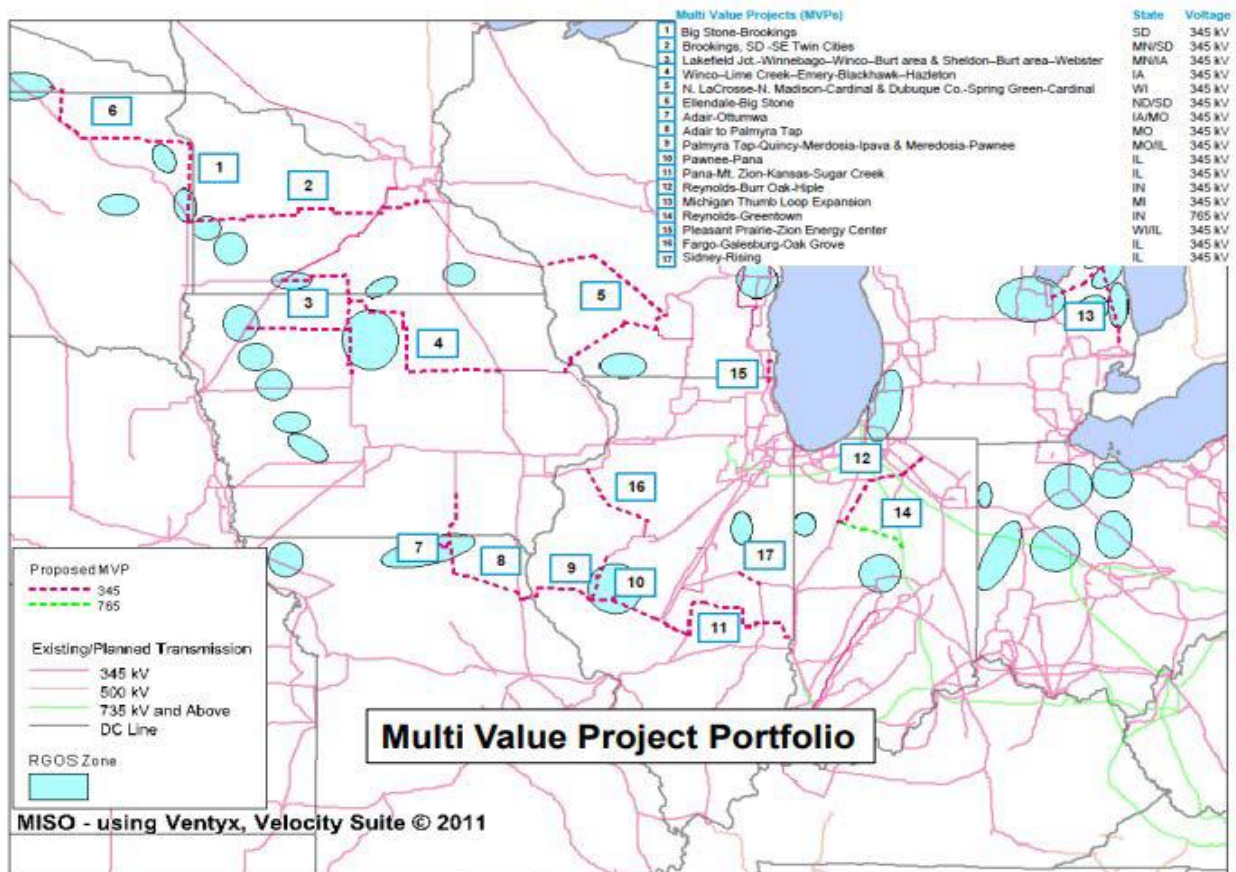


November 8, 2021
Executive Summary

A Transmission Success Story: The MISO MVP Transmission Portfolio

By AESL Consulting, David Boyd & Edward Garvey,¹

The Final MVP Map: Zones and the 17 MVP Transmission Projects



On July 15, 2010, MISO² filed the Multi-Value Project (MVP) tariff with the Federal Energy Regulatory Commission (FERC). On December 16, 2010, FERC conditionally accepted the proposed tariff, and on December 8, 2011, the MISO Board of Directors approved a portfolio of

¹ DISCLAIMER: This paper was sponsored by the Edison Electric Institute. This “story” is the authors’ story. As participants and direct observers in the MVP process, it is based on our memory, experiences and to some extent refreshed by reviewing our files and public information. David Boyd was Co-Chair of the UMTDI, a member of the MN Public Utility Commission from 2007 to 2015 and its chair from 2012 to 2015 and VP for Government and Regulatory Affairs at MISO from 2015 to 2019. Edward Garvey was a member of the MN PUC from 1997 though 2002; was Deputy Commissioner of Commerce for Energy & Director of the MN Office of Energy Security where he was the chief policy advisor to then MN Governor Tim Pawlenty from 2003 to 2008.

