- MISO Transmission Service
- MISO Markets
  - Energy
  - Ancillary Services
  - Capacity
- Broad MISO benefits
WPPI Energy

- Joint action agency
  - 51 members in WI, IA, Upper MI
  - ~ 1000 MW
- Supply 100% of member demand & energy requirements
- Diverse resource mix (own, buy, term, fuels)
- MISO Market Participant
  - Load Serving Entity
  - Generator Owner
  - Transmission Owner
MISO

- Midcontinent Independent System Operator, Inc.
  - Not for profit
  - Member-based
  - Administer wholesale electricity markets
- 2002: Transmission service provider
- 2005: Energy market
- 2008: Ancillary services market
- 2013: Annual capacity market
MISO Governance

- Board of Directors
- Stakeholder Committees
  - ~ 30 currently active

- Federal Energy Regulatory Commission
MISO Market Footprint

Scope of Operations Without Entergy

- ~49,000 miles of transmission
- ~98,000 MW 2012 summer peak load
- $18 B annual gross market charges
- 857 full time employees
- Operate in 11 states
Independent System Operators (ISO)/Regional Transmission Operators (RTO)
Reliability Coordinator

- NERC Balancing Authority
- Ensure transmission system reliability
- Coordinate reliability among transmission providers
- NERC Planning Authority - MISO Transmission Expansion Plan (MTEP)
MISO Transmission Service

Current MISO process:
- Similar for new generator/load interconnection
- MISO effectively has control of all generation in market
- MISO no longer needs to curtail transaction to control power flow on transmission lines

Pros:
- No longer need firm/non-firm transmission service
- Greater control of power flows on transmission lines
- Transmission available to those that value it the most
MISO Transmission Service

Cons:

- Difficult to obtain congestion protection from new resources
- Non-load serving entities extract a greater portion of market savings

Pending issues:

- Transmission projects may be subject to competitive bid (FERC Order 1000)
MISO Energy Market

Current MISO process

- Suppliers offers energy into market
- Load purchases from market
- MISO dispatches resources to serve load at lowest cost

Pros:

- Efficiently control intermittent resources (wind)
- Transparent market energy price
- Market design – Generators maximize profits by following MISO dispatch
MISO Energy Market  (Cont’d)

Cons:

- Requires additional FTE and internal costs to participate in market
- RTO administration costs are significant
- RTO governance process is time consuming to manage
- Steep 1-2 year learning curve

Pending issues:

- Extended LMP/Ramp
- RTO seams management
MISO Ancillary Services

Current MISO Process

- Suppliers offer into market
  - Regulation
  - Contingency reserves (spinning & supplemental)
  - Load Following
- Ancillary services procured at lowest total cost
- Load pays

Pros:
- MISO selects resources to provide ancillary services, co-optimized with energy
MISO Ancillary Services  (cont’d)

Cons:
- None

Pending issues:
- None
MISO Annual Capacity Market

Current MISO process

- Suppliers offer capacity into the auction
- Load buys its capacity in the auction
- May self-serve all or portion
- Subject to any capacity price differential between zones

Pros:

- Efficient manner to buy and sell residual capacity on short-term basis
- Transparent short-term capacity price
MISO Annual Capacity Market

Cons:

- Current MISO market or PJM capacity market does not incent capacity to be constructed
- If load and capacity in different zones, load may pay more for capacity than resource receives
- Another MISO market construct to track

Pending issues:

- Multi-year capacity market
- Minimum Offer Pricing Rule
- Sloped demand curve
2016 Resource Forecast
Below Reserve Margin Requirements

Moderate Load Forecast (0.8%)
2013 – 2016
(GW)

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<tr>
<th>2013 Resources</th>
<th>Potential Resources 2016</th>
<th>Demand</th>
<th>Net Demand</th>
<th>2016 Resource Requirement (14.2% PRM)</th>
<th>2016 Resource Requirement (15.8% PRM)</th>
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<td>New Resources</td>
<td>DSM</td>
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Caveats:
1. Assumes suspended units not returning
2. Estimates of out year PRM based on past correlation between LFU and PRMR

BTMG - Behind the meter generation
DSM - Demand Side Management
PRM - Planning Reserve Margin
Additional MISO Benefits

- Improved coordination of regional transmission planning
- Market efficiencies delay need for new resources
- Efficient & evolving intermittent resource (wind) integration
- Additional market efficiencies possible (e.g. seams coordination)
Additional Market Challenges

- Independent Market Monitor has a lot of influence with RTO staff and the FERC
- RTO tariff and procedures continue to change
- MISO tariff is several thousand pages and business practice manual is an additional several thousand pages
In Conclusion:

- Overall, WPPI’s participation in MISO has been a positive for WPPI members
- Change in MISO is a constant
- Necessary to stay current on the many MISO issues