

Regional planning

ATC is involved in various regional planning efforts that address regional, inter-regional and Eastern Interconnection-wide needs that could impact our transmission system. There continues to be proposed legislation at the national level that call for significant changes such as enhanced renewable portfolio standards and green-house gas emission reductions. While Wisconsin’s Clean Energy Jobs Act was not passed into law in 2010, ATC continues to undertake internal analyses and participate in regional studies to anticipate future demands on the transmission system from enhanced renewable standards and to identify facilities that will potentially be required.

MISO Regional Generation Outlet Study (RGOS)

MISO initiated the RGOS Phase I as a targeted planning study. The study was completed in 2009 and a report was issued in 2010. The report identified both 345 kV solutions, 765 kV solutions and combination solutions to facilitate the delivery of 28-34 GWs of wind based on the Renewable Portfolio Standard (RPS) requirements in four states - Illinois, Iowa, Minnesota and Wisconsin.

RGOS Phase II considered the wind generation required to satisfy state RPSs and goals beyond those focused on in Phase I. The study examined three main scenarios with varying locations of wind generation in the MISO footprint, totaling approximately 40 GW. The wind zones that were modeled are shown below:

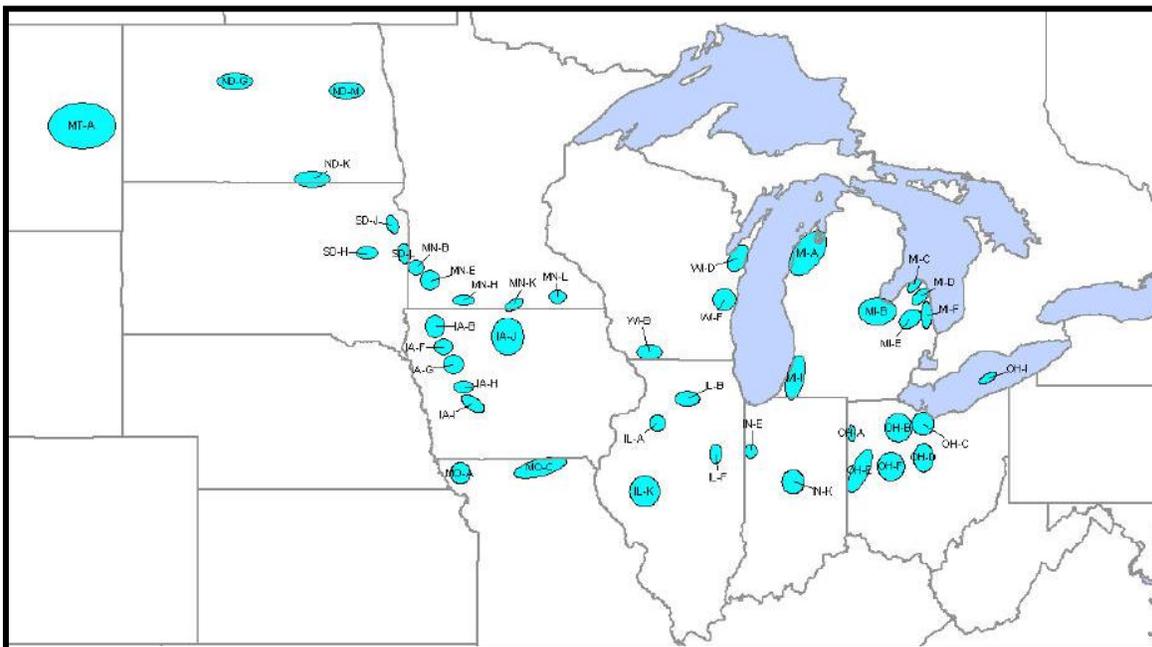


Figure RP-1: RGOS Phase II Wind Zones



MISO developed three transmission designs to move the wind. One is a 345 kV design which is entirely alternating current. One is a 765 kV design which is also entirely AC and the third is a 345 kV design which combines Alternating Current lines with High Voltage Direct Current (HVDC) lines. Each design was evaluated for its ability to provide the wind generations while maintaining system reliability. They have also been evaluated economically to determine which design provided the most cost efficient dispatch of resources across MISO's footprint.

