Ministry of Economy, Trade and Industry

John Bear, President & CEO
MISO

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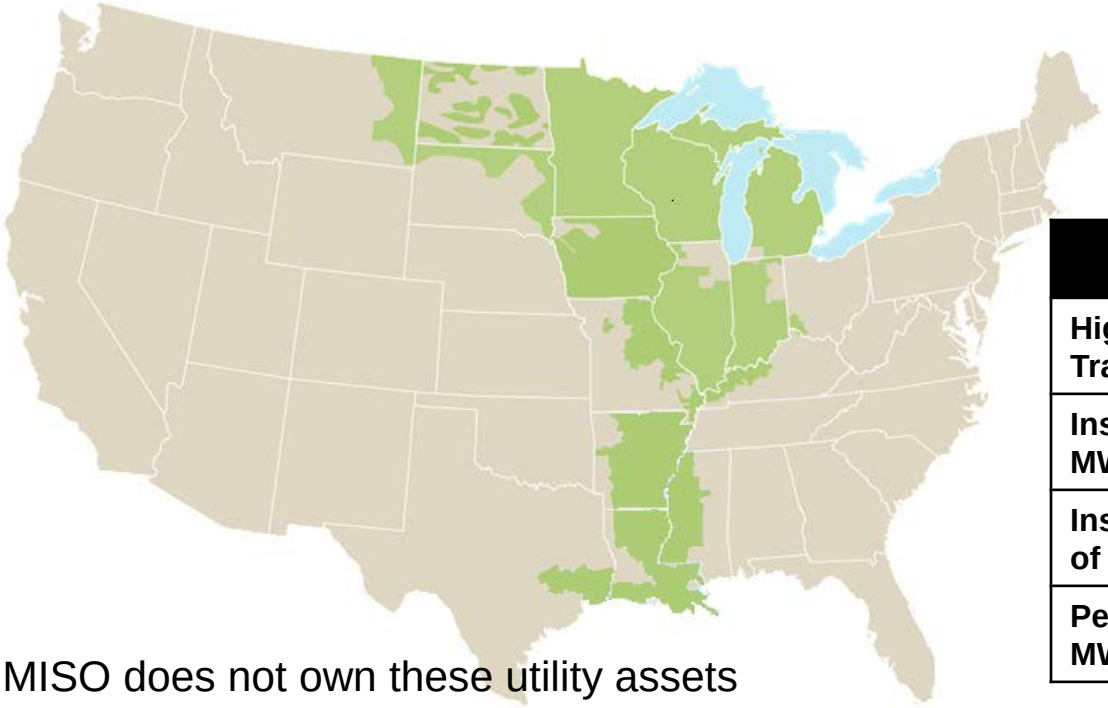
MISO is an independent, not-for profit company that operates the electric transmission system and energy markets in the central United States



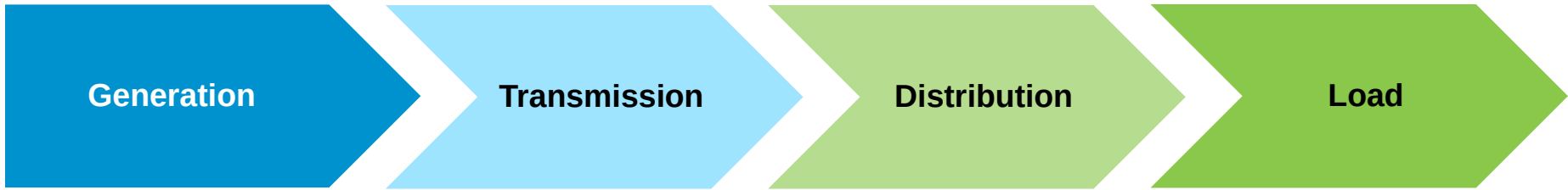
MISO Scale	
High Voltage Transmission - miles	49,670 → 65,370
Installed Generation - MW	131,010 → 155,296
Installed Generation - # of Units	1,242 → 1,336
Peak System Demand - MW	103,975 → 129,475

- MISO does not own these utility assets
- MISO functionally operates the transmission system on behalf of the asset owners
- MISO commits and dispatches the generation as the market operator

MISO and other Regional Transmission Organizations (RTOs) have enabled robust wholesale competition – providing great value to end use consumers

