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1000 Ways to Look at Order 1000 – Regional Plans to Meet Multiple Goals: MISO

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Background on Wind on the Wires

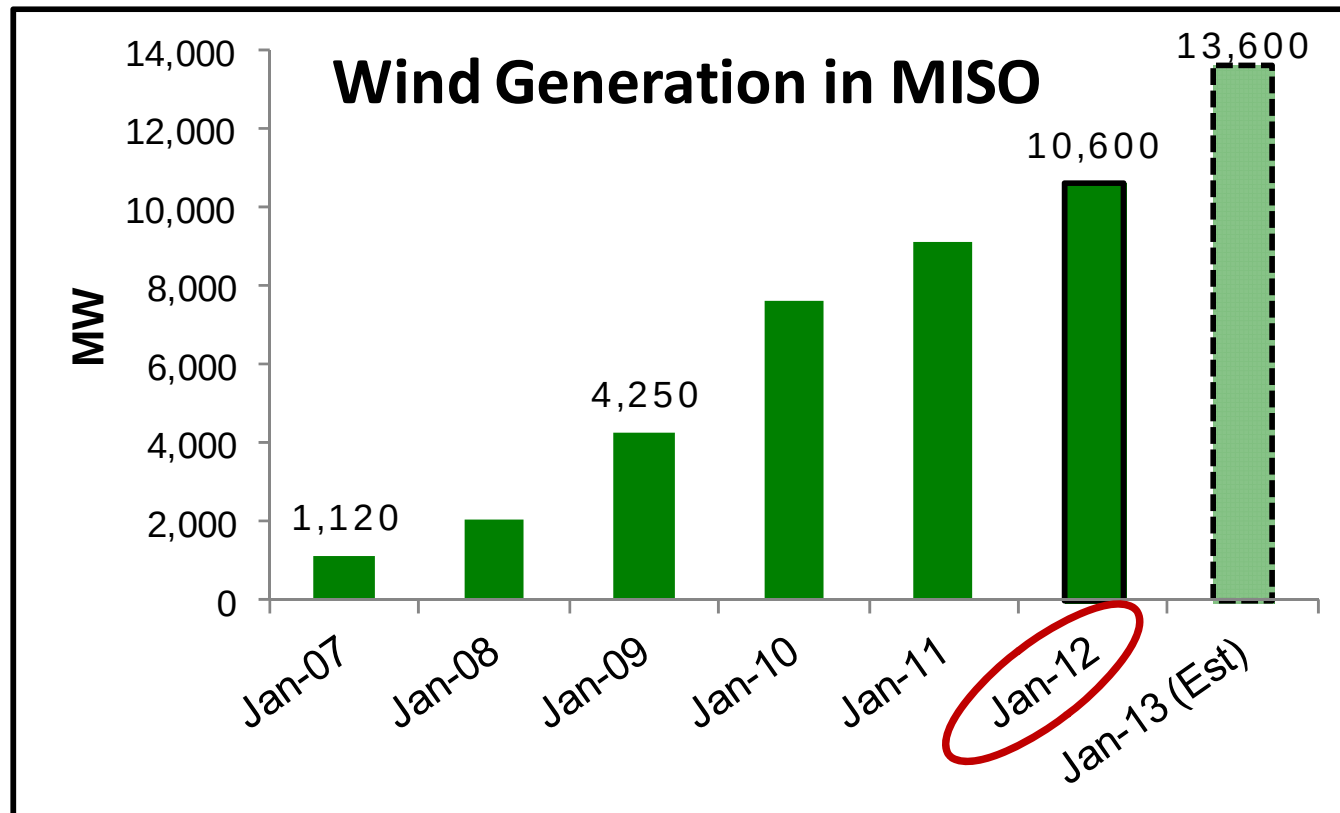
- **Non-profit Advocacy Organization launched in 2001** to overcome the barriers to bringing wind energy to market in the Midwest.
- **Members** include non-profit environmental organizations, tribal representatives, farm groups, wind developers and manufacturers, American Wind Energy Association, businesses 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

