

# NORTH DAKOTA

TRANSMISSION AUTHORITY

**ANNUAL REPORT**  
JULY 1, 2010 - JUNE 30, 2011

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## OVERVIEW

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At the request of the North Dakota Industrial Commission, the North Dakota Transmission Authority (Authority) was created by the North Dakota Legislative Assembly in 2005. Since its inception the Authority's mission has been to facilitate the development of transmission infrastructure in North Dakota. The Authority was established to serve as a catalyst for new investment in transmission by facilitating, financing, developing and/or acquiring transmission to accommodate new lignite and wind energy development. The Authority is a builder of last resort, meaning private business would have the first opportunity to invest in and/or build additional needed transmission.

By statute the Authority membership is comprised of the members of the North Dakota Industrial Commission. Sandi Tabor has served as director of the Authority since October 2006. Ms. Tabor works closely with the Executive Director of the NDIC, Ms. Karlene Fine. The Authority has no other staff, and receives no direct general fund appropriation.

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## SUMMARY OF ACTIVITIES

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Whether the issue is project development or legislative initiatives, the Authority is actively engaged in seeking ways to improve North Dakota's energy export capabilities. To be successful Authority staff must have an in-depth understanding of the technical and political challenges associated with moving energy from generator to satisfied customer. Detailed planning is a prerequisite along with outreach to potential developers and existing transmission system owners and operators in order to meet the goals

set by the EmPower ND Commission of increasing North Dakota's installed capacity of wind generation to 5,000 megawatts by 2020. Another key element for success is working with elected officials at the state and federal levels to ensure that legislation and public policy are designed to take advantage of moving electricity generated from North Dakota's abundant energy resources to local, regional and national markets.

### North Dakota Industrial Commission



Jack Dalrymple  
Governor



Wayne Stenehjem  
Attorney General



Doug Goehring  
Agriculture Commissioner

### North Dakota Transmission Authority



Sandi Tabor  
Director



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## STATUTORY AUTHORITY

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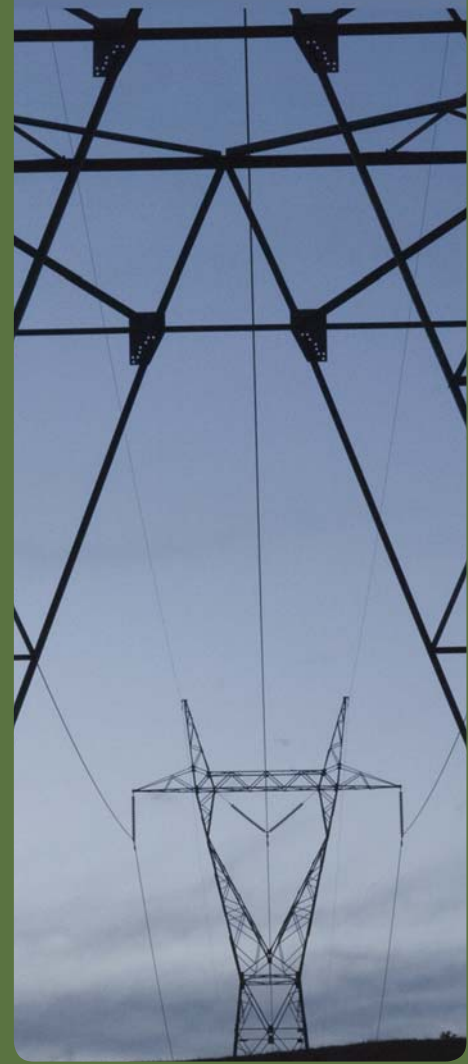
Statutory authority for the Authority is found in chapter 17-05 of the North Dakota Century Code. Section 17-05-05 N.D.C.C. delineates the powers of the Authority including:

1. make grants or loans or to borrow money;
2. issue up to \$800 million in revenue bonds;
3. enter into lease-sale contracts;
4. own, lease, rent and dispose of transmission facilities;
5. enter into contracts to construct, maintain and operate transmission facilities;
6. investigate, plan, prioritize and propose transmission corridors; and
7. participate in regional transmission organizations.

Before the Authority may exercise its power to construct transmission facilities, it must follow a process defined by statute to ensure public participation and comment. In particular, the Authority must publish a notice describing the need for the transmission project. Entities interested in constructing the facilities or furnishing services to satisfy the identified needs have 180 days to respond by filing a notice of intent. If the Authority receives a notice of intent from an interested entity, it may not exercise its powers to construct unless the Authority makes a finding that doing so would be in the public interest. In making such a finding, the Authority shall consider the economic impact to the state, economic feasibility, technical performance, reliability, past performance, and the likelihood of successful completion and ongoing operation.