- MISO has enabled wholesale competition by:
  - Removing transmission barriers
  - Putting processes, systems and incentives in place that allow many types of competitors to participate equally
  - Providing data / information transparency
- MISO's Annual Value Proposition - $2.2 to $2.7 Billion

Most of the history of the US electric industry has been dominated by large vertically integrated utility companies



Vertically Integrated Utilities

- Investor Owned Utilities
- Municipal Utilities
- Rural Cooperative Utilities

All Customers

	Start Up Era		Golden Era		Nuclear Expansion
	1880s	1920s		1940s	1960s
Customers (millions)	7	22	27	43	58
Revenue ($ billions)	0.5	1.8	2.3	4.6	10.6

Private Generators → Private Use

The early history of the US electric industry was one of rapid growth driven by technical advances, falling prices and growing demand….until the Nuclear Expansion Era

	Start Up Era 1880 – 1935	Golden Era 1935 – 1965	Nuclear Expansion Era 1965 – 1978
Industry Structure	Vertically Integrated	Vertically Integrated	Vertically Integrated
Demand Growth	Rapid	Steady 7%/Year	Slowed
Economies of Scale	Marginal costs <u>less</u> than average costs	Marginal costs <u>less</u> than average costs	Marginal costs <u>more</u> than average costs
Federal Regulatory Focus	• Investor protection • Universal availability	• Investor protection • Universal availability	Interstate sales
State Regulatory Focus	Retail rate-setting	Retail rate-setting	Retail rate-setting
Other Characteristics	• Proliferation followed by concentration • By 1925, 16 holding companies controlled 85% of industry	• Recognized as national monopoly • Consumer rates dropped continuously	• Nuclear costs and slowed technical advances drive consumer rates up for first time

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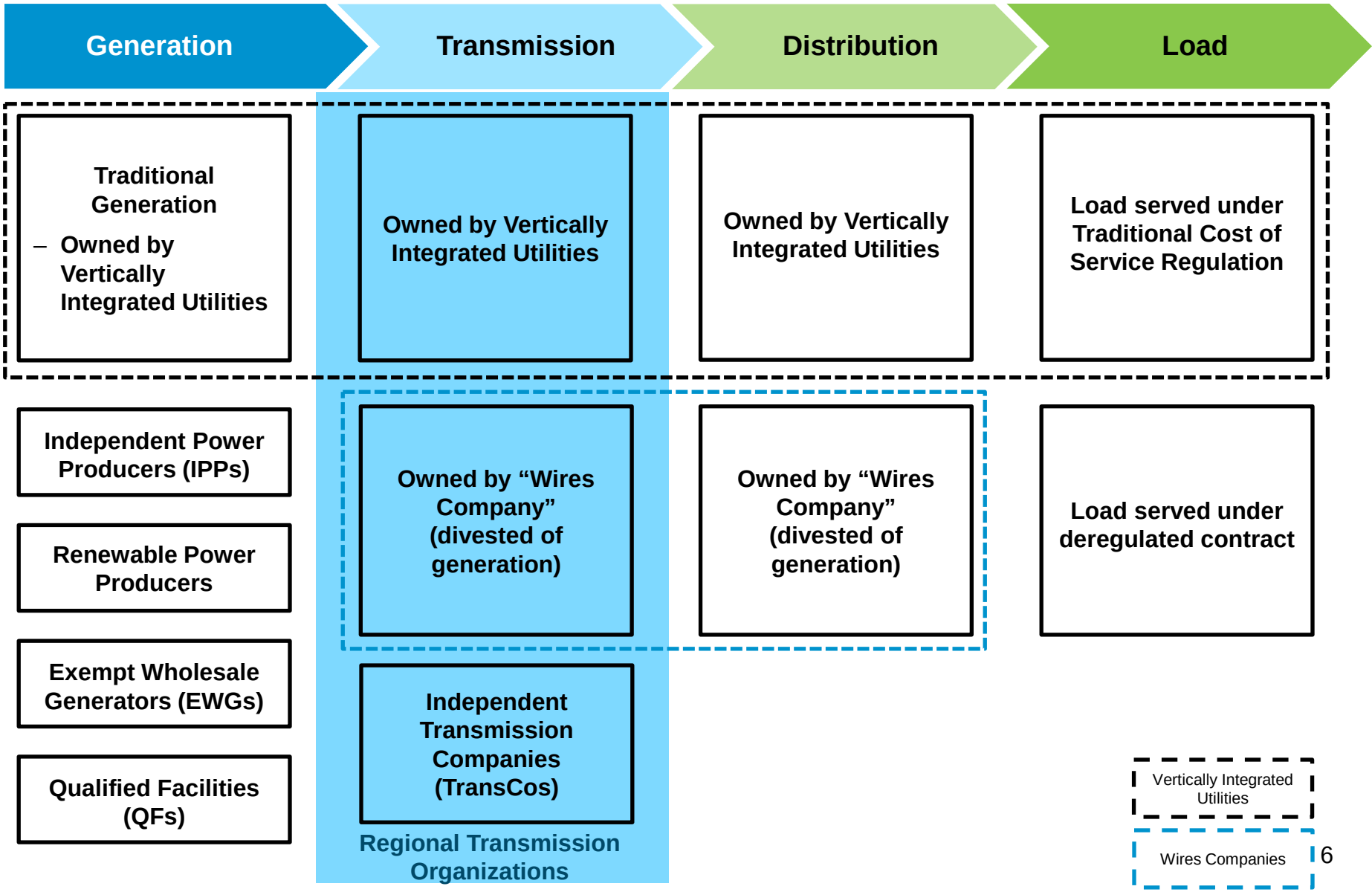
More recent history has been focused on increasing competition in the industry – Encouraging new generation while removing competitive barriers

