

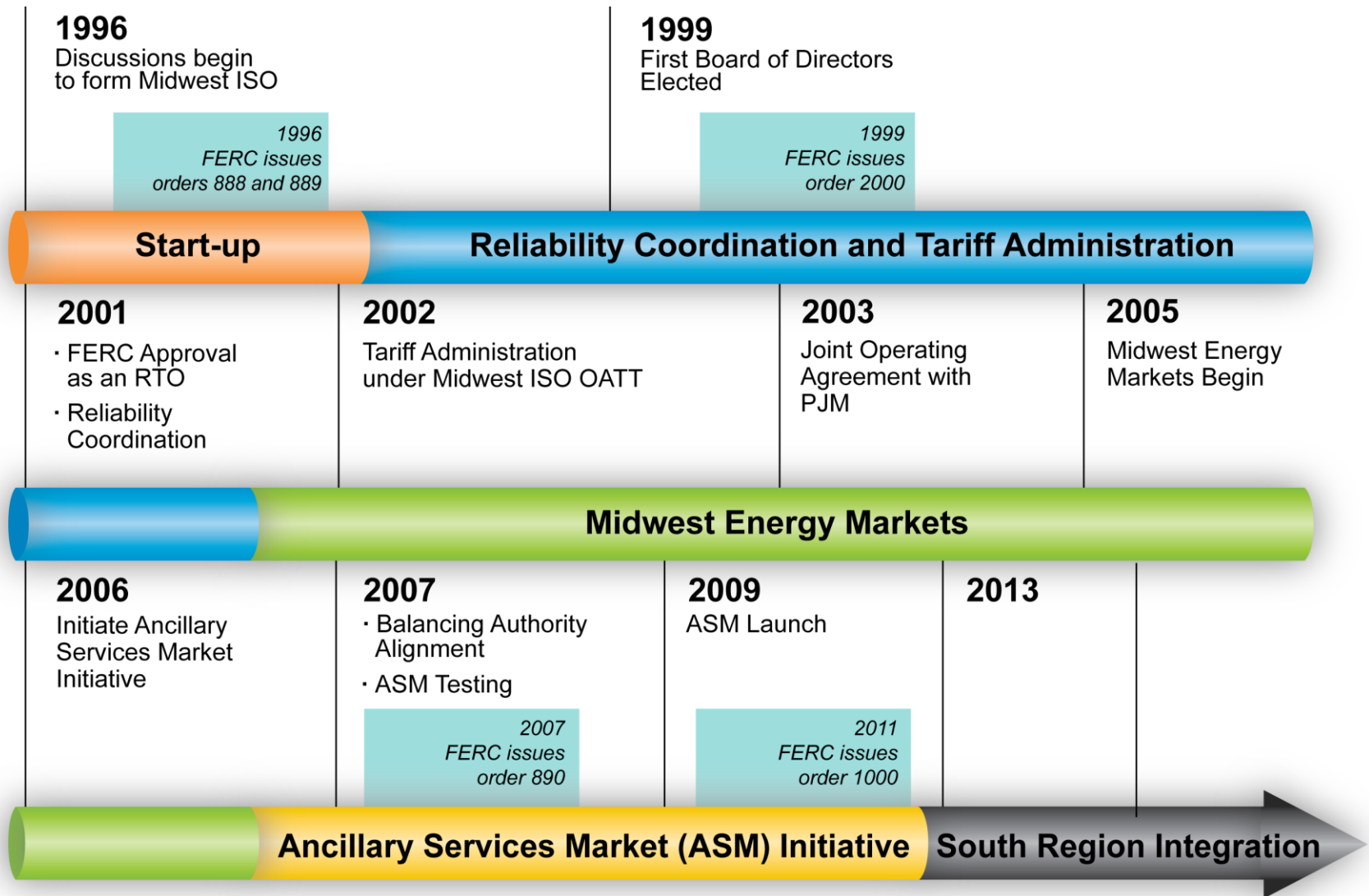
A large, light gray, stylized sun graphic is centered on the page. It features a semi-circular top with several triangular rays extending downwards, and a larger, more complex shape at the bottom that resembles a sunburst or a stylized sun. The graphic is composed of various shades of gray and white, creating a subtle background for the text.

