



Proposed Multi Value Project Portfolio

Business Case Overview

September 15, 2011



MISO Planning Objectives

Fundamental Goal



The development of a comprehensive expansion plan that meets reliability needs, policy needs, and economic needs

MISO Board of Director Planning Principles*

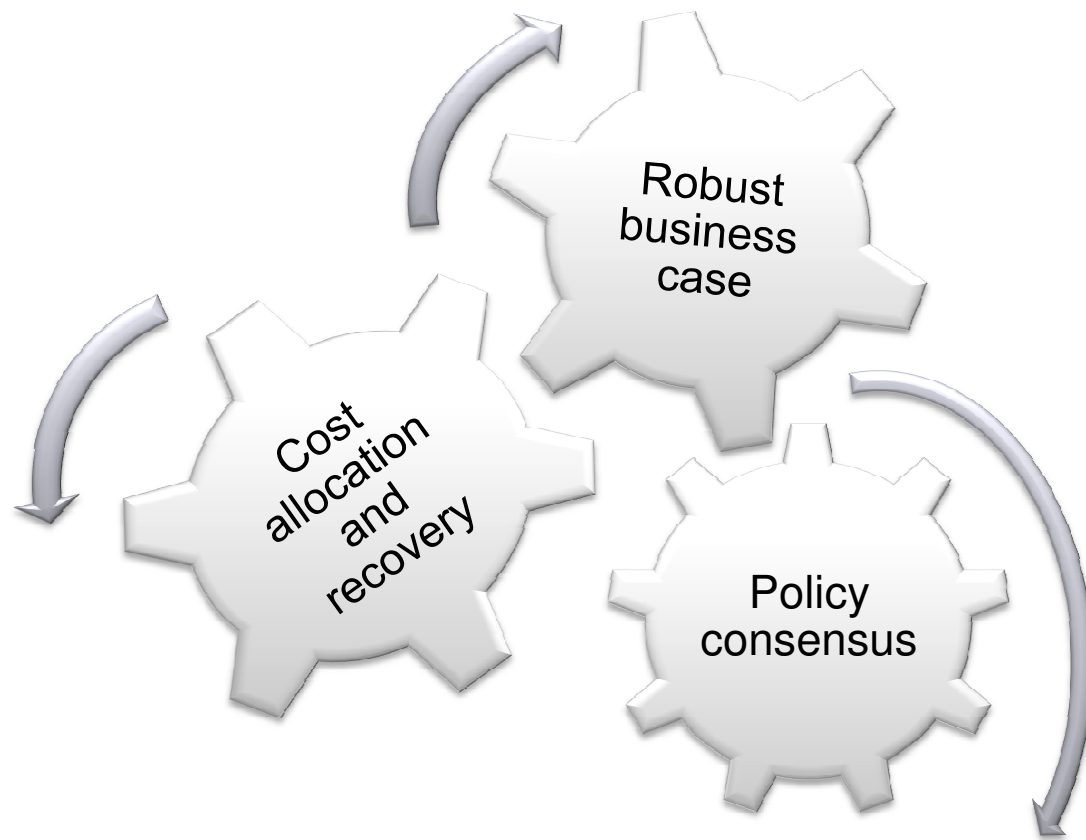


- Make the benefits of an economically efficient energy market available to customers by providing access to the lowest electric energy costs
- Provide a transmission infrastructure that safeguards local and regional reliability and supports interconnection-wide reliability
- Support state and federal energy policy objectives by planning for access to a changing resource mix
- Provide an appropriate cost mechanism that ensures the realization of benefits over time is commensurate with the allocation of costs
- Develop transmission system scenario models and make them available to state and federal energy policy makers to provide context and inform the choices they face



* As modified and approved by MISO Board of Directors System Planning Committee 5/16/2011; pending full board approval

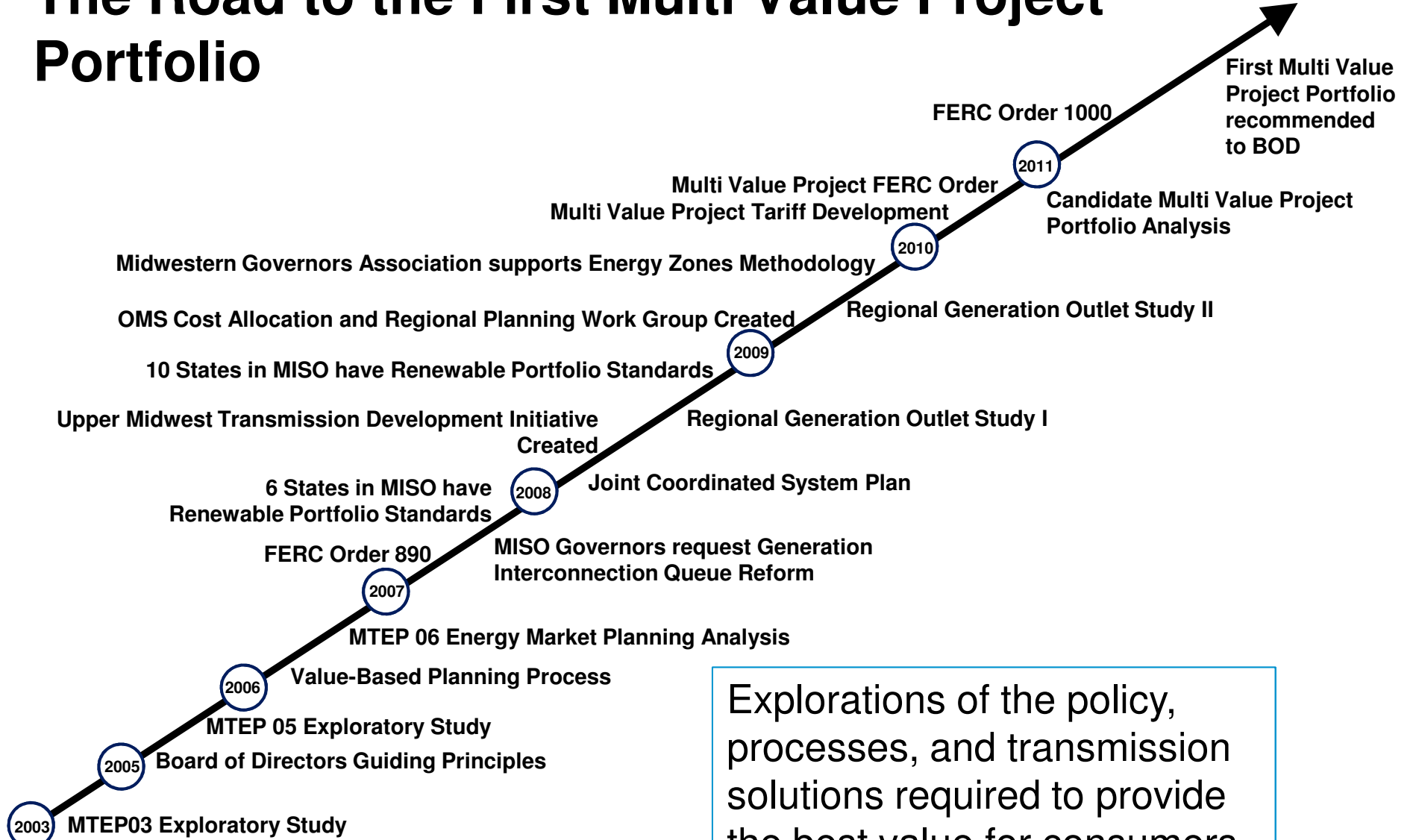
Conditions Precedent to Increased Transmission Build