	Increased Competition Era (1978 – 1992)	Regional Transmission Organization Era (1992 – Present)
Industry Structure	Largely vertically integrated with new generators emerging	Increasingly modular
Demand Growth	Varied	Slow but steady

Federal Regulatory Focus	• Encouraging new generation competitors
	  • Independent Power Producers (IPPs)
	  • Qualified Facilities (QFs)
		• Open, non-discriminatory transmission access
		• Encouraging new generation
		  • Exempt Wholesale Generators (EWGs)

State Regulatory Focus	• Move from declining block rate making (which encouraged consumption) • Move to marginal cost pricing • Retail deregulation	• Renewable Portfolio Standards (RPS) • Retail deregulation
Other Characteristics	Transmission access blocked new generation	• Emergence of new industry business models • Environmental concerns increase • Fuel cost variability / volatility

The current industry structure is more accommodating of diverse business structures with competition across multiple segments



Federal Energy Regulatory Commission (FERC) Orders 888 / 889 opened up transmission access

Order 888

Utilities required to:

- File open access, non-discriminatory transmission tariffs
- "Functionally unbundle" their generation and power marketing functions
- Provide unbundled ancillary transmission services

Order 889

- Establishes Open Access Same Time Information System (OASIS) to reserve transmission service
- Provides all current and potential users the same access that the actual transmission owner has
- Establishes standards of conduct to functionally separate transmission and wholesale power merchant functions

Effects

- Establishment of Independent System Operators (ISOs) to manage transmission
- Divestiture of generation units by vertically integrated utilities
- Notable increase in power marketers and independent generators
- Development of retail competition in states
- Large industrial customers received lower costs

FERC Order 2000 created Regional Transmission Organizations designed to increase wholesale competition

Purpose:

– Eliminate continuing opportunities for transmission discrimination

– Reduce engineering and economic inefficiencies

- Bulk power system reliability
- Difficulties in computing transmission capacity
- Regional coordination of` transmission congestion
- Pancaked transmission rates

RTO Required Characteristics

Minimum Standards

- Independent from market
- Regional scope of operations
- Authority to plan and expand
- "Open architecture" policy to allow structural modifications

Minimum Functions

- Transmission tariff administration
- Transmission system congestion management
- Transmission access administration
- Market monitoring—Ensuring fair competition
- Transmission planning and expansion
- Coordination between regions