***U.P. Energy Summit***

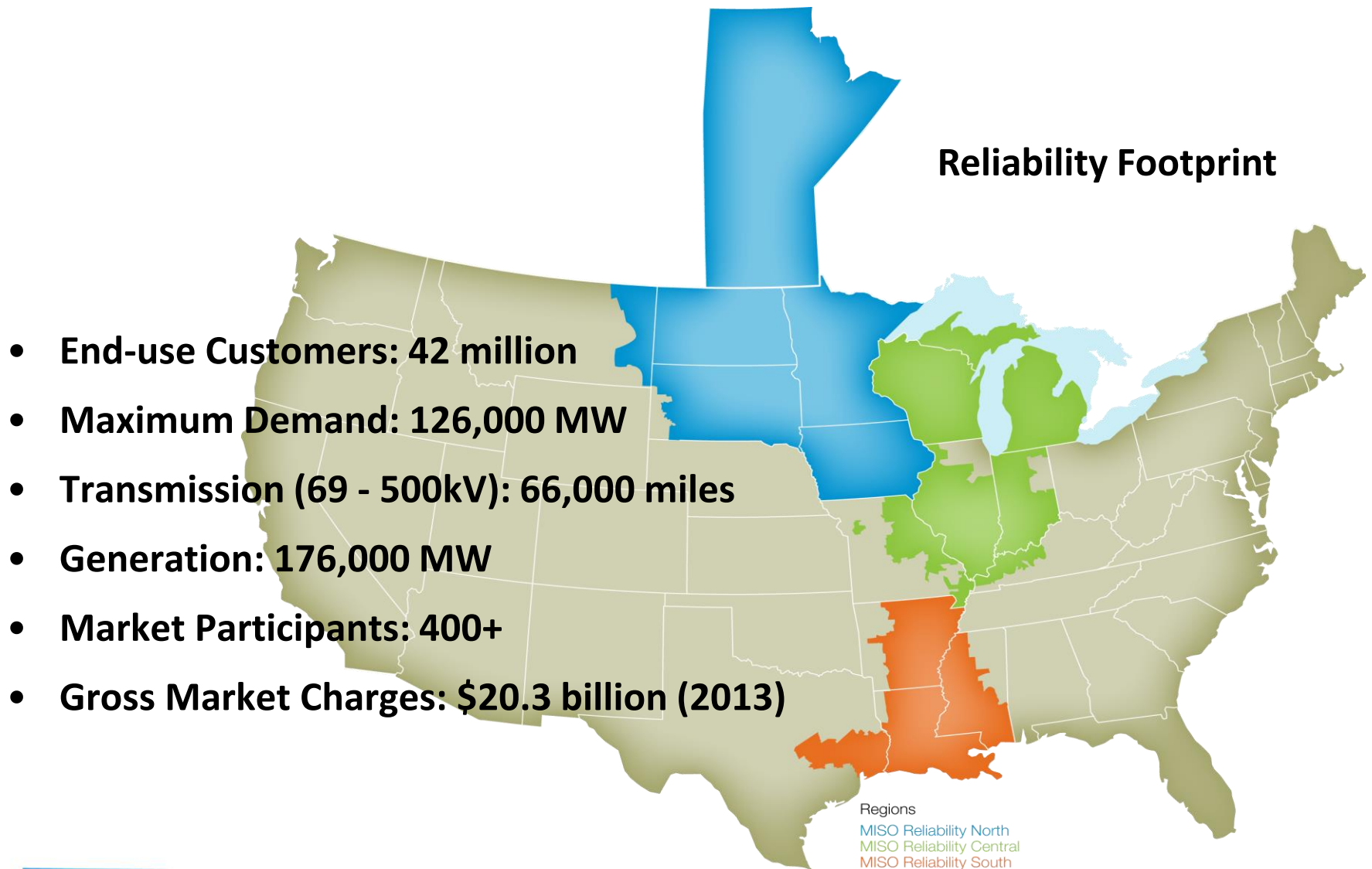
Digaunto Chatterjee  
Senior Manager, Economic Planning

