

New England Clean Energy Transmission Summit

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Modernizing America's Grid: What Does It Mean For New England?

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Background on Wind on the Wires

- **Non-profit Advocacy Organization launched in 2001** to overcome the barriers to bringing wind energy to market in the Midwest.
- **Members** include non-profit environmental organizations, tribal representatives, farm groups, wind developers and manufacturers, American Wind Energy Association, businesses that provide goods and services to the wind industry.
- **Work in 3 areas:**
 - **Technical** – work with electric utilities and Midwest Independent System Operator (MISO – regional “grid” operator) on transmission planning for wind, market and operational rules that treat wind fairly
 - **Regulatory** – actively participate in cases where states are approving new transmission lines that will deliver wind energy and other dockets that affect wind development
 - **Policy education/outreach/advocacy** – work with governors, state regulators, legislators, local elected officials, regional groups, colleague organizations, general public on wind and transmission issues
- **Support** – Foundation grants and member contributions



Advancing Clean Energy in MISO

Transmission Planning

- Inclusion of Renewable Energy Resources (RER) comparable to other resources
- Inclusion of RERs that are already on the books (RPS/RES/CES) and sensitivities of higher penetration levels – *the work on integrating currently required levels of renewables is not done yet!*

Market Rules

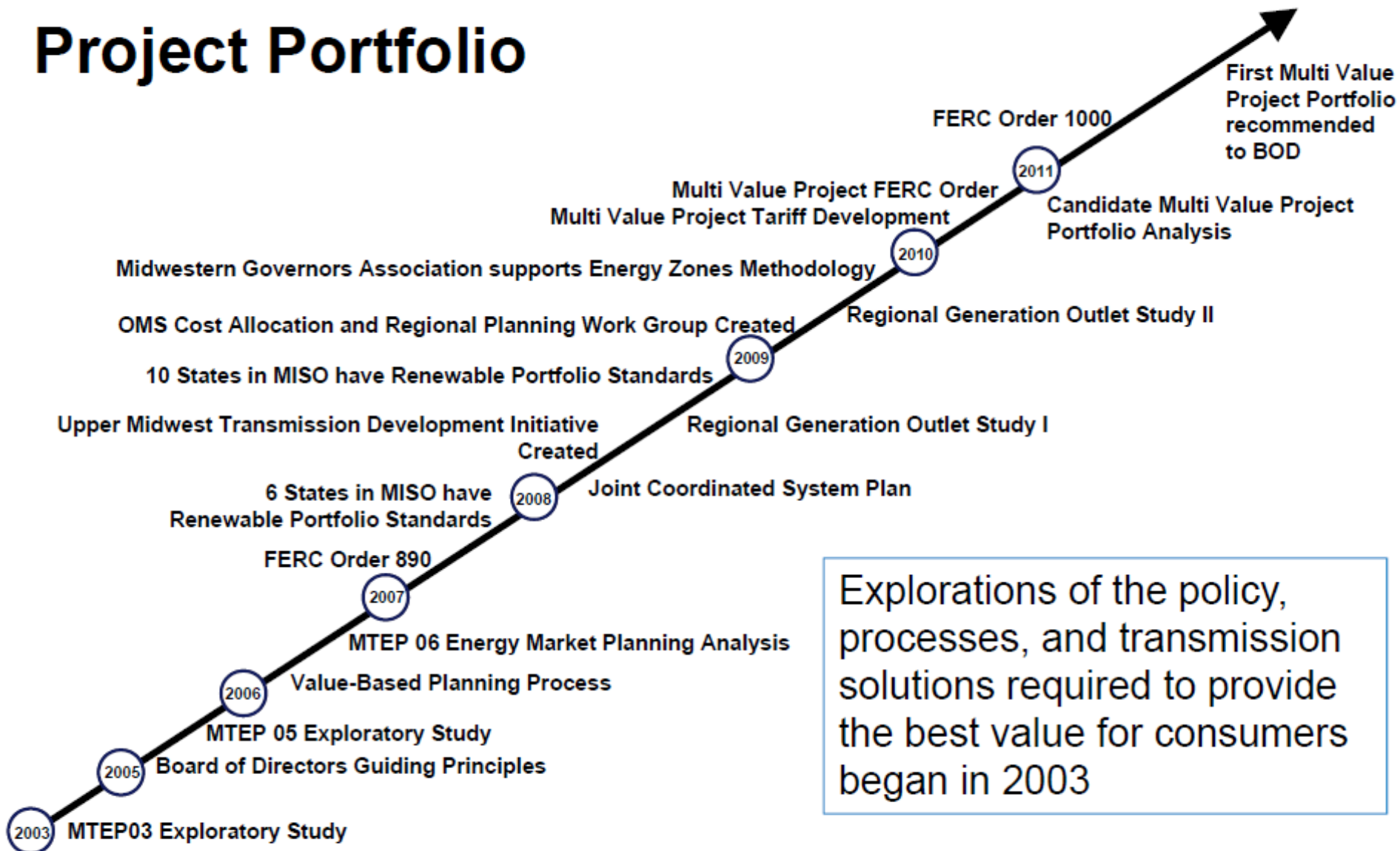
- Rules that reflect RER unique characteristics, what they can provide the marketplace, and comparability