Before transmission is built a number of conditions must be met

- Increased consensus on energy policies (current and future)
- A robust business case that demonstrates value sufficient to support the construction of the transmission project
- A regional tariff that matches who benefits with who pays over time
- Cost recovery mechanisms that reduce financial risk

The Road to the First Multi Value Project Portfolio

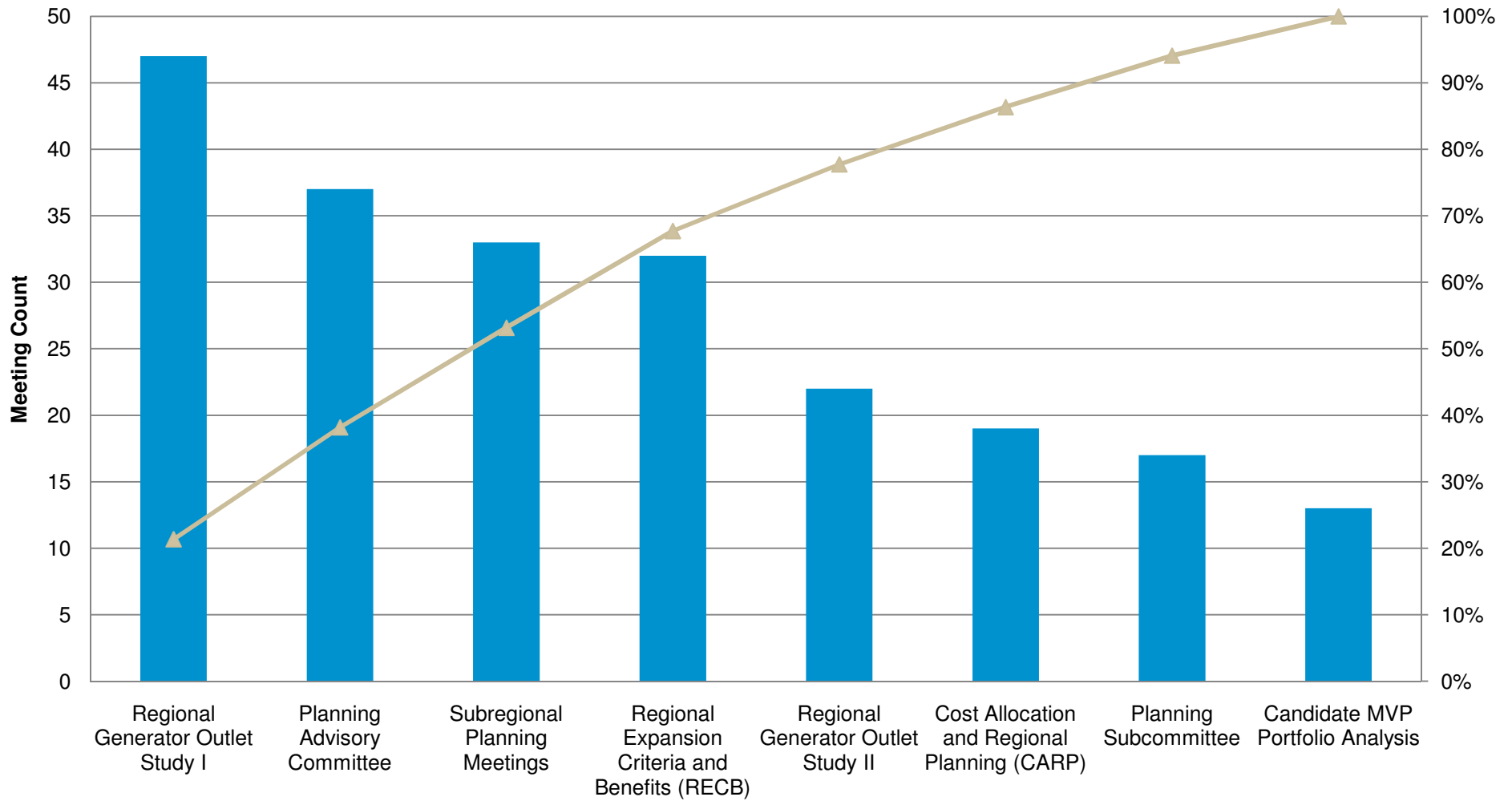


Explorations of the policy, processes, and transmission solutions required to provide the best value for consumers began in 2003