To learn more about the final economic portion of the study and the 3 overlays studied please see the Final RGOS Report at the link below:

[https://www.midwestiso.org/Library/Repository/Study/RGOS/Regional Generation Outlet Study.pdf](https://www.midwestiso.org/Library/Repository/Study/RGOS/Regional%20Generation%20Outlet%20Study.pdf)

Strategic Midwest Area Renewable Transmission (SMARTransmission) Study

We, along with co-sponsors Electric Transmission America, a transmission joint venture between subsidiaries of American Electric Power (NYSE: AEP) and MidAmerican Energy Holdings Co., Exelon Corp. (NYSE: EXC), NorthWestern Energy (NYSE: NWE), Xcel Energy (NYSE: XEL), and MidAmerican Energy Co., a subsidiary of MidAmerican Energy Holdings Co., performed a comprehensive study of the transmission needed in the Upper Midwest to ensure reliability and support renewable energy development for transport to population and electricity load centers. The study was completed in two phases, a reliability analysis phase and an economic analysis phase.

Phase 1 of the study evaluated the reliability of various alternatives designed to move 56.8 GW of wind generation capacity. The 56.8 GW of wind generation capacity generally reflects a federal Renewable Portfolio Standard requirement of 20 percent for all states in the SMART Study footprint. Adjustments were made for states with approved RPS requirements or goals in excess of 20 percent. At the conclusion of Phase 1, three alternatives were recommended for further study based on a rigorous reliability assessment and stakeholder input. One alternative is primarily 765-kV extra-high voltage transmission, another includes 765-kV combined with limited use of high-voltage direct current transmission lines, while the third constitutes a combination of both 345-kV and 765-kV transmission lines.

The results of Phase 2, completed in 2010, indicate that two alternatives have substantially similar economic and environmental performance as well as abilities to reliably deliver wind generation. Both the Phase 1 and Phase 2 reports can be downloaded at www.smartstudy.biz.



Eastern Interconnection Planning Collaborative (EIPC)

ATC is among the NERC-registered Planning Authorities in the Eastern Interconnection that form “Eastern Interconnection Planning Collaborative”. The EIPC group consists of 26 Planning Authorities, working with the Department of Energy, formed to develop Eastern Interconnection-wide transmission expansion options. The DOE has granted an award for \$16 million to the group to develop transmission expansion options for the Eastern Interconnection under different scenarios. A Stakeholder Steering Committee with representatives from state regulatory bodies, transmission owners, generation owners (including renewables), end users, demand-side businesses, other suppliers, transmission-dependent utilities, public power entities and non-governmental entities has been established. They have completed developing eight macroeconomic future scenarios which will be used to ultimately choose three scenarios for which detailed transmission expansion options will be developed. The futures range from Business As Usual, incorporating the latest EPA proposed rules, to a 30% national Renewable Portfolio Standard, to an Aggressive Energy Efficiency/Demand Response/Distributed Generation/SmartGrid future where electricity demand is significantly lower than it is today. The modeling in Phase 1 of the study involves macroeconomic impacts of the stakeholder defined futures, the generation resource additions and retirements created by the futures and an initial indication of how much transmission might need to increase to accommodate the new and retired generation. Initial modeling results for many of the futures are available at http://www.eipconline.com/Modeling_Results.html. This work is expected to be completed in 2011, with a review by the DOE to see if Phase 2 will continue in 2012.

Phase 2 of the project involves developing more detailed transmission expansion options for three stakeholder specified scenarios. This transmission option development will include more traditional power flow modeling to ensure the proposed options will meet NERC reliability criteria. It will also involve production cost analysis of each of the options developed for the scenarios. DOE-approved work has already begun on Phase 2 of the effort. ATC is an active participant in the EIPC and is one of eight sub-awardees of the DOE funding grant.

Regional Transmission Assessments

ATC is a member of two regional reliability organizations, the Midwest Reliability Organization (MRO) and the ReliabilityFirst Corporation (RFC). ATC participates in regional transmission assessments conducted by the MRO Transmission Assessment Subcommittee (TAS), and the RFC Transmission Performance Subcommittee (TPS). ATC also participates in the Coordinated Seasonal Assessments (CSA) conducted by MISO.



MISO Market Constraints –

There are three Narrow Constrained Areas (NCAs) identified in the MISO footprint and two of them are associated with ATC. An NCA is defined as “An electrical area that has been identified by the Independent Market Monitor (IMM) that is defined by one or more Binding Transmission Constraints that are expected to be binding for at least five hundred (500) hours during a given year within which one or more suppliers are pivotal.”¹. The two NCAs associated with ATC are Wisconsin and Upper Michigan System (WUMS) and Northern WUMS.

