

FERC Technical Conference on Review of Wholesale Electricity Markets



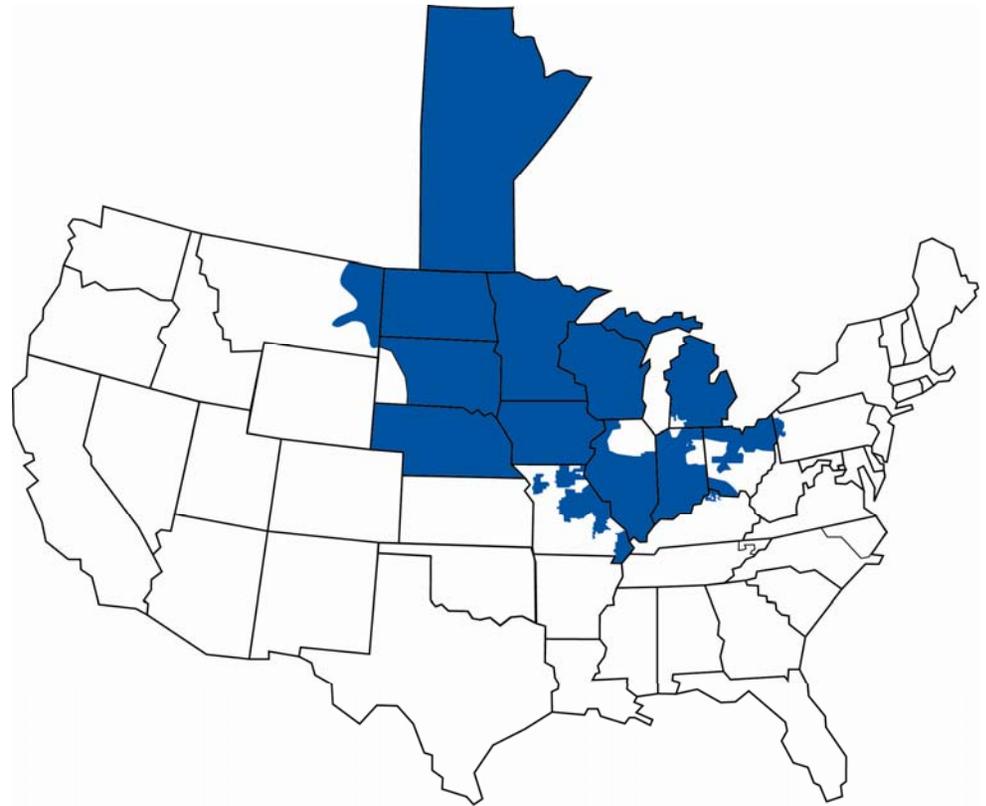
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Midwest ISO Overview

Midwest ISO is an independent, non-profit reliability coordinator for the generation and transmission of high voltage electricity across all or parts of 15 states and Manitoba

Key Midwest ISO Milestones

1995	Discussions began to form Midwest ISO
1998	FERC Approves startup
1999	Elected first Board
2001	Expanded to include St. Paul Approved by FERC as first RTO
2005	Launched energy markets
2008	Ancillary Services Market launch scheduled