Regional Transmission Planning Efforts

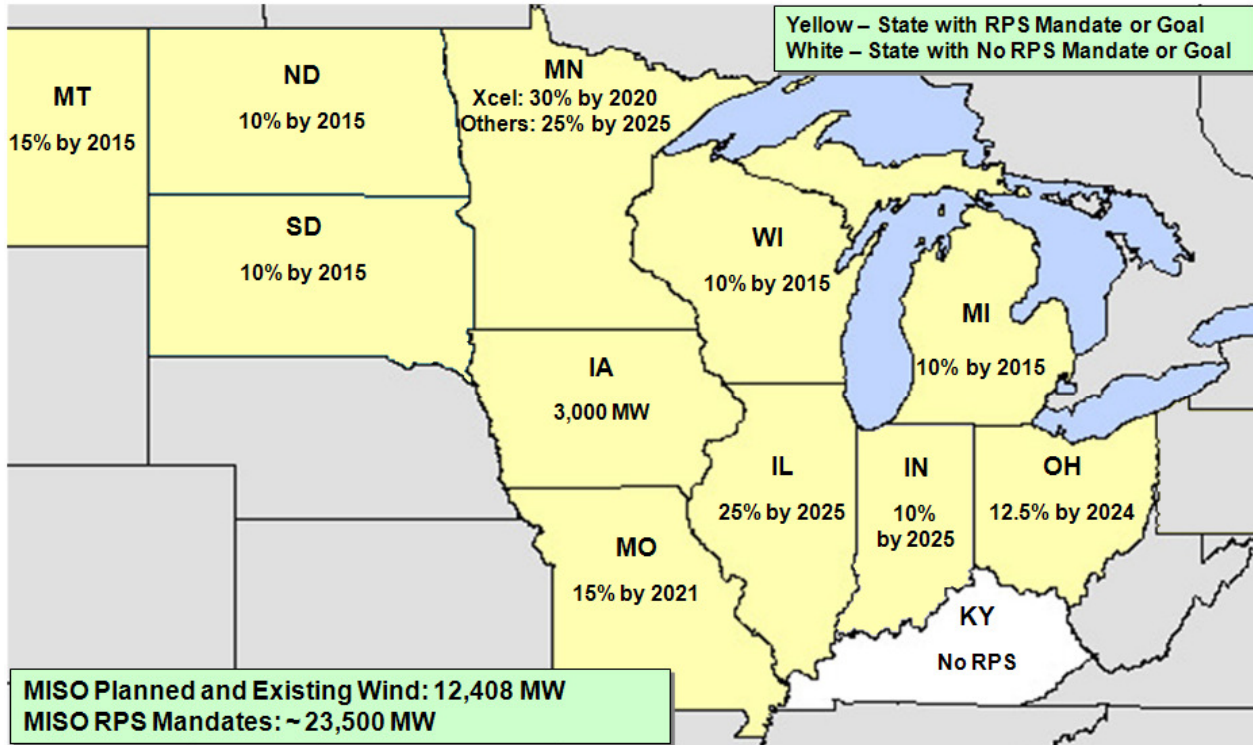
Stakeholder Meetings



Required: Policy Consensus

Current State Renewable Portfolio Standards

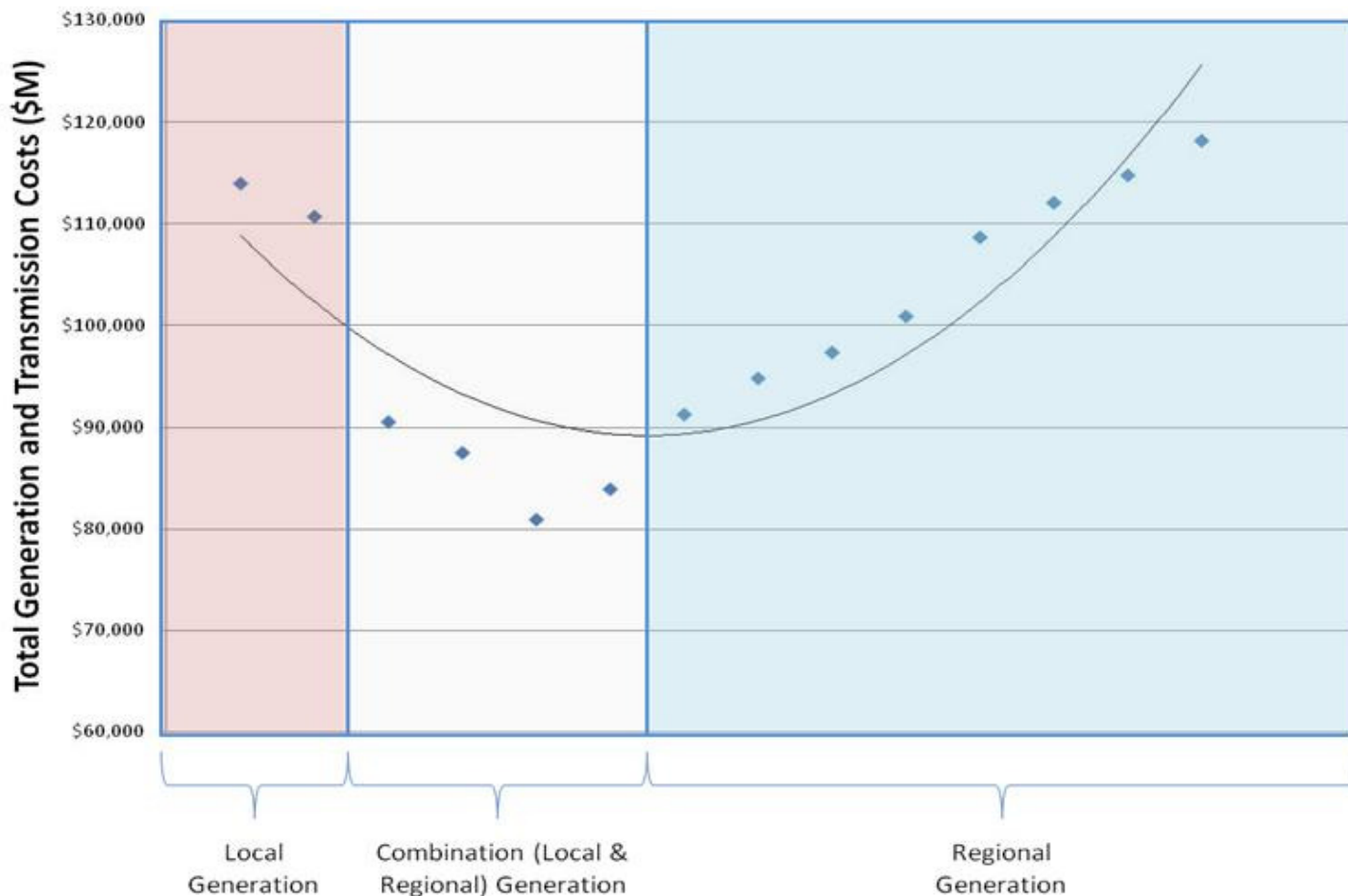
As of 07/27/2011



Planned and Existing Wind as of 3/28/3011

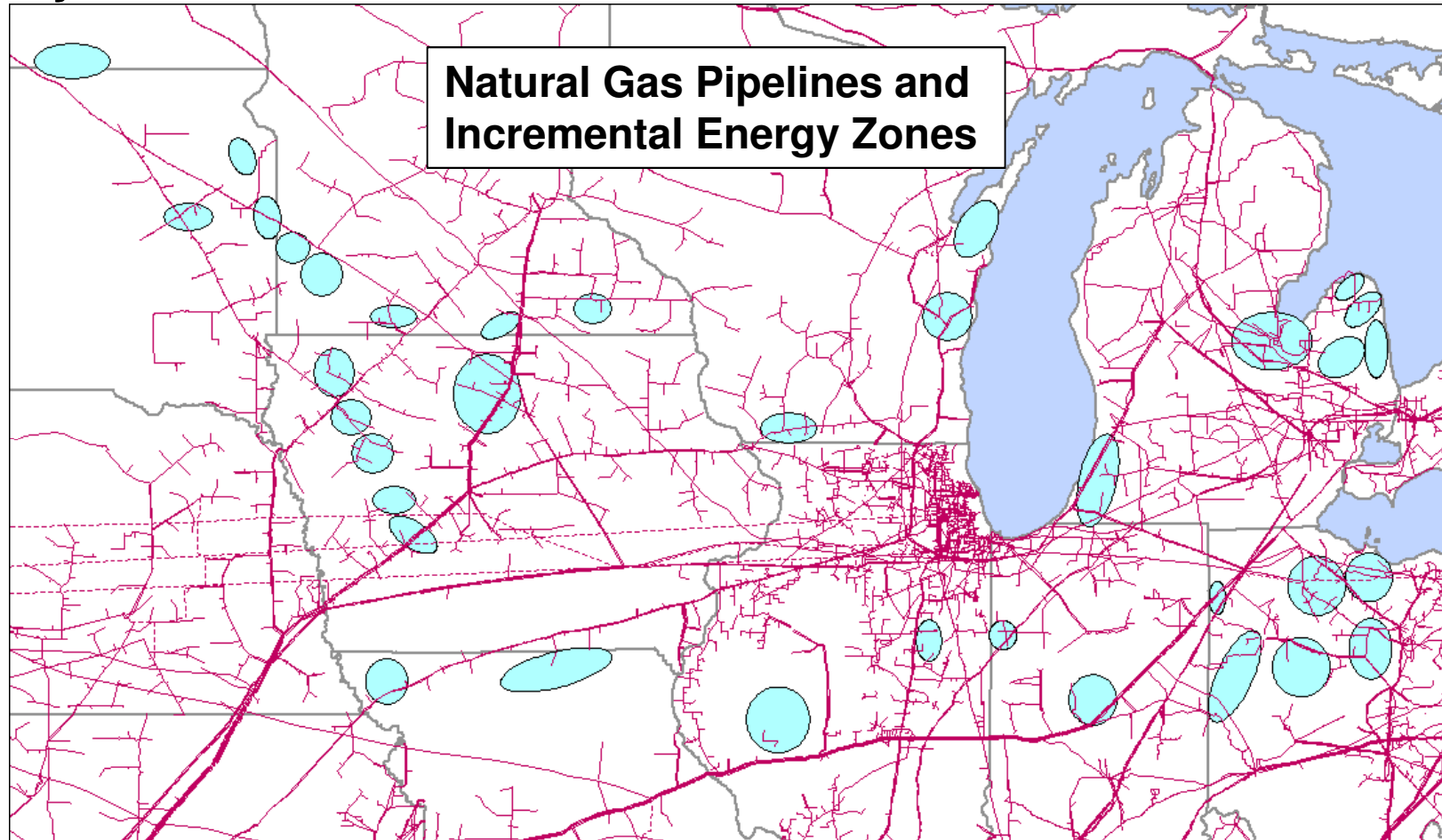
- MISO believes an informal consensus has been reached regarding appropriate planning for energy policies.
- This belief is based on the widespread implementation of Renewable Portfolio Standards across the MISO footprint and the work of many stakeholders, spearheaded by the:
 - ✓ Midwest Governor's Association
 - ✓ Upper Midwest Transmission Development Initiative
 - ✓ Organization of Midwest ISO States Cost Allocation and Regional Planning

To meet the MISO planning goal of providing consumers with access to the lowest cost electric energy, analyses were performed to determine the costs associated with different wind generation siting methodologies



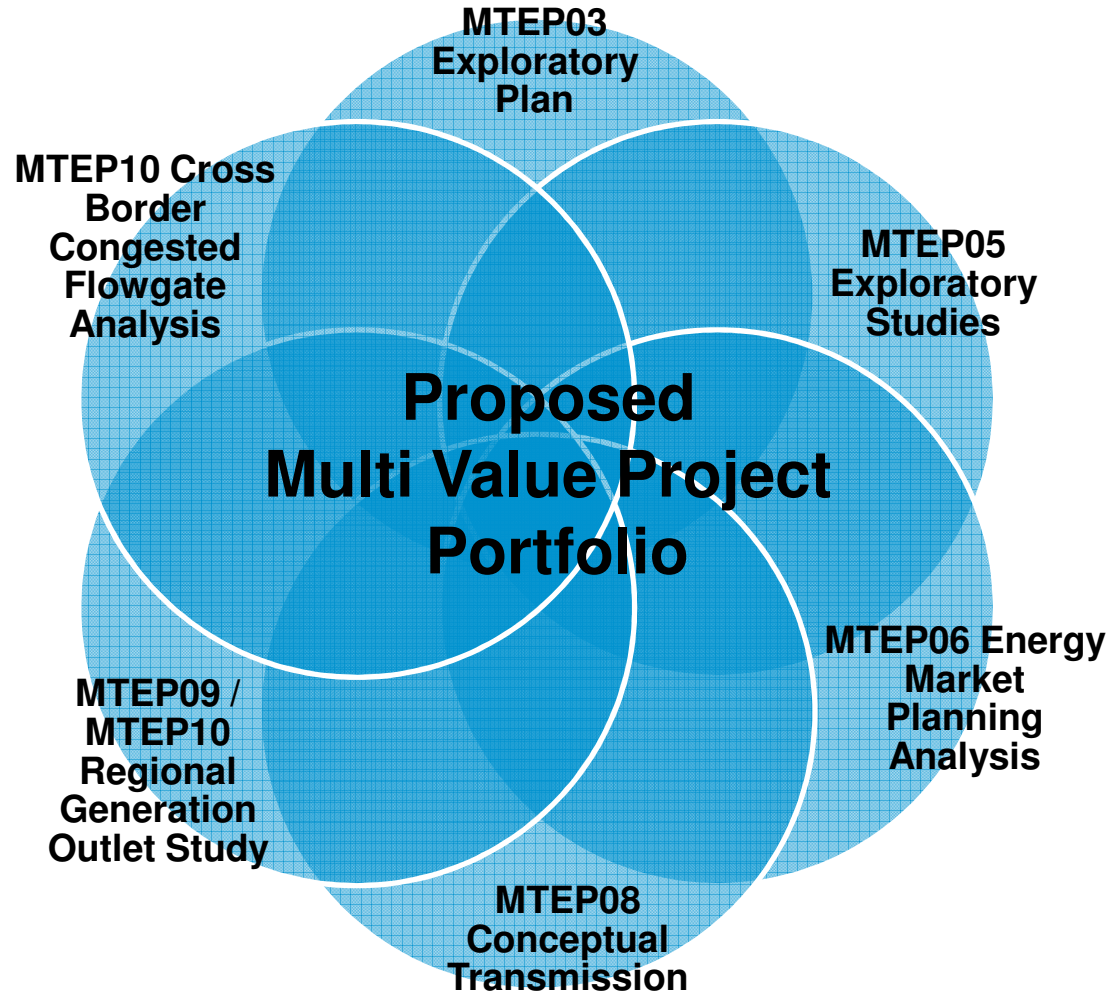
The low cost approach to wind generation siting, when both generation and transmission capital costs are considered, is a combination of local and regional generation locations.

