

Midwest ISO: The First 80 Days

ELCON Workshop Presentation

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Outline



- ▶ RTO Model Overview
- ▶ Midwest ISO Overview
- ▶ LMP Market Overview
- ▶ Interregional Coordination
- ▶ Midwest ISO Market: First 80 Days
- ▶ Midwest ISO Information Resources

What Is an RTO?



- ▶ A Regional Transmission Organization (RTO) provides wholesale electric transmission service under one tariff for a large geographic area

- ▶ An RTO must meet certain characteristics to be approved by the FERC
 - Independence
 - Scope and Regional Configuration
 - Operational Authority
 - Reliability Authority

- ▶ An approved RTO must also be able to provide certain regional functions
 - Tariff Administration
 - Congestion Management
 - Parallel Path Flow
 - Ancillary Services
 - Open Access Same-Time Information Systems (OASIS)
 - Available Transmission Capacity (ATC)
 - Market Monitoring
 - Planning and Expansion
 - Interregional Coordination

Benefits of an RTO

- ▶ **Efficiency and Optionality**
 - Efficiency of equipment usage for generators and transmission grid
 - Increased supply options and optimal use of energy resources across footprint
 - Transparency and energy pricing data availability
 - Security constrained unit commitment and economic dispatch for load
 - Market-based congestion management

- ▶ **Independence**
 - Non-discriminatory open access to a large consolidated transmission system
 - Independent Available Transfer Capability (ATC) & Available Flowgate Capability (AFC)
 - Independent market monitoring and mitigation in place

- ▶ **Enhanced Reliability**
 - Better planning process for a large region, maintaining or improving reliability
 - Allows the opportunity to provide and implement a long-term congestion solution
 - Improved maintenance and outage coordination

- ▶ **One-stop Shopping**
 - Single OASIS and scheduling system
 - Consolidation of reliability coordinators into one regional entity
 - Establishes one generator interconnection process

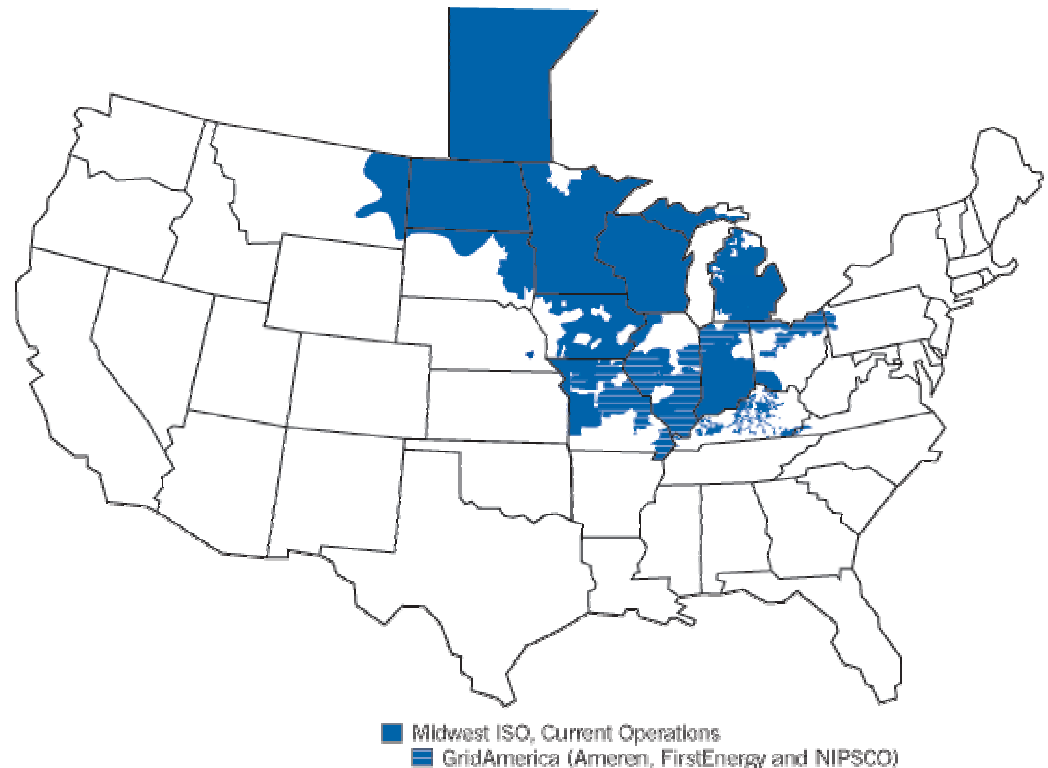
- ▶ **Cost Savings**
 - Elimination of “pancaked” rates over a large area
 - All of the items above in One-Stop Shopping
 - Eliminates seams within the RTO and addresses seams with other RTO’s
 - Provides opportunity to consolidate and lower reserve requirements regionally