² In 2010 MISO was called the Midwest ISO instead of the Mid-Continent ISO and included much of Ohio and part of Pennsylvania, but not Mississippi, Louisiana, Arkansas, and Texas in its footprint, as it does now. For ease of reading, we simply use the acronym “MISO” throughout.

MVP History, Executive Summary

17 MVP projects with an estimated investment cost of over \$5B. This was the culmination of more than six years of effort and remains one of the largest and most successful transmission buildouts in recent history. See pages 6-7 for Key Dates in the MVP development process

The MVP process successfully married public policy with regional transmission planning through a complex, intertwined, and iterative process of collaboration and compromise among MISO, governors, state utility regulators, the MISO Transmission Owners, and stakeholders. This paper chronicles the MVP tariff development—including its successes, failures, and compromises. It is a complicated story but one that may help inform those considering new transmission who face similar challenges today: new generation technologies seeking to interconnect in volume, public policy pressures, a grid operating at capacity, aggressive customer preferences, and disparate stakeholder opinions regarding the best path forward.

In hindsight, the MVP Transmission story has a sense of inevitability about it. Yet, at the time there was great uncertainty about its success, and no one really knew at the outset what success would look like. While many ingredients went into its successful outcome, here are nine of the most important ones:

1. **Have governors engaged.** A bipartisan set of midwestern governors (Governors Hoven (ND-R), Rounds (SD-R), Granholm (MI-D) and Pawlenty (MN-R) in particular) helped identify the problems, added urgency to efforts, gave political cover (and pressure when needed) to overcome objections, and empowered their regulators to act.
2. **Have a deadline.** FERC set a deadline of July 15, 2010, for MISO to file a tariff for a new category of cost sharing for transmission projects driven primarily by public policies. The drive to integrate large quantities of remote generation resources created time pressures that forced participants to focus, avoid getting bogged down, and adopt mechanisms (like CARP's advisory votes) to clear away little supported ideas.
3. **Develop momentum and keep moving forward.** While the governors created front-end urgency and FERC set a backend deadline, transmission planning still takes time. So, the key was not speed, but momentum: the groups of regulators, analytical studies, and MISO stakeholder committees did not get bogged down in minutia or stalled by obstructionists, rather they all kept moving forward to meet the deadline.
4. **State Regulators: Empowered to be Deciders & Make Decisions.** In both the UMTDI and CARP settings it was state regulators that assumed leadership, gathered input, and made decisions.
5. **A Flexible & Inclusive Process.** The MVP Process gathered diverse perspectives, but there were tough decisions to make that required delicate balancing of competing interests. So, while the process was inclusive of ideas and perspectives, it was intolerant to objections: any participant could put any idea on the table for consideration, but no one

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November 8, 2021

Page 2 of 7

MVP History, Executive Summary

could take an idea off the table until it had been evaluated, analyzed, assessed, and discussed by the group. This approach ensured openness and transparency.

6. **It's Not About the Money; It's About the Money.** Who pays for what is clearly a centering question that came into play in the MVP transmission story in two ways. First, and most obviously was in the cost allocation debates. But the second was just as important: the use of the “lowest cost of delivered energy” analytical touchstone. The MVP conversation did not focus on the cheapest or lowest cost transmission project; rather the discussion was on which set of energy zones and transmission projects produced the lowest cost of electricity delivered throughout the states (or MISO footprint). Thus, the MVP projects were recognized not only for their individual cost-benefit economics but also for how they worked together as a portfolio to lower the total costs in aggregate. This was critical to the final business case analysis, facilitated cost allocation decisions, and soothed potential political opposition to the estimated \$5+ billion price tag of the transmission portfolio.
7. **Think Regionally.** From the beginning, the MVP transmission story was bigger than one transmission line, one electric company, one renewable energy developer or one state. Rather, it was seen as a regional issue that needed a regional solution. While the desires of each state's policies required accommodations, the goal was to accommodate them within the regional context.
8. **“No Regrets.”** Whatever the final transmission projects selected might be, they all needed to not only meet the individual and collective state goals, be economic and enhance reliability, but they also needed to meet the high- and low-variations of those goals and fit all scenarios, so there would be “no-regrets” as to which future would occur.
9. **Support from MISO.** Perhaps the most important ingredient to the success of the MVP Transmission story is the assistance, communication, and honest-broker roles played by MISO. MISO provided extensive analytical support to UMTDI and CARP. It also provided logistical and administrative assistance by convening meetings and covering some expenses. And, when requested, MISO assisted and supported regulators when briefing governors and other in-state stakeholders.