AWEA Regional Partners



Rapid Growth – Midwest Wind Energy

- Wind generation operating in the Upper Midwest has increased ten-fold in five years

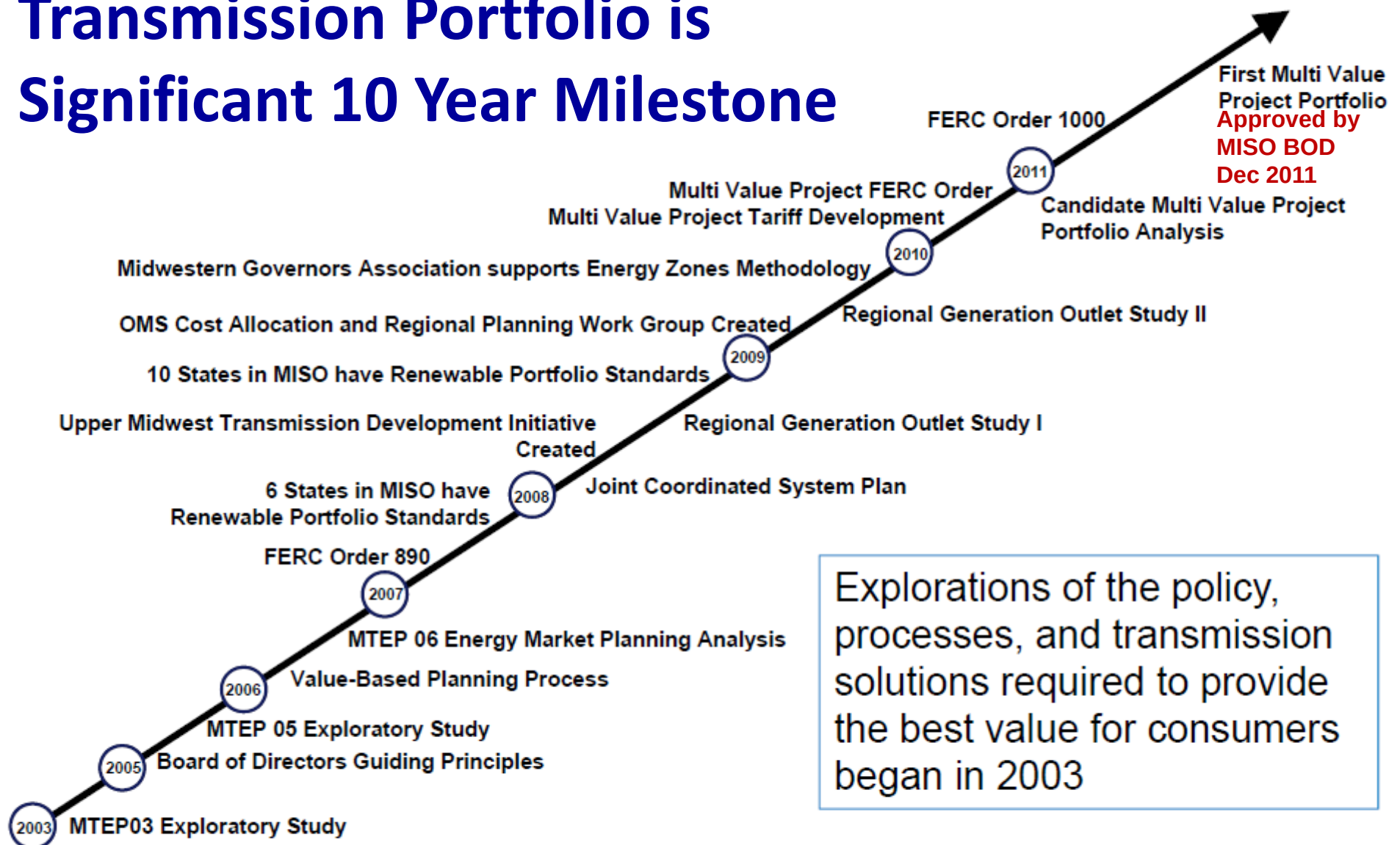


- MISO operations, planning, and markets have gained significant experience successfully integrating wind