Congestion in WUMS declined in 2010 compared to prior years, in part due to the addition and enhancement of key transmission facilities, such as the Paddock-Rockdale line placed in service in 2010, as well as new generation additions. The congestion is now often from north to south from WUMS to Com Ed. However, congestion remained above 500 hours. Although there have been a number of transmission projects in WUMS, MISO’s Independent Market Monitor (IMM) still expects that the constraints that define the WUMS NCA to surpass the 500-hour criteria during the next 12 months

Generation Deliverability – MISO uses an aggregate “deliverability” test, which, rather than studying a specific generator-to-load path, requires showing that the output of a resource is deliverable to the “aggregate” MISO energy pool without overloading the transmission system. If the resource passes the deliverability test, it is able to be designated as a Network Resource by a load serving entity with MISO. This deliverability analysis is performed as part of the generator-transmission interconnection process.

MISO Planning Process

The MTEP process has adopted an approach that investigates transmission expansions for the long term, short term and for targeted issues/needs. The MISO footprint is divided into three sub-regions for planning purposes: western, central and eastern. The ATC footprint falls within the western sub-region. The long-term studies are primarily value-based economic studies looking into the ten- to twenty-year horizon. Conceptual transmission overlays are proposed based on a value/economic view of future years utilizing an array of assumptions. This approach is often considered a “top-down” approach. The short-term planning looks into the five- to ten-year horizon and is thus primarily driven by Transmission Owners’ reliability needs and compliance with NERC reliability standards. To date, the projects that address short-term reliability needs have been proposed to the MISO by individual Transmission Owners. Need drivers and alternatives are then verified through the MTEP process and studies. This approach is often considered a “bottom-up” approach. The targeted studies investigate specific issues and the time frame can be between long- and short-term. The short-term and targeted studies typically follow a one-year planning cycle. The long-term economic studies thus far follow a two-year planning cycle.

¹ Excerpt from MISO Transmission Expansion Plan 2008, Section 8.
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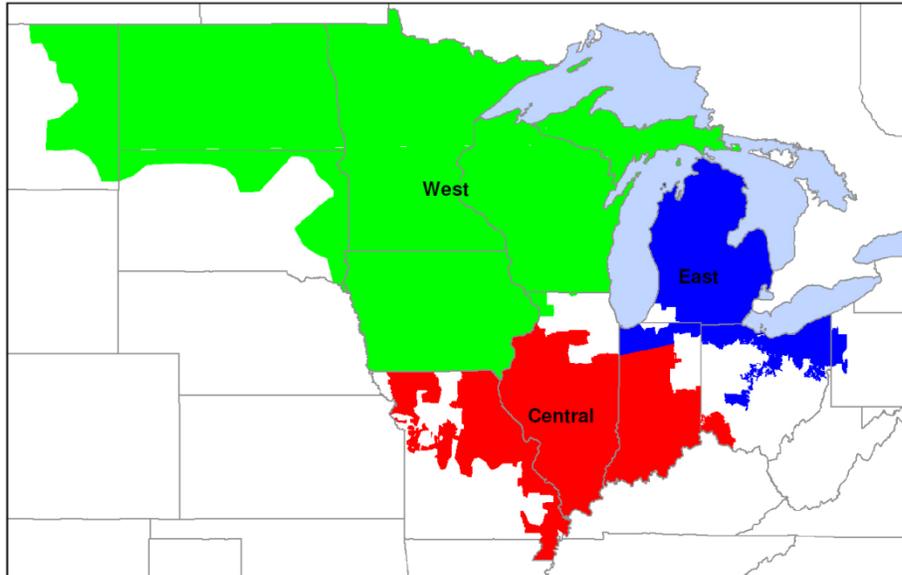


Figure RP-2: Map from MTEP10 Final Report

MISO Transmission Expansion Plan 2011 (MTEP11) reliability studies

The ATC Regional Strategic Projects staff participates in the MISO MTEP11 bottom-up reliability studies to ensure correct representation of our projects. These activities include:

- Ensuring ATC’s project information is in the MISO project database,
- Participating in building/reviewing the annual MTEP models,
- Correlating the needs identified in the MISO analyses with the specific ATC projects,
- Reviewing and commenting on MTEP study results to ensure successful inclusion of the ATC projects in MTEP Appendix A in a timely manner,
- Actively participating in the Candidate Multi-Value Projects Study, the Cross Border Top Congested Flowgate study and other targeted studies
- Ensuring the appropriate cost allocation is identified for those ATC projects eligible for regional cost sharing,
- Answering questions related to ATC projects at the western Sub-regional Planning Meetings (SPMs) and other stakeholder forums, and
- Providing suggestions/comments that help improve the MTEP process.

