

Roundtable: The Future of Regional Wholesale Power Markets

LSU Energy Summit 2014

The Future of Louisiana Energy



Todd Hillman, MISO
John Hurstell, Entergy Corporation
Jennifer Vosburg, NRG Energy

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

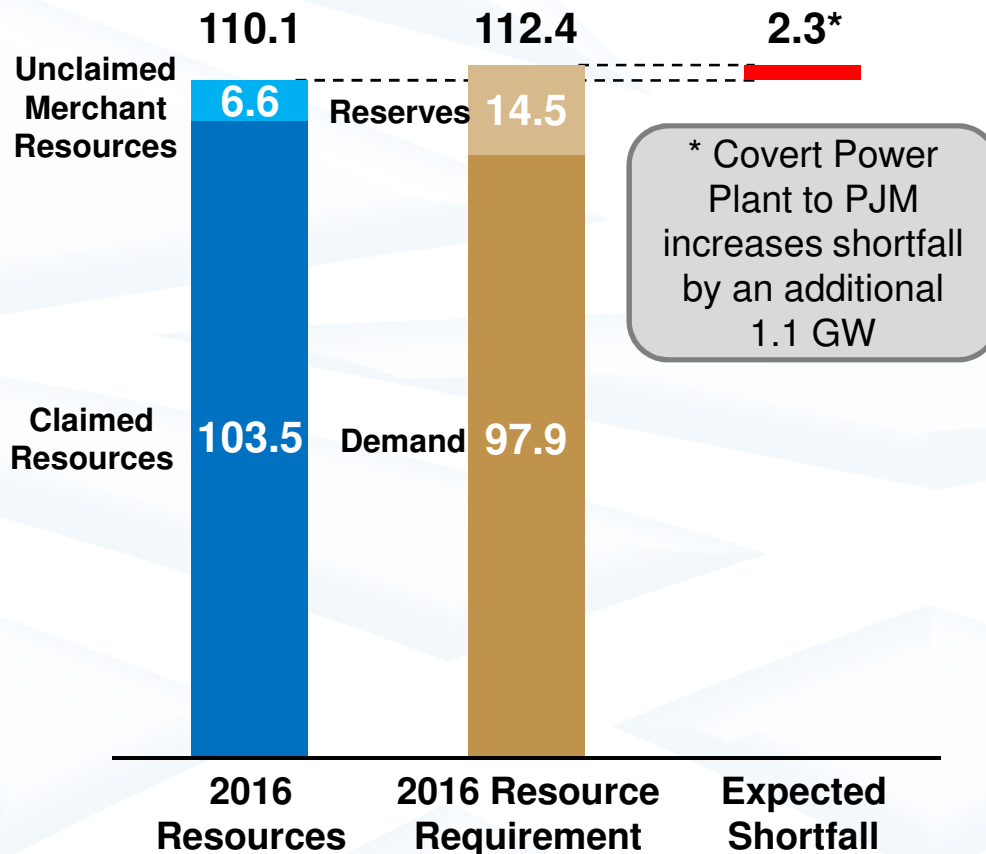


Nature of Regulation	Mercury and Air Toxics Standards	Cross State Air Pollution Rule and Water Regulations (316(b))	Carbon regulations (Clean Power Plan)	National Ambient Air Quality Standards? Coal Ash? Other?
Compliance Dates	2015 / 2016	As early as 2015	2020-2030	???
Impacts	<ul style="list-style-type: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

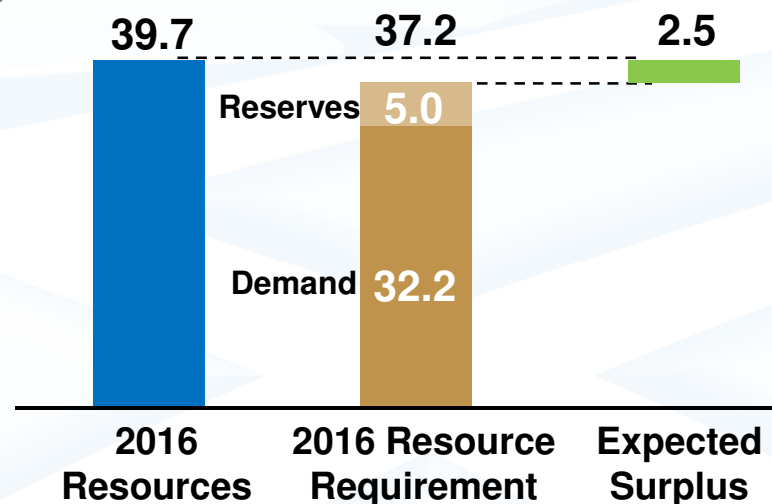
These factors will culminate in the erosion of reserve margins and an increase in reliability risk.