System Operations

- Day ahead and real time – management of the integrated system that allows RER to run, subject to curtailment for reliability issues



The Road to the First Multi Value Project Portfolio



2011 Midwest ISO Transmission Expansion Plan (MTEP11)

- ❖ Transition from a single, multi-audience MTEP report to a greater dependence on detailed study reports which are published upon completion
- ❖ Incorporates two defined project approval periods per year
 - June and December
- ❖ MTEP11
 - Transmission Investment and Cost Sharing Summaries; Economic Assessment; Retail Rate Impact
 - Status of MTEP10 and MTEP Implementation History
 - Regional Energy Policy Studies
 - Proposed MVP Portfolio Analysis
 - EPA Regulations Impact Analysis
 - Generation Portfolio Analysis / Future Scenarios Assessment
 - Resource Assessment / Loss of Load Expectation Study
 - Near and Long-Term Reliability Analysis

2011 Midwest ISO Transmission Expansion Plan (MTEP11)

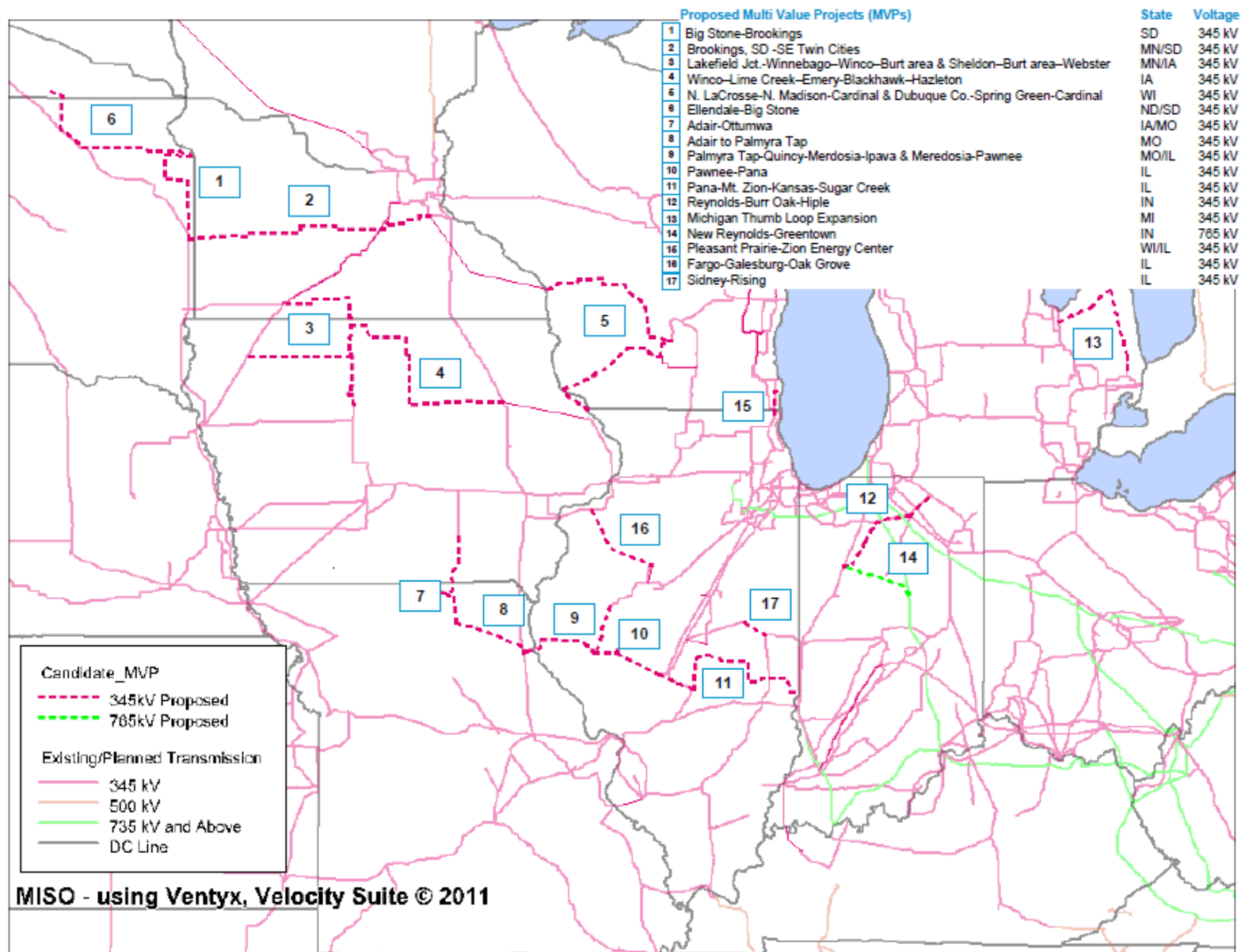
MISO Board of Directors Approved 215 new projects, at a cost of \$6.5 billion, for inclusion in Appendix A

- ❖ Multi Value Projects
 - 16 projects, \$5.1 billion
- ❖ Baseline Reliability Projects
 - 40 projects, \$424 million
- ❖ Generator Interconnection Projects
 - 26 projects, \$273 million
- ❖ Other Projects (local reliability, economic, etc)
 - 133 projects, \$682 million

Source: MISO

- ❖ **The Proposed Multi Value Project portfolio was approved by the MISO Board of Directors (12/8/11) for inclusion in Appendix A of MTEP11; Portfolio:**
 - Provides benefits in excess of costs under all scenarios studied, with its benefit to cost ratio ranging from 1.8 to 3.0
 - Maintains system reliability by resolving hundreds of reliability violations for thousands of system conditions and mitigating dozens of instability violations
 - Enables 41 million MWh of wind energy annually to meet renewable energy mandates and goals
 - Provides average annual value of \$1,279 million over the first 40 years of service at an average annual revenue requirement of \$624 million
 - Additional benefits include reduced operating reserve cost, reduced Planning Reserve Margin and costs, reduced transmission line losses, reduced wind generation capital costs, decreased aggregate wind generation variability, increased local investment and jobs, and reduced carbon emissions,
- ❖ Each project / line must be approved by the state it is in before it can be built

