NORTH DAKOTA TRANSMISSION AUTHORITY

ANNUAL REPORT

July 1, 2018 to June 30, 2019

OVERVIEW

The North Dakota Transmission Authority (Authority) was created by the North Dakota Legislative Assembly in 2005 at the request of the North Dakota Industrial Commission. The Authority's mission is 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 has the first opportunity to invest in and/or build needed transmission.

By statute the Authority membership is comprised of the members of the North Dakota Industrial Commission. John Weeda was appointed Director of the Authority in February 2018. The Director 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.

SUMMARY OF ACTIVITIES

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 along with transmission capabilities within the state. To be successful Authority staff must have an understanding of the technical and political challenges associated with moving energy from generator to satisfied customer. Outreach to existing transmission system owners and operators and potential developers in order to understand the nuances of successful transmission infrastructure development is necessary. Another key element for success is working with officials at the state and federal levels to ensure that legislation and public policy are designed to support the movement of electricity generated from North Dakota's abundant energy resources to local, regional and national markets.

NORTH DAKOTA INDUSTRIAL COMMISSION

Doug Burgum,
Governor

Wayne Stenehjem,
Attorney General

Doug Goehring,
Agriculture Commissioner

NORTH DAKOTA TRANSMISSION AUTHORITY

John Weeda, Director

STATUTORY AUTHORITY

Statutory authority for the Transmission 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 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 construction of 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 power 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 current law up to 30 percent 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 $800 million total bonding authority may be sold with the moral obligation of the state. The moral obligation component enhances the marketability of the Authority's bonds.

PLANNING

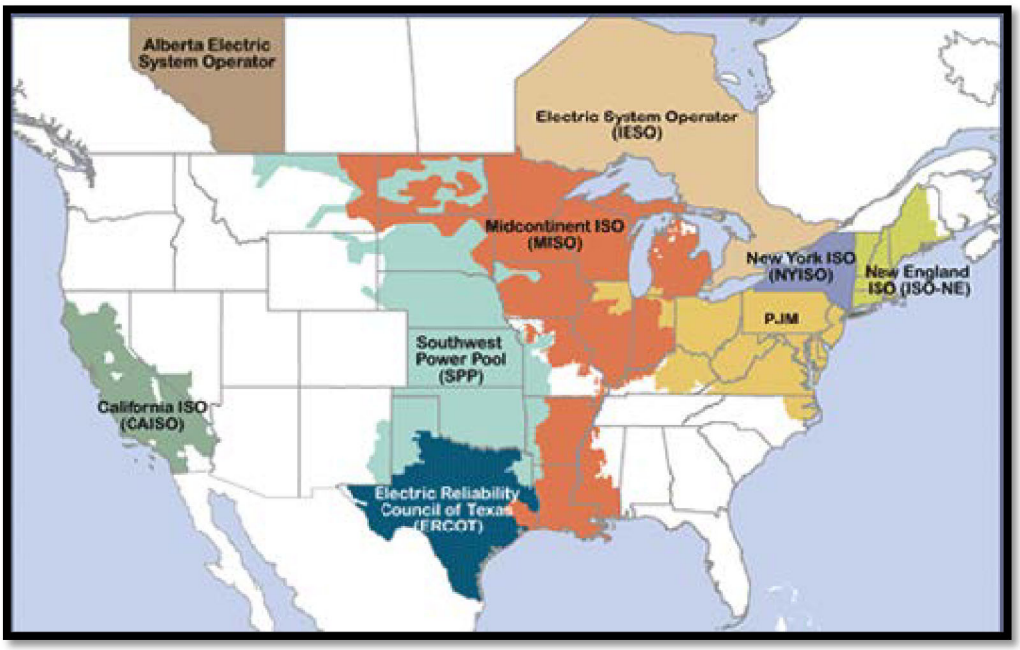
A major portion of the Authority's workload includes observation and achieving a high level of understanding of regional transmission planning. To accomplish this task, the Authority monitors the efforts of regional transmission organizations (RTOs) that represent North Dakota transmission developers. Authorized and recognized by the Federal Energy Regulatory Commission (FERC), RTOs oversee the efficient and reliable operation of the transmission grid. While RTOs do not own any transmission assets, they do provide non-discriminatory access to the electric grid, manage congestion, assure reliability and provide billing and settlement services, and oversee planning, expansion, and interregional coordination of elec-tric transmission.

Many North Dakota service providers have long been participants in the Midcontinent Independent System Operator (MISO). The MISO footprint covers the service territories of Otter Tail Power (OTP), Montana-Dakota Utilities (MDU), Great River Energy (GRE), Xcel, and Missouri River Energy Services (MRES). In addition, they have an agreement with Minnkota Power Cooperative that provides them with many of the same services. In October 2015, the Western Area Power Administration (Western) and Basin Electric Power Cooperative (BEPC) officially joined the Southwest Power Pool (SPP), bringing the entire state of North Dakota under the transmission planning of RTOs. In addition, BEPC members Mountrail-Williams Electric Cooperative and Central Power Electric

Cooperative and Mor-Gran-Sou Electric Cooperative have also joined SPP due to their transmission ownership. Combined, North Dakota utilities and transmission developers are part of an extremely complex system that oversees the transmission of over 200,000 megawatts of electricity across 100,000 miles of transmission lines so that utilities can deliver power to homes and businesses in all or part of 20 states.

MISO and SPP also operate the power markets in their respective territory. Pricing for selling electricity into the grid and for buying electricity from the grid is managed by them. This process determines which generating units will be providing generation at any point in time and also which units will provide various ancillary services to sustain voltage, assure reliability, etc.

Regional Transmission Organization and Independent System Operators



FERC-Recognized Regional Transmission Organizations and Independent System Operators (www.ferc.gov)

ND Transmission Authority Planning

The North Dakota Transmission Authority periodically conducts independent evaluation of factors that affect the adequacy of transmission in North Dakota. Two studies of that nature were recently completed.

POWER FORECAST 2019

To help understand the demand for electricity in the growth area in the oil producing counties, the NDTA commissioned Barr Engineering to do a Power Forecast 2019 estimating the growth over the next 20 years. The full study can be obtained from the North Dakota Industrial Commission web site: http://www.nd.gov/ndic/ic-press/Power%20Forecast%202019.pdf

In summary, the Power Forecast 2019 (PF19) projects an increase of 71% in energy demand over the next 20 years under the consensus scenario. The load factors in that area have been in excess of 90% and that is expected to continue with the rising demand. Utilities will be tasked with meeting both the capacity and energy requirements associated with that growth. The report did not focus on determining the capacity growth, but approximates that at least 1000 MW of capacity will need to be devoted to those markets to meet capacity and margin requirements.

Generator Interconnection Queue and Transmission Plan Review

As a step in understanding the capacity of the grid in North Dakota, Power Systems Engineering was commissioned to review Generator Interconnections that have been evaluated recently. This study revealed that transmission interconnections are getting progressively more complex and expensive to execute. This conclusion is consistent with complaints that have begun to surface from wind developers who have observed that connection to the grid is becoming more difficult for their projects. This concern will be assessed in more detail during the coming year.