Midwest ISO Regional Reliability Area

Midwest ISO Critical Deliverables

What We Do

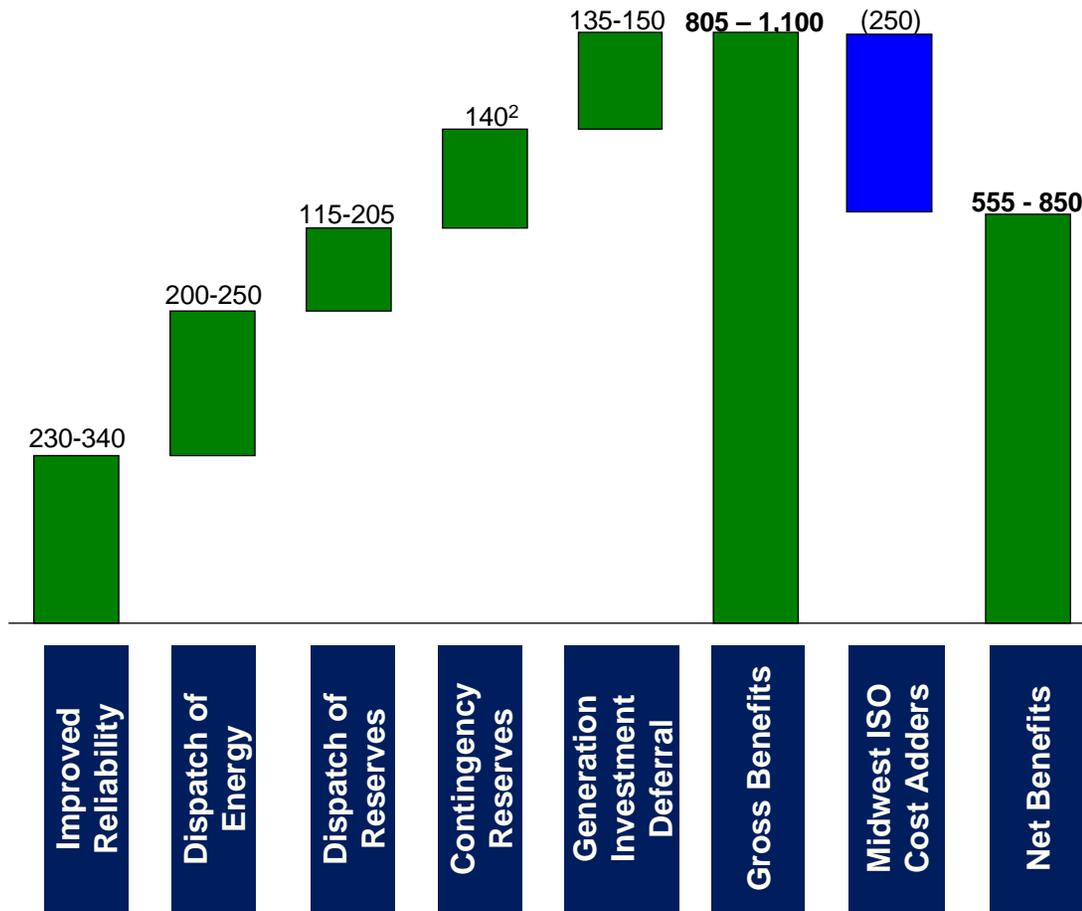
- Provide Independent Transmission System Access
- Deliver Improved Reliability Coordination
- Perform Efficient Market Operations
- Coordinate Regional Planning
- Foster Platform for Wholesale Market Development

Implications

- All parties have equal and non-discriminatory access
- Substantial regional reliability improvements
- Lower cost unit commitment, dispatch and congestion management
- Integrated system planning
- Encourage infrastructure investment and facilitate regulatory initiatives

Midwest ISO Value Proposition

Midwest ISO Annual Benefit by Value Driver¹
(in \$ millions)



Qualitative Value Drivers

- Price Transparency
- Data / Informational Transparency
- Planning Coordination
- Seams Management
- Regulatory Compliance
- Wholesale Platform for Demand Response
- Wholesale Platform for Renewable Portfolio Standards