The Authority may finance approved projects through the issuance of bonds. Under present law up to 30% of the cost of a project may be financed by selling bonds that include the moral obligation of the State of North Dakota. In other words up to \$240 million of the Authority's total \$800 million bonding authority may be sold with the moral obligation of the state. The moral obligation component will enhance the marketability of the Authority's bonds.

*North Dakota's transmission system will be increased by over 500 miles with the addition of new 230 kV and 345 kV transmission lines.*



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# KEY ELEMENT: PLANNING

Transmission planning at the macro level represents a major portion of the Authority's workload. Through participation in several regional planning efforts and one major national focus, entities representing significant portions of the United States continue to discuss how to improve the country's aging transmission infrastructure and how to improve the transmission of low-carbon and zero-carbon energy from rural areas to urban areas. Areas of common ground are being identified as well as areas of local and regional concerns in forums that encourage debate and resolution.

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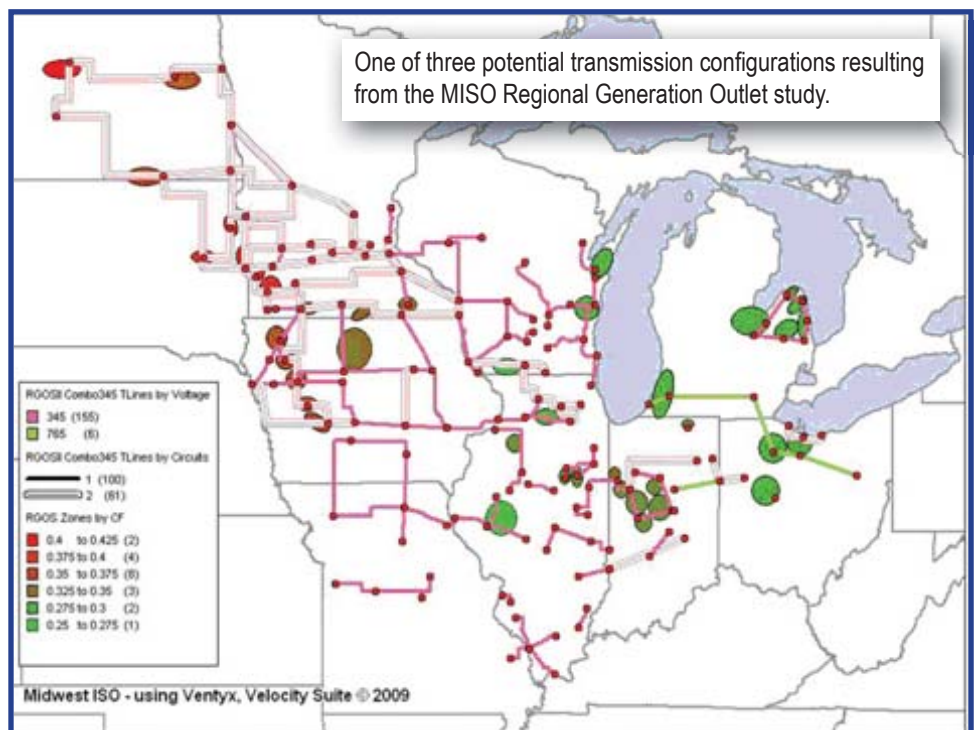
- **UPPER MIDWEST TRANSMISSION DEVELOPMENT INITIATIVE**

Authority staff represented the Governor's office in a five-state study (ND, SD, MN, IA, and WI) to determine the feasibility of upgrading and/or constructing new transmission in the region. Staff participated in bi-monthly executive committee conference calls and meetings with ND transmission owners. The UMTDI study not only identified the location of energy zones within each of the member states, but also evaluated ways to streamline the permitting and siting processes in each state and tackled the difficult issue of how to allocate the enormous costs associated with the build-out of transmission. The UMTDI issued its final report in October 2010.

- **REGIONAL GENERATION OUTLET STUDY**

Authority staff participated in meetings of the Regional Generation Outlet Study (RGOS) sponsored by the Midwest Independent System Operator (MISO). The study evaluated the impact of state specific renewable portfolio standards (RPS) on MISO operations, specifically focusing on wind development.

Phase I of the RGOS process focused on transmission needs in Minnesota, Iowa, Illinois and Wisconsin, while Phase II considered renewable portfolio standards in Michigan, Illinois, Missouri, and Ohio. The study defined potential export markets for North Dakota by identifying potential transmission opportunities to those markets.