MISO is currently projecting a reserve margin shortfall in the North and Central Regions starting in 2016

Central & North Regions In GW

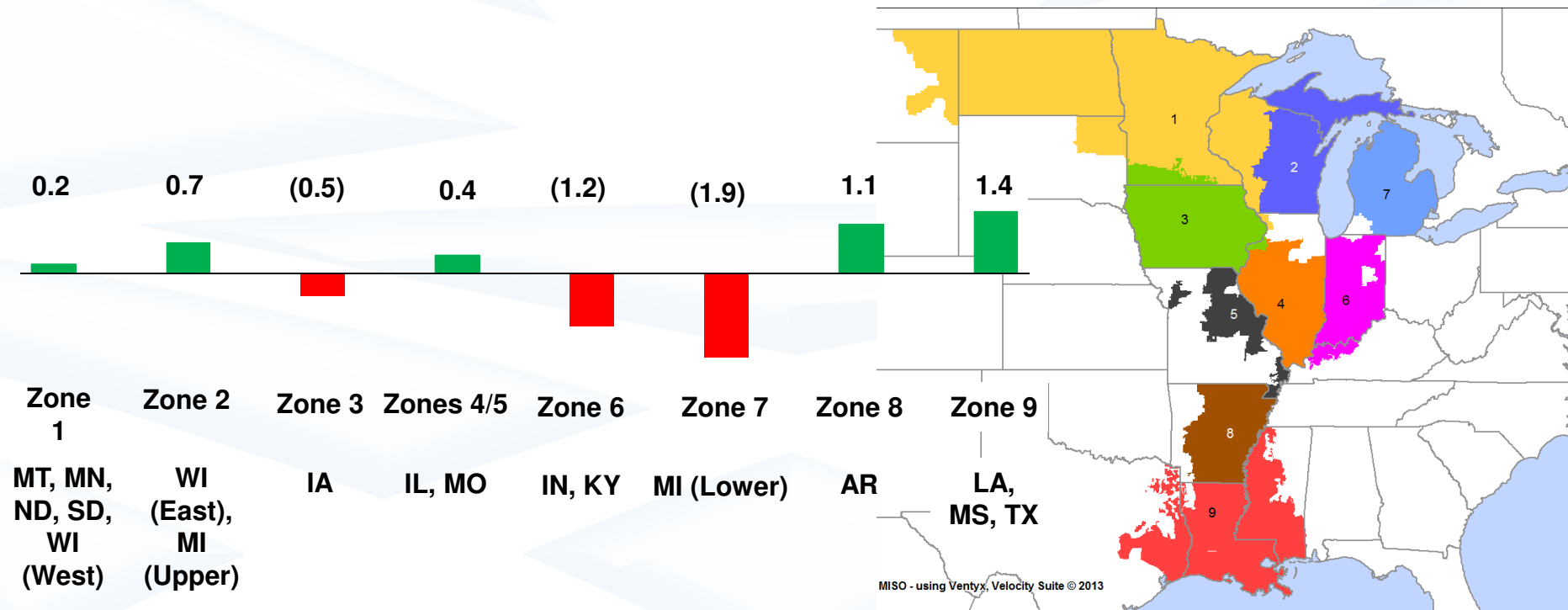


South Region In GW



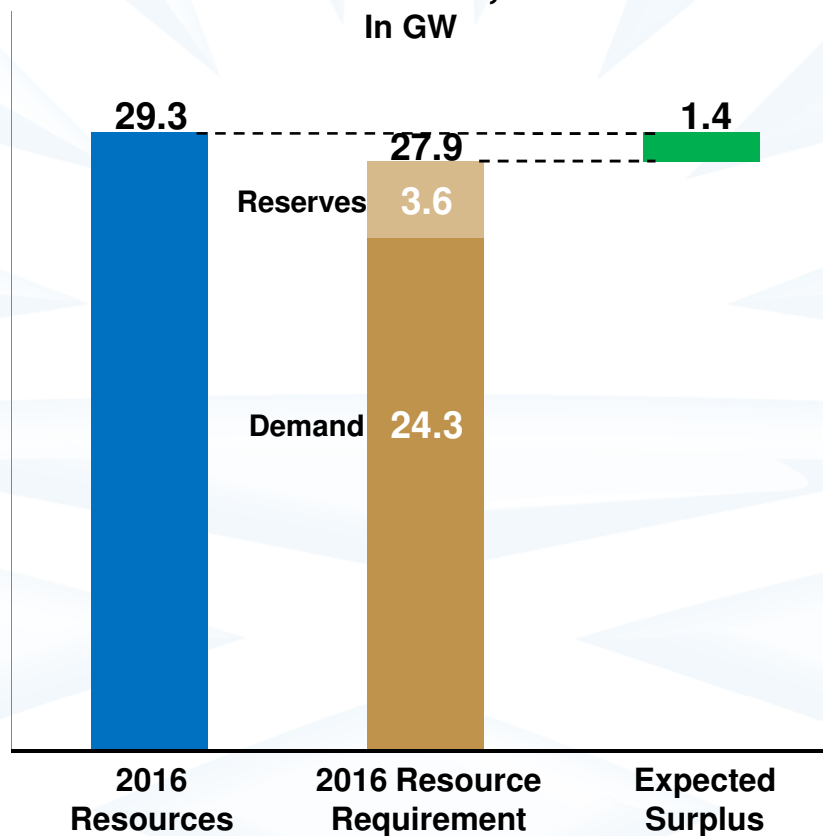
As of October 2014

Zonal survey results indicate uncertainty as to whether the system will have adequate resources to meet its desired reserve margin in 2016