2011 MVP Portfolio

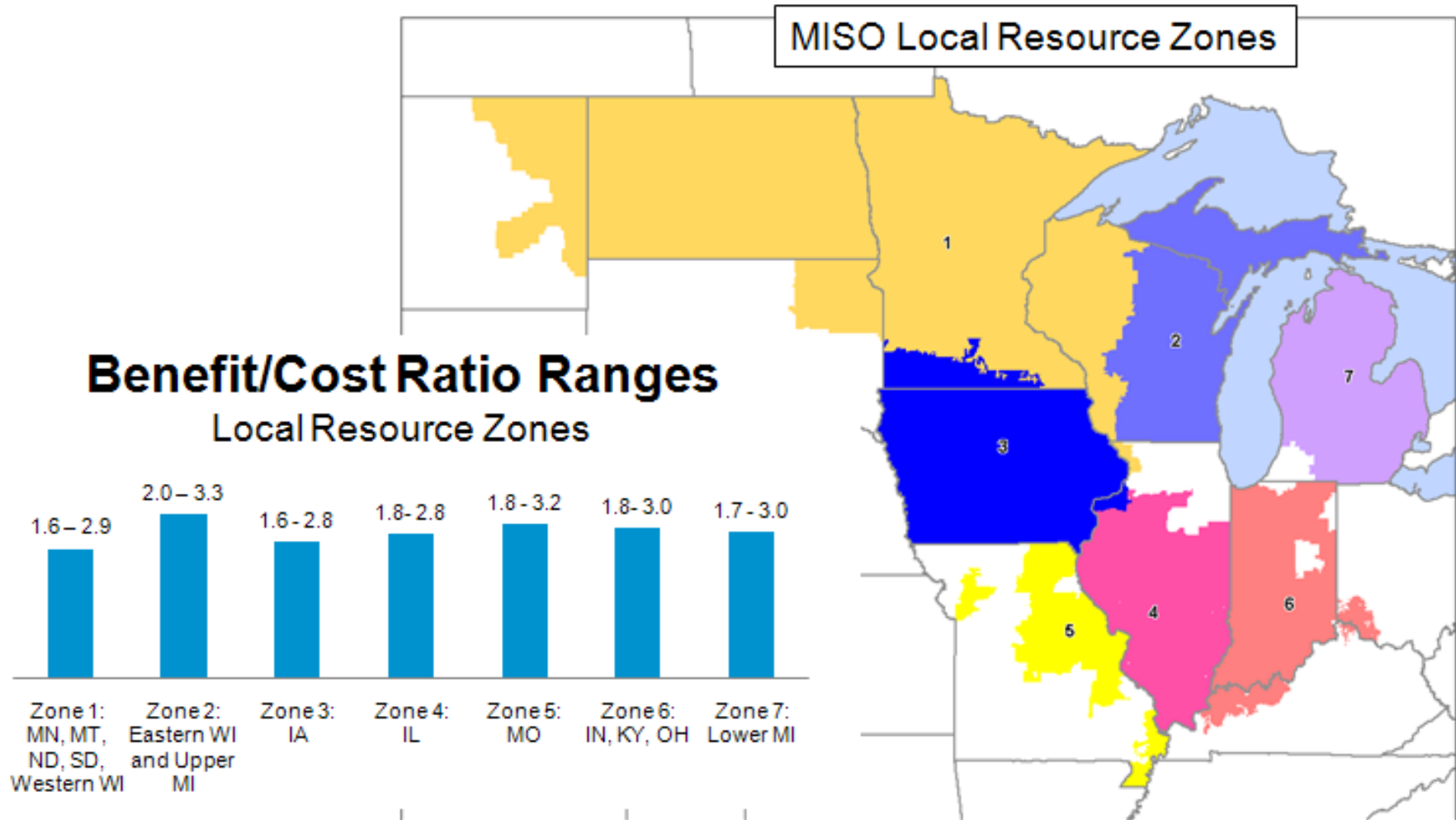


	Project	State	Voltage (kV)	In Service Year	Cost (M, 2011\$) ¹
1	Big Stone–Brookings	SD	345	2017	\$191
2	Brookings, SD–SE Twin Cities	MN/SD	345	2015	\$695
3	Lakefield Jct. –Winnebago–Winco–Burt area & Sheldon–Burt area–Webster	MN/IA	345	2016	\$506
4	Winco–Lime Creek–Emery–Blackhawk–Hazleton	IA	345	2015	\$480
5	N. LaCrosse–N. Madison–Cardinal & Dubuque Co. –Spring Green–Cardinal	WI	345	2018/2020	\$714
6	Ellendale–Big Stone	ND/SD	345	2019	\$261
7	Adair–Ottumwa	IA/MO	345	2018	\$152
8	Adair–Palmyra Tap	MO/IL	345	2018	\$98