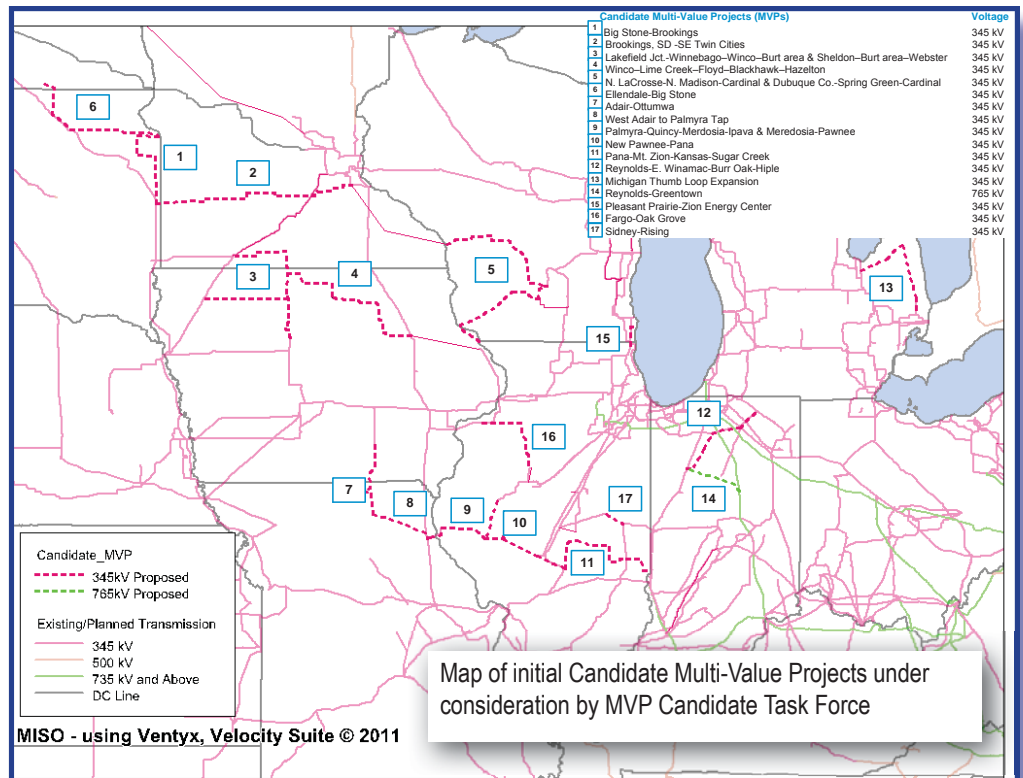
The RGOS Phase II study incorporated the Phase I results into the design of a MISO system-wide build-out that will increase the transmission capacity to accommodate state renewable portfolio standards. The final Phase II report was issued in October 2010. The final report included three transmission expansion scenarios to integrate wind from the designated zones:

1. a Native Voltage overlay that does not introduce new voltages such as 765 kV in areas where they do not currently exist;
2. a 765 kV overlay allowing the introduction of 765 kV transmission throughout the study footprint; and
3. Native Voltage with DC transmission that allows for the expansion of DC technology within the study footprint.

All three transmission expansion scenarios meet respective state renewable portfolio standards (RPS) requirements within the Midwest ISO footprint. The transmission overlay plans represent potential investment of \$16 billion to \$22 billion (2010 USD) in transmission over the next 20 years and consist of new transmission mileage of 6,400–8,000 miles. As part of the RGOS process an initial set of lines common to all three scenarios was identified for purposes of the next step in the MISO planning process.

• **MULTI-VALUE PROJECTS (MVP) TASK FORCE**

With the RGOS study results in hand Midwest ISO established the MVP Candidate Task Force to evaluate the feasibility of the “starter project” lines identified as being common to all three RGOS transmission expansion scenarios. The new MVP category was designed to facilitate the interconnection of location-constrained resources (renewable and traditional generation) in the MISO footprint. The process identified the next, most immediate step to transmission investment – a set of robust Candidate MVPs designed to address current renewable energy mandates and the regional reliability needs of its members. The significance of a line being identified as an MVP line is directly related to how the cost of the transmission line will be allocated (See below for discussion on cost allocation).