MISO TRANSMISSION EXPANSION PLANNING (MTEP)

The MISO Transmission Expansion Plan (MTEP) is developed annually through an inclusive and transparent stakeholder process. MISO evaluates various types of projects through the MTEP process that, when taken together, build an electric infrastructure to meet local and regional reliability standards, enable competition among wholesale capacity and energy suppliers in the MISO markets, and allow for competition among transmission developers.

SPP Integrated Transmission Planning process (ITP)

SPP utilizes their ITP (Integrated Transmission Planning) process that analyzes the system for the next 10 years. This study looks to identify the “needs” of the system and subsequently produces a plan to mitigate those needs whether they are a reliability need, and economic need, or a policy need. The ITP process has been somewhat revised in the past couple of years whereas they used to do a near term every other year, and a 10-year study on the odd years. The current process combines the two studies into a single ITP study which will be completed each year. They are currently working to approve the 2019 ITP study this October. There won’t be any projects within the ND area that come out of the 2019 ITP study.

MISO-SPP Joint Transmission Study

Following approval by the SPP Seams Steering Committee, and the MISO Interregional Planning Stakeholder Advisory Committee (IPSAC), it was agreed that the two RTOs would conduct a joint study. A 2019 Joint System Plan (JSP) is underway. The purpose of the study is to efficiently address issues along the seam between the SPP and MISO systems. The seams geographically run from Louisiana to the Canadian border so many of the issues addressed do not impact ND. Issues in South Dakota and Minnesota as well as those in ND do have an impact on ability to efficiently export electricity from North Dakota when they contribute to congestion on the system.

TRANSMISSION CONSTRUCTION & IMPROVEMENTS

There have been a number of transmission projects completed in recent years and a number are smaller projects are underway that enhance the transmission available to North Dakota generators and their access to the energy markets. The transmission improvements are summarized briefly below.

SPP PROJECTS

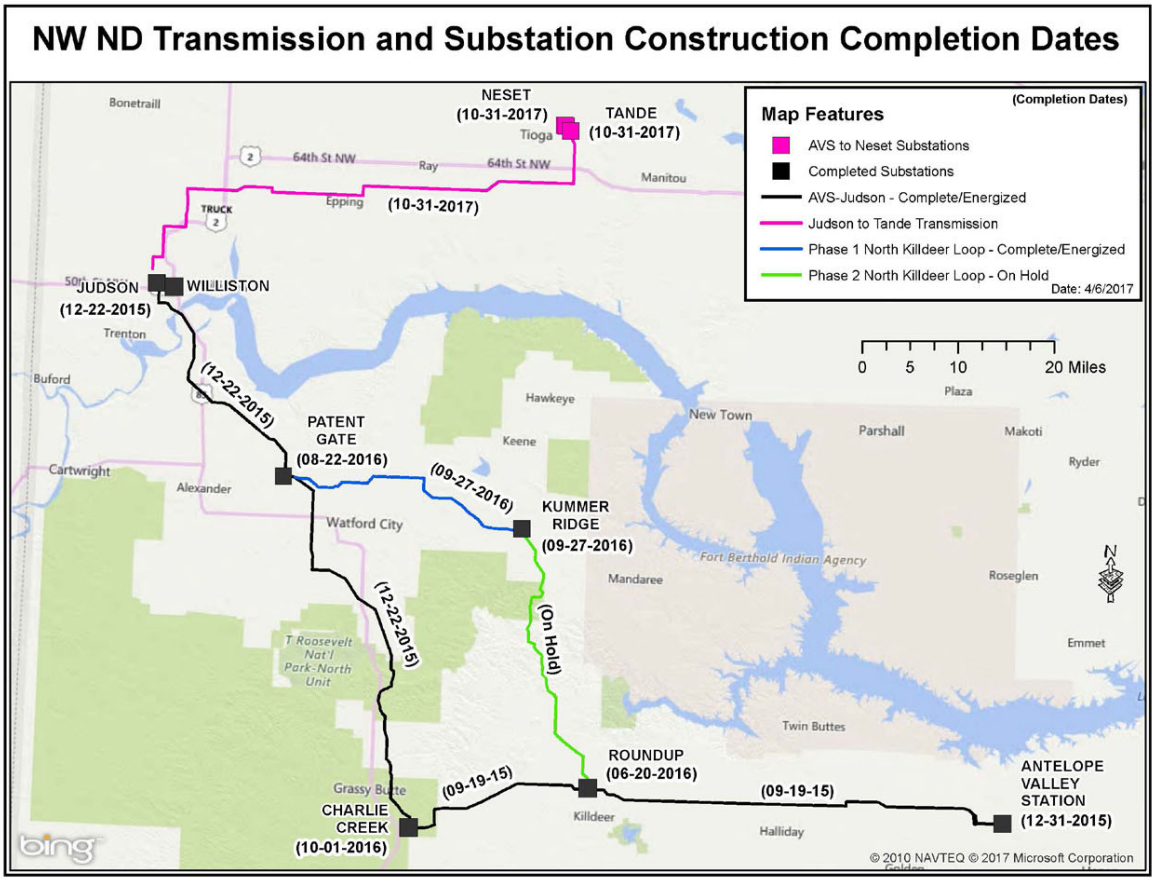
Basin Electric Power Cooperative Western ND Project - In response to growth in western North Dakota related to oil and gas development, BEPC constructed a 200-mile 345kV line from the Antelope Valley Station (AVS) to the Neset Substation near Tioga, North Dakota. Construction of the AVS to Judson Substation, near Williston, line segment began in 2014 and was placed in service in 2015. The final segment from Judson Substation to Neset was placed in-service in 2017. This high voltage addition is a strong basis for supplying the developments in the Bakken.

Basin is continuing to build and energize other lines in the area as needed to continue the support for the Bakken. A 115kv line from Blaisdell to Plaza was placed in service in January 2018 strengthening service to the north shore of Lake Sakakawea.

BEPC is currently in pre-design phase of a 230KV line from the Neset Substation near Tioga to a new Substation near Ross, ND. Current work is with SPP to get the line fully authorized. From that substation at Ross, Mountrail Williams as a member of BEPC is planning a line to the New Town Area for the growing demand there.

BEPC completed Phase I of the North Killdeer Loop in 2016. This project consists of approximately 28-miles of 345kV line and two substations that tie into the AVS-Neset Line west of Watford City. It delivers power to the service territory of the McKenzie Electric Cooperative. Approval is being sought from SPP for phase II of the North Killdeer Loop, which would run north from Killdeer to the Kummer Ridge substation east of Watford City.

BEPC also has other plans to be implemented at such time as demand dictates. They will monitor the growth in the area and submit plans for approval as the need develops. Perhaps the largest of those plans is to complete the 345kv line around the east end of Lake Sakakawea to have a complete loop.