This methodology resulted in a set of energy zones which were used as the locations for incremental generation in continuing analyses



These energy zones were created by balancing relative wind capacities along with distances from natural gas pipelines and existing transmission infrastructure

Required: Robust Business Case



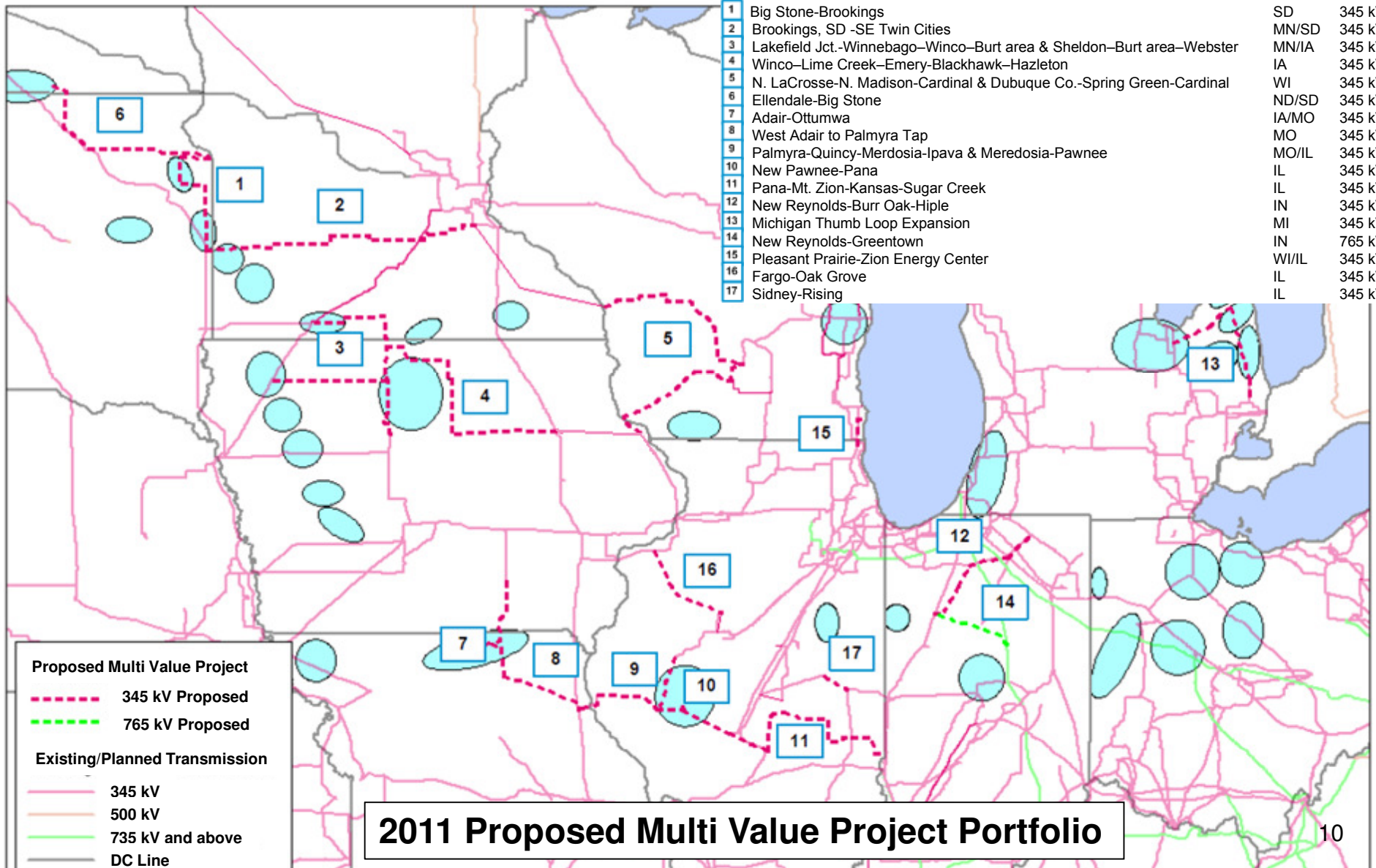
Through consolidating the transmission solutions developed throughout the years, the proposed Multi Value Project Portfolio was created

After additional intensive analysis, the candidate portfolio was refined into a final proposed Multi Value Project Portfolio

Proposed Multi Value Projects (MVPs)