¹ Figures shown reflect annual benefits and costs reflected in 2007 dollars

² As of 5/31/08, the 12-month rolling average savings = \$137 million

Source: Midwest ISO

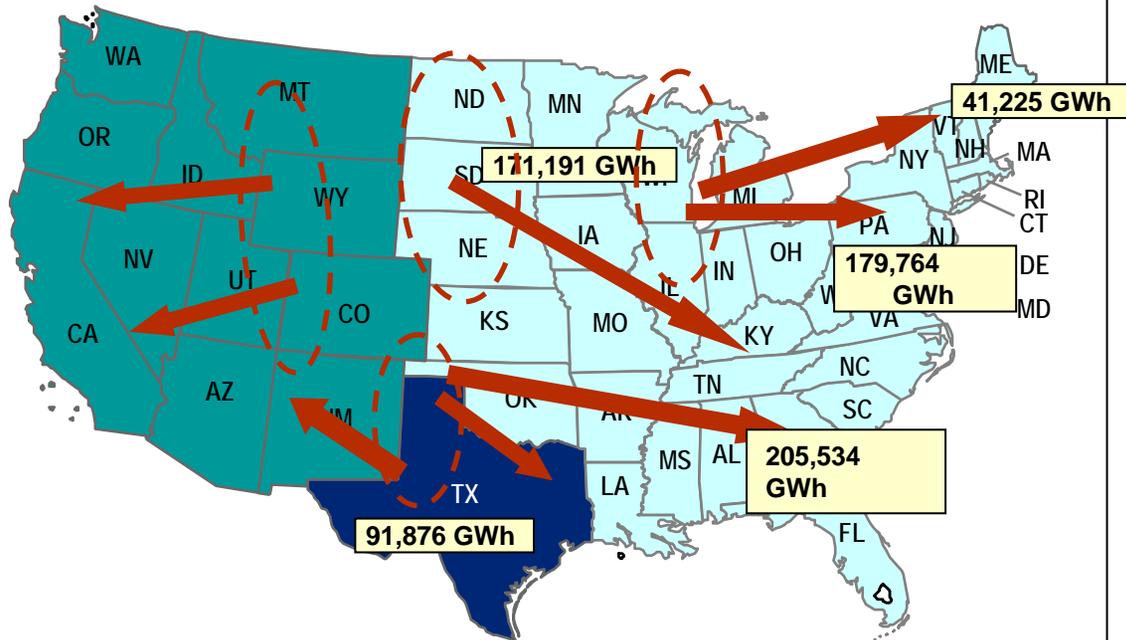
Challenges & Opportunities

- Renewables (including Wind) Integration
- Demand Response and Smart Grid Integration
- Infrastructure Development and Cost Sharing

Renewables Integration

Challenges

Renewable Energy Needed by Eastern Interconnect 2027



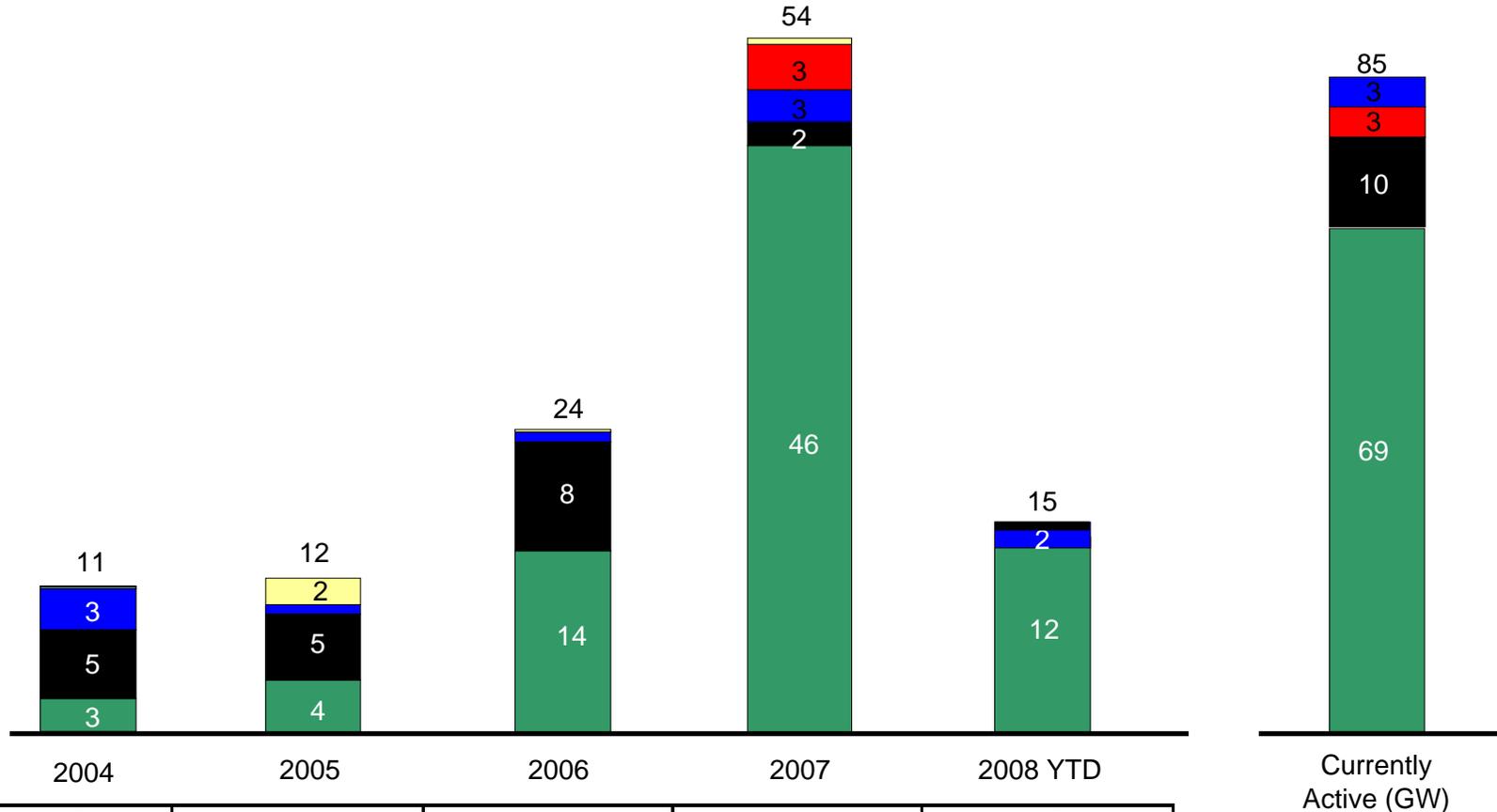
- Planning uncertainties for carbon future
- 10 states in footprint with RPS mandates/goals¹
- A rapid transmission system build is required, against a “flood” of wind interconnection requests
- Midwest region is better suited for renewables but this increases the traffic (congestion) to load centers
- Reliability concerns due to lower and less predictable run times and impacts on fuel-based units on grid
- Midwest ISO’s footprint requires tracking and qualification for 15 states

