

The Role of Resource Adequacy in **ISO-administered Energy Markets**

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MISO's responsibilities

- MISO's two most important responsibilities are to:
 - Assure electric reliability in all time frames
 - Facilitate efficient operations and planning
- Day ahead and real-time markets facilitate short term reliability and efficiency in the day ahead and operational (real time) timeframes in part through centralized competitive energy markets
 - Flexibility is provided for resources to self schedule in the day ahead and real time markets, subject to restrictions to avoid market manipulation
 - Flexibility is provided for load to self schedule or opt-out of the day-ahead market, subject to restrictions to avoid market manipulation



Where is MISO with respect to capacity?

MISO's early priorities were on improvements likely to have the most impact on regional efficiency that can lead to customer savings.

- Improve spot pricing and regional dispatch.
- Create regional OR markets and co-optimise with energy dispatch/procurement and pricing.
- Introduce scarcity pricing for better price signals.
- Resource adequacy was still addressed



Why have a System-Wide RA Requirement?

- Planning reserves reduce the odds of firm load shedding
 - Without sufficient retail customers on dynamic pricing
- Without a Resource Adequacy Requirement (RAR):
 - Reserve margins could fall until prices rise enough to attract investment
 - Resulting reserve margin and reliability levels might be deemed too low
- A System-Wide RAR is needed because:
 - Reliability is a "common good"; public interest standard
 - Cost savings from reserve sharing, accounting for load diversity, and enabling cost-effective sales/purchases can be realized



Where is MISO with respect to capacity?

MISO's history on resource adequacy provisions:

- Adopt regional reliability entities' standards.
- Adopt a common reliability standard with a voluntary capacity auction (monthly).
- Adopt an annual prompt-year voluntary capacity auction to address
 - Locational requirements
 - Demand & external resource participation



Collaborative approach to resource adequacy

- Long term reliability (resource adequacy) is <u>assured</u> through mandatory reserve margin requirements
 - States have flexibility to set higher or lower than MISO determined reserve margin requirements
 - Load Serving Entities have choice to self-supply or purchase supply resources in the voluntary capacity auction, or to accept a penalty for failure to meet planning reserve requirements
 - Mandatory requirements create a market for capacity
- Supply efficiency is <u>enabled</u> through a voluntary capacity auction
 - Flexibility is provided for Load Serving Entities to Self-Supply (or Opt-Out) of the voluntary capacity auction



Current Collaborative Process Has Many Elements to Ensure Reliability and Support Efficiency

RA Process Element	Why	Regional Benefit
Standardized the Planning Reserve Margin Process	Prevent inequities between who pays for resource adequacy and who benefits	Consistent requirements for all LSEs
Increased Certainty and Transparency in Meeting RAR	All LSEs affect each other	LSEs incented to meet the RAR
Quantified Footprint Load Diversity	Load diversity increases with geography	Approximately 4% reduction in overall capacity requirements
Developed Common Capacity Product Definition and Resource Qualification Process	Level playing field for DR, BTMG, and generation under 3 different Regional Entities' standards	Facilitates bilateral market liquidity:
Established Delivery Zones	Recognize transmission constraints	Enables reliable full utilization of the transmission system and inform transmission planning process
Introduced Voluntary Capacity Auctions	Offer a way for LSEs to buy or sell capacity as desired or needed	Provides multi-lateral market opportunities to buy/sell; provides some price transparency



What's the issue then?

- Need for forward looking review of reserve margins
 - EPA rules, resulting in retirements reflected in recent Attachment Y requests
 - Potential decline in non-firm external support from neighboring entities during emergencies
 - Potential gas supply shortage during winter months due to transportation limitations and heating demand
 - MISO is working with the Electric and Natural Gas Coordination Task Force to identify issues and potential solutions
 - Lack of forward transparency across footprint to be able to determine the capacity shortfall situation



MISO's latest EPA/coal survey

4.0 GW

0.9 GW

Coal Resources Affected – 1st Quarter, 2013 Survey Capacity, GW





Resources are very tight under a moderate (50/50) load forecast – manageable, but tighter than the grid has ever operated





*Includes support (~4,5 GW) from non-firm external resources **Units without firm gas transport or distillate backup Lack of forward transparency creates reliability and economic efficiency concerns in resource adequacy

Reliability Concerns

- MISO projects up to 60 GW of coal plants will retire or retrofit in the coming years
- MISO has limited information about which plants will retire, retrofit, repower, or be replaced
- Potential lack of investment in restructured states could result in overall supply shortages
- Need certainty for reliable transmission planning and avoid last-minute SSRs

Efficiency Concerns

- Utilities and state regulators have little information on others' supply plans
- Lack of certainty regarding available supply (and at what cost in each capacity zone) make it difficult to determine what retrofit and build investments are economic
- Current mechanism has potential to result in less investment in restructured states (result may be regulated ratepayers subsidizing their neighbors)



MISO Members' Procurement Are on a Continuum





Total Reliance on Market Through MISO VCA



MISO's Challenge

 Is to accommodate all LSEs' business models while <u>assuring</u> reliability and <u>enabling</u> efficiency

Utility IRP

- Predominant model in MISO, with mix of forward ownership, PPAs, and short-term bilaterals
- Unlikely to be short on total capacity, but possible
- Lack of coordination problematic for locational and transmission planning reasons
- There may be opportunities to <u>enable</u> greater efficiency in members' resource plan

Competitive Retailers

- Reliant on VCA and short-term bilateral market (except for the forward capacity auctions of the IL Power Authority)
- Lack of captive customers limits forward contracting (no forward price transparency or sales opportunities for merchant suppliers)

Industry Options for Improving Forward Transparency

Option	Description
Provide More Information	 Additional information or process to firm up resources in the interconnection queue from a planning perspective Transparency into Energy Resources that could provide capacity if applicable Network Upgrades where planned
Quasi-Coordinated IRPs	 Roll-up individual IRPs, with IRPs based on consistent assumptions May enhance coordination somewhat if the process is iterative (e.g., <i>regulated utilities</i> revise IRPs based on info in first round)
Create Standard Forward Capacity Product	 Qualify resources for tradable forward capacity Reduce transactions costs, counterparty risk, enable brokers to provide price quotes for standard capacity at any forward period (in any zone)
Voluntary Forward Auctions or Over-the- Counter Market	 For example, 2, 3,and 10 years forward For delivery periods of 1, 3, 5 or 10 years Supply and demand participation would be entirely voluntary Price transparency would be valuable for participants and regulators
Move RAR Construct 2- 3 Years Forward	 Most planning would have to be conducted prior to forward deadline (remaining deficiency penalized or procured in auction as in current construct) Participants could choose to make marginal build/buy decisions contingent on auction outcomes (or can make decisions prior to auction and opt out as self-supply) May be of concern to some regulated states, who might prefer to do some IRP activities on a shorter-term
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Opportunities for MISO

- MISO is different from other RTOs mix of regulated and restructured states
 - Regulated entities can use MISO's RA mechanism to increase the efficiency and effectiveness of planning (e.g. to inform the timing and value of self-supply vs. bilateral purchases)
 - Merchant investments may be attractive in the future if and when new supplies are needed (market prices must be sufficiently high)
 - To increase efficiency, MISO may also consider some elements of forward capacity markets while avoiding design pitfalls learned from others
- Cohesive collaboration with OMS
 - Transparency in long term forward resource assessments encompassing wide range of risk factors developed in collaboration with OMS
 - Both MISO and Load Serving Entities will benefit through the visibility provided by RAR enhancements, such as IRP rollup