Midwest ISO Overview



- ▶ Midwest ISO is an independent, non-profit reliability coordinator for the transmission of high voltage electricity via a security constrained economic dispatch across all or parts of 15 states and Manitoba

- ▶ Large footprint (~947,000 square miles)
- ▶ Multi-control area environment (35 Control Areas)
- ▶ Security constrained economic dispatch
- ▶ Voluntary, LMP-based energy market with FTR's
- ▶ Day Ahead and Real Time markets (two settlement system)
- ▶ Dynamic market monitoring
- ▶ Control centers in Carmel, Indiana and St. Paul, Minnesota
- ▶ All industry sectors represented
- ▶ Operational since December 15, 2001
- ▶ 107,552 MW of peak load
- ▶ 131,365 MW of generating capacity (by control area)
- ▶ 97,000 miles of transmission lines
- ▶ Footprint encompasses 15.1 million customers
- ▶ \$11.8 billion installed assets



The Midwest ISO Overview



- ▶ As the Market Operator, the Midwest ISO centralizes generation dispatch and outage management for its footprint
 - Evaluate all resources within the Midwest ISO footprint as a pool
 - Operate Day-ahead and Real-time markets
 - Administer auctions for Financial Transmission Rights (FTR's)
 - Manage congestion through Locational Marginal Pricing (LMP) and, as necessary, Transmission Loading Relief (TLR) and seams agreement procedures

- ▶ Planning Authority
 - Ensure long-term (generally 1+ years) plan is available for adequate resources and transmission
 - Integrate and assess Transmission and Resource plans within the footprint to ensure those plans meet the reliability standards

- ▶ Reliability Authority
 - Ensure the real-time operating reliability of the interconnected bulk transmission systems within the Midwest ISO footprint

- ▶ Balancing Authorities
 - Interact with the 26 Balancing Authorities and maintain the reliability of the system load-interchange-generation balance within a Balancing Authority Area
 - Support interconnection frequency in real-time

The Midwest ISO: Stakeholder-Driven



Midwest ISO Governance Structure

Board

Board of Directors

Advisory
Committees

Made up of 9 sectors, anyone can attend meetings but only Advisory Committee Members can vote

Sub
Committees

Key Committees are Markets, Planning and Reliability

Working
Groups

Focused on Specific Topic or Function

Task Forces

Temporary entities to study a specific issue or topic

LMP Market Overview



- ▶ Voluntary energy markets facilitate day-ahead transmission schedules and generation dispatch in real-time to manage congestion and schedule imbalances
- ▶ Market is based on centralized dispatch, using LMP
 - LMP at a bus or a defined aggregated set of buses reflects the marginal value of energy at that location. LMP is a single price, but reflects three components:

energy + congestion + losses

- ▶ Market Participants may acquire FTR's to hedge potential Day Ahead LMP differences
- ▶ Market Participants will receive settlement statements based on their position in each of the MISO administered markets

Interregional Coordination



CURRENT

FUTURE

Market to Non-Market

Market to Market

Joint & Common Market (JCM)

Activities

- Data exchange
- Congestion management
- Outage planning
- Reliability coordination
- Flowgate capacity management
- Transmission Loading Relief

- Data exchange
- Least cost congestion management
- Outage Planning
- Reliability Coordination
- Flowgate Capacity Management
- Least cost generation redispatch

- Market rule alignment and standardization
- Common data and information model
- Common data portal
- Single nodal price definition at seam
- Determination of common market products
- Joint RTO service delivery
- Operating Synergies

Counterparties

- Southwest Power Pool (SPP)
- Independent Electric System Operator (IESO)
- Tennessee Valley Authority (TVA)
- Mid-Continent Area Power Pool (MAPP)