Oct. 2014

# MISO Evolution



# Current Scope of Operations



# More about MISO (Midcontinent Independent System Operator)

## Who we are

- Independent, non-profit organization responsible for maintaining reliable transmission of power in 15 states and one Canadian province
- First Regional Transmission Organization (RTO) approved by the Federal Energy Regulatory Commission (FERC)

## What is our role?

- MISO is a service company that provides reliability to the electric grid
- MISO administers the market for electricity producers and users on a wholesale level
- MISO does not generate or buy electricity

# MISO's Critical Deliverables

## What we do?

- Provide independent transmission system access
- Deliver improved reliability coordination
- Perform efficient market operations
- Coordinate regional planning\*
- Foster platform for wholesale energy markets

## Implications

- Equal and non-discriminatory access
- Regional reliability improvements
- Lower cost unit commitment, dispatch, congestion management
- Integrated system planning
- Encourage infrastructure investment, facilitate regulatory initiatives

\*Resource Adequacy

# Resource Adequacy Strategic Intent and Desired Business Outcomes

May 9, 2014

## MISO Strategic Intent

- Achieve confidence in all time horizons that the MISO region will be resource adequate at the lowest possible cost.
  - For system planning time horizons, adequacy is defined as loss of firm load during any period of the year no more often than one day in ten years.

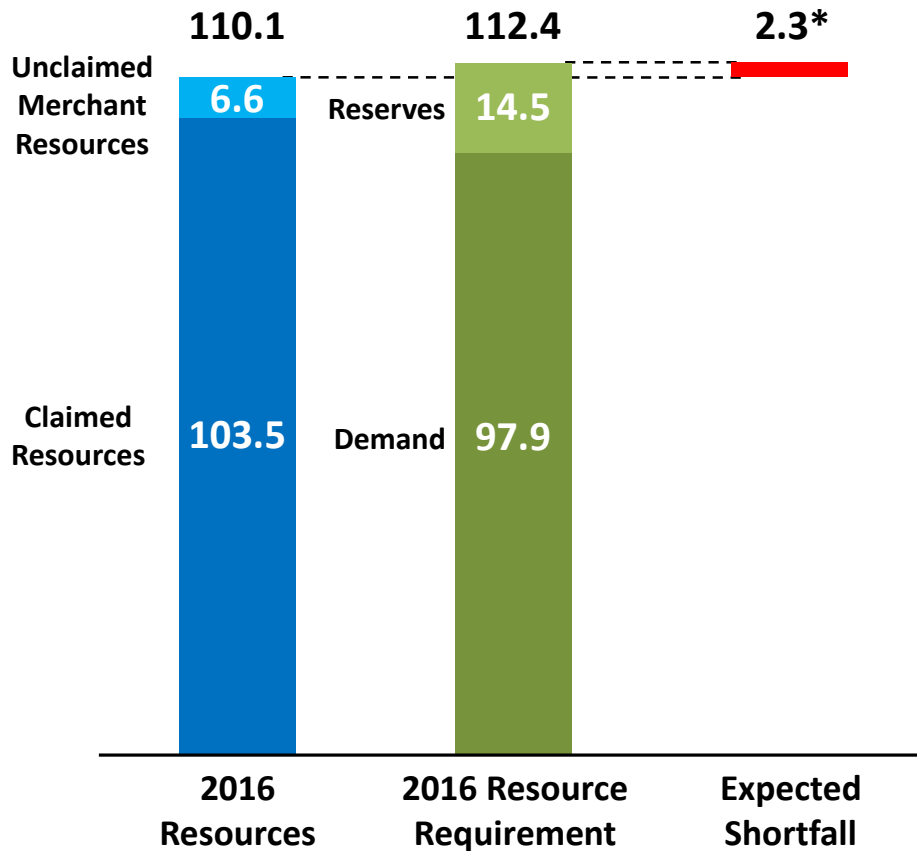
## MISO Desired Business Outcomes

- Resource Adequacy processes support stakeholders in achieving Resource Adequacy at just and reasonable rates.
- MISO, member and stakeholder confidence that Resource Adequacy will be achieved in all time horizons.
- MISO, member and stakeholder confidence in MISO's Resource Adequacy assessments.
- MISO has provided sufficient transparency and market mechanisms to allow for mitigation of potential shortfalls.