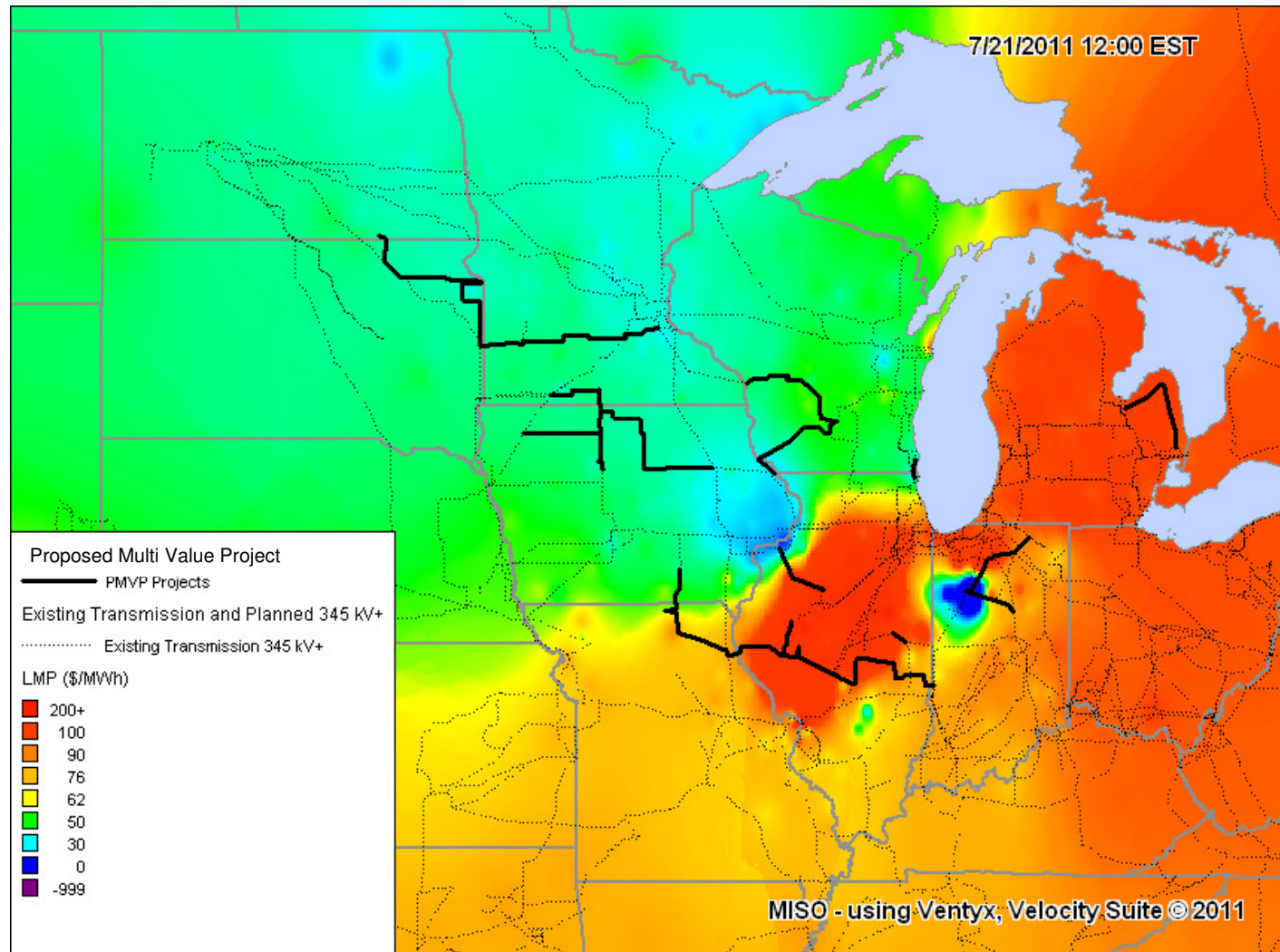
- 1 Big Stone-Brookings
- 2 Brookings, SD -SE Twin Cities
- 3 Lakefield Jct.-Winnebago-Winco-Burt area & Sheldon-Burt area-Webster
- 4 Winco-Lime Creek-Emery-Blackhawk-Hazleton
- 5 N. LaCrosse-N. Madison-Cardinal & Dubuque Co.-Spring Green-Cardinal
- 6 Ellendale-Big Stone
- 7 Adair-Ottumwa
- 8 West Adair to Palmyra Tap
- 9 Palmyra-Quincy-Meradosia-Ipava & Meradosia-Pawnee
- 10 New Pawnee-Pana
- 11 Pana-Mt. Zion-Kansas-Sugar Creek
- 12 New Reynolds-Burr Oak-Hiple
- 13 Michigan Thumb Loop Expansion
- 14 New Reynolds-Greentown
- 15 Pleasant Prairie-Zion Energy Center
- 16 Fargo-Oak Grove
- 17 Sidney-Rising

State	Voltage
SD	345 kV
MN/SD	345 kV
MN/IA	345 kV
IA	345 kV
WI	345 kV
ND/SD	345 kV
IA/MO	345 kV
MO	345 kV
MO/IL	345 kV
IL	345 kV
IL	345 kV
IN	345 kV
MI	345 kV
IN	765 kV
WI/IL	345 kV
IL	345 kV
IL	345 kV



2011 Proposed Multi Value Project Portfolio

Multi Value Projects enable a more reliable and efficient transmission system



Multi Value Projects reliably and economically enable established energy policy choices

