Evolution of the Midwest ISO

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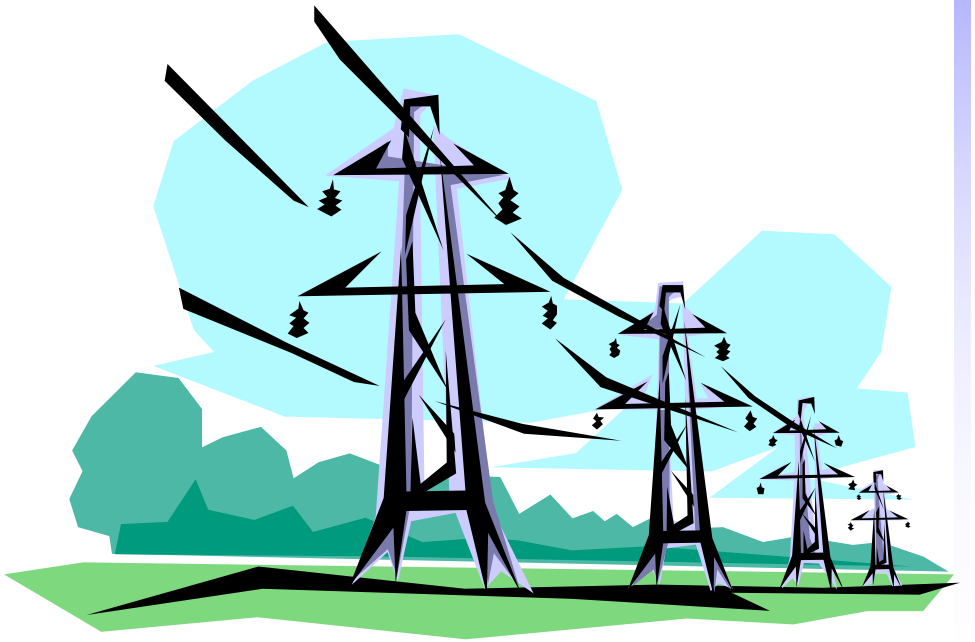

MAPP Fall Conference
August 28, 2002

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)

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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

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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

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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

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Regulatory Background

- **Congress**
  - **Energy Policy Act (1992)**
- **Federal Energy Regulatory Commission (FERC)**
  - **Mega NOPR (1994)**
  - **Orders 888,889 (1995) – OASIS mandated**
  - **Order 2000 (2000)**
  - **SMD NOPR (2002)**
- **State Regulators – retail choice (Ohio, Michigan, Illinois)**

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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)

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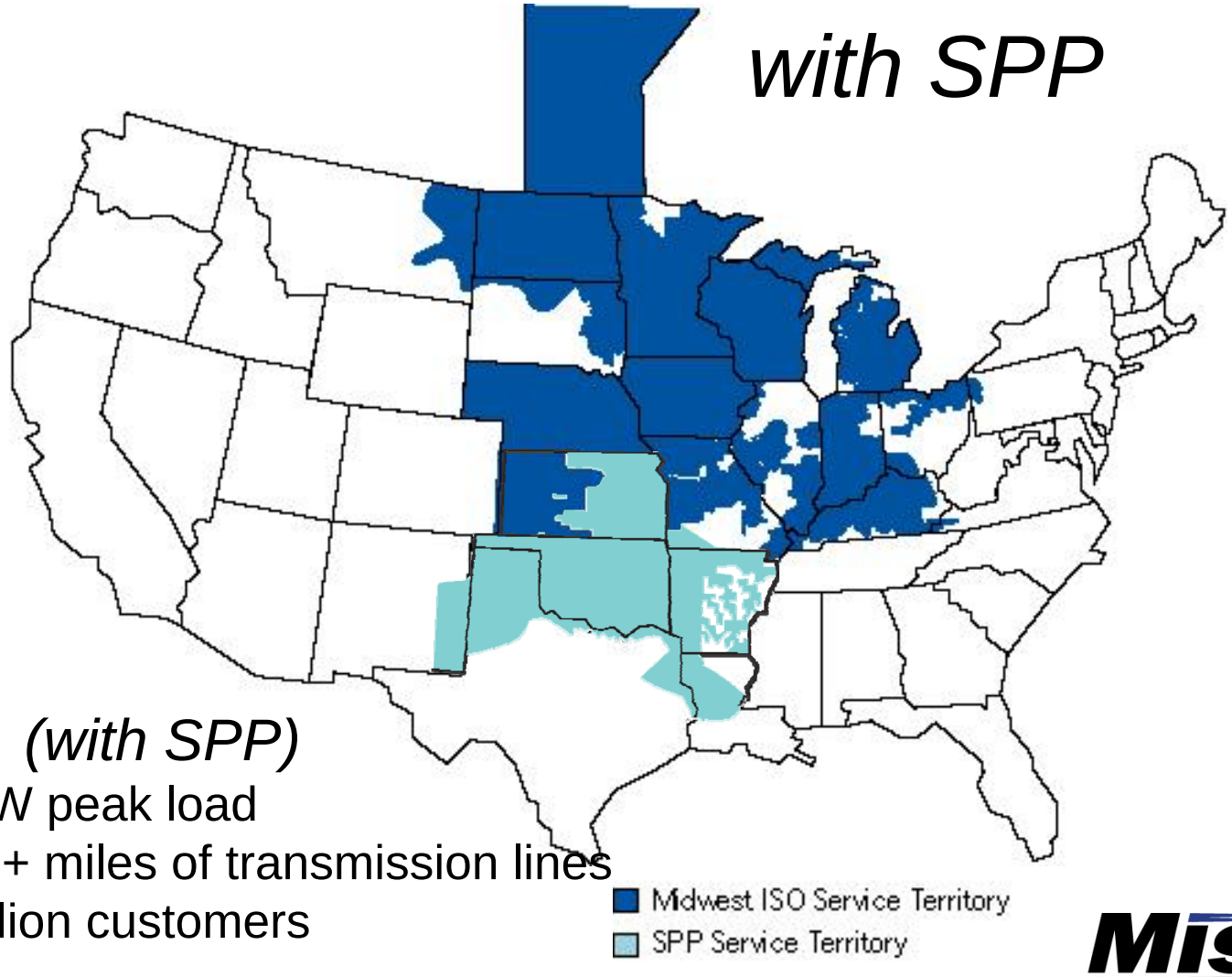
Midwest ISO Service Territory