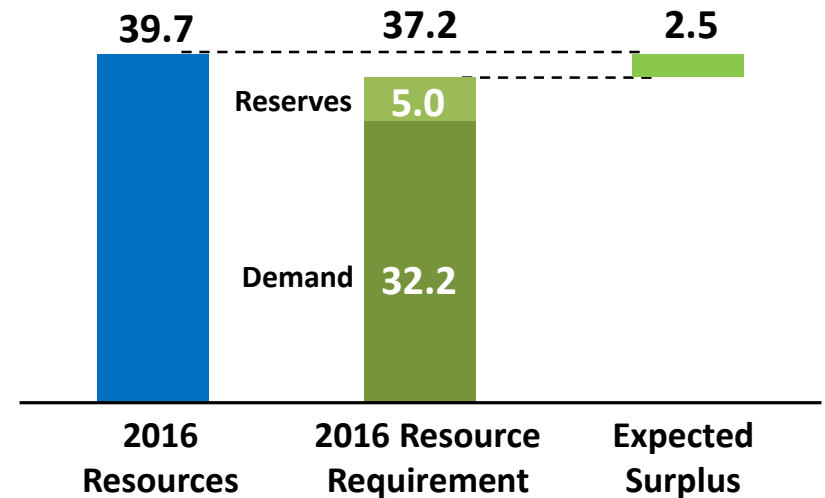
# New information projects an additional reserve margin shortfall in the North and Central Regions starting in 2016