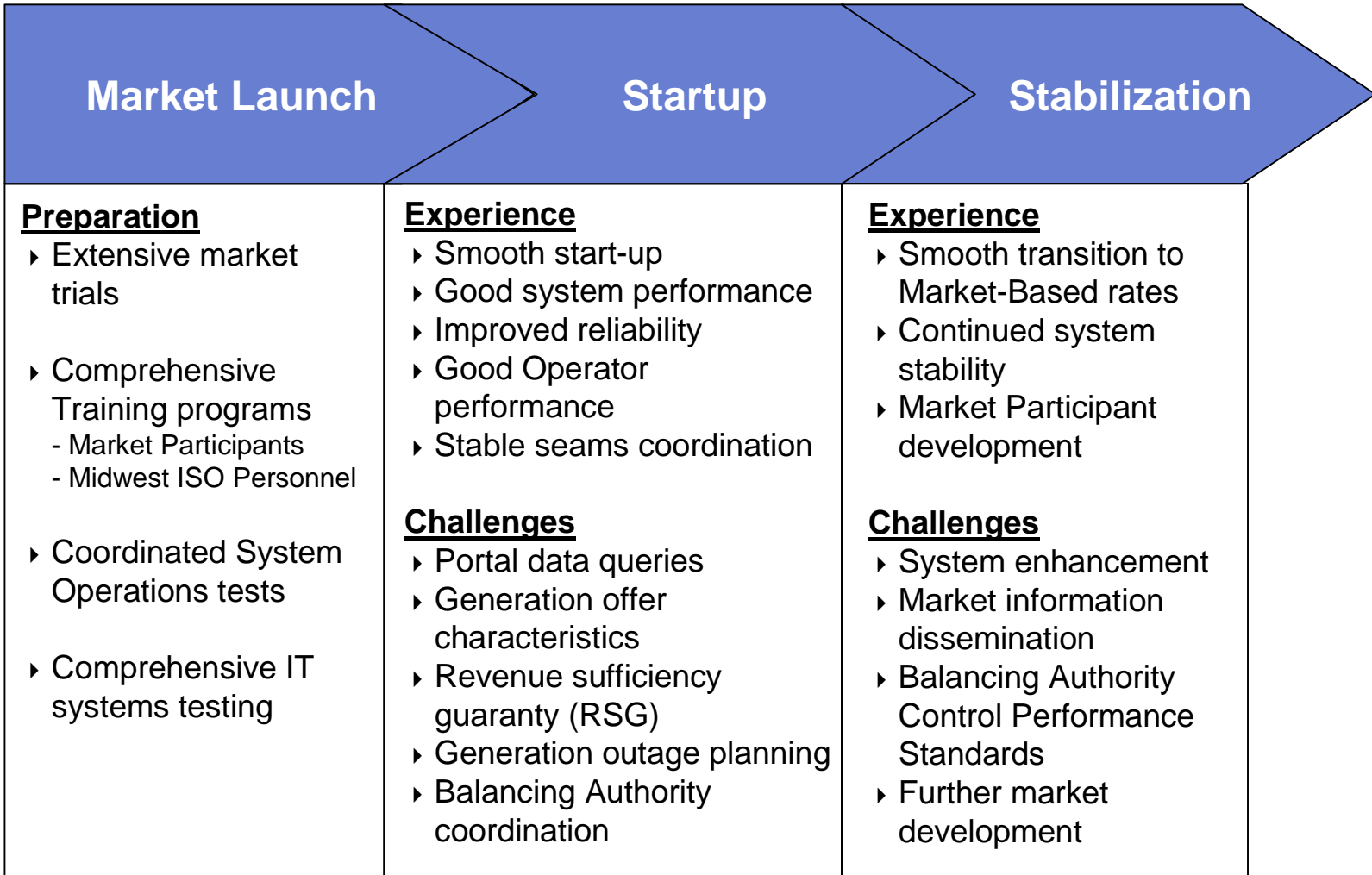
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Midwest ISO Market: First 80 Days



January - March → April 1st → April/May → June



Midwest ISO Information Resources



▶ Websites

- www.midwestmarket.org
 - Guiding documents – Business Practices Manuals, Tariff
 - Informational documents – training presentations, testing documentation
 - Technical Infrastructure documents - implementation documents, technical specifications, testing information
 - Market Registration documents - registration packet, public data
- www.midwestiso.org
 - Midwest ISO initiatives – committee activity
 - Information – FERC filings, Operations Information, newsroom, key links

▶ Training

- Midwest ISO offers various training courses throughout the year in various formats (video, webcast, in person)
- Training Calendar and information is available at www.midwestiso.org/training

▶ Customer Relations & IT Support Teams

- (866) 296-MISO

▶ Communications

- extranet.midwestiso.org