AVS to Neset Line, including North Killdeer Loop
(Image Courtesy of BEPC)

MISO PROJECTS

CapX2020 - CapX2020 partners have worked together to plan and build nearly 800 miles of new high-voltage transmission lines across Minnesota, Wisconsin, North Dakota, and South Dakota, with a total investment of $2.1 billion. New transmission lines designed to serve the expected growth and meet regional Renewable Energy Standard (RES) requirements. Grid operations have benefited from these lines in service.

Minnkota Power Cooperative- MPC's North Dakota primary work consisted of general maintenance on the 230 kV and 345 kV transmission lines, both general work and some storm damage repair. A structure replacement on both the Frontier to Wahpeton 230 kV line and the Prairie to Winger 230 kV line comprised most of the costs. Replacement of dead-end bodies on the Center-Grand Forks 345 kV line also was a bulk of the high voltage work done in 2018. There was no new line construction or significant modifications or improvements.

MPC's future plans include construction on a new 115 kV transmission line to improve reliability in the northwest portion of Minnkota's service territory which will begin in late-2019 with completion in 2020. This project will also alleviate capacity on the existing 69 kV system by utilizing better load distribution. This area includes service to the pipeline located near Edinburg. The new line will tap the existing Langdon-Hensel 115 kV line and is about 20 miles in length. The project also includes the construction of a new 115 kV interconnection substation located near Concrete, ND and a 115/69 kV transmission substation located near Edinburg, ND. Approximate investment is $13 million.

MPC also performed work in Minnesota of which the most significant project consisted of uprating the Thief River Falls to Plummer 115 kV Line to support increased loading. This line is located in NW Minnesota and the project involved raising a few structures to accommodate increase line sag to allow for higher loading.

Ottertail Power Company- Big Stone South to Ellendale (BSSE) - Crews from co-owners Otter Tail Power Company and Montana-Dakota Utilities, Co., energized the 163-mile, 345-kV Big Stone South-Ellendale (BSSE) Transmission Line on February 5, 2019. The $215 million line extends from the Big Stone South Substation near Big Stone City, South Dakota, to the Ellendale Substation near Ellendale, North Dakota. The project is one of 17 Multi-Value Projects (MVPs) approved by the Midcontinent Independent System Operator, Inc. (MISO) and state regulatory agencies. High-voltage transmission lines, such as BSSE, allow access to diverse generation resources in a large geographic area and allows MISO to ensure all customers within MISO's 15-state footprint receive the reliable energy they need with the most cost-effective mix of resources available.

Great River Energy High Voltage Direct Current (HVDC) Refurbishment -
In December 2015, GRE's Board of Directors approved the largest transmission refurbishment project in the organization's history. The Great River Energy CUHVDC upgrade project, was successfully completed in May 2019.

The CUHVDC upgrade replaced the power electronics, associated cooling equipment, and controls with the goal of near 100% reliability for the HVDC system for the next 30 years. The Great River Energy HVDC system is a dedicated transmission line for Coal Creek Stations units I & II with connections to the Minnesota AC system at the Dickinson Minnesota 345 kV substation.

The McHenry 230/115 kV substation was expanded and reconfigured to accommodate a new Xcel 230 kV line to Minot.

Xcel Energy-In late 2018, Xcel Energy completed its newest transmission line and substation in the Minot area. The Magic City-McHenry transmission line will provide enhanced electric reliability in Minot and the region by adding an additional electricity source for customers. The 20-mile, double circuit 230/115 kilovolt transmission line runs between the existing McHenry substation near Velva and the new Magic City substation in Minot. Construction of the transmission line began in October 2017. The nearly $50 million project was energized in late 2018 and replaced the existing line that was built more than 60 years ago.

Xcel Energy worked closely with other utilities on the longer term planning in the Minot area. Those preliminary plans included other transmission which may be built in the future by other utilities but the initial build out was Xcel Energy's portion of the area upgrades.

Montana-Dakota Utilities Transmission Improvements – MDU is currently focused on reliability projects and windfarm interconnections. Reliability projects include Watford Loop, Dickinson Loop, the

Ellendale to Leola project. Interconnection projects include work for the Merricourt wind farm, the Foxtail wind farm, and the Emmons Logan wind farm.

The Watford Loop includes a 230 kV interconnection to WAPA, a new 230/34.5 kV substation, and an 11 mile 34.5 kV loop line. Substation construction began in 2018 and line construction began in May 2019. Part of the project will be put in service in November 2019. The Dickinson Loop consists of building an 18 mile 115 kV line and substation upgrades to create a 115 kV loop around the city of Dickinson. 11 miles of the line will be built in 2019 with the other 7 miles in 2020. The Ellendale to Leola project consists of a 45 mile 115 kV line connecting Ellendale to a new substation at Leola, SD. This provides a stronger source at Leola for our 41.6 kV system in southern ND and northern SD.

Merricourt wind farm required the addition of reactive devices at Ellendale for system support. MDU is installing four 50 MVAR capacitors and a 50 MVAR reactor capable of high speed switching at Ellendale. This project will go in service in March 2020. The Foxtail wind farm required a new 230 kV interconnection substation on MDU's 230 kV line northwest of Ellendale. This project went in service in May 2019. The Emmons Logan Wind Farm requires two new interconnection substations, a 230 kV substation near Napoleon and a 115 kV substation near Linton. These substation projects will go in service in November 2019. Line upgrades are required on MDU's Bismarck to Ellendale 230 kV line and on MDU's Bismarck to Wishek 115 kV line. Those upgrades are scheduled to be in service June 2020.

Great Northern Transmission Line Project - The Great Northern Transmission Line Project includes approximately 225 miles of new 500 kV transmission line connecting Manitoba to northeastern Minnesota's Iron Range. Great Northern Transmission Line Project - The Great Northern Transmission Line Project includes approximately 225 miles of new 500 kV transmission line connecting Manitoba to northeastern Minnesota's Iron Range. While not directly impacting North Dakota, the Great Northern Transmission Line is an integral component to realizing the regional reliability, resilience and capturing the synergies between flexible Canadian hydropower resources and intermittent wind resources the Upper Midwest, as demonstrated in MISO's Manitoba Hydro Wind Synergy Study. Minnesota Power is continuing to work on their portion of the project, ending the month of June 2019 the Transmission line portion of the project was approximately 70% complete, 230 KV Substation work is complete, the 500KV portion of the substation is being constructed and the Series Compensation Station construction has started. The project is on schedule to be in service June of 2020.

Minnesota Power High Voltage Direct Current System - Minnesota Power is exploring a modernization of its High Voltage Direct Current (HVDC) system that currently connects North Dakota (at Center) and Minnesota (near Duluth). The project would replace the technology installed in the late '70s to newer HVDC technology at the ends of the lines and additional system capabilities. The project is in the early planning stages for the mid 2020 timeframe.

FUTURE TRANSMISSION CONCEPTS

TransGrid-X 2030-MISO, SPP and a number of others are participating in evaluation of a major grid

expansion that would include transmission across ISO marketing areas from the eastern part of the US to the west coast. The National Renewable Energy Lab has recently completed an analysis of energy that would move back and forth through such a grid allowing for more consistent availability of renewable energy to a broad part of the country when renewable generation is available and demand dictating need for energy.