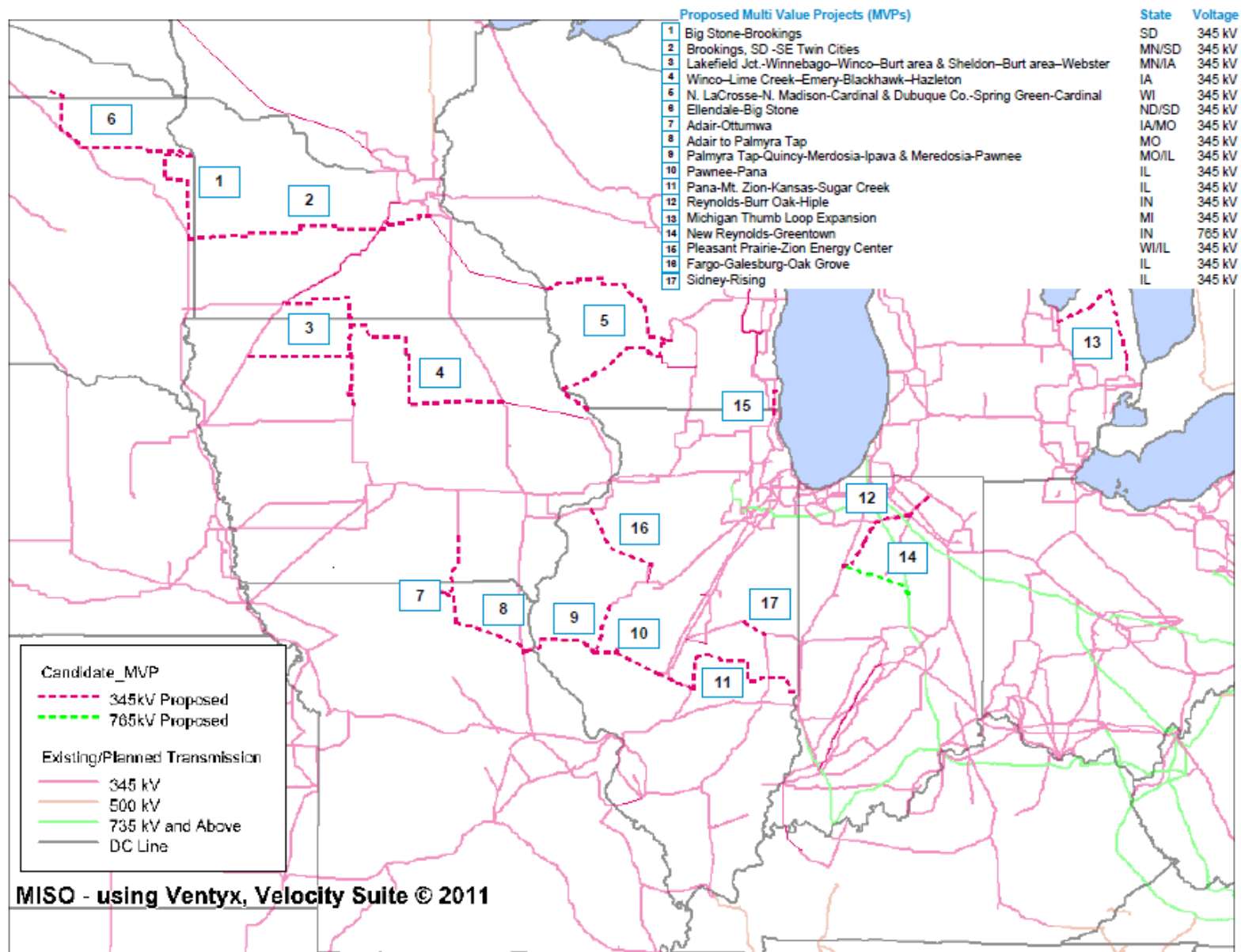
Current and Ongoing Opportunities – Midwest Wind Energy