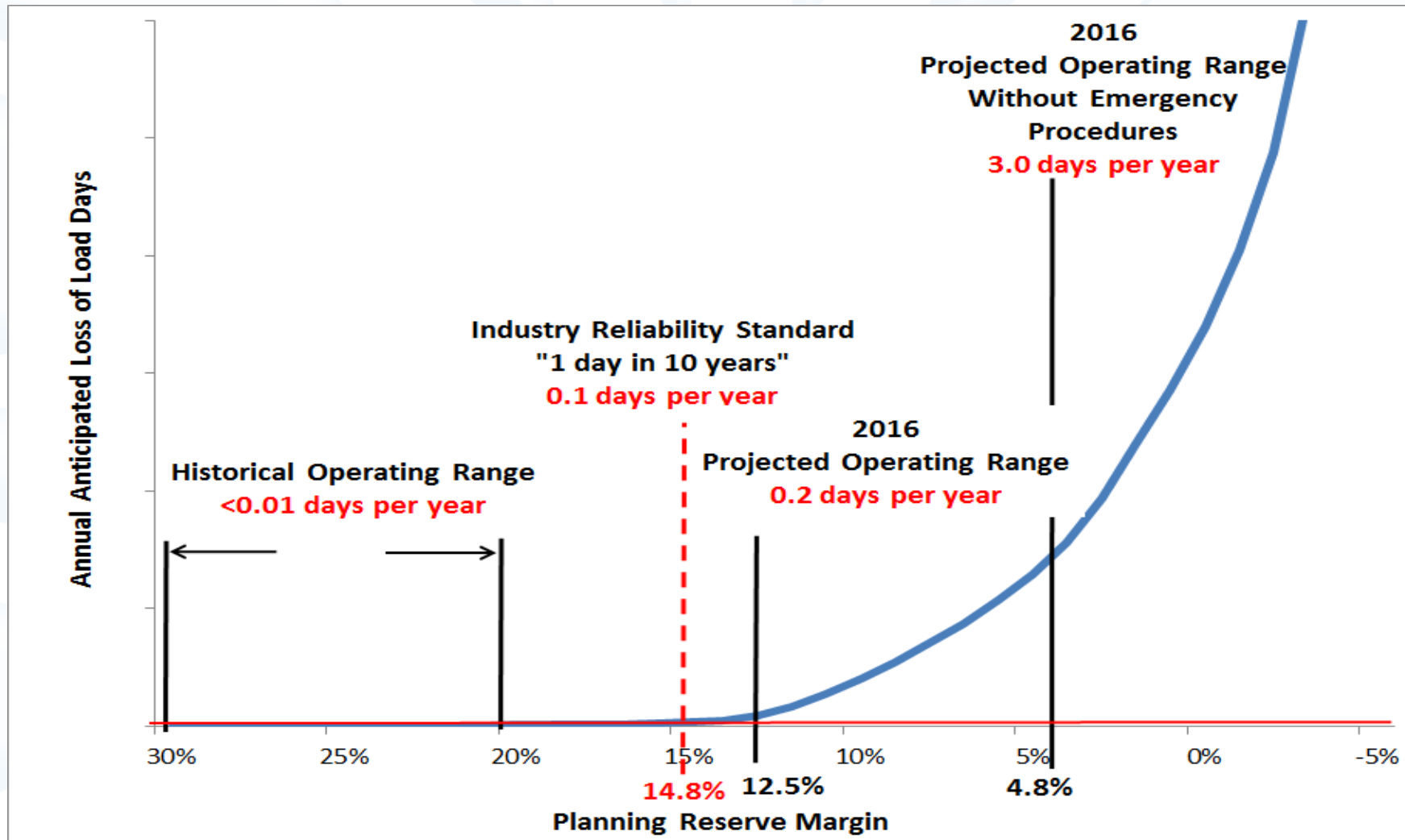


2016 Resource Adequacy Forecast - Zone 9 (LA, MS, TX)

As of June 2, 2014
In GW