SOO Green-There are two projects of particular interest. The SOO Green Renewable Rail project (SGRR) is a 2,100 MW, 349-mile, 525 kV underground high voltage direct current (HVDC) transmission line from Iowa to Illinois, linking low-cost, utility-scale renewable generation in MISO with customers in PJM. East coast utilities have signed letters of intent to utilize approximately 25% of the line. Once this portion of the project is deemed successful the company does have aspirations to connect the project to North Dakota. CP Rail is a project partner so the railroad right of way to North Dakota is a key to that future extension of the project.

Absaroka Energy-A second concept that has identified North Dakota in their conceptual planning is Absaroka Energy LLC. They have proposed a DC line from Bismarck, ND to Colstrip, MT. This line would connect the MISO territory in North Dakota to the Western Electric Coordinating Council in Montana. They also are developing a pumped storage project in central Montana and announced in July 2019 an equity partner who is also a partner in the Soo Green project.

While none of these concepts have active projects to access North Dakota generation, they do both understand the abundance of renewable energy available in North Dakota. Any expression of interest by developers in North Dakota will encourage them to be more active on the North Dakota portion of their concepts.

NORTH DAKOTA UTILITY SCALE GENERATION REPORT (all data is in calendar year)

CURRENT GENERATION RESOURCES

Renewable generation - North Dakota has approximately 3045 MW of wind generation at more than 30 locations in service. The average capacity factor for 2017 (measure of actual generation to maximum possible at rated capacity) for the fleet of North Dakota wind generators is between 42%.

Solar generation - North Dakota does not currently have any utility scale generation facilities in service, although some are in the Queues.

Thermal coal generation - North Dakota currently has thermal coal generation in service at seven locations. These sites include a total of
12 generating units. The combined capacity of the units is approximately 4000 MW. The average capacity factor for 2017 was 76.5**%.**

Montana-Dakota Utilities said it expects to retire the 44-MW coal-fired Lewis & Clark Station in Sidney, Montana by year-end 2020. It plans to retire coal-fired Units 1 and 2 at the 100-MW Heskett Station in Mandan, North Dakota, by year-end 2021.

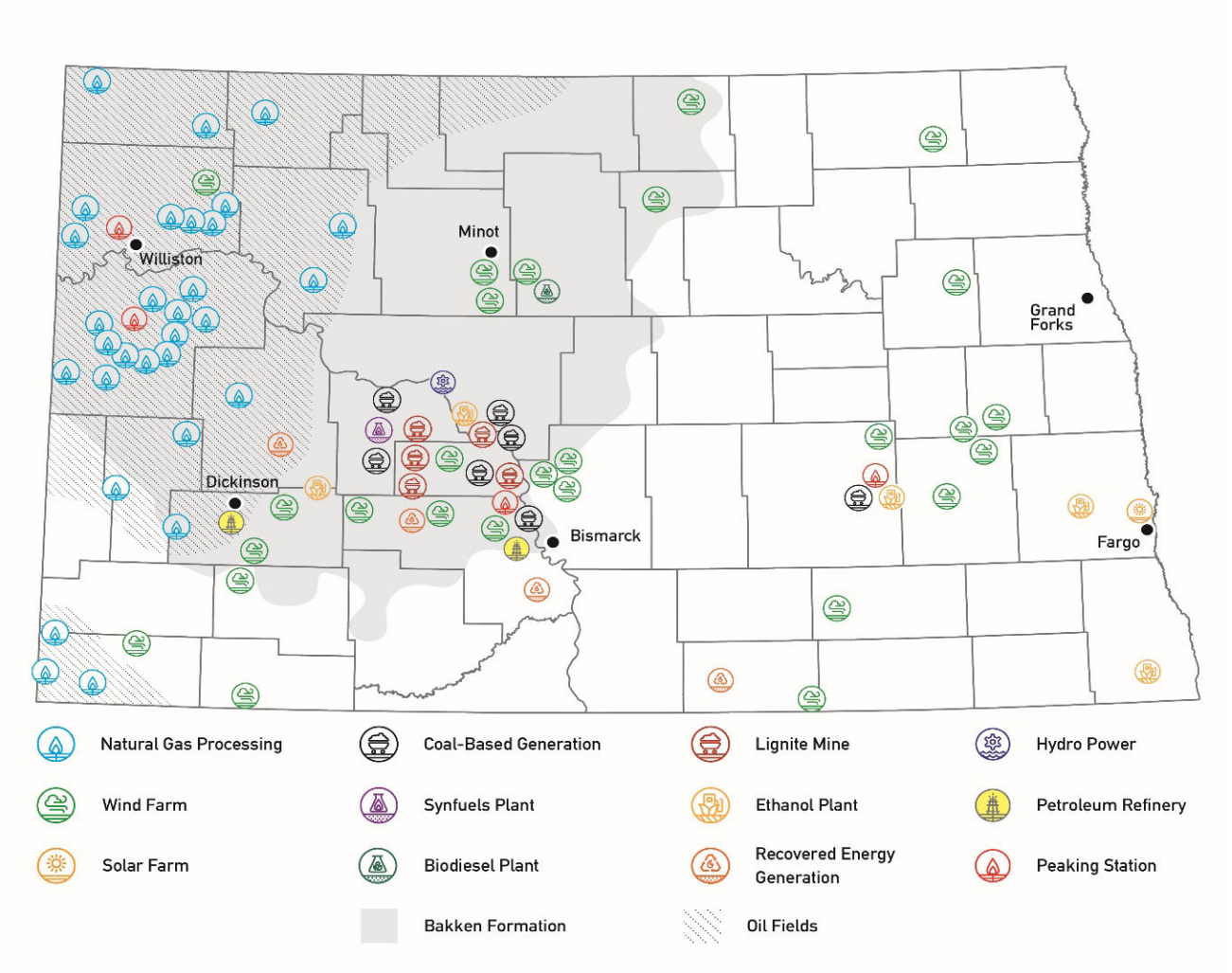
Demolition of the Great River Energy Stanton Station that was retired in 2012 is entering final reclamation stage to be completed in 2019.

Hydro generation - North Dakota has one hydro generation site containing 5 units with a total capacity of 583 MW. The average capacity factor for 2017 for the hydro unit was 57.8%.

Natural gas generation - North Dakota has three sites for electric generation utilizing natural gas. These three sites contain 7 generating units. Nameplate capacity totals 548 MW. These units are reciprocating engines and gas turbines. There is a variation in summer capacity is due to performance of gas generators in hot weather.

Total Generation - The combined total of all types of utility scale generation is approximately 8,176 MW. The 3,045 MW of wind generation receives a reduced capacity accreditation in the ISO of approximately 460 MW since it is intermittent. This is representative of the amount that is estimated to be available for the peak demand in the summer.