MISO Transmission Expansion Plan Cost Allocation Types

The MISO Business Practice Manual (BPM) allows for cost sharing of projects through their annual MTEP reliability study. This cost allocation methodology can be broken down into the project types below:

- Baseline Reliability Projects (RECB1)
- Transmission Access Projects (TAP)
 - Generator Interconnection Projects (GIP)



- Transmission Delivery Service Projects
- Market Efficiency Projects (RECB2)
- Multiple Value Projects (MVP)
 - FERC approved December 16th, 2010
- Other Projects
 - Not one of the above. Projects are not cost shared.

Each cost allocation type listed above has different criteria that a project must meet in order to receive the cost sharing associated with that type. More detailed information on the criteria and cost sharing percentages can be found on the MISO website.

MISO Transmission Expansion Plan 2011 (MTEP11) ATC Projects targeted for Regional Cost Sharing

MTEP Project ID	Project Name	Cost Allocation Type	Estimated Project Cost	MISO Approval Date
2846	Straits Power Flow Controller	Baseline Reliability Project (RECB1)	\$90,000,000	6/17/2011
1950	2nd Kewaunee Transformer	Baseline Reliability Project (RECB1)	\$17,700,000	Expected in Dec 2011
3206	Point Beach Long Term Solution Upgrades	Generator Interconnection Project	173,300,000	Expected in Dec 2011

Other MISO planning activities

Our Strategic Projects staff also participates in other MISO planning activities such as the Planning Sub-committee and Planning Advisory Committee. Our involvement includes taking part in various technical and policy discussions and providing feedback concerning the future direction of MTEP activities. ATC also actively participates in other groups including, but not limited to the MISO Interconnection Process Task Force and observes closely several generation interconnection studies included in the System Planning Analysis (SPA) and Definitive Planning Phase (DPP) group studies.



Western Wisconsin Study

ATC led a joint study effort investigating the long-term reliability issues and transmission needs in the western Wisconsin area, collaborating with the transmission-owning utilities Xcel Energy, Dairyland Power Cooperative, ITC Midwest, Great River Energy, Southern Minnesota Municipal Power Agency and the MISO. The western Wisconsin area is often impacted by various through flows, e.g., the west to east flow bias, which can stress the area's transmission network. Increasing wind penetration levels in the west contribute to increased flows (in terms of magnitude and frequency) through the western Wisconsin area in real-time system operations.

This emerging reliability concern can become more significant when additional wind generation comes online in future years in the west. The Minnesota-Wisconsin Export interface is currently limited due to voltage stability and transient voltage recovery constraints. Transmission reinforcement in the study area is likely to have a significant positive impact on this critical interface. Local reliability issues and transmission needs will also be evaluated in an integrated fashion in conjunction with the regional flow bias issues.

This study included two phases: the initial screening and the detailed analysis. The initial screening evaluated the base case and 15 different transmission options using AC contingency analysis. Options that did not have significant impact on the reliability of the western Wisconsin study area were excluded from further detailed analysis. Of the 15 different transmission options that were initially evaluated, seven provided sufficient impact on the reliable operation of the transmission system in the study cases to warrant further detailed evaluation. These are the seven transmission options evaluated in detail:

- Option 1: North La Crosse – Hilltop – Spring Green – Cardinal 345 kV project
- Option 1a: North La Crosse – Spring Green – Cardinal 345 kV project
- Option 1b: North La Crosse – North Madison – Cardinal 345 kV project (now known as Badger Coulee 345 kV project)
- Option 8: Dubuque – Spring Green – Cardinal 345 kV project
- Option 7c: North La Crosse – North Madison – Cardinal (Badger Coulee) and Dubuque – Spring Green – Cardinal 345 kV projects
- Low Voltage Option: a collection of 69 kV, 138 kV and 161 kV facilities
- 765 kV Option: Genoa – North Monroe 765 kV project