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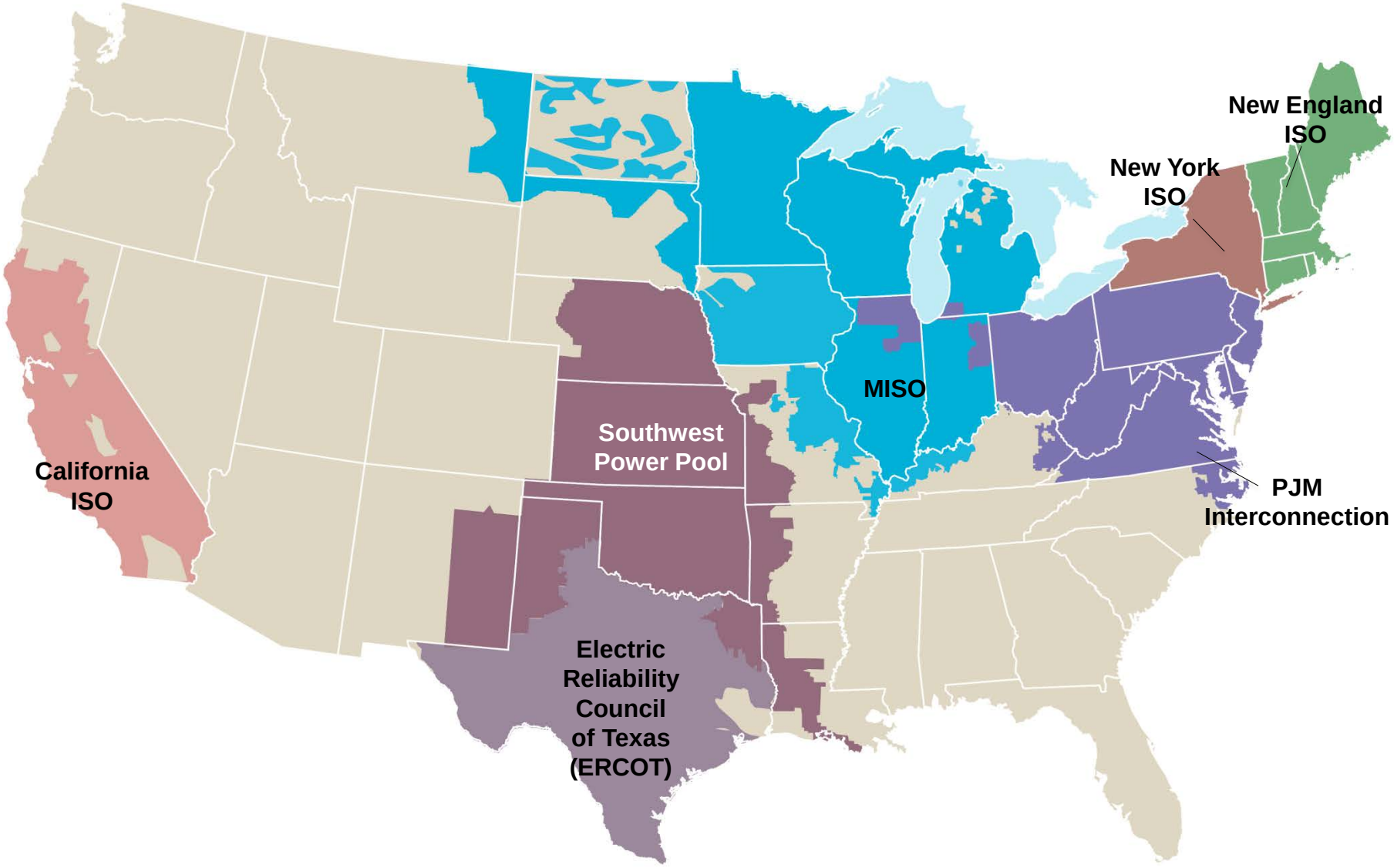