CURRENT GENERATION & ENERGY RESOURCES

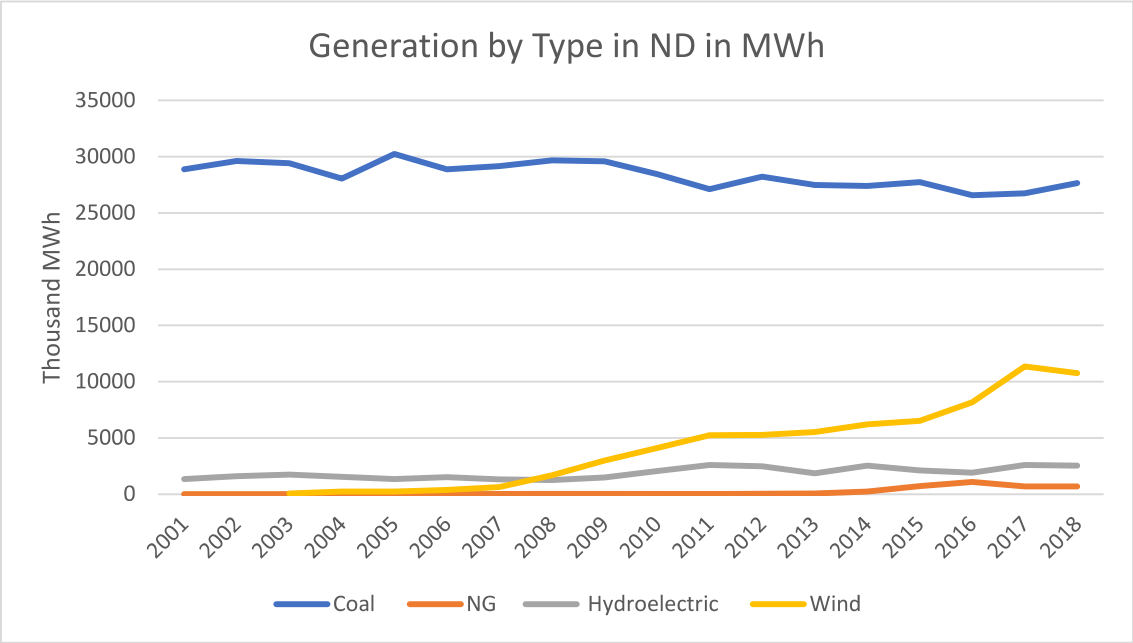


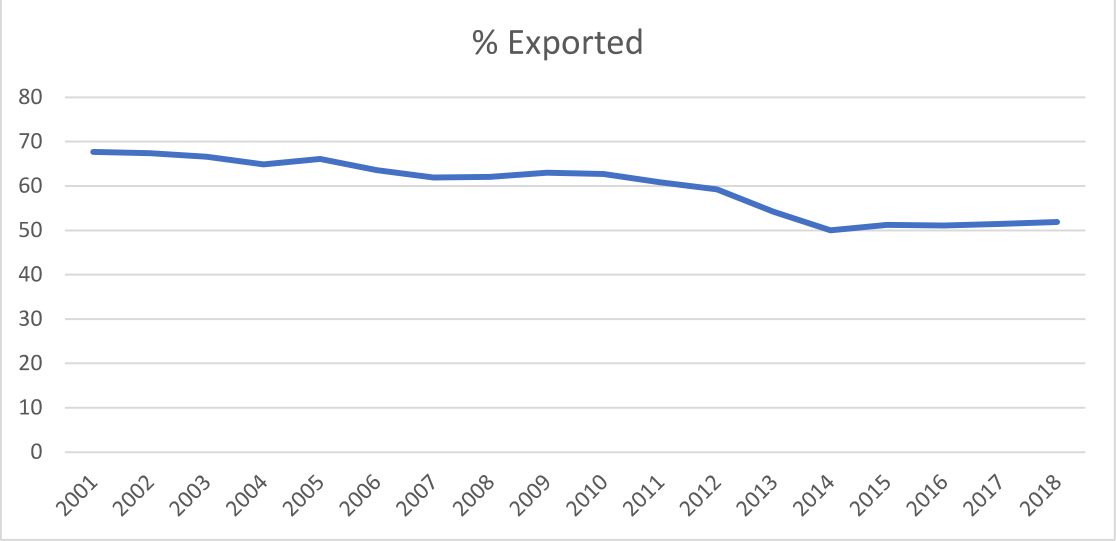
ELECTRIC GENERATION MARKET & UTILIZATION

Electric energy utilization

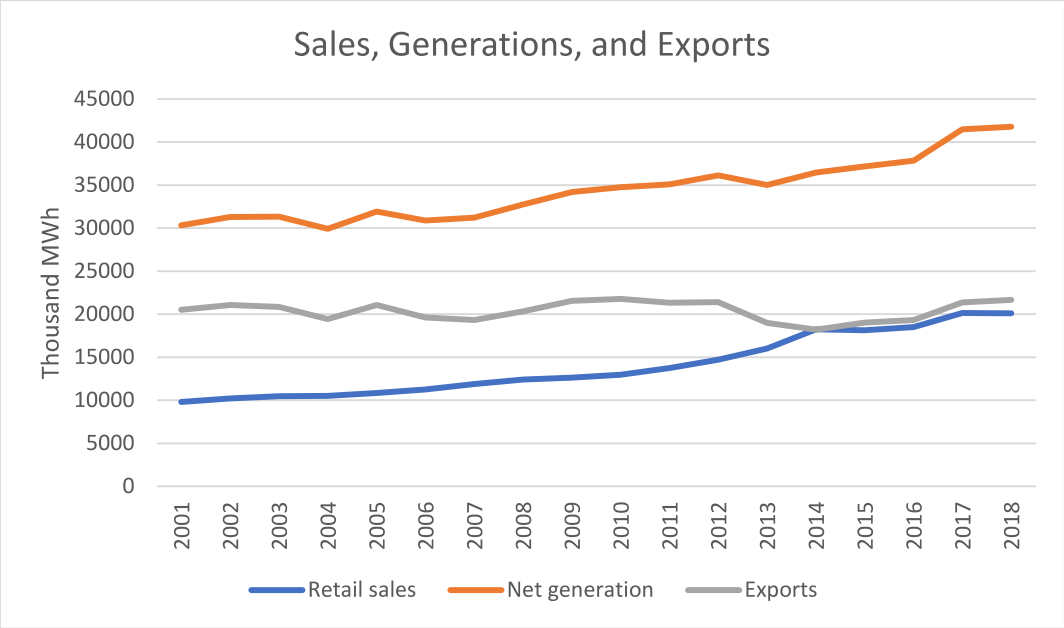
North Dakota has been a major exporter of electricity since the development of thermal lignite generation in western North Dakota beginning in the 1960s. Transmission was developed along with the generation to export the electric generation primarily to markets to the east. In more recent years North Dakota has become noted as an excellent source of wind generation and additional transmission development has taken place to accommodate getting the additional generation to market.

The Energy Information Administration provides data on electric generation for the United States. The information below is derived from their data. In 2018 a total of 41,633 MWhr was generated from all sources in North Dakota. Of that total 52% was exported outside of the state.