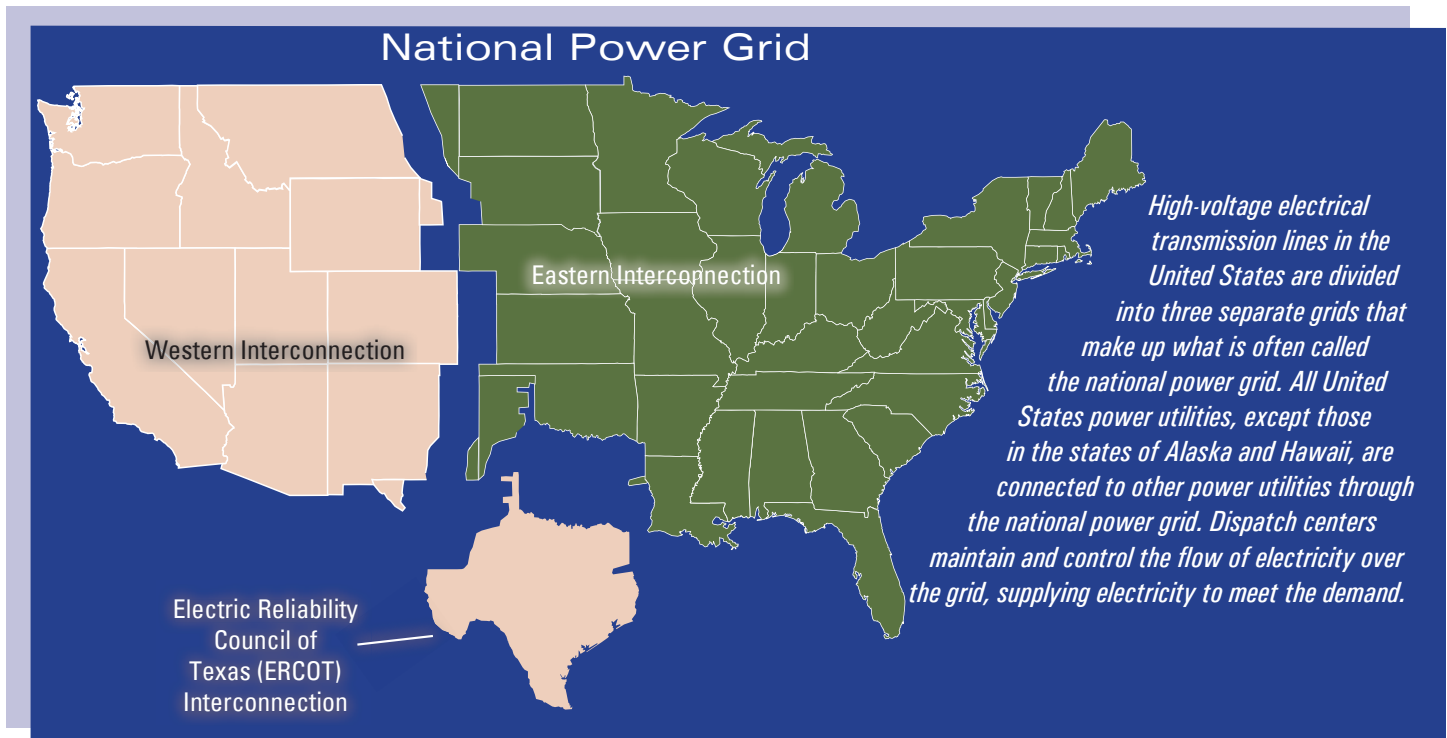
In order for a transmission project to qualify as an MVP, it must meet one of three threshold criteria:

1. the transmission project is developed through MISO’s expansion planning process;
2. the project meets certain economic values and a cost benefit ratio established by MISO; or
3. the project must address a transmission issue associated with a reliability violation and provides economic value across multiple pricing zones.

In addition to meeting at least one of the criteria, the MVP project must meet six additional requirements. For instance, MVP projects can not begin before July 16, 2010 and must not contain any facilities included in existing MISO planning documents. Another requirement is that the project capital costs must be greater than or equal to the lesser of \$20 million or 5% of the constructing transmission owner’s net transmission plant.

Since January 2011 the MVP Task Force has conducted numerous studies to further evaluate the impact of the candidate lines on the MISO system. Tentatively the projects represent \$4.5 billion (2010 USD) of capital investment. Of particular interest to North Dakota are the Ellendale to Big Stone line (6), the Big Stone to Brookings line (1) and the Brookings to Twin Cities (2) line. If selected, the lines will add capacity to move new energy resources from North Dakota.