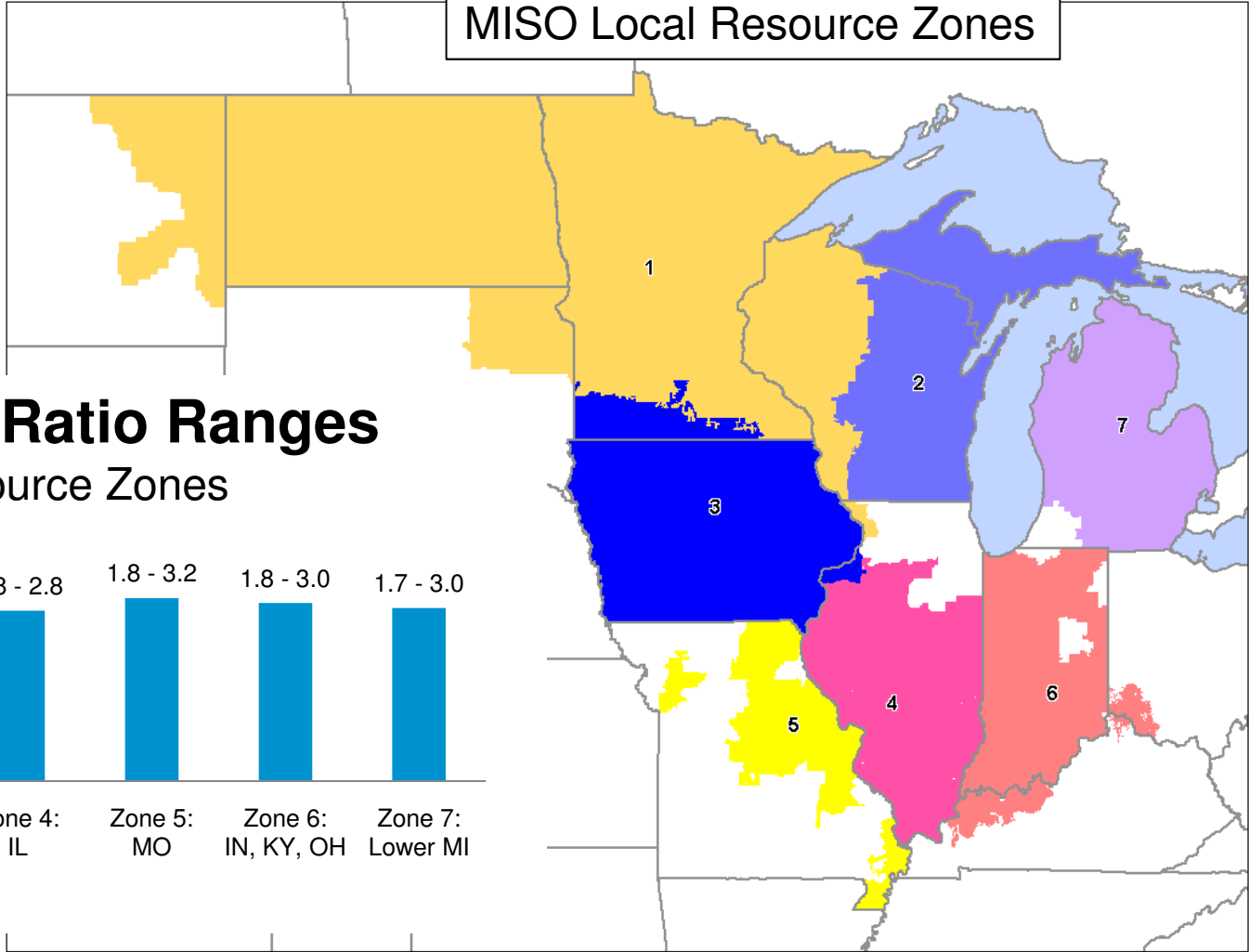
- The proposed Multi Value Project Portfolio creates a robust transmission system that provides value under a wide range of policy, economic, and operating conditions
- Specifically, it
 - Provides benefits in excess of its costs under all scenarios studied, with its Benefit-to-Cost ratio ranging from 1.8 to 3.0
 - Maintains system reliability by resolving reliability violations on about 650 elements for more than 6,700 system conditions and mitigating 31 system instability conditions
 - Enables 41 million MWh of wind energy to meet renewable energy mandates and goals
 - Provides an average annual value of \$1,279 million over the first forty years of service, at the cost of an average annual revenue requirement of \$624 million*
 - Supports a variety of generation policies through utilizing a set of energy zones which support wind, natural gas, and other fuel sources



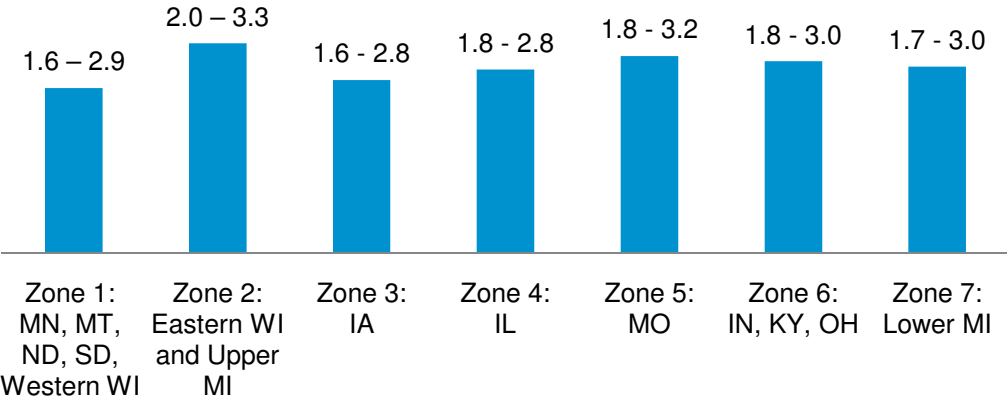
** Based on a total portfolio capital cost of \$5.2 billion, in 2011 dollars
Final costs are subject to change as actual construction estimates are received*

Multi Value Projects create benefits that are spread across MISO in a manner commensurate with costs