## Central & North Regions In GW

Values reflect most recent (June 2014)  
OMS-MISO Survey Results



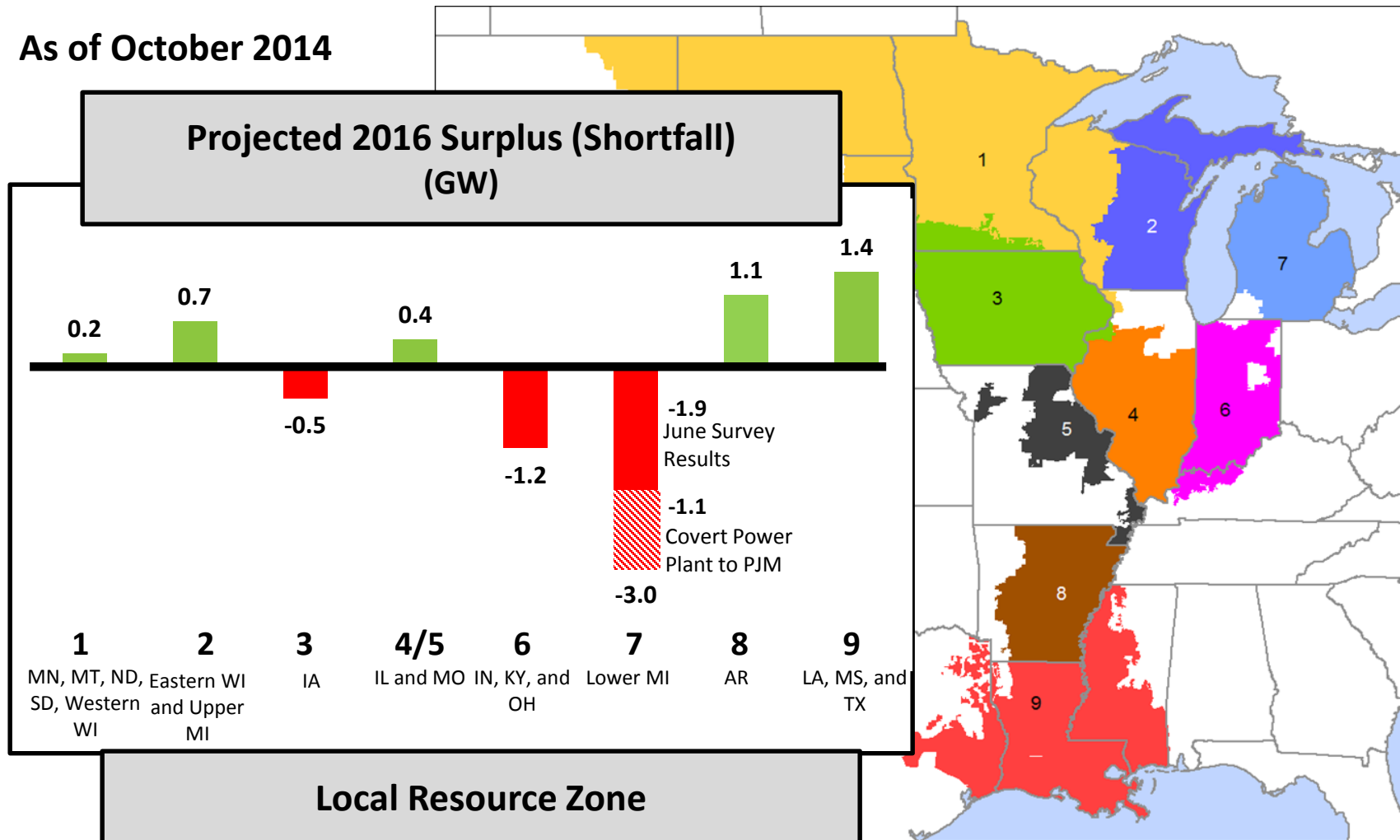
## South Region In GW



\* Covert Power Plant to PJM in 2016 will increase shortfall by an additional 1.1 GW

# Current projections show resource adequacy risk is highest in the eastern zones

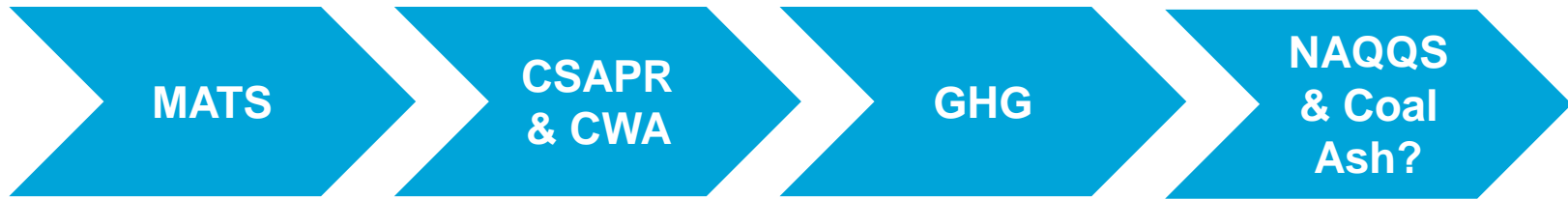
As of October 2014



Note: Values updated to reflect Covert Power Plant interconnecting with and committing capacity to PJM