The conclusion of this study is that Option 7c provides the most reliability benefit to the western Wisconsin area; Option 1b provides a portion of the benefit realized in Option 7c and includes the additional interconnection to Minnesota. Option 8 provides significant reliability benefits to western Wisconsin as well but not the needed reinforcements for Minnesota. For more information and study results, the final report has been posted at: <http://www.atc10yearplan.com/documents/WesternWIREportPublicVersion01132011.pdf>



Badger-Coulee (formerly known as North La Crosse- North Madison-Cardinal) 345-kilovolt project

In addition to MISO's evaluation of the Badger Coulee project and following approximately three years of study and analysis, we have determined that a 345-kilovolt transmission line from the La Crosse area to the greater Madison area would provide multiple benefits to the state of Wisconsin, including improved electric system reliability, economic savings for utilities and energy consumers, and access to additional renewable energy. As it finalizes its evaluation of the multiple benefits of the project, ATC will continue the public outreach efforts on the proposed Badger Coulee Transmission Line in the 150-mile area from La Crosse to Madison to explore corridor options for the new line. If the Badger Coulee line is chosen as a Candidate Multi-Value Project under MISO's proposed cost- allocation methodology it would greatly reduce the cost of the line to our customers.

ATC's studies indicate that the Badger Coulee Transmission Line Project is a multi-benefit project that would deliver benefits to Wisconsin and the Midwest region in three important ways:

Improve electric system reliability locally and regionally

- Better enable Wisconsin to import power
- Offset the need for approximately \$180 million (\$140 million in the ATC service area) in lower voltage upgrades in western Wisconsin communities
- Alleviate stability issues on regional transmission grid

Deliver economic savings for Wisconsin utilities and electric consumers

- Provide utilities with greater access to the wholesale electricity market with potential savings that can be passed on to electric consumers
- Improve efficiency of grid; more efficient grid reduces the cost to deliver energy
- Connect to high-quality renewable resources in the nation's western wind alley, which translates into hundreds of millions of dollars in potential savings

Expand infrastructure to support public policy for greater use of renewables

- Establish another pathway for renewable energy into Wisconsin with connections to key load centers
- Match regional studies (Strategic Midwest Area Transmission Study and the MISO Regional Generation Outlet Study) evaluating transmission options that best deliver renewable energy while also addressing reliability issues



ATC currently expects to file an application to build the line with the Public Service Commission of Wisconsin in 2013. If approved by the PSC, construction on the new line would begin in 2015 to meet an in-service date of 2018. Transparency and stakeholder engagement have been hallmarks of our planning process from our company's inception. While planning studies for this project continue, we will engage local officials and residents as well as other interested parties on the routing and siting issues this fall. Because transmission line planning, siting and construction can take between five to 10 years, we want to ensure adequate time for public discussion and input.

For more information or to be emailed updates please visit www.BadgerCoulee.com

The Badger Coulee line has been identified as a Candidate Multi-Value Project under MISO's new proposed cost allocation methodology (discussed below). This would greatly reduce the cost of the line to ATC customers. Badger Coulee has also been identified in many MISO System Planning and Analysis (SPA) and Definitive Planning Phase (DPP) studies for the western generator interconnection queue, as needed for the new generator requests to be placed in service. See MISO's generator interconnection queue studies and reports for more information at <https://www.midwestiso.org/Planning/GeneratorInterconnection/Pages/GeneratorInterconnection.aspx>

Dubuque-Spring Green-Cardinal 345-kilovolt project

The Dubuque-Spring Green-Cardinal 345-kV project is also part of MISO's initial Candidate Multi-Value Project Portfolio and has been under study by ATC for the past three years. As part of the analysis discussed in the section on the Western Wisconsin Study, a 345-kV transmission line from Dubuque County to Spring Green to Cardinal was found to show benefits for Wisconsin. This line is approximately 104 miles long and has an expected in-service date of 2020. The combination of the Badger Coulee and the Dubuque-Spring Green-Cardinal 345-kV projects performed the best across all aspects of the reliability analyses. This combination provides additional benefits beyond any of the single 345-kV options and it provides the highest level of transfer capability for wind generation in Minnesota and Iowa. This combination also provided the most net economic benefits across most futures.

