Evolution of the Midwest ISO

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Overview

• General Background Information
• MISO Today
• MISO Evolution
General Background Information
General Utility Background Information

• Electrification starts around the turn of the century (20th) in isolated pockets
• Rural Electrification Act pass in the 1930s
• Interconnection between utilities for reliability purposes starts in 1920s with the formation of power pools in the Northeastern U.S. (PJM, New York, New England)
General Utility Background Information (continued)

• Continued interconnections between utilities up and including 1970s
• Regional Areas are formed (SPP, WSCC, MAPP, MAIN, etc)
• North American Electric Reliability Council (NERC) formed in late 1960s due to New York blackout – voluntary organization
General Utility Background Information (continued)

- Airline Deregulation – late 1970s
- Telecom Deregulation begins 1982 with breakup of Bell System
- Gas Deregulation in 1986 with FERC Order 636
  - Electronic Bulletin Boards ordered for all gas pipeline companies to post available capacity
General Utility Background Information (continued)

• ISOs formed starting 1997
  – California ISO & Power Exchange
  – PJM
  – New York
  – New England
  – ERCOT

• Energy Markets Established in each ISO area with mixed success

• California meltdown and ENRON
Regulatory Background

• Congress
• Federal Energy Regulatory Commission (FERC)
  - Mega NOPR (1994)
  - Orders 888,889 (1995) – OASIS mandated
  - SMD NOPR (2002)
• State Regulators – retail choice (Ohio, Michigan, Illinois)
MISO Today
Who We Are

- Independent, non-profit grid operator for the transmission of high voltage electricity across much of the Midwest
- Member based
  - TOs and TDUs and Coordination Agreements
  - End Users and State Regulatory Authorities
  - Consumers and Environmental Groups
  - Power Marketers and IPPs
- Nation’s first FERC approved Regional Transmission Organization (RTO)
**Midwest ISO Service Territory**

**Scope (with SPP)**
- 150+ GW peak load
- 144,000+ miles of transmission lines
- 20.9 million customers
# Transmission Owning Members

- **Alliant Energy** (part of TRANSLink)
- **Aquila, Inc.** (formerly UtiliCorp)
- **American Transmission Company (ATC)** (includes Alliant-WP&L, MG&E, WPS, UPPCO and WE transmission facilities)
- **CILCO**
- **Cinergy Services**
- **Hoosier Energy**
- **IMPA**
- **IP&L**
- **LG&E**
- **Lincoln Electric System**

- **Michigan Electric Transmission Company**
- **Minnesota Power**
- **Montana-Dakota Utilities**
- **Northwestern Wisconsin Electric Company**
- **Otter Tail Power Company**
- **Southern Illinois Power Coop.**
- **City of Springfield, Illinois**
- **Vectren** (formerly SIGECO)
- **Wabash Valley Power**
- **NSP/Xcel Energy** (part of TRANSLink)
Transmission Owning Members

Coordination Agreement Members
• Manitoba Hydro

Appendix I Members
• GridAmerica (not operational: includes ATSI (First Energy), Ameren, & NIPSCO)
• International Transmission Co. (formerly Detroit Edison)
• TRANSLink Transmission Co. (not yet operational: includes Alliant, Xcel Energy, Corn Belt Power Cooperative, MidAmerican, NPPD, and OPPD)

Pending Transmission Owning Members
• Dairyland Power Cooperative
• East Kentucky Power Cooperative
• Great River Energy
• Kansas Electric Power Cooperative, Inc.
• Southern Minnesota Municipal Power Agency
• Sunflower Electric Power Corporation
• Wolverine Power Supply Cooperative
Non-Transmission Owning Members

Marketers

- Allegheny Energy Supply
- American Electric Power Co.
- Automated Power Exchange, Inc.
- Cargill-Alliant, LLC
- Conectiv Energy Supply Inc.
- Constellation Power Source, Inc.
- Consumers Energy
- Coral Power
- Detroit Edison
- Dominion Energy Marketing, Inc.
- El Paso Merchant Energy Co.
- The Energy Authority, Inc.
- Exelon Generation Co. LLC (Commonwealth Edison)

- Mirant Americas Energy Marketing, L.P.
- NRG Power Marketing
- PPL Energy Plus, LLC
- PSEG Energy Resources
- Quest Energy LLC
- Reliant Energy Inc.
- Sempra Energy Trading Co.
- Tenaska Power Services Co.
- The Energy Authority
- UBS AG
- Williams Energy Marketing
Non-Transmission Owning Members

Industrial Customers
• Granite City Steel (IL)
• Air Products and Chemicals (OH)

IPPs
• Calpine Power Services Co.
• Duke Energy North America, LLC
• Dynegy, Inc. (Illinois Power)
• Edison Mission Marketing & Trading, Inc.
• Indeck-Rockford, LLC
• PG&E Generating Co.