# The generation fleet in MISO is being affected by timing, fuel prices and multiple environmental regulations



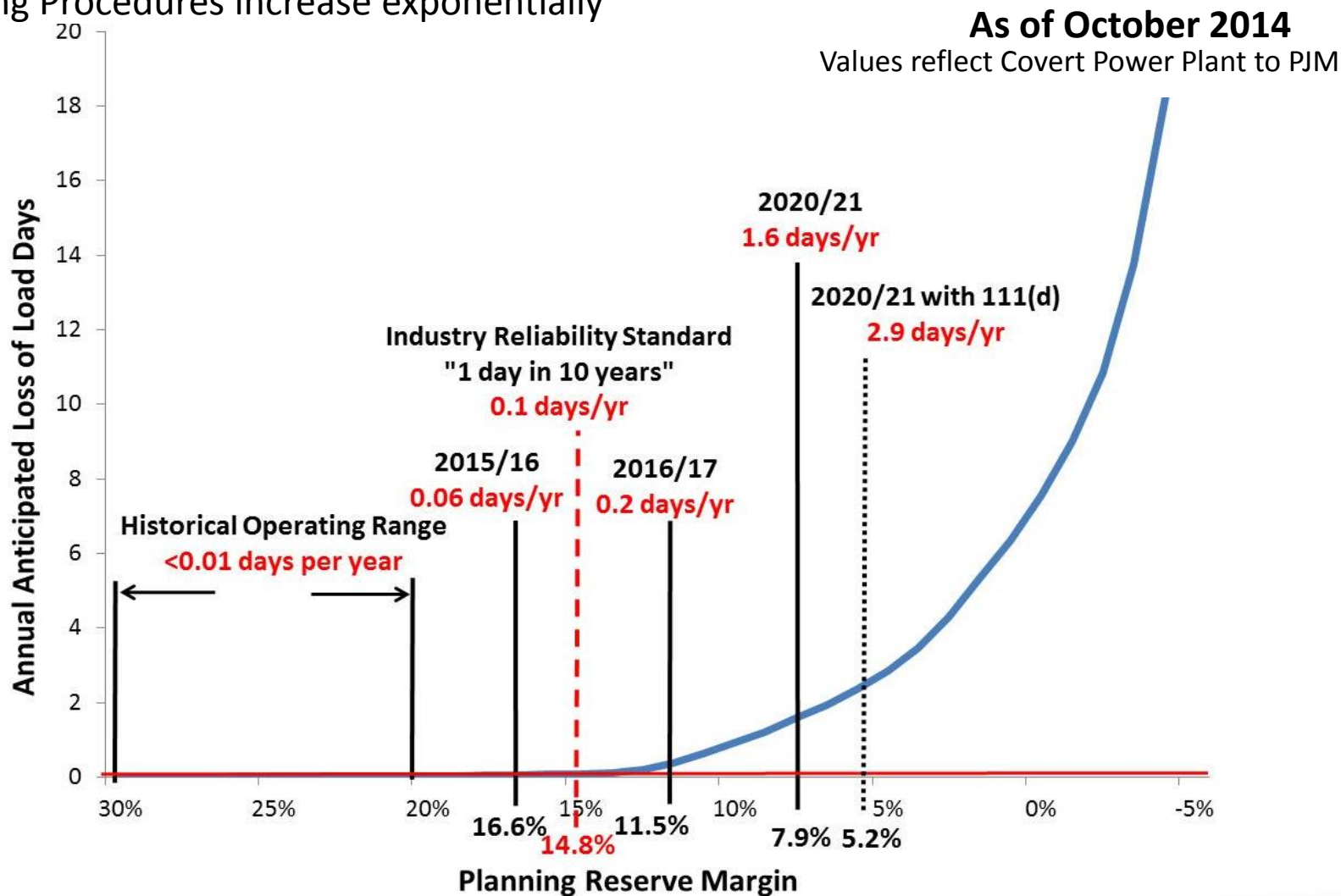
Nature of Regulation	Mercury and Air Toxics Standards	Cross State Air Pollution Rule and Water Regulations (316(b))	Carbon Regulations (Clean Power Plan)	National Ambient Air Quality Standards? Coal Ash?, Others?
Compliance Dates	2015 / 2016	As early as 2015	2020-2029, 2030 and beyond	???
Impacts	<ul style="list-style-type: none"> <li>• Significant coal retirements</li> <li>• Outage coordination challenges</li> <li>• Shrinking reserve margins around MISO</li> <li>• Growing dependence on natural gas</li> </ul>	<ul style="list-style-type: none"> <li>• CSAPR is subject to ongoing litigation</li> <li>• EPA sought lift of stay on CSAPR – could make rule effective as early as 2015</li> <li>• Final water intake rule released May 2014</li> </ul>	<ul style="list-style-type: none"> <li>• Draft Rule released June 2014</li> <li>• Continued pressures on reserve margins</li> <li>• Increased dependence on natural gas</li> <li>• Regulatory uncertainty</li> </ul>	