As with the Badger Coulee project, if this project is approved under the MVP cost-allocation method, the cost of this project to our customers would be greatly reduced.

Renewable Investment Benefit

Badger Coulee, Dubuque-Spring Green-Cardinal and the other projects in western Wisconsin will enable higher-capacity wind generation in Iowa, Minnesota, North Dakota and South Dakota to move more freely to loads to the east, including Wisconsin. Because



renewable energy standards require a certain amount of energy (kWh) to be produced, there is the potential for significant capital cost savings if wind generation is built in higher wind capacity areas than in lower wind capacity areas. We have developed and tested with stakeholders and MISO a process for calculating the value of this benefit, and the dollar savings are included in the savings for both the Badger Coulee 345-kV line and the Dubuque-Spring Green-Cardinal 345-kV project.

MTEP11 Candidate Multi-Value Project (MVP) Study

MISO was required by the Federal Energy Regulatory Commission (FERC) to file a new cost allocation methodology to address large regional projects. On July 15th, 2010 MISO filed a new tariff for approval by FERC which outlined a cost allocation methodology for a new classification of project, Multi-Value Projects (MVPs). FERC conditionally approved this new cost allocation methodology in December of 2010. The cost allocation methodology allocates costs for Multi-Value Projects over the entire MISO footprint based on the percentage of energy used in each area. For ATC customers, the percentage that would be paid for MVPs across the MISO footprint is estimated in the 10-15% range.

This new cost allocation methodology led the way to an MTEP11 Candidate MVP Study, which would allow MISO to study a portfolio of projects for MVP cost allocation. Seventeen projects have been chosen to make up the Candidate MVP Portfolio to be studied in the MTEP11 process. These 17 projects have been listed and mapped below:

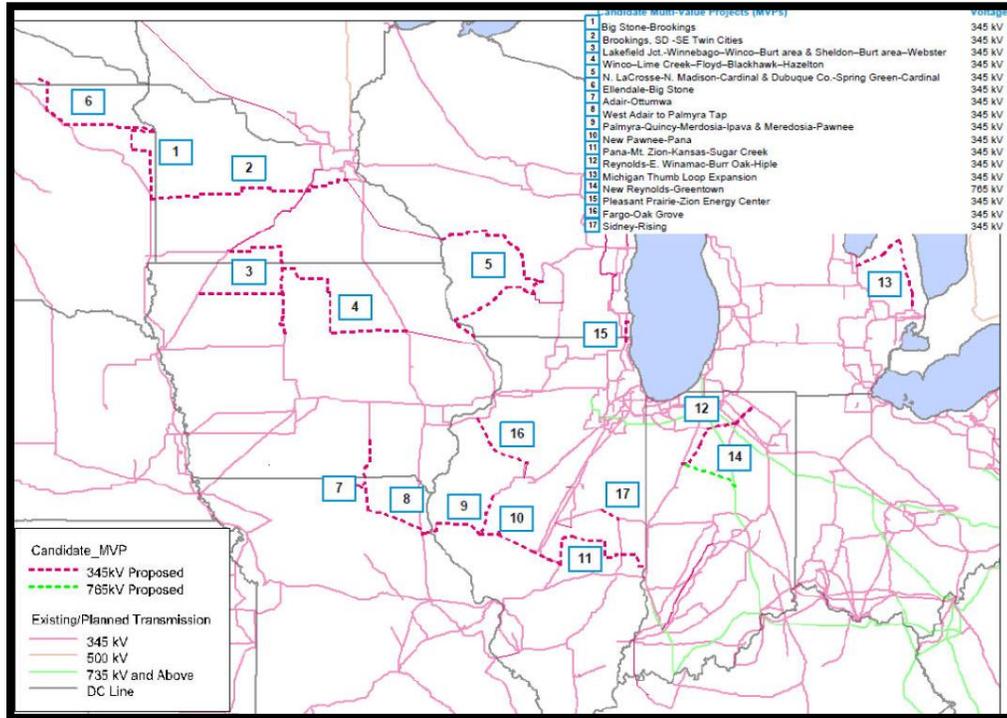


Figure RP-3: Candidate MVP Portfolio map for MTEP11²

ATC has Candidate MVP Projects included in the portfolio list above (#5 and #15). MISO has put together a task team to complete this study and ATC’s Strategic Projects engineers are actively participating in the meetings and results review. The models for this study were completed at the beginning of 2011 and the RGOS wind zones shown in the RGOS section of this report were used to determine future wind generation locations and capacities. The portfolio as a whole will be looked at to see that each project meets one of the three criteria for being designated an MVP project.