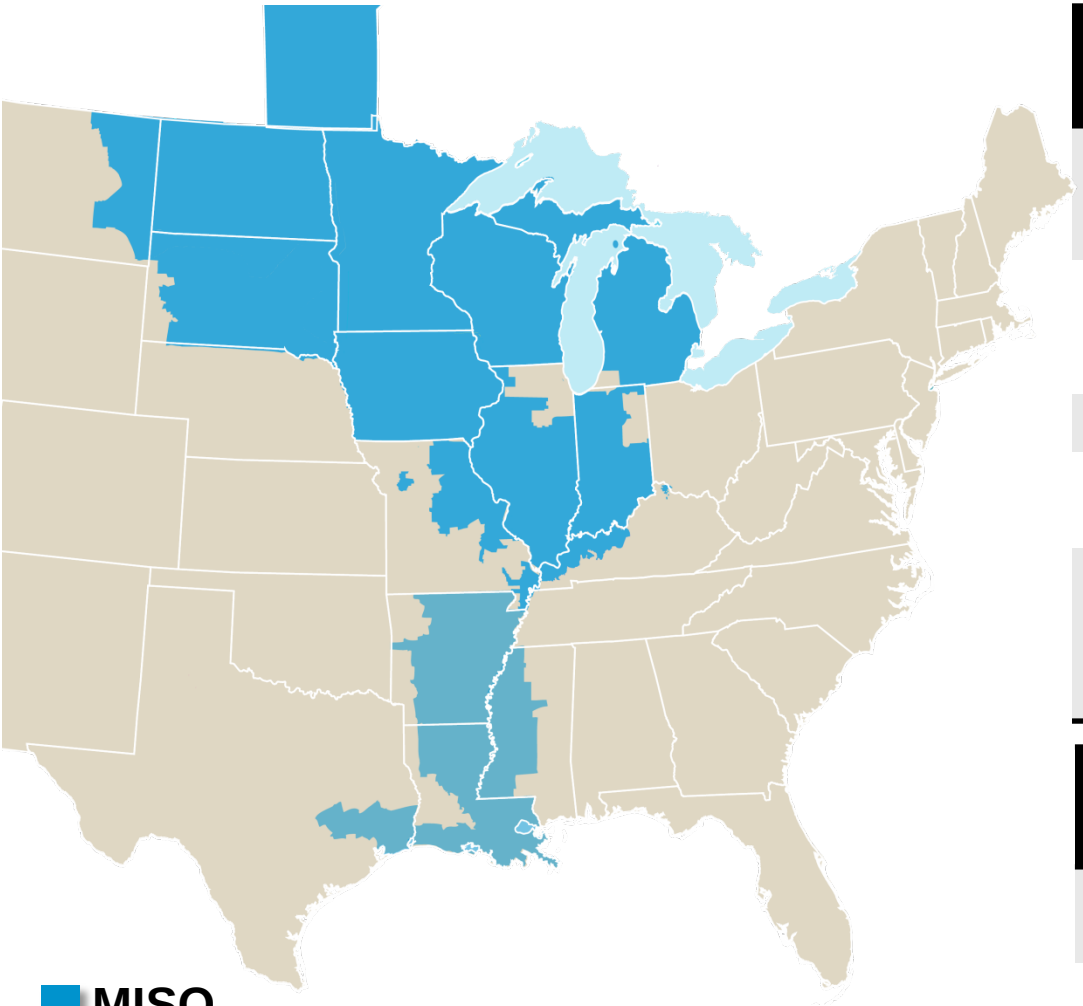
Regional Transmission Organizations in the US