9	Palmyra Tap–Quincy–Merdosia–Ipava & Meredosia–Pawnee	IL	345	2016/2017	\$392
10	Pawnee–Pana	IL	345	2018	\$88
11	Pana–Mt. Zion–Kansas–Sugar Creek	IL/IN	345	2018/2019	\$284
12	Reynolds–Burr Oak–Hiple	IN	345	2019	\$271
13	Michigan Thumb Loop Expansion	MI	345	2015	\$510
14	Reynolds–Greentown	IN	765	2018	\$245
15	Pleasant Prairie–Zion Energy Center	WI/IL	345	2014	\$26
16	Fargo–Galesburg–Oak Grove	IL	345	2018	\$193
17	Sidney–Rising	IL	345	2016	\$90

2011 MVP Portfolio

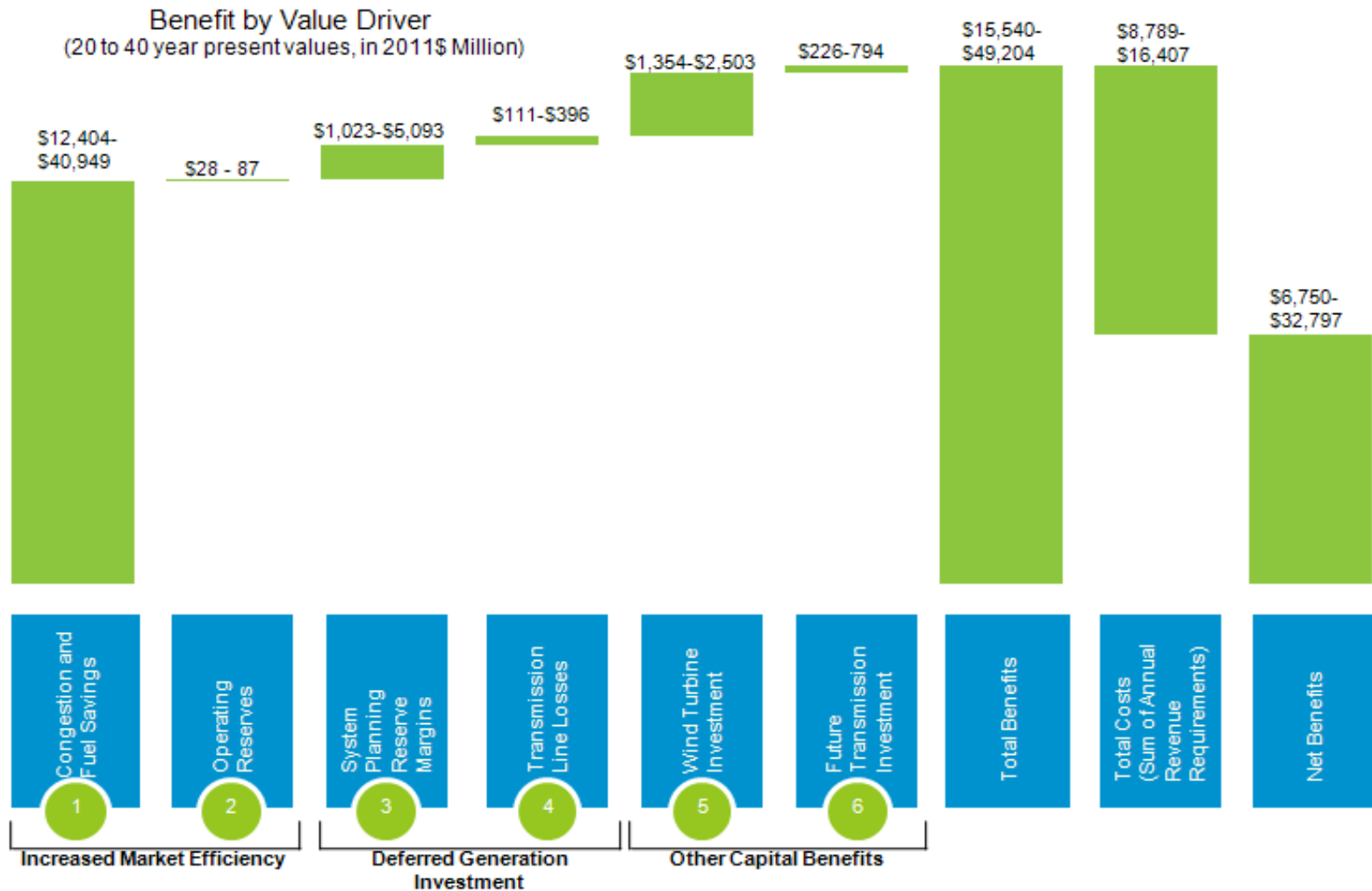
Source: MISO *Multi Value Project Portfolio, Results and Analysis*, Full Report, 12/8/11