Munis/Coops/TDUs/Other
• Ameren Energy Marketing
• American Municipal Power, Ohio
• Cleveland Public Power
• FirstEnergy Corp.
• Illinois Municipal Electric
• Kansas Electric Cooperative
• Madison Gas & Electric
• Missouri River Energy Services
• Wisconsin Public Power Inc.
• WPS Resources Corp.
• Wisconsin Electric Power Co.
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 these characteristics to be approved by the FERC:

- Independence
- Scope and Regional Configuration
- Operational Authority
- Short-Term Reliability
Additional RTO Requirements

An approved RTO must also be able to provide certain regional functions:

- Tariff Administration
- Congestion Management
- Parallel Path Flow
- Ancillary Services
- OASIS and ATC
- Market Monitoring
- Planning and Expansion
- Interregional Coordination
What We Do as an RTO

- Evaluate transmission service requests through one OASIS site
- Approve and Provide transmission reservations
- Schedule transmission service over multiple control areas
- Provide billing/settlements for transmission service
- Manage congestion over a wide area in real time (security coordination)
- Analyze system conditions in real time
- Standardize generation interconnection
- Long-term transmission planning
Evolution of the Midwest ISO
MISO Evolution – Step 1

- FERC issues Order 888 and 889 in 1995
- Discussions on MISO started 1996
- MISO Board of Directors convened first Board meeting January 1999
- MISO first employee hired August 1999
MISO Evolution – Step 2

• MISO establishes temporary headquarters and starts hiring employees - 1999
• FERC issues Order 2000 and changes acronym from ISO to RTO and adds additional duties that an RTO must perform that an ISO did not.
• MISO moves into new building – April 23, 2001
• FERC grants RTO status to MISO – December 2001
MISO Evolution – Step 3

- MISO begins Security Coordination Services - December 15, 2001
- MISO provides OATT Services February 1, 2002
- As of August, 2002 MISO is the RTO for 20 Transmission Owning Members, 1 Coordination Agreement Member, and 1 Appendix I Member
- (With six pending TO Members and operation soon with two new Appendix I Members)
MISO Evolution – Step 4

- MISO-SPP Merger underway (Tariff to be filed by November 1, 2002)
- MISO-PJM-SPP SMDF process for one joint and common market underway (including discussions with TVA)
- MISO-PJM-SPP Inter-RTO Coordination underway
- Discussions with possible new Members
- Review and comment on FERC SMD NOPR
MISO-SPP Merger

• Extends MISO footprint into Arkansas, Louisiana, Texas, Oklahoma and New Mexico and expands footprint in Missouri and Kansas

• Additional scope and configuration is a key FERC requirement for RTOs

• Spreads our costs among greater number of members

• Ultimately consumers benefit with lower costs
The Joint and Common Market*

* as proposed

- 277 GW peak load
- 300 GW generating capacity
- 186,500 miles of transmission lines
- More than 300 members and 45 million customers
Joint and Common Market

• Single energy and transmission market for combined footprint (26 states +)
• Single set of market rules
• One-stop shopping for all customers
• Single approach to managing congestion
• A market designed by customers
What is **NOT** being proposed

• ... a merger of PJM and MISO  
  (MISO/SPP merger currently underway)

• ... a prescribed market solution
FERC’s SMD NOPR

- Single non-discriminatory OATT with Network Access Service applicable to all users of the grid.
- All utilities that own, control or operate transmission must turn over facilities to ITP.
- An ITP must provide transmission services and administer day-ahead, real-time, and ancillary service markets.
- Establish access charge to recover embedded transmission costs.
FERC’s SMD NOPR

- Use LMP for Transmission Congestion Management and provide tradable financial rights.
- Establish preference for auction of Congestion Revenue Rights, but allow initial flexibility.
- Establish open imbalance energy markets to allow all market participants access to the market.
- Permit customers under existing contracts to receive the same level and quality of service under SMD that they receive currently.
FERC’s SMD NOPR

- Establish procedures to mitigate market power in day-ahead and real-time markets per SMD.
- Establish procedures to ensure adequate transmission, generation, and demand-side resources.
- Provide a formal role for state representatives to participate in ITP decisions.
- Clarify obligation of all transmission users to comply with all security and reliability standards.
MISO Evolution – Future

• Continuing stakeholder process to improve MISO.

• MISO’s Vision: We will be recognized as a North American leader in providing bulk power transmission services.

• MISO’s Mission: We are committed to reliability, maximizing transmission revenue and the nondiscriminatory operation of the bulk power transmission system.

• With MISO-SPP Merger – New Company & New Name
MISO Values

- Customer Focus
- Accountability
- Economic Responsibility
- Continuous Learning and Improvement
- Integrity
- Teamwork
- Diversity
- Work/Life Balance