with SPP



Scope (with SPP)

150+ GW peak load

144,000+ miles of transmission lines

20.9 million customers

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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)**

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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**

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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**

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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.**

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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**

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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**

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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**

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Evolution of the Midwest ISO

MISO Evolution – Step 1

- FERC issues Order 888 and 889 in 1995
- Discussions on MISO started 1996
- FERC ISO Filing – January, 1998
- FERC ISO Conditional Approval – September 16, 1998
- MISO Board of Directors convened first Board meeting January 1999
- MISO first employee hired August 1999

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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)

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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

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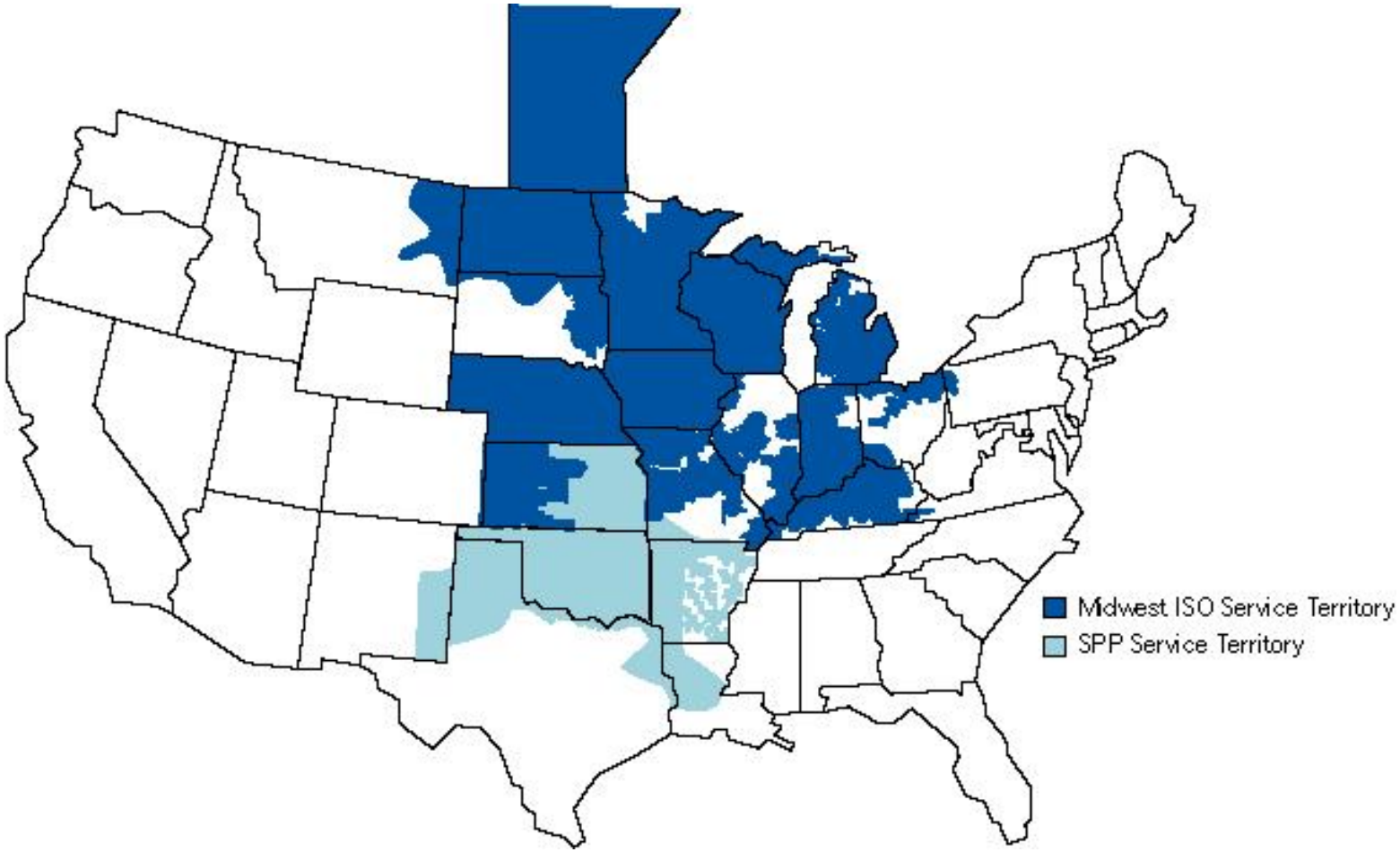
MISO-SPP Merger