MISO footprint and business model allow for widespread participation in industry

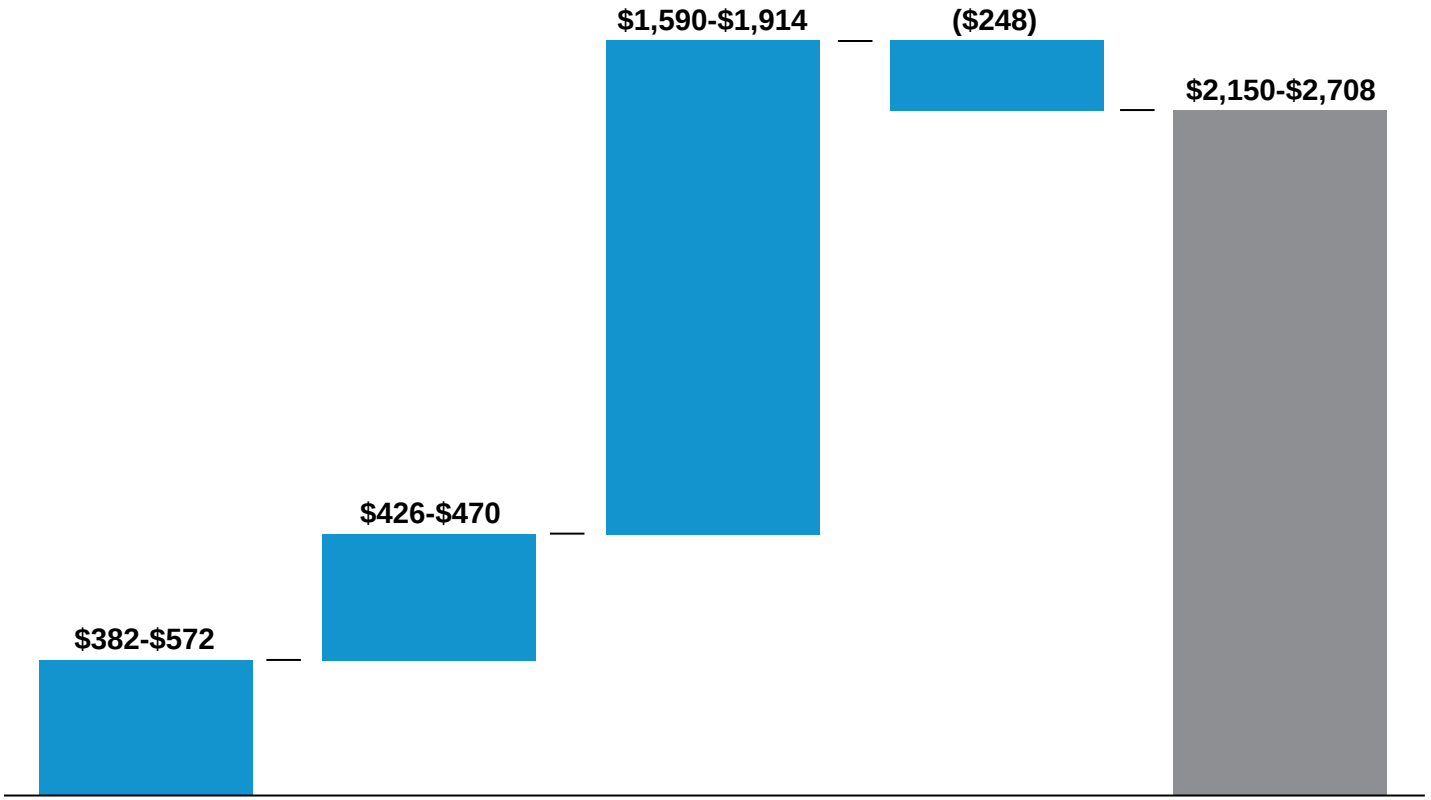


Market Participants	
Vertically Integrated Transmission Owners	33 → 37
Independent Transmission Companies	2
Power Marketers	49
Independent Power Producers	27 → 80+
Transmission Dependent Municipals / Cooperatives	17 → 30+

Industry Stakeholders	
State Regulatory Agencies	11 → 16
Consumer Advocates	12
Environmental Groups	8

The MISO 2011 Value Proposition

Benefit by Value Driver
(in $ millions)



RTOs have produced a number of benefits for generation and other resources

- All resources compete equally
  - Traditional generation – Coal, gas, nuclear, hydro, etc…
    - Regardless of ownership
  - Renewable generation – Wind, solar, biomass, etc…
  - Emerging technologies – Flywheels, storage, etc…
  - Demand side resources – Interruptibles, dispatchable load, etc…
- All stakeholders have full access to pricing information
  - Energy – Day-Ahead – Hourly, Real-Time – 5 minutes
  - Operating Reserves and Regulation
    - Day-Ahead – Hourly, Real-Time – 5 minutes

However, RTOs have not yet found a proven market solution to incentivize generation/resource investment

MISO's Resource Adequacy Market	Centrally Procured Capacity Market Model
• Relies on state regulatory authority to authorize generation/resource investment • Primary cost recovery is through regulated recovery of investment costs • MISO operates a "voluntary" capacity auction to facilitate capacity market • Bilateral capacity market also strong	• RTO runs an auction to procure generation/resources on behalf of the load in their area • Typically 1-3 years ahead • Has worked well to incentivize demand resources • Has not been proven to incentivize new generation construction, especially baseload resources