2011 MVP Portfolio



Source: MISO Multi Value Project Portfolio, Results and Analysis, Full Report, 12/8/11

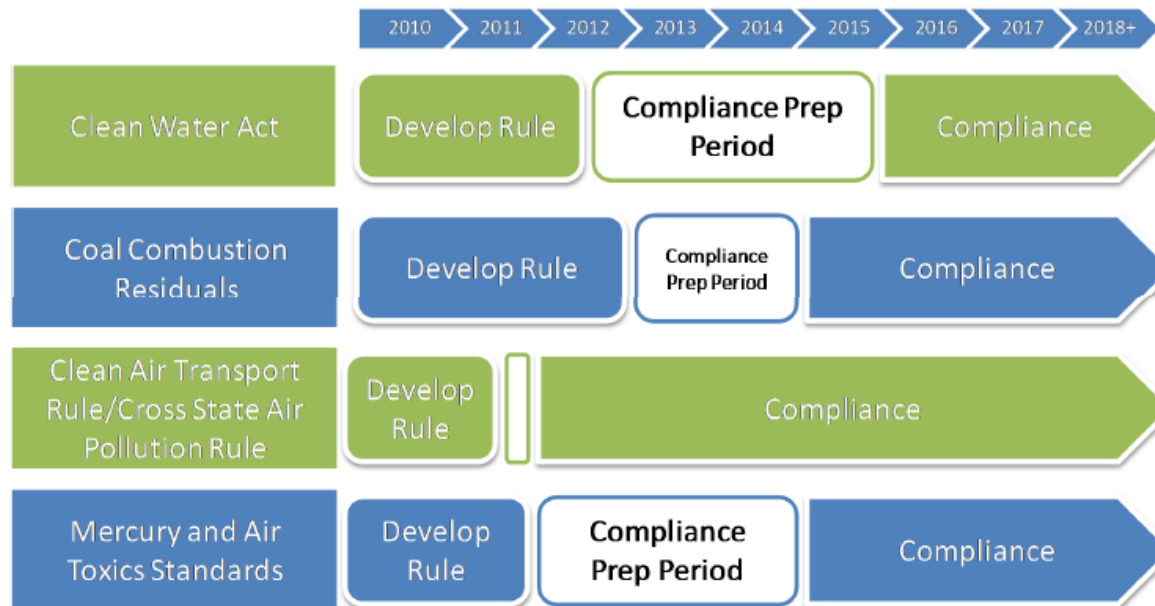
Economic Benefits - MVP Portfolio



Source: MISO Multi Value Project Portfolio, Results and Analysis, Full Report, 12/8/11

MISO EPA Impacts Analysis

- ❖ EPA is proposing four new regulations:



- ❖ MISO Coal Fleet:

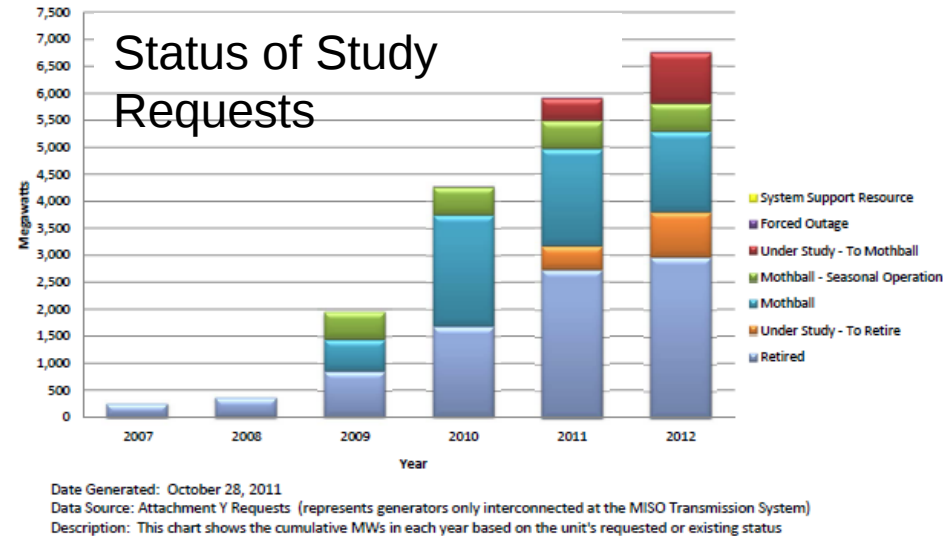
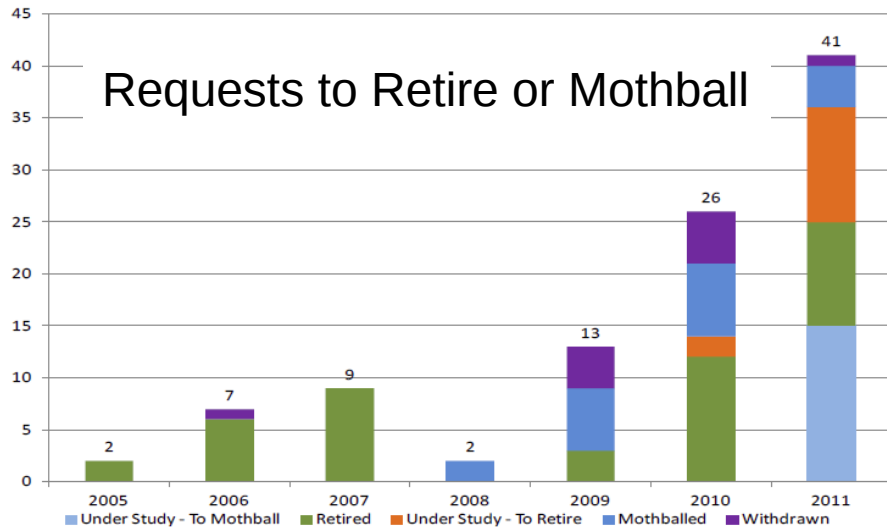
	Capacity in MISO (MW)
Total Coal	70,568
No SO ₂ Controls	31,162
No SCR or SnCR	41,922
No SO ₂ and No SCR or SnCR	26,643
No SO ₂ and No Fabric Filter	26,714

- ❖ MISO analysis has indicated that 12.6 GW of coal capacity is at-risk for retirement (cost of compliance = cost of a new CT); expected retirement dates in 2014/15

Sources: MISO EPA Impact Analysis 10/31/11; MISO staff presentation to the System Planning Committee of the BOD 12/6/11

Requests to Retire / Mothball Generation in MISO

- ❖ Under MISO tariff (Attachment Y), generators notify MISO of intent to retire or mothball; MISO evaluates reliability impacts
- ❖ MISO Trends:



- ❖ 4,000 MW are currently in study; 3,026 MW of requests are part of the 12.6 GW identified in the EPA Impacts study, 2,977 MW of requests are currently in study for 2012 retirement or suspension
- ❖ MISO staff is preparing proposed tariff revisions to Attachment Y to clarify / update study protocols, reliability impacts, etc

Sources: MISO SAWG RA Monthly Report 12/01/11; MISO staff presentation to the System Planning Committee of the BOD 12/6/11; MISO staff presentation to the Advisory Committee 12/7/11.