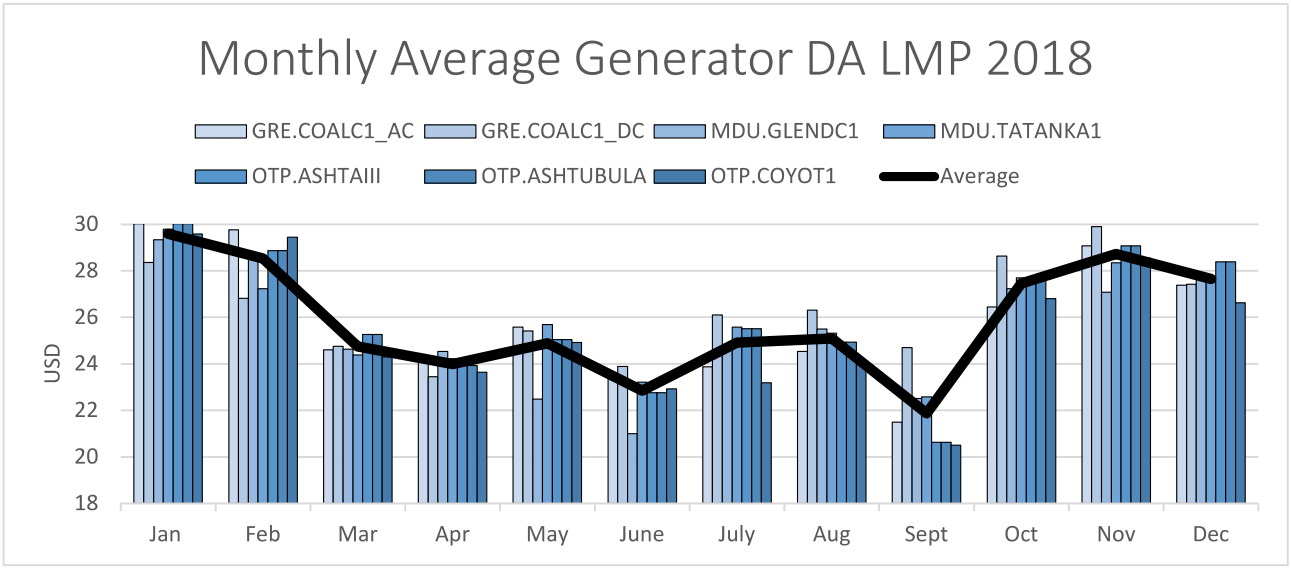


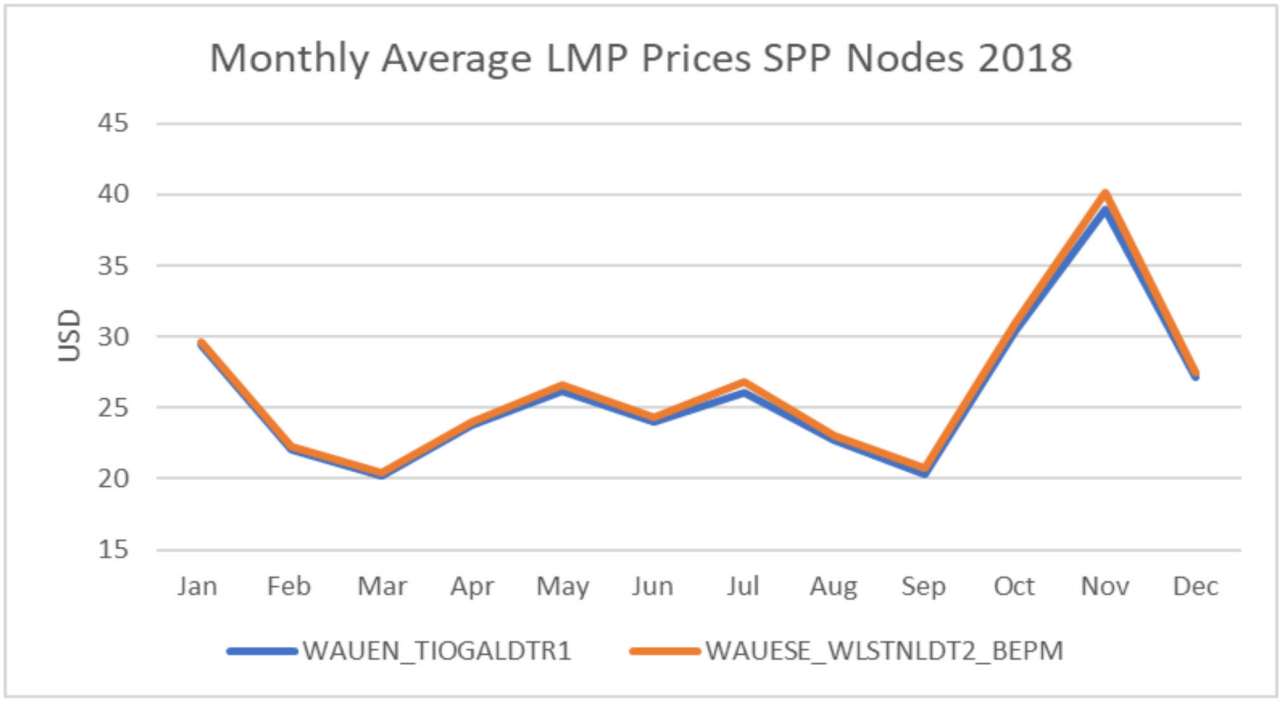


While demand in markets outside of North Dakota and in all but the western part of North Dakota has remained quite flat in recent years, the growth of demand in the Bakken region has been notable. Growth of total generation in the last 15 years has grown from 30,136 MWhr to 41633 MWhr. Retail sales have grown from 10461 MWhr to 21,663 MWhr due in large part to growth associated with Bakken oil development.