Transmission users have seen significant benefits from RTOs

- Elimination of “pan-caked” (duplicative) transmission charges
- Equal access to transmission system
  - Interconnect of facilities
  - Transmission reservations
- Market based congestion management
- Consistent calculation of available transmission capacity
- Centrally coordinated transmission planning
  - Bottom Up – Reliability – Transmission Owner
  - Top Down – Economic – RTO in concert with all stakeholders

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Appendix

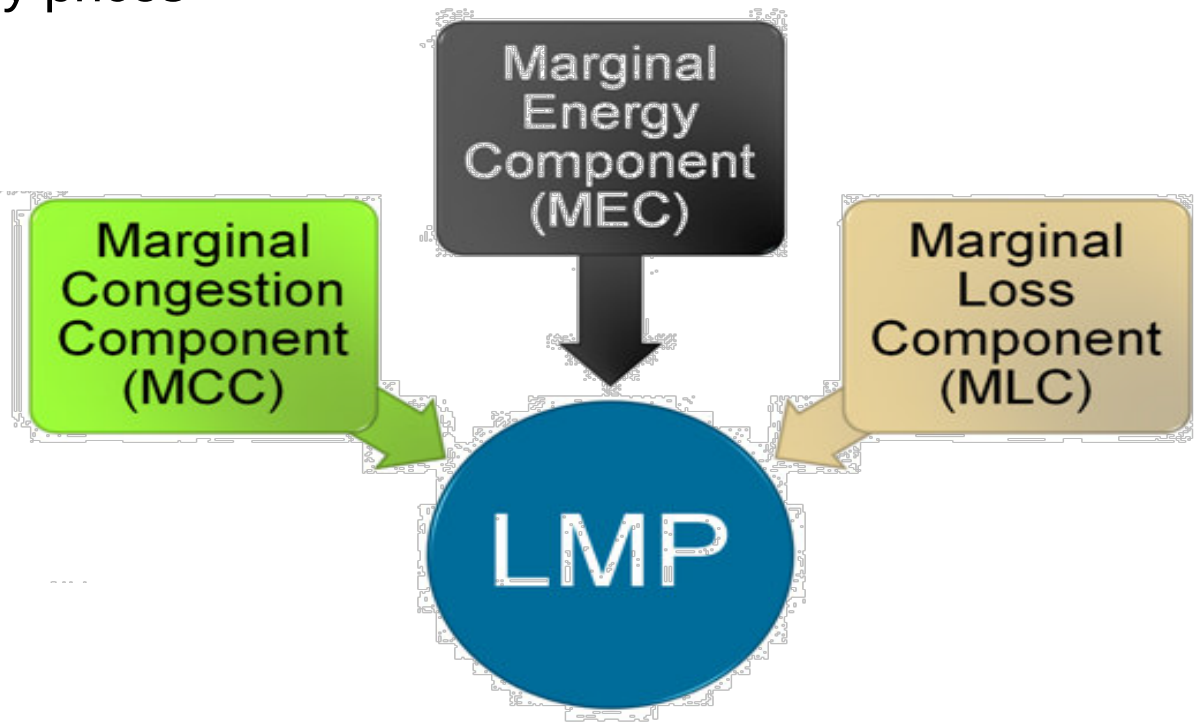
MISO uses a Locational Marginal Pricing (LMP) Methodology

What is LMP?

- Price for energy, including congestion and losses
- Used to calculate, settle and communicate energy prices

LMP Concept

- The market price of any commodity should be the cost of bringing the next unit of that commodity to market



The US Nuclear energy industry has benefited from a strong industry safety organization that is independent from but complimentary to federal regulatory and enforcement efforts

Basic Principles

1. Whole industry is hostage to the worst nuclear operator in the country
2. Meeting regulations is just “the price of admission”
3. Given 1&2, industry must go beyond the minimum level to keep everyone safe
4. You can be committed to excellence from within, but achieving excellence requires a willingness to learn from everyone

Industry Commitment

- Strong senior leadership necessary
  - From nuclear owners
  - From organization itself
- Industry participants must be:
  - Transparent – sharing both best practices and problems/issues
  - Self critical – willing to really take a hard look at what is working and not working
  - Open – receptive to other options/input from outside

Types of Activities

- Plant evaluations – Operations, processes, personnel, systems, equipment
- Training and accreditation of operations
- Event analysis and information exchange
- Assistance as required