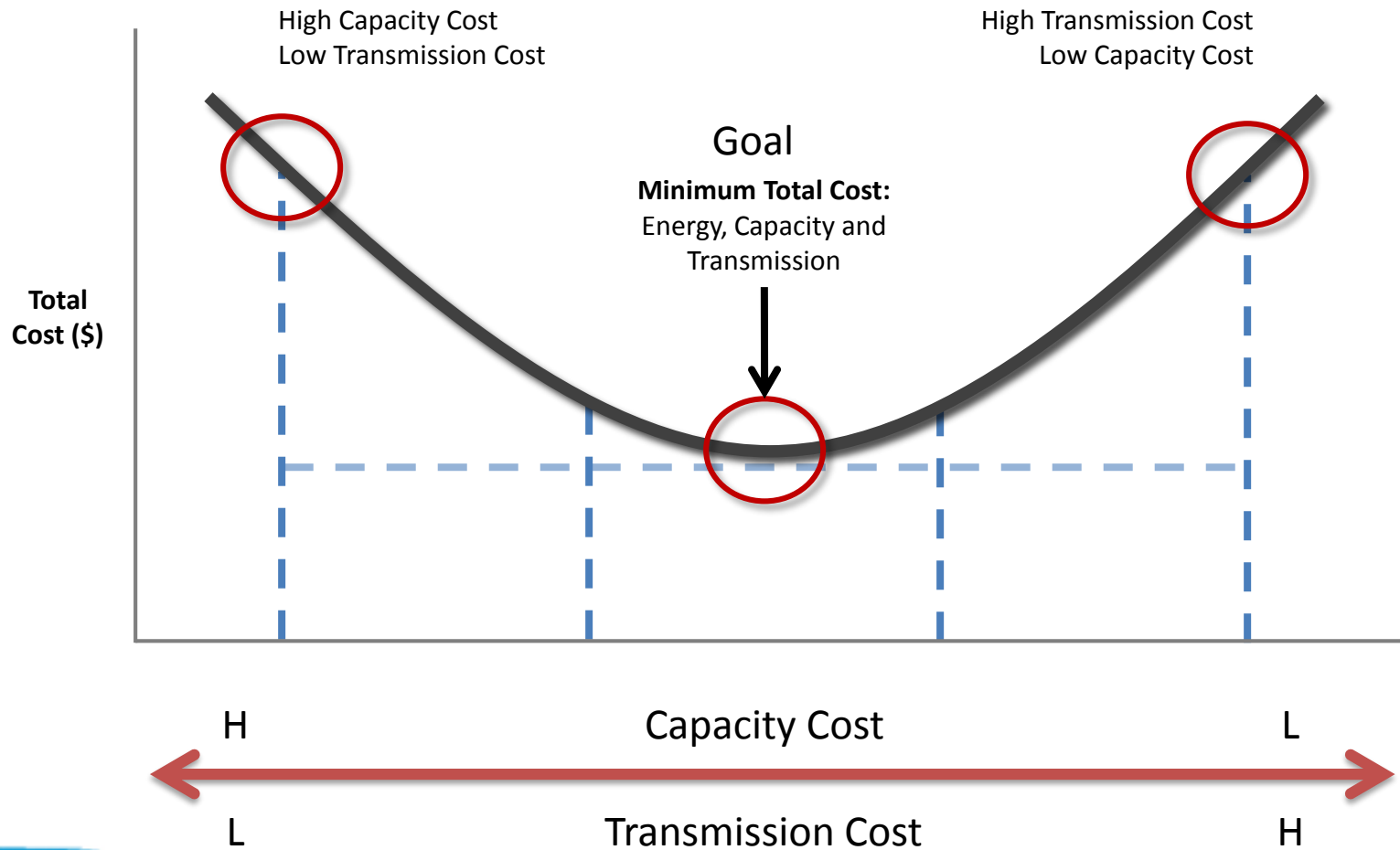
These factors will culminate in the erosion of reserve margins and an increase in reliability risk.

# Why is Resource Adequacy Important?

As planning reserves erode the probability of loss of load and reliance on Emergency Operating Procedures increase exponentially



# Our focus is - Minimize total cost of energy to consumers



# MISO is actively pursuing multiple avenues to assess and address potential resource shortfalls

- MISO will continue to partner with regulators and load serving entities to improve the regional view of long term reliability and resource adequacy
- Independent load forecast results are an additional tool to inform regional visibility and planning
- MISO continues to explore opportunities to improve its resource planning processes to ensure full utilization of available internal and external resources

# Contact Information

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