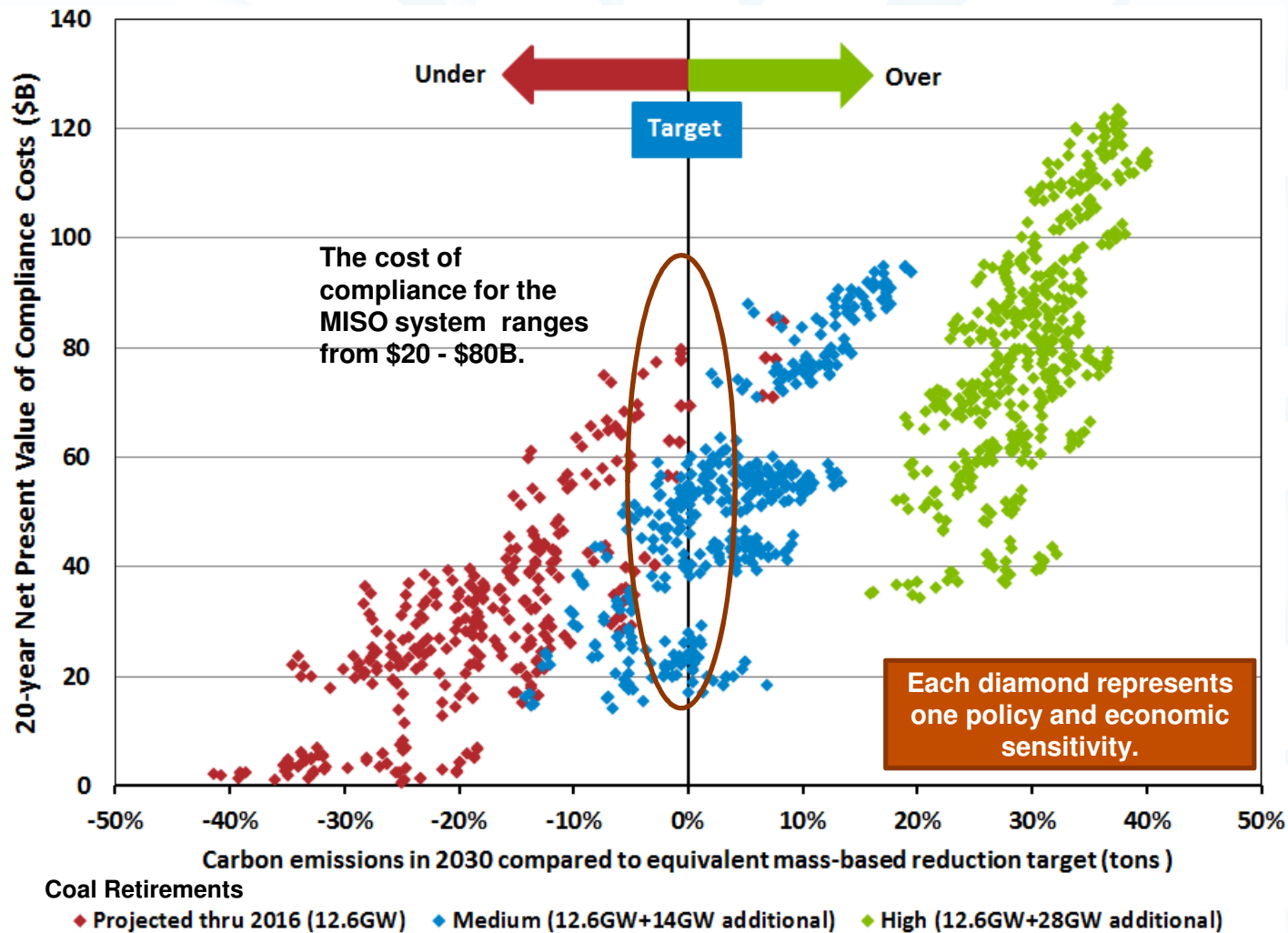
As planning reserves erode, the probability of reliance on Emergency Operating Procedures and loss of load will increase