To be designated as an MVP, a project must meet one of the three following criteria:

1. must be needed to meet a public policy mandate,
2. must provide economic benefits, including regional benefits, sufficient to meet a 1:1 benefit/cost ratio when you compare twenty years of the costs paid by consumers for the project and twenty years of the benefit,
3. must solve a reliability issue and provide economic benefits as described above and specifically includes those costs for lower voltage projects that would not need to be built if a larger regional project were built.

² This map is from the MISO homepage under the Candidate MVP Portfolio Study at <https://www.midwestiso.org/Planning/Pages/MVPAnalysis.aspx>
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This study is expected to reach completion in August with a draft report completed in September 2011. To learn more about the progress in the Candidate MVP Portfolio study please go to the following website:

<https://www.midwestiso.org/Planning/Pages/MVPAnalysis.aspx>

Pleasant Prairie-Zion Energy Center 345 kV line

Our final project included in the MISO's MVP analysis is the Pleasant Prairie-Zion Energy Center 345-kV project. This is a 5.3 mile line connecting southeast Wisconsin with northeast Illinois. This project is proposed to provide additional reliability benefits and to relieve congestion around southern Lake Michigan, showing significant savings to customers in Wisconsin and Illinois in most futures studied. The results of the study were presented to stakeholders in January 2011, and we will file applications for this project in both Wisconsin and Illinois later this year. If approved, the in-service date for the project will be 2014.

More information on this project can be found at:

<http://www.atc-projects.com/SE-PLPZEC.shtml>

CapX2020 (Capacity Expansion - by the year 2020)

ATC also pays close attention to the CapX2020 effort, which is a joint initiative of 11 transmission-owning utilities in Minnesota and the surrounding region. Their objective is to expand the electric transmission grid to ensure reliable and affordable service. CapX2020 includes the following transmission projects:

- Fargo – St. Cloud – Monticello 345-kilovolt line,
- Hampton – Rochester – La Crosse 345-kilovolt line,
- Brookings County – Hampton 345-kilovolt line (Candidate MVP #2), and the
- Bemidji – Grand Rapids 230-kilovolt line.

The Minnesota Public Utilities Commission (MPUC) approved certificates of need for these projects, some with conditions, one of which was to build the projects with the ability to expand. Rather than build single-circuit 345 kV lines, the MPUC required the CapX2020 group to build the projects as double circuit capable, but to only build the initial circuit at this time. The CapX2020 group is pursuing the routing and siting of these projects. Route permit applications for the following lines have been filed:

- Brookings County – Hampton 345-kilovolt project, and the
- Fargo – St. Cloud 345-kilovolt project.
- Hampton – Rochester – La Crosse 345-kilovolt project up to the Minnesota state line.



The CapX2020 group filed an application with the Public Service Commission of Wisconsin for the Wisconsin portion of the Hampton – Rochester – La Crosse 345-kilovolt line on January 3, 2011 and a completeness letter was issued by the PSCW in June 2011. The completeness letter indicates that the PSCW now has approximately one year to issue an order on the line.

Portions of the CapX2020 projects also will require approvals by federal officials and by regulators in North Dakota and South Dakota. More information about the CapX2020 projects and updates can be found on the CapX2020 Web site at www.capx2020.com.

Business Development

Duke-American Transmission Co.

Building on more than 10 years of success, we are looking for opportunities to grow our company beyond our current service area in the Upper Midwest. In 2011, we formed a partnership with Duke Energy in a joint venture to build, own and operate new electric transmission infrastructure in North America. We believe Duke-American Transmission Co. is well-positioned to help address increasing demand for affordable, reliable transmission capacity in the United States and Canada. The DATC planning team, comprised of transmission planners from both companies, has been working to find and address the gaps in transmission that would provide additional economic, reliability, and public policy benefits to consumers. Thoughtful, well-designed transmission projects will afford customers, regulators and other stakeholders flexibility in determining which energy resources will help meet demand for electricity in the future. As such, they will serve as a springboard for next-generation energy technologies. For more information, please visit www.datcllc.com.