The MVP Transmission Success Story...By mid-2000's the transmission grid serving the Midwest (in the MISO footprint) was oversubscribed, the MISO queue process was being overwhelmed, the 50-50 interconnection costs tariff was not fair to certain members and the rise of clean energy goals in states across the MISO footprint were making the situation worse. Everyone recognized the need for new transmission and even governors started to weigh in. Plus, electric companies, in the form of *CapX2020*, were banding together to discuss and plan for the region's transmission needs. The Texas *Competitive Renewable Energy Zones* (CREZ), process offered a pathway to address these issues and the Federal government was offering both carrots and sticks to build needed transmission.

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November 8, 2021

Page 3 of 7

MVP History, Executive Summary

Catalysts: Governors and UMTDI (2008-2010). In September 2008, the governors of Iowa, Minnesota, North Dakota, South Dakota, and Wisconsin collectively announced the creation of the *Upper Midwest Transmission Development Initiative* (UMTDI) to identify and resolve regional transmission planning and associated cost allocation issues across their five-states. With MISO's support, these governors were united in UMTDI policy, as well as regulatory and political perspectives and inserted them into the technical and engineering aspects of transmission planning. UMTDI was able to solve (or at least decide) the competing issues of location versus economics, parochial versus regional benefits, as well as the countless small-scale issues that had stymied transmission planning to date. In short, UMTDI laid the foundation for appraising aspects of transmission projects and determined that multiple value metrics needed to be included to meet the region's needs and goals.

| UMTDI & RGOS I Governors in 2008-09 | | |
|-------------------------------------|----------------------------|------------|
| Iowa | Governor Chet Culver | Democrat |
| Minnesota | Governor Tim Pawlenty | Republican |
| North Dakota | Governor John Hoeven | Republican |
| South Dakota | Governor Mike Rounds | Republican |
| Wisconsin | Governor Jim Doyle | Democrat |
| RGOS II Governors (2009) | | |
| Illinois | Governor Rod Blagojevich | Democrat |
| Indiana | Governor Mitch Daniels | Republican |
| Michigan | Governor Jennifer Granholm | Democrat |
| Missouri | Governor Jay Nixon | Democrat |
| Ohio | Governor Ted Strickland | Democrat |

Zones & Wires: Regional Generation Outlet Study (2007 to 2010). In roughly mid-2007, well before the UMTDI's formation in 2008, MISO began working with the CapX2020 members on what became known as the *Regional Generation Outlet Study* (RGOS). As RGOS evolved, it took on two main tasks. First, RGOS was to identify the best wind regimes in the MISO footprint, use that data to create energy zones, and work with the states to choose the best zones in each state. Second, it was to optimize the zones and transmission projects to meet the states' policy goals cost effectively and reliably.

UMTDI and RGOS developed a symbiotic relationship as RGOS analyzed the data and UMTDI asked how various scenarios affected the region and their respective five states. Once the UMTDI was formed, MISO was able to start reviewing the RGOS scenario results with that group of governors' staff and regulators, and then loop the UMTDI preferences back into the next round of RGOS analysis to refine and narrow the scenarios. Through this symbiosis, a coalescence occurred between policy and engineering as the clean energy zones were identified, reviewed, and ultimately the "best" ones were selected by UMTDI.

Once the final set of zones were selected, RGOS began analyzing transmission project options, *i.e.*, differing transmission voltages, balancing generation locations vs. transmission line length, etc., that could connect those UMTDI-selected zones to the existing grid. The choices made

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November 8, 2021

Page 4 of 7

MVP History, Executive Summary

among these options is where the “least cost delivered energy” to the region and the other regional goals came into play.