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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**

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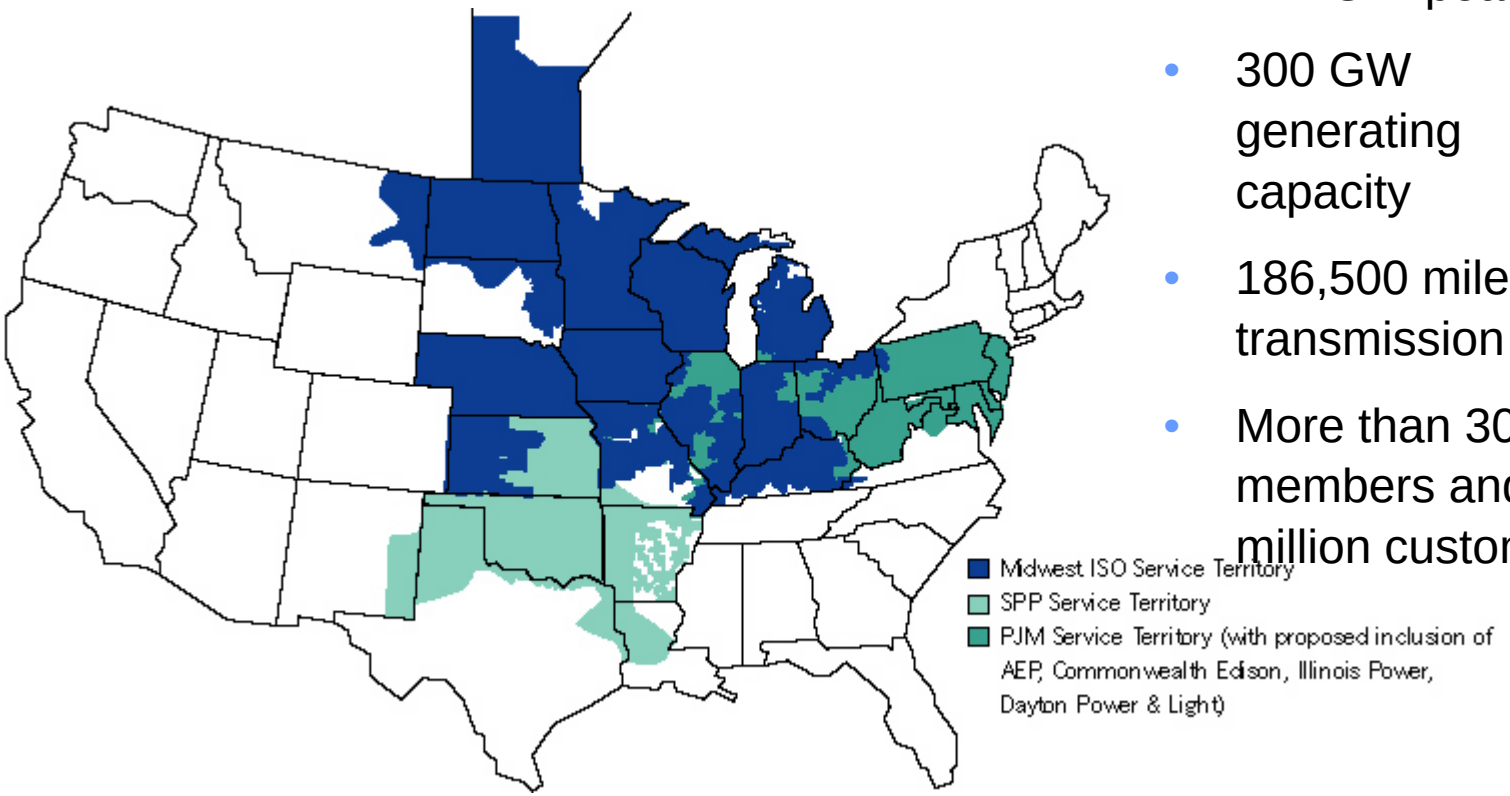
*The Joint and Common Market**

<u>* as proposed</u>



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

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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**

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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.**

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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.**

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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.**

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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**

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MISO Values

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