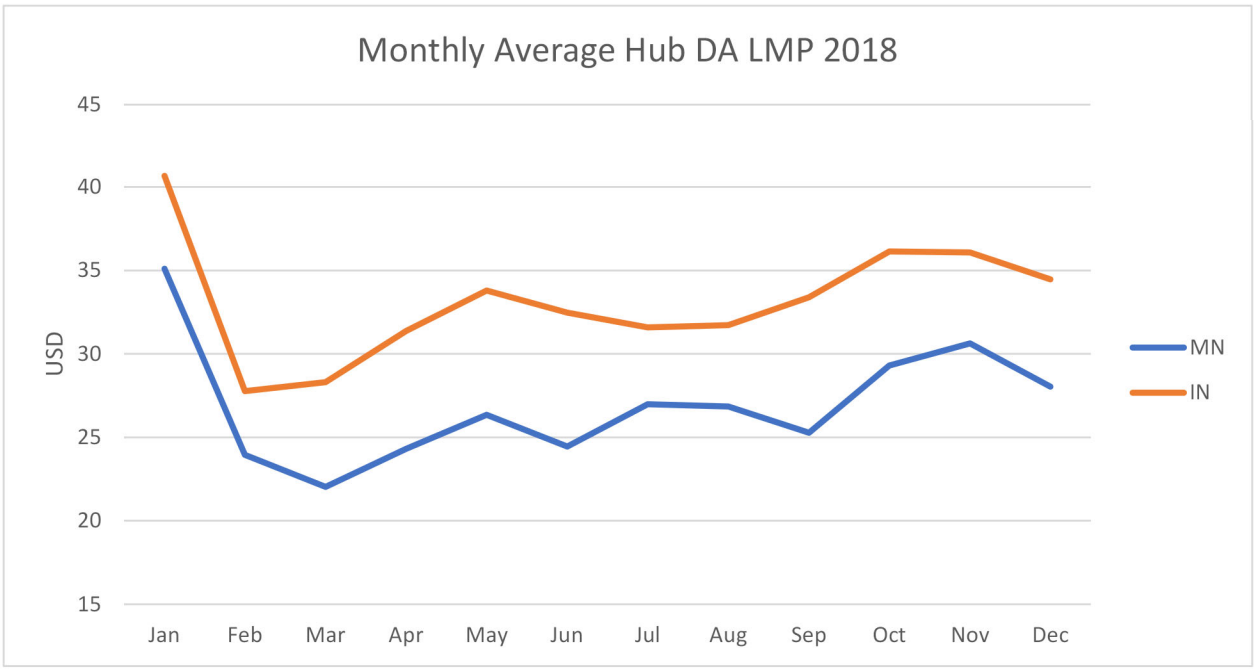


Wholesale Electric Market - With North Dakota being a net exporter of electricity, the whole sale market price is important to the generators in the state. The graphs below reflect the market price for a variety of locations into which North Dakota Electricity is marketed both in the MISO and in the SPP areas.





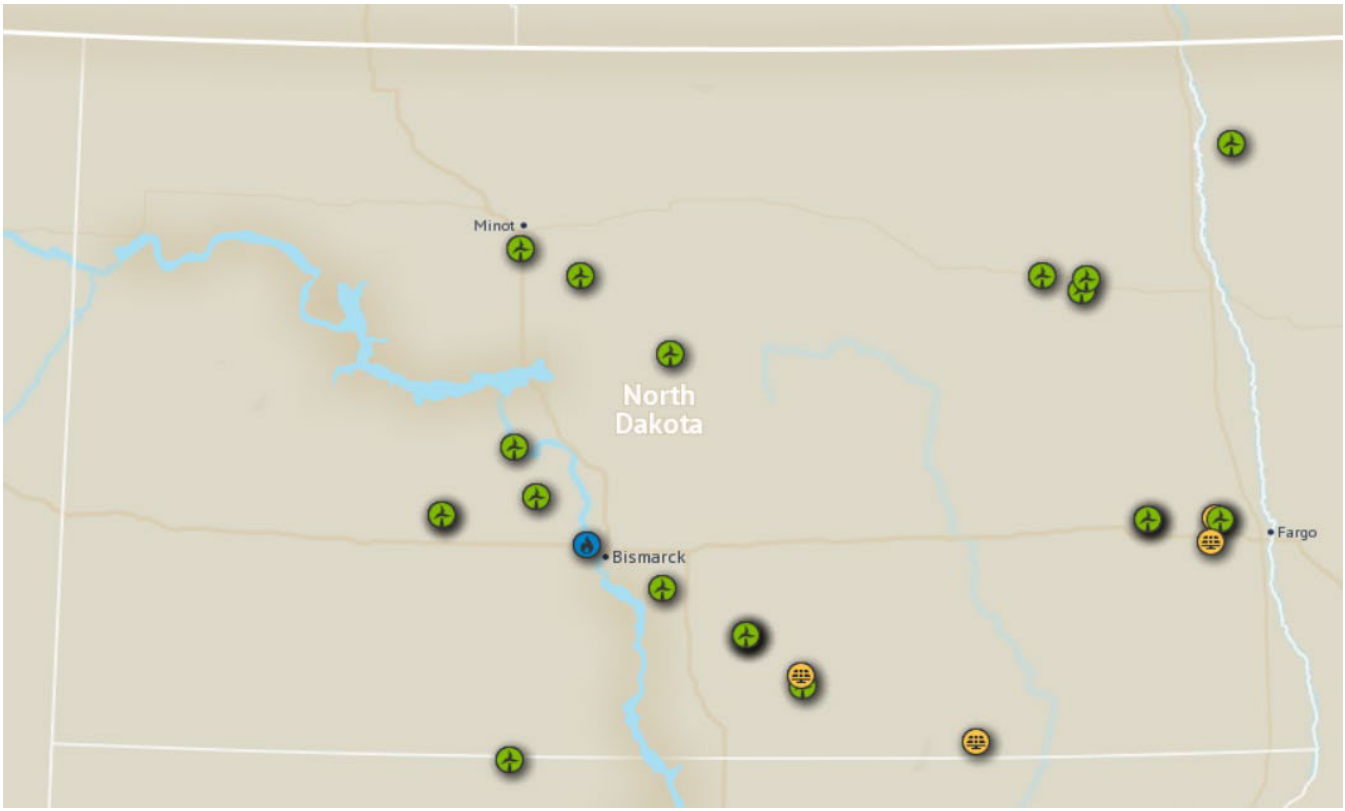
The Indiana hub is a typical point that is indicative of pricing east of MISO. As the graph below shows, pricing in that area is typically more than in Minnesota and potentially an opportunity for North Dakota electricity as avenues open up to ship power further east.



GENERATION IN QUEUE FOR TRANSMISSION ACCESS

A good measure of potential for growth in the industry and future demand for transmission expansion is reviewing the projects in Queue at MISO, Minnkota Power Cooperative and SPP. The projects in Queue include both wind generation and utility scale solar generation.

The MISO Queue includes 25 projects in North Dakota for a total of 4136 MW capacity. Four of those projects are designated as solar with capacity of 485 MW, one is gas fired at 103 MW and 20 are wind.