- **COST ALLOCATION**

Who pays for new transmission or upgrades to existing transmission infrastructure (known as “cost allocation”) has been a controversial issue, especially for transmission owners serving the rural portions of the MISO footprint. During the last three years, MISO and the Organization of MISO States focused a great deal of energy developing cost allocation methodologies to cover the costs associated with the transmission build-out being planned through the RGOS process. Many members of UMTDI were actively engaged in these cost allocation discussions. Ultimately, these discussions resulted in MISO filing a tariff with the Federal Energy Regulatory Commission (FERC) including a cost allocation formula that assessed the cost of certain high voltage transmission infrastructure across the MISO footprint. FERC issued a final tariff regarding cost allocation in December 2010.

Under the new tariff, costs associated with lines meeting the MVP criteria will be spread across the MISO footprint. The new tariff also allowed Generator Interconnection Projects (GIP) arising within a defined time period to share the costs of network upgrades on which they mutually rely; and it retained the cost allocation for network upgrades needed for GIPs that was conditionally accepted by the FERC in 2009. This is the fourth tariff developed as part of the ongoing, comprehensive review of MISO’s Regional Expansion Criteria and Benefits (RECB) transmission cost allocation methodologies.<sup>1</sup>

- **EASTERN INTERCONNECTION STATES PLANNING COUNCIL**

The American Recovery and Reinvestment Act of 2009 (ARRA) required states to coordinate planning in the Eastern Interconnection and provided the Department of Energy (DOE) with planning grant monies to encourage a state-led transmission planning process. The Eastern Interconnection States Planning Council (EISPC) was formed in June 2009 to apply for a DOE planning grant. The focus of EISPC (which includes 39 states and the District of Columbia and the City of New Orleans) was to develop concepts for moving zero-carbon and low-carbon energy throughout the Eastern Interconnection. A grant of \$14 million was awarded to the group in late 2009 to fund a 4-year planning process. The group’s organizational meeting was held in March 2010.

Authority staff, along with representatives from the ND Public Service Commission, represents North Dakota at Council meetings. During the last year the Council developed an organizational structure and worked with consultants on developing future scenarios and sensitivities based on a set of key drivers. The key drivers included:

1. future policy goals;
2. policy implementation approaches;
3. economic performance;
4. load growth;
5. technology performance; and
6. fuel prices and availability.

<sup>1</sup> Both the existing Baseline Reliability Projects (RECB I) and Regional Beneficial Projects (RECB II) cost allocation methodologies will be retained by MISO.

Late last year the group adopted eight macroeconomic futures and related sensitivities. The futures included business as usual; carbon constrained – national implementation and regional implementation; national renewable portfolio standard – national and regional implementation; nuclear resurgence and combined federal climate and energy policy. The ultimate goal of the EISPC is to develop a process for the coordination of transmission expansion across the Eastern Interconnection. Work will continue through 2013.