Cost Allocation. In a July 9, 2009, MISO filing with FERC to make the 50-50 interconnection cost issue more equitable, MISO told FERC that it would continue to work with its members and stakeholders on a tariff to allocate costs for the new category of transmission projects that would become known as MVPs. Cutting the cost allocation gordian knot started in earnest on October 23, 2009, when FERC gave MISO about nine months, until July 15, 2010, to come up with a new cost allocation tariff for a new category of transmission projects driven primarily by public policy needs and secondarily by the enmeshed need to integrate large quantities of remote generation resources.

In October 2008, spurred by the governors’ UMTDI creation the month before, the Organization of MISO States (OMS) Board decided to take a proactive role and launch its own cost allocation initiative dubbed *Cost Allocation and Regional Planning (CARP)*. Led by Wisconsin commissioner and OMS president Lauren Azar, CARP became the forum to educate state regulators, to debate options for cost allocation, to formulate concepts, and to discuss proposals that could be injected back into MISO’s stakeholder-led *Regional Expansion Criteria and Benefits (RECB) Task Force*.

The July 2010 filing deadline focused the attention of all those debating cost allocation and led to a flurry of activity. By March-April 2010, there were at least four cost allocation variations being discussed by CARP and the RECB Task Force. While there were many difficult issues, competing interests, and considerable disagreement among the members in both CARP and the RECB Task Force, questions related to allocation of costs between generators and load were particularly divisive.

On July 15, 2010, after listening to the stakeholders, considering many often-competing options, and considering multiple alternatives, MISO filed a postage stamp tariff that allocated all project costs to load. The MISO filing differed from the CARP proposal, which allocated 20% of project costs to generators.

The Business Case & Approving the MVP Lines: On December 8, 2011, the MISO Board of Directors approved a package of 17 MVP projects with an estimated investment cost of greater than \$5B as part of MTEP 11 (MISO Transmission Expansion Plan 2011). This approval was guided by MISO’s planning principles, the criteria in the approved MVP tariff, and a solid business case. MTEP11 concluded the MVPs “Provide[d] benefits in excess of its costs under all scenarios studied, with its benefit to cost ratio ranging from 1.8 to 3.0.” This finding was echoed in MTEP14 MVP Triennial Review which concluded that the MVPs “Provide[d] benefits in excess of its costs, with its benefit-to-cost ratio ranging from 2.6 to 3.9; an increase from the 1.8 to 3.0 range calculated in MTEP11. See MTEP14 MVP Triennial Review.

Ten years later, 16 of the 17 projects are in service.

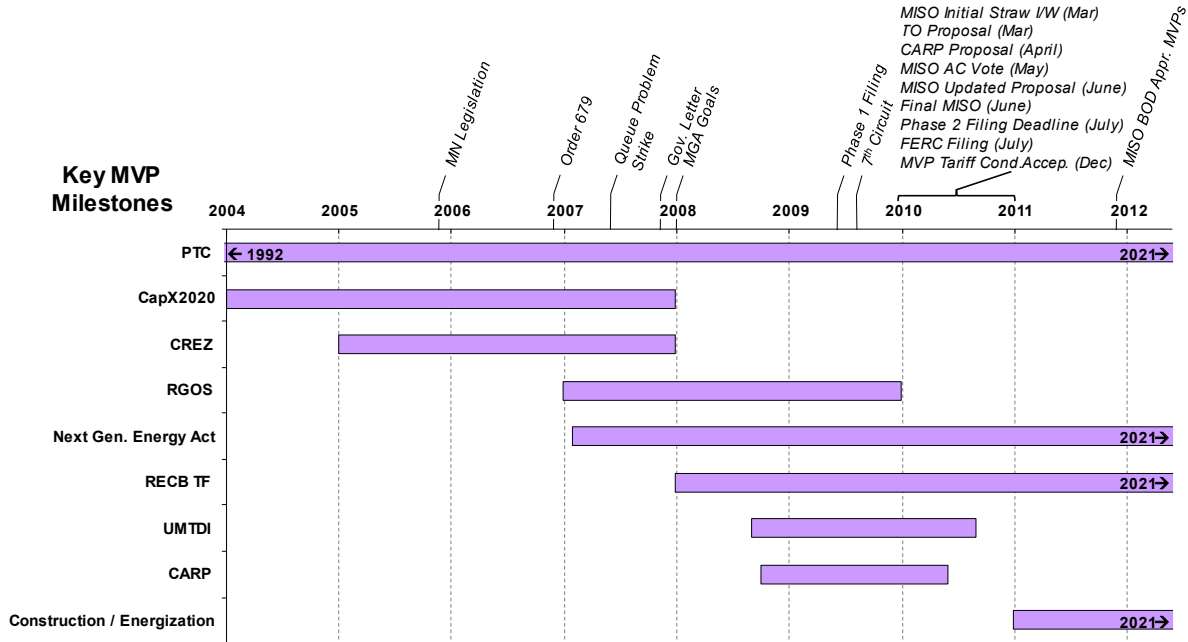
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November 8, 2021