MISO QUEUE

Project #	Transmission Owner	County	System	Winter MW	Fuel
J1040	Montana-Dakota Utilities Co.	McIntosh County	Wishek Junction 230 kV Substation	250	Wind
J1109	Northern States Power (Xcel Energy)	Cass County	Bison 345kV Substation	207	Wind
J1170	Northern States Power (Xcel Energy)	Cass County	Bison 345 kV Substation	200	Solar
J1187	Great River Energy	Mercer County	Stanton 230 kV Substation	151.8	Wind
J1193	Montana-Dakota Utilities Co.	Morton County	Heskitt 115 kV Switchyard	103.1	Gas
J1428	Otter Tail Power Company	Cass County	Buffalo 345kV Substation	200	Solar
J1456	Otter Tail Power Company	Sheridan County	Harvey - Underwood 230 kV Line Tap	300	Wind
J302	Montana-Dakota Utilities Company	Emmons & Logan County	230kV Heskett-Wishek	101.2	Wind
J503	Montana-Dakota Utilities Company	Emmons & Logan County	230 kV Heskett-Wishek, 20 miles NW of Wishek	98.8	Wind
J580	Montana-Dakota Utilities Company	Burleigh County	Wishek to Heskett 230kV	298	Wind
J628	Great River Energy	Grand Forks & Nelson County	Ramsey - Prairie 230kV Line Tap	400	Wind
J705	Minnesota Power (Allete, Inc.)	Morton County	Tri-county 230 kV substation	100	Wind
J706	Minnesota Power (Allete, Inc.)	Morton County	Tri-county 230kV sub	100	Wind
J713	Minnesota Power (Allete, Inc.)	Oliver County	Square Butte East 230kV Substation	300	Wind
J741	Montana-Dakota Utilities Company	Emmons & Logan County	Wishek - Linton 115kV	51	Wind
J743	Northern States Power (Xcel Energy)	Cass County	Bison 345kV Substation	200	Wind
J746	Great River Energy	McHenry, McLean & Ward County	Stanton-McHenry 230kV	200	Wind
J779	Montana-Dakota Utilities Company	Emmons & Logan County	Bismarck-Linton 115kV	51	Wind
J816	Otter Tail Power Company	Cass County	Buffalo 115kV Substation	60	Solar
J880	Northern States Power (Xcel Energy)	Ward County	Magic City 230kV sub	150	Wind
J889	Great River Energy	Nelson County	Ramsey - Prairie 230KV Line Tap	150	Wind
J897	Great River Energy	Grand Forks County	Prairie - Ramsey 230 kV line	190	Wind
J929	Montana-Dakota Utilities Company	McIntosh County	Wishek 41.6 kV Substation	25	Solar
J946	Northern States Power (Xcel Energy)	Cass County	Bison 345kV Substation	200	Solar
J975	Otter Tail Power Company	Cass County	Buffalo 115kV Substation	150	Wind
J997	Montana-Dakota Utilities Co.	LaMoure County	Ellendale 230kV Substation	200	Solar

SPP QUEUE

Interconnection Number	Cluster Group	Nearest Town or County	System	Capacity	Generation Type
GEN-2015-046	16 - Western ND	Williams County	WAPA	300	Wind
GEN-2015-096	16 - Western North Dakota	Hettinger County	BEPC	150	Wind
GEN-2016-004	16 - Western North Dakota	Oliver	BEPC	202	Wind
GEN-2016-007	18 - Eastern North Dakota	Barnes	WAPA	100.05	Wind
GEN-2016-052	16 - Western North Dakota	Burleigh	WAPA	3.3	Wind
GEN-2016-053	16 - Western North Dakota	Burleigh	WAPA	3.3	Wind
GEN-2016-130	16 - Western North Dakota	Mercer	WAPA	202	Wind
GEN-2016-151	16 - Western North Dakota	Burke	WAPA	202	Wind
GEN-2016-155	16 - Western North Dakota	Burleigh	WAPA	1.3	Wind
GEN-2017-010	16 - Western North Dakota	Bowman County	BEPC	200.1	Wind
GEN-2017-048	16 - Western North Dakota	Williams County	BEPC	300	Wind
GEN-2017-214		Ward		100	Wind
GEN-2017-215		Ward		100	Wind
GEN-2017-216		Ward		100	Wind
GEN-2017-235		Ward		50	Wind
GEN-2017-236		Ward		50	Wind
GEN-2018-008		McIntosh		252	Wind
GEN-2018-010		Montrail		74.1	Battery
GEN-2018-039		LaMoure		72	Solar
GEN-2018-067		Williams		255	Wind
GEN-2019-020		Williams		35	Solar
GEN-2019-037		Mercer		150	Solar
				2902.15	

MINNKOTA QUEUE

The Minnkota Power Queue includes 6 projects. Two are solar for 350 MW and 4 are wind.

Minnkota Queue Position	Summer Max Output MW	Generation Type	POI Location County/State	Point of Interconnection
MPC03600	200.0	Solar	Richland, ND	Frontier-Wahpeton 230 kV Line
MPC03700	150.0	Solar	Richland, ND	Frontier-Wahpeton 230 kV Line
MPC03800	250.0	Wind	Eddy, ND Wells, ND	Center-Prairie 345 kV Line
MPC03900	151.2	Wind	Eddy, ND Wells, ND	Center-Prairie 345 kV Line
MPC04000	300.0	Wind	Oliver, ND Morton, ND	Square Butte 230 kV Substation
MPC04100	300.0	Wind	Grand Forks, ND	Prairie 230 kV

The sum of the three queues in ND contain **8,408 MW.**

RENEWABLE ENERGY CERTIFICATES

Each unit of electricity generated from a renewable source such as wind or solar carries with it a Renewable Energy Certificate (REC). The REC program is authorized by the USEPA to encourage renewable generation. The REC is a separate commodity from the electricity. The RECs can be utilized as evidence that the party that "retires" the REC as they utilize electricity supports renewable generation. The REC does not carry a time of day, season or transmission obligation. As such, RECs are used to meet pledges to utilize renewable energy beyond the ability of the grid to deliver on a real time basis.

GOVERMENT ACTION

Another function of the Authority staff is to act as a resource for elected officials and policymakers and provide the necessary information to help make informed decisions. Whether the issue involves working on state energy policy regarding transmission development, or commenting on federal transmission legislation and regulations, the Authority serves as a resource for decision-makers. In the last year the Authority was involved on several fronts working with the following entities: The EmPower ND Commission, Governor's Office, Attorney General's Office, Department of Commerce, the ND Public Service Commission, and the ND 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 development of Commission goals.

• **Interagency Coordination** - As important as everything else discussed in this report, is the coordination of efforts among the various government entities with oversight, or interest in transmission development. In particular, regular meetings are held with the representatives from the Public Service Commission to discuss transmission issues and receive updates from RTOs. On occasion other offices request technical support and policy guidance from Authority staff.

CONCLUSION

The electric transmission system in North Dakota is in good condition for the current generation. The increased retail demand in North Dakota has contributed to the current good operation of the grid. The 345 transmission that was added around the western end of North Dakota is key to the growth projected in the Bakken areas. The size of the queues at MISO, MPC and SPP is evidence of the continuing interest to add generation which reach the limits of the existing grid as expansion occurs. The robust growth projected in the Bakken at high load factors will challenge utility planners to match additional generation resources to match that demand which is mostly in the SPP region of the state. Early in the 2019-2020 fiscal year two projects cancelled or postponed plans due to costly generation interconnect requirements. Meanwhile the MISO regions to the east of North Dakota are demanding more renewable energy for which North Dakota has outstanding potential. If North Dakota is to contribute to meeting that need, however, transmission additions will be an important consideration.

To best match the capabilities of North Dakota generation options collaboration between generation, transmission options and customer demand can be met in new and innovative ways. The Direct Current Transmission options discussed in the report can be coupled with abundant renewable generation firmed up with the abundant supply of nature gas for generation to provide efficient transmission of electricity to customers who are demanding a high renewable content in their electric supply.

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