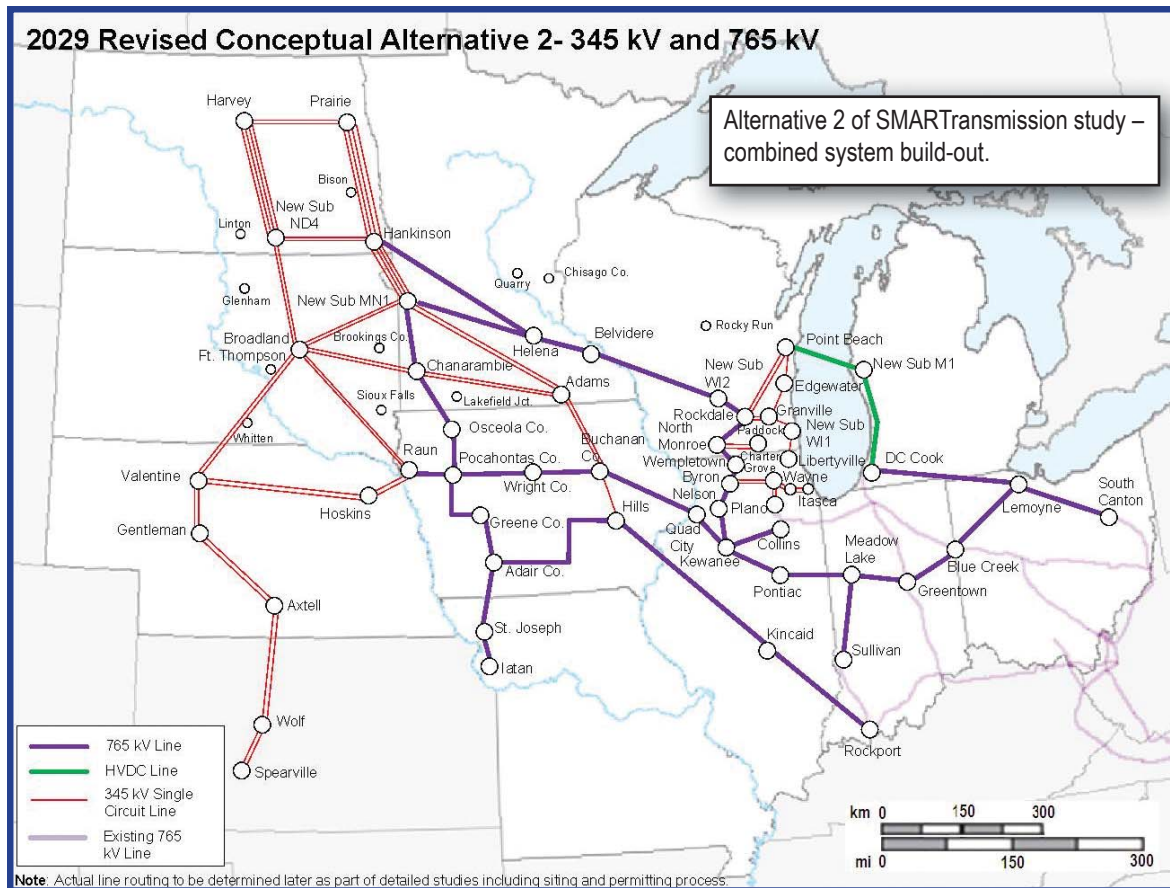
- SMART TRANSMISSION STUDY**

The Strategic Midwest Area Transmission Study was a comprehensive study of the transmission needed in the Upper Midwest to support renewable energy development and to transport that energy to consumers. The study determined that 56.8 GW of wind generation would be needed to meet a 20% Federal renewable portfolio standard (RPS) requirement for all states in the SMART Study footprint. The study was sponsored by Electric Transmission America<sup>2</sup>, American Transmission Company, Exelon Corporation, NorthWestern Energy, MidAmerican Energy Company and Xcel Energy. The Authority participated in stakeholder meetings regarding the study.

The final report was issued by the group in October 2010. While several transmission build-out scenarios were examined during the Phase 1 portion of the study, the economic analysis in the Phase 2 report was completed on two alternatives that included:

1. a combination of 765 kV lines and 345 kV lines; and
2. a 765 kV only build-out.

The cost associated with the alternative plans ranged from \$23.8 billion to \$25.7 billion. The miles of line to be constructed ranged from 8,200 to 11,000. All of the projects are located within the MISO and PJM<sup>3</sup> footprints. Two lines included in the study located in Iowa and Illinois are under development.



<sup>2</sup> Electric Transmission America is a transmission joint venture of subsidiaries of American Electric Power and MidAmerican Energy Holdings Company.

<sup>3</sup> PJM Interconnection coordinates the movement of electricity through all or parts of Delaware, Illinois, Indiana, Kentucky, Maryland, Michigan, New Jersey, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia and the District of Columbia.

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# KEY ELEMENT: OUTREACH

A significant element of the Authority's mission is to solicit ideas from interested parties regarding solutions to transmission constraint issues in North Dakota. Outreach can occur in many ways, whether through one-on-one contacts with individuals or by participating in organizations and programs designed to bring a wide variety of people and groups together to share ideas and develop solutions. The Authority's outreach program includes both individual contacts and participation in larger group meetings.

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- **UPPER GREAT PLAINS TRANSMISSION COALITION**

The coalition is comprised of a broad range of groups interested in solving transmission issues in the region. The Coalition meets periodically to discuss recent events at the local, state, regional and federal levels. For instance, at the last meeting of the Coalition in November 2010 presentations were made by representatives from CapX 2020, SMARTransmission Study, UMTDI, MISO, and state representatives. Representatives from the SMARTransmission study discussed the Phase 2 study results and representatives from UMTDI reviewed the group's final report. MISO reported that Appendix A of the 2010 MTEP contained 613 projects with projected investment through 2020 of \$4.7 billion. The lines represent 4,110 miles of new or upgraded transmission.