- **Implementation of Renewable Portfolio Standards**
 - Current requirements & goals (25-30 GW, depending on load growth)
 - Potential increases (Michigan 25% by 2025 ballot initiative)
 - Current standards only ~12% wind energy in MISO
- **Developments in wind integration will facilitate significantly greater wind penetration levels**
 - Improved market rules (economic dispatch – DIR, system flexibility – ramp management, etc)
 - Improved wind forecasting (reduces uncertainty)
 - Increasing geographic diversity (reduces variability)
- **Removal of barriers for accessing eastern markets**
 - Seams management; transmission development; cost allocation for transmission that span RTO/ISO seams

Approved MISO Multi Value Transmission Portfolio is Significant 10 Year Milestone



MVP Portfolio Approved by MISO Board December 2011



MVP List

	Project	kv	State	In-Service	Costs (M)	TO
1	Big Stone--Brookings	345 kV	SD	2017	\$191	Ottertail Power, Xcel
2	Brookings--Twin Cities	345 kV	SD/MN	2015	\$695	Great River Energy
3	Lakefield Jct--Winnebago-- Winco--Burt area&Sheldon-- Burt area--Webster	345 kV	MN/IA	2016	\$506	MidAmerican, ITC
4	Winco--Lime Creek--Emery-- Black Hawk--Hazleton	345 kV	IA	2015	\$480	MidAmerican, ITC
5	N. Lacrosse--N. Madison-- Cardinal&Dubuque Co-- Spring Green--Cardinal	345 kV	WI	2018/2020	\$714	Xcel, ATC, ITC
6	Ellendale--Big Stone	345 kV	ND/SD	2019	\$261	Ottertail Power, Montana- Dakotas Utilites
7	Adair--Ottumwa	345 kV	IA/MO	2017	\$152	Ameren, ITC, MidAmerican
8	West Adair--Palmyra Tap	345 kV	MO	2018	\$98	Ameren
9	Palmyra--Qunicy--Merdosia- -Ipava&Meredosia--Pawnee	345 kV	MO/IL	2016/2017	\$392	Ameren



MVP List

	Project	kv	State	In-Service	Costs (M)	TO
10	Pawnee--Pana	345kv	IL	2018	\$88	Ameren
11	Pana--Mt. Zion--Kansas-- Sugar Creek	345kv	IL	2018/2019	\$284	Ameren, Duke
12	Reynolds--Burr Oak--Hiple	345kv	IN	2019	\$271	NPSCO
13	Michigan Thumb Loop Expansion	345kv	MI	2015	\$510	ITC
14	Reynolds--Greentown	765kv	IN	2018	\$245	Duke, NPSCO
15	Pleasant Prairie--Zion Energy Center	345kv	WI/IL	2014	\$26	Ameren
16	Fargo--Galesburg--Oak Grove	345kv	IL	2018	\$193	Ameren, MidAmerican
17	Sidney--Rising	345kv	IL	2016	\$90	Ameren



Order 1000 – Planning and Cost Allocation

Planning

- Participation open to all stakeholders – meetings, comments on plans
- Define Public Policy – need to clearly define
- Study methods – need to be transparent and well documented
- Harmonize planning models and inputs (interregional)
- Synchronize planning time lines (interregional)

Cost Allocation

- Transmission Providers must propose actual cost allocation methods
 - Principles, a project-by-project approach or deferral of decisions would not comply with O-1000 requirements
- Must address Public Policy Requirements-driven needs
- “Benefits” must include benefits related to likely future scenarios
- All benefits of a transmission facility, including PPR-driven benefits, must be evaluated for purposes of cost allocation