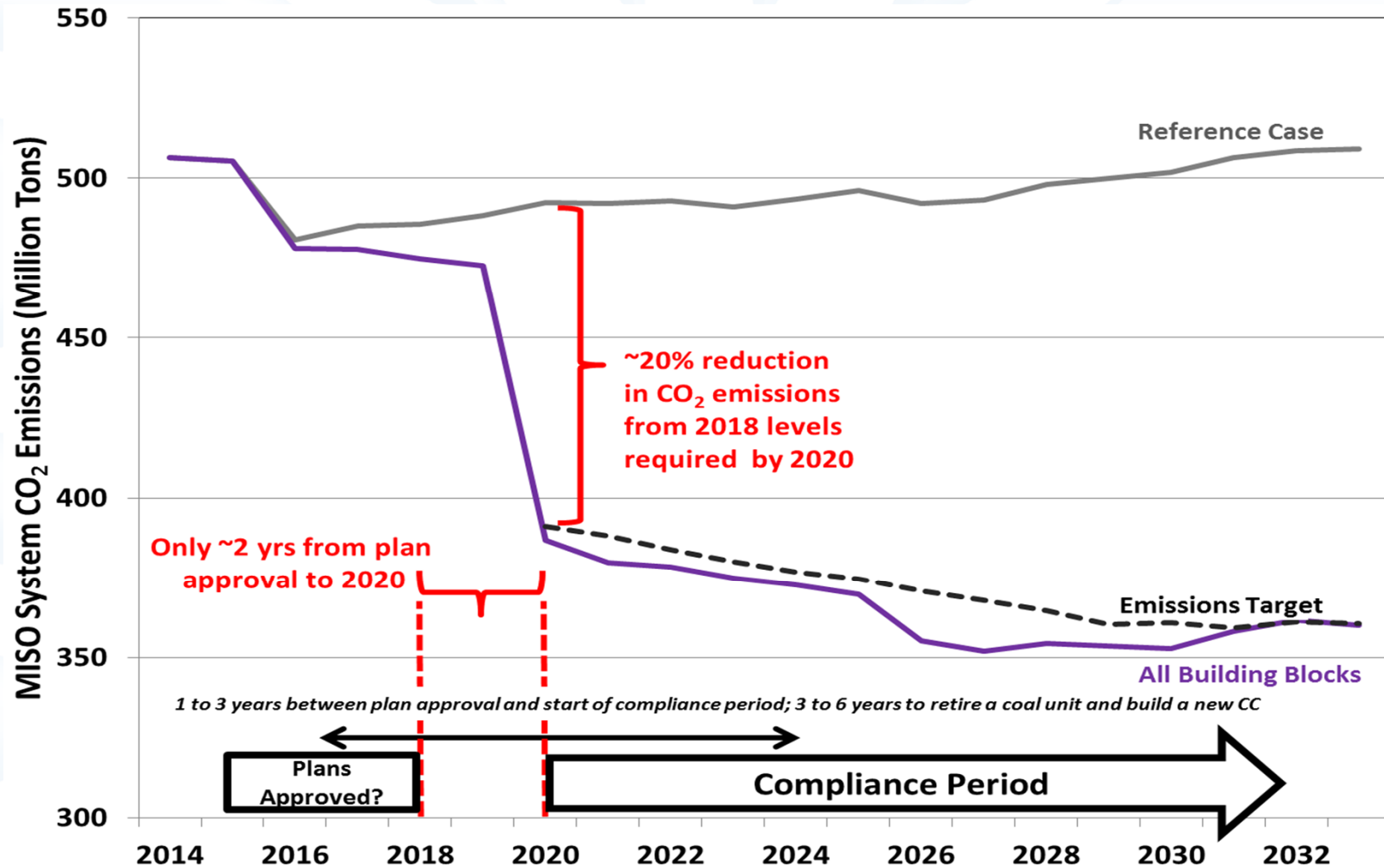
Coincident gross demand growth rate for MISO is 0.8%