- **CAPX 2020**

CapX2020 is a Minnesota-based joint initiative of 11 transmission-owning utilities to expand the electric transmission grid to ensure continued reliable and affordable service. Planning studies show that Minnesota customer demand

for electricity will increase 4,000 to 6,000 megawatts (MW) by 2020. New transmission lines must be built in phases designed to meet this increasing demand as well as to support renewable energy expansion. The lines identified in the first phase of the effort include:

- Bemidji-Grand Rapids, 68 miles, 230-kV
- Fargo-St. Cloud-Monticello, 250 miles, 345-kV
- Hampton-Rochester-La Crosse, 150 miles, 345-kV
- Brookings County-Hampton, 200 miles, 345-kV



A CapX 2020 project, this portion of the Fargo-St. Cloud-Monticello line runs along Highway 75 in Minnesota.



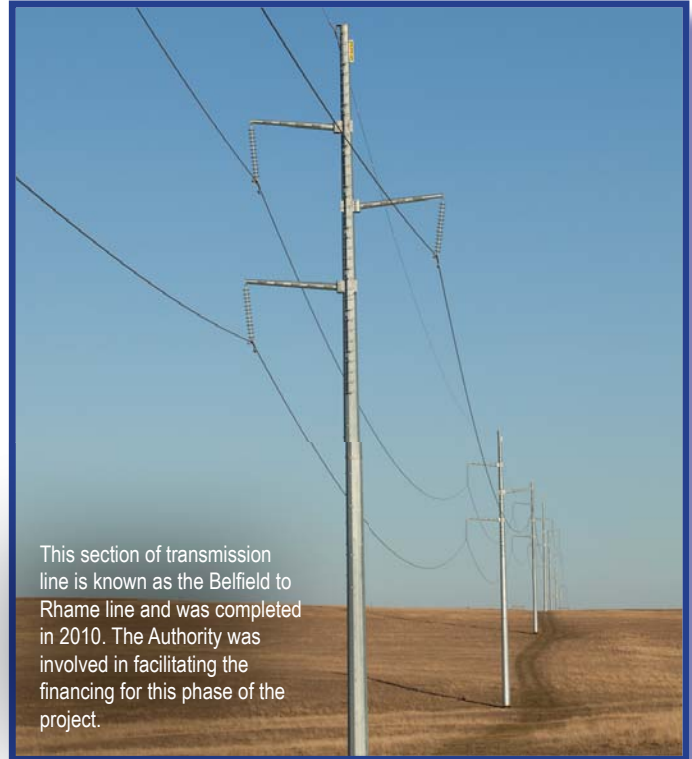
Of particular interest to North Dakota is the Fargo-St. Cloud-Monticello line. This project is designed to alleviate electric reliability concerns in the St. Cloud, Alexandria and Red River Valley areas, as well as meet the region's projected electric growth and provide an outlet for new generation. Route permits were issued by the MN PUC for the first segment of the line (Monticello to St. Cloud) in July 2010 and for the second segment (St. Cloud to Fargo) in June 2011. Construction of the first segment began in the fall of 2010. A routing permit for the segment between St. Cloud and Fargo is expected to be filed with the ND PSC in 2011. The Fargo – Monticello line is expected to be in service in 2015.

• **WIND FARM DEVELOPMENT**

A mere three years ago, North Dakota had 529 megawatts of active wind farm development.<sup>4</sup> Today, there are 1,455 megawatts of wind farm energy in various stages of active development and an additional 4,674 megawatts in the planning stages. During the last year the Authority met with several wind farm developers including representatives from Envision Energy, Grand Forks Economic Development, CapX 2020, Competitive Power Ventures, and Geronimo Wind. The discussions with these groups range from the Authority's role in transmission development to transmission issues related to wind farm development.

• **BASIN ELECTRIC WILLISTON TO TIOGA PROJECT**

The northern portion of a three segment, multi-year construction project in the energy fields of western North Dakota was placed in service in January 2011. The



This section of transmission line is known as the Belfield to Rhame line and was completed in 2010. The Authority was involved in facilitating the financing for this phase of the project.



The green line reflects the route approved for the Minnesota portion of the Monticello to Fargo line.

Williston to Tioga project consists of a 61-mile, 230-kV line, and is one of a series of projects built by Basin Electric Power Cooperative and the Western Area Power Administration. The line cost approximately \$400,000 per mile to construct with total costs exceeding \$24 million. The Authority was involved in facilitating the financing of the first phase of the project, known as the Belfield to Rhame line, with the Bank of North Dakota.

<sup>4</sup> Active wind farm development refers to wind farms in operation, under construction or in receipt of a permit to construct.

<sup>5</sup> Based on information available from filings made with the ND Public Service Commission.