MISO Local Resource Zones

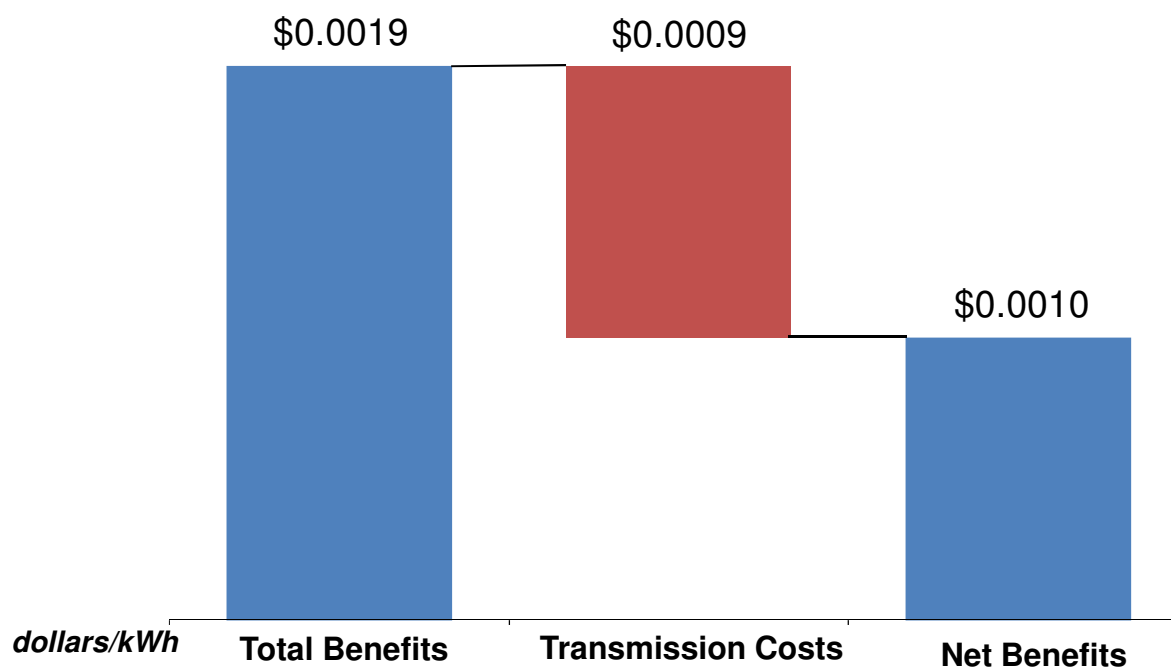


Benefit/Cost Ratio Ranges Local Resource Zones



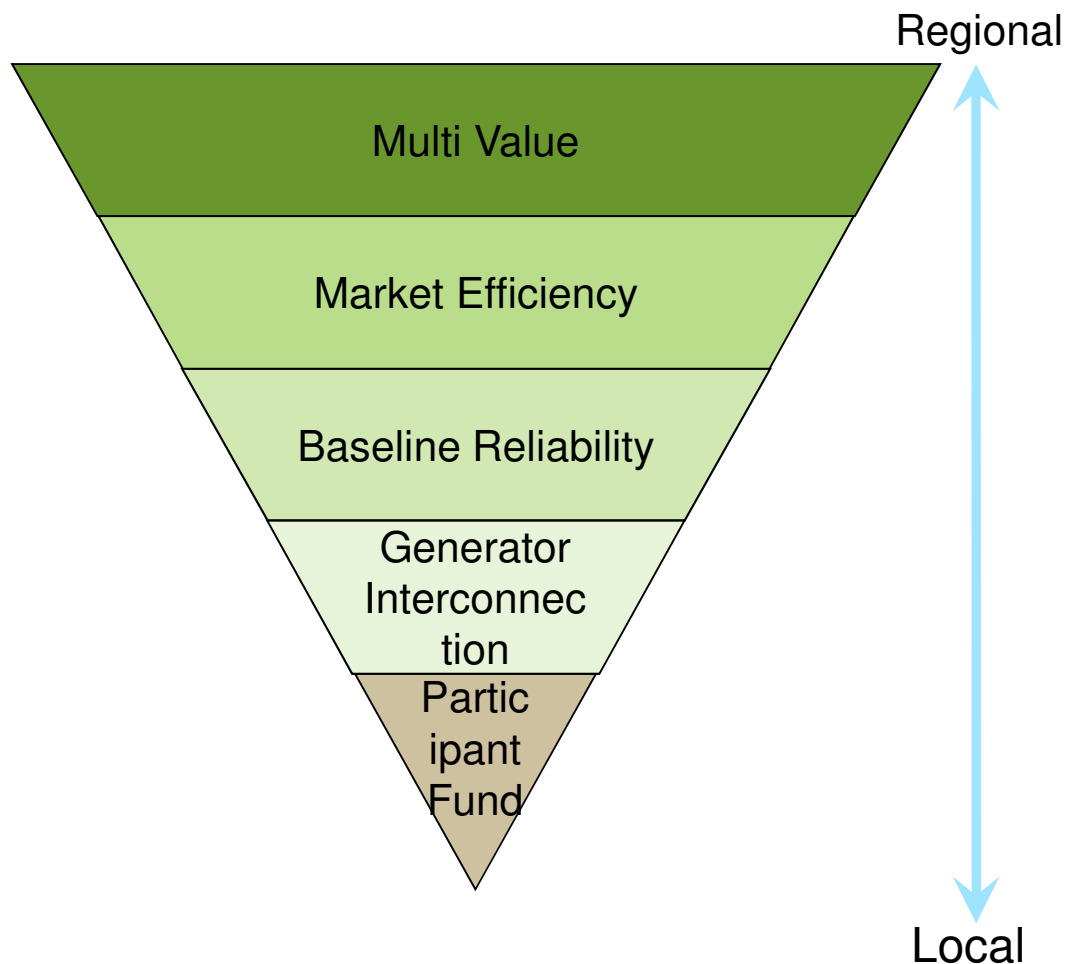
Multi Value Projects provide the average residential customer \$23 in annual benefits, at an annual cost of \$11

Average Residential Customer Benefits



* Assumes average residential customer uses 1,000 kWh per month.
Costs and benefits based on the first 40 years of operation, in 2011 dollars

Required: Transmission Cost Allocation



In the MISO cost allocation approach the business case (i.e. benefits) defines the spread of dollars

- Benefits of Multi Value Projects are spread regionally consistent with the widespread benefits from regional plan
- Economic benefits of Market Efficiency Projects spread farther beyond the local zone
- Reliability benefits of Baseline Reliability Projects primarily stay in the zone in which the reliability issue exists
- Generator Interconnection Projects paid primarily by Interconnection Customer
- Participant funded projects are paid by the party proposing the project

Conclusions and Next Steps

- The proposed Multi Value Project portfolio represents the culmination of over 8 years of planning efforts by MISO and its stakeholders to minimize the total cost of delivered power to consumers while maximizing their benefits
- The proposed Multi Value Project portfolio provides widespread reliability, public policy, and economic benefits in excess of costs to the MISO footprint
- MISO Staff will be presenting this portfolio of project for approval by the MISO Board of Directors in December, in combination with other MTEP11 Appendix A projects
- Additional information will also be presented at the MVP Portfolio Business Case Workshops
 - Monday, September 19 from 1-4 pm Eastern, Carmel, IN
 - Thursday, September 29 from 1-4 pm Central, St. Paul, MN

Appendix



Multi Value Projects provide a variety of quantitative benefits

- In addition to the reliability benefits and public policy benefits quantified for the portfolio, the proposed Multi Value Project portfolio creates a number of economic benefits
- These benefits include:
 - Increased market efficiency
 - Congestion and Fuel Savings
 - Operating Reserve Optimization
 - Deferred Generation Capital Investment
 - System Planning Reserve Margin Reduction
 - Transmission Line Losses Reduction
 - Other Capital Benefits
 - Decreased Wind Turbine Build-out
 - Avoided Future Transmission Investment

Transmission Planning and Cost Allocation Timeline

2006

- Introduction of Value-Based Planning Process
- RECB I FERC Order

2007

- RECB II FERC Order
- Identification of need to address increase in Interconnection Requests driven by RPS mandates

2008

- Incorporation of Order No. 890 Planning Principles
- Queue Reform Order

2009

- Development of new cost allocation methodology with stakeholders to address unintended consequences of generator interconnection cost sharing method in place at that time

2010

- Regional Generation Outlet Study
- Multi-Value Project FERC Order

2011

- Candidate MVP Portfolio Study

Generator Interconnection Queue