Lower cost compliance strategies would retire up to an additional 14GW of coal capacity

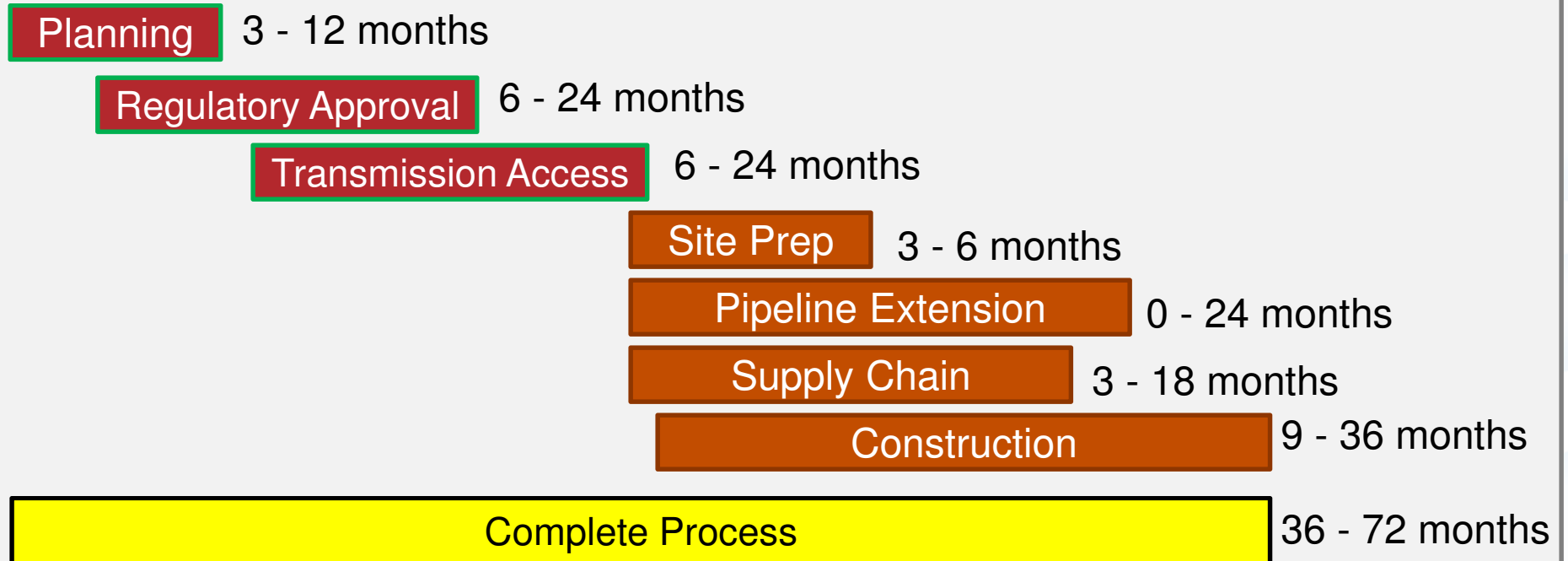


Is there enough time to implement lower cost compliance strategies?



Construction of a new natural gas power plant typically takes 36 to 72 months after a decision to proceed is reached

Indicative Combustion Turbine or Combined Cycle Planning, Regulatory, and Construction Schedule



Is There a Case to be Made for Regionalization?

- **Reliability and Resource Adequacy**
- **EPA: MATS and 111(d) implications**
- **Seams management and issues**
- **Industrial expansion in the South US**
- **Technology "trump"?**
- **Current and Future Value Proposition**