Source: 20% by 2030 Wind Integration Study

¹ Source: DSIRE Database (www.dsireusa.org)

Midwest ISO Queue Requests*

Annual Requests (GW)



Total # of Requests	79	90	131	214	85
Wind	43 (54%)	51 (57%)	99 (76%)	165 (77%)	73 (86%)

■ Wind
 ■ Coal
 ■ Natural Gas
 ■ Nuclear
 ■ Other

Demand Response and Smart Grid Initiative Integration

Demand Management

Demand Response

Energy Efficiency

“Actions by customers that change consumption of electricity in response to signal, incentives or directives (emergency) from grid operators”

“Short-term in nature”

“Smart Grid – design concepts that focuses on optimizing grid operations, with much of the ‘smart’ coming from load control”

“Programs encouraging a longer-term shift in consumption behaviors to reduce system demands”

Challenges

- Midwest ISO’s footprint of 15 states
 - many with demand response legacy programs
 - Mixture of retail choice and traditional regulated states
- Retail regulatory treatment does not always encourage demand response participation
- Real-time pricing is not transparent at retail level
- Patchwork of regulatory, financial and technological obstacles challenge system and societal benefits of smart grid
- Must work to fully integrate demand response and smart grid initiatives into resource planning

Infrastructure Development and Cost Sharing

Challenges

What needs to be built?

- Requires generation, transmission, demand response, environmental realities, fuel supply, reliability and economics to be analyzed together

Who pays?

- No consensus on the benefactors versus those that are paying
- Cost recovery uncertainty

How to complete?

- Siting and equipment constraints likely
- “Not in my backyard”
- Timing an issue

Summary

- The benefits of the Midwest ISO are readily evident in the form of improved access, enhanced reliability, market efficiencies and regional planning
- As demonstrated in the value proposition analysis, the benefits are achieved in a cost effective manner
- The Midwest ISO is in the best position to help address the future challenges of the electric industry in the Midwest, given the magnitude of the challenges and the regional nature of the solutions necessary to address these challenges