Page 5 of 7

Key Dates in the MVP Transmission Development Process



- **2003-2007**

- Wind developer interconnection requests grew significantly
- 2004 *CapX2020* utilities group formed
- 2005 Minnesota adopts regional transmission legislation
- States throughout the Midwest start adopting renewable energy goals, standards & requirements
 - March 9, 2006, then-Minnesota Governor Tim Pawlenty in his State of the State Address set a goal that 25% of Minnesota’s electricity should come from renewable resources by 2025.
 - February 22, 2007, Gov. Pawlenty signed the first part of what was called the “Next Generation Energy Act,” which included specific language mandating the implementation of the “25 by 25”
- November 5, 2007, the governors of Illinois, Minnesota, Ohio, Wisconsin, Iowa, North Dakota, and South Dakota sent then MISO CEO Graham Edwards a letter expressing their “growing concerns over the crisis wind energy developers face today as a result of current [MISO] policies governing the interconnection of wind resources to the transmission grid.”
- Nov. 7, 2007, the Midwestern Governors Association (MGA), in its *Energy Security and Climate Stewardship Platform*, set measurable renewable goals for the region.

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November 8, 2021

Page 6 of 7

MVP History, Executive Summary

- Texas adopts and starts implementing its *Competitive Renewable Energy Zones* (CREZ) program.
- 2007 MISO's initiates the *Regional Generation Outlet Study* (RGOS)
- **2008-2009**
 - September 18, 2008, the governors of Iowa, Minnesota, North Dakota, South Dakota, and Wisconsin collectively announced the Upper Midwest Transmission Development Initiative (UMTDI).
 - October 28, 2008, UMTDI asks stakeholders for input
 - September 2010 UMTDI issues its final report
 - Energy Zones & transmission project options in RGOS I & II.
 - Oct. 2008 OMS creates the *Cost Allocation and Regional Planning* (CARP) group.
 - July 9, 2009, MISO filing addressed the 50-50 interconnection costs issue.
 - August 6, 2009, the Seventh Circuit issued their opinion in *Illinois Commerce Commission v. FERC*, (576 F.3d 470 (7th Cir. 2009)) ruling that “transmission benefits and costs be roughly commensurate” became a clear and necessary element of any proposed new cost allocation methodology.
 - October 23, 2009, FERC sets July 15, 2010 as deadline for MISO to file a tariff for a new category of cost sharing transmission projects driven primarily by the need to integrate large quantities of remote generation resources.
- **2009-2010**
 - March-April 2010, there were at least four cost allocation variations being discussed by CARP, RECB, and stakeholders.
 - July 15, 2010, MISO files MVP cost allocation tariff with FERC.
 - December 16, 2010, FERC conditionally accepted the MVP tariff.
- **2011 to Present**
 - December 8, 2011, the MISO Board of Directors approved a package of 17 MVP projects with an estimated investment cost of over \$5B as part of the 2011 MISO Transmission Expansion Plan (MTEP 11).
 - June 7, 2013, the U.S. Court of Appeals for the Seventh Circuit upheld MISO's MVP cost allocation for new transmission projects.
 - The 2019 “MTEP19 Limited Review” study showed the benefit/cost ratio of the MVP portfolio to be 1.8-3.1, firmly within the range projected in 2011.
 - October 2021, 16 of the MVP 17 projects are in service.³

³ The last line is still going through the regulatory review process in Wisconsin.