- **MINNKOTA POWER COOPERATIVE PROJECT**

Planning continued on the 260-mile 345-kV transmission line proposed by Minnkota Power Cooperative, Inc. The new line will run from Center to Grand Forks and is expected to be completed by early 2013. The line will move energy from the existing Milton R. Young 2 power station directly into the Minnkota service territory. Reallocation of energy presently transmitted on the existing line to this new line will also allow more energy from potential future wind power developments to be carried. The estimated cost of the project is \$310 million.

- **TRANSMISSION DEVELOPMENT**

The estimated construction cost of the infrastructure associated with planned or constructed high-voltage transmission line projects since 2008 will exceed \$428 million<sup>5</sup>. This includes over 540 miles of new transmission lines. The Authority continues to explore with interested parties new avenues for further expansion of transmission in North Dakota.

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## KEY ELEMENT: GOVERNMENT ACTION

Providing elected officials with the information necessary to make informed decisions is another function of Authority staff. Whether the issue is setting state energy policy regarding transmission development or commenting on federal transmission legislation, the Authority serves as a resource for decision-makers. In the last year the Authority was busy on several fronts working with the following entities: the EmPower ND Commission, Governor's Office, Department of Commerce, the ND Tax Department, ND Public Service Commission, ND Legislative Assembly and the Congressional Delegation.

- **EMPOWER ND COMMISSION**

The Authority was an active participant in the EmPower ND Commission work. Authority activities included briefing the Commission on transmission issues in North Dakota and participating in the design of Commission goals. The Commission's 2010 report included the following wind development goal:

- ◇ Develop an export market to increase installed capacity of wind generation to 5,000 megawatts by 2020 conditioned upon a prior commensurate increase in North Dakota transmission export capacity and cost-effective and equitable allocation of the associated cost to North Dakota customers that:

- maintains grid stability;
- preserves affordability for North Dakota electric rate payers;
- maintains and expands opportunities for North Dakota lignite coal and natural gas industries, including offering base-load, peaking and other services for large-scale exporting of energy.

The Commission's transmission goal is to increase North Dakota's energy export capacity to 7,500 megawatts in coordination with other states and regional planning entities to facilitate permitting, construction and upgrading transmission systems by 2020 provided acceptable cost allocation methodology is developed and approved by FERC.

The Commission also developed a legislative agenda for the 2011 session that included **SB 2322** which allowed a utility the right of first refusal regarding the construction of a transmission line that will interconnect with the utility's system. This bill was necessary to ensure the integrity of the existing transmission system and to respond to potential regulation changes under review by the Federal Energy Regulatory Commission.

- **NORTH DAKOTA LEGISLATIVE ASSEMBLY**

The Authority monitored several bills during the 2011 Legislative Session. While not directly related to transmission construction, the Authority followed **SB 2129** which lowered the Public Service Commission's (PSC) siting jurisdiction threshold for wind facilities to .5 MW and other energy conversion facilities to 50 MW. Another bill, **HB 1116**, included technical corrections related to tax exemption for transmission lines. No legislation adverse to the development of transmission was passed by the 2011 Legislature.

- **FEDERAL LEGISLATION**

Periodically the Authority discusses the feasibility of including federal tax exemption language on state issued transmission revenue bonds with Senator Conrad's office. To date no bill has received any traction largely due to the costs associated with the program.

- **INTERAGENCY COORDINATION**

As important as everything else discussed in this report, is the coordination of efforts among the various government entities with an interest in transmission development. In particular regular meetings are held with the representatives

from the Public Service Commission to discuss the status of transmission projects. When business development staff from the Department of Commerce set meetings with new project developers they invite Authority staff

to attend. Likewise Authority staff provide briefings on transmission issues to Commerce staff and members of the Governor's staff. In addition Authority staff provided comments and background to the Governor's staff on transmission issues raised at various regional and national meetings, like the Western Governors Association. All of these efforts make the State's response to transmission issues and opportunities more timely and seamless.

**EmPower ND Transmission Goal:**

Increase exported energy capacity to 7,500 megawatts by 2020.

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## **CONCLUSION**

The expansion of transmission capacity in the State of North Dakota was one of the key reasons for the creation of the Authority in 2005. As many in North Dakota have discovered there are no easy answers to the perplexing questions of how to quickly expand transmission infrastructure in order to export more energy from our state. The transmission issues are

complex and changes to the system must be made with great care to ensure the reliability of the existing system and to maintain the ability of the system to provide electricity to its customers 24 hours a day, 7 days a week. The good news is that new transmission is being built and will continue to be built as the demand for new generation grows not only in the region, but also in the nation. The North Dakota Transmission Authority will continue to work to ensure new development.



