NORTH DAKOTA TRANSMISSION AUTHORITY

ANNUAL REPORT

July 1, 2019 to June 30, 2020

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

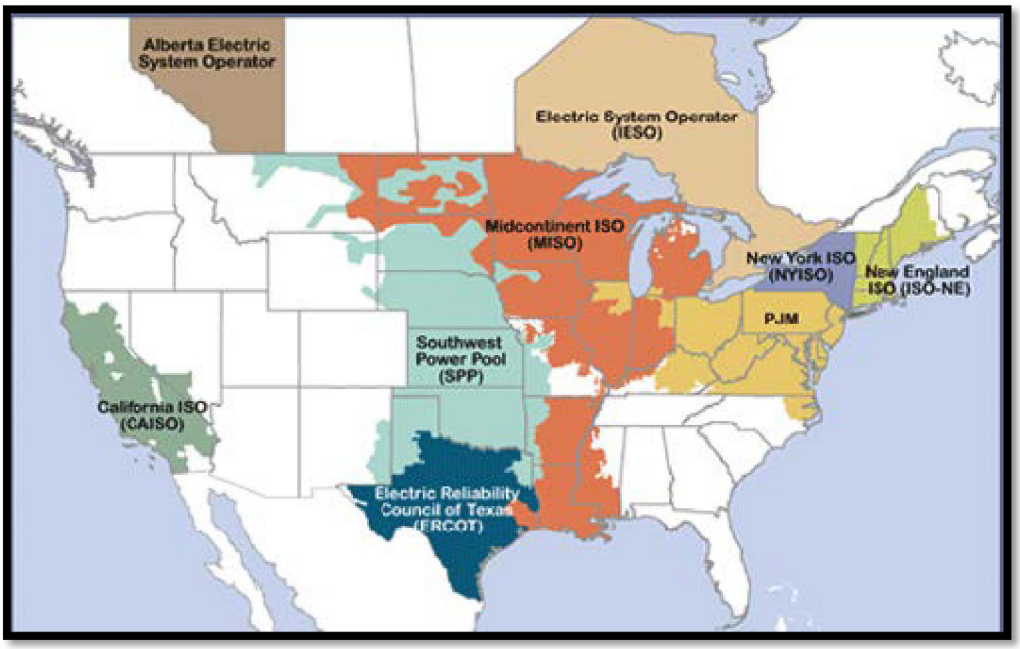
A major portion of the Authority's workload includes observation and achieving a high level of understanding of regional transmission planning. To accomplish this task, the Authority monitors the efforts of regional transmission organizations (RTOs) that represent North Dakota transmission developers. 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, Roughrider 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.

The downturn in the crude oil market in early 2020 had a major impact on demand in the Bakken. The long-term impact of the downturn is not apparent yet at this time. Some forecasts project a return to the rate of growth prior to the downturn, while others expect the situation to settle out around the level of production that existed before the downturn of 2020. Once that becomes more clear, and update to the Power Forecast can easily be updated if needed.

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. In the summer of 2019 this resulted in most of the projects in MISO and SPP in the region were canceled due to being assessed high cost in the interconnect studies. In many cases the transmission interconnect cost was nearly as much as the cost of installation of the wind generation. A major part of the cost is driven by transmission improvements that are needed a long distance from the interconnect point in both the MISO and SPP evaluations. This is further evidence that a long-term view of the overall grid is needed to identify improvements that are needed before significant increases can be made within ND.

In a follow-up study by Power Systems Engineering the conclusions were that power flows are consistently near capacity in most of the North Dakota grid. Projected growth in the future will exceed any remaining capacity within the next few years. The study looked at power flow projections thru 2038 and showed that allowable flows in many areas exceed limits prior to that time.

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. All North Dakota Projects in the MTEP 19 study were cancelled or postponed.

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 were no 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. Two points of congestion in Minnesota have been identified as affecting west to east flow thru southern Minnesota and therefore potentially affect ND. They are scheduled to go forward for approval in December 2020. NDTA engaged with both MISO and SPP about matters that relate to the seam between the two ISOs in ND. Most of the current issues are relative to the pancaking effect of rates when crossing the seams. Some developers and potential market participants in the region encounter this rate effect as they assess getting their projects into each of the regions.

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 Projects - In response to growth in western North Dakota related to oil and gas development over the past 10 years, Basin Electric has constructed several projects to enable continued load growth across the Bakken area. These projects include a 200-mile 345kV line from the Antelope Valley Station (AVS) to the Neset Substation near Tioga, North Dakota. Construction of this project included the AVS to Judson Substation, near Williston, line segment which began in 2014 and was placed in service in 2015. The final segment from Judson Substation to Neset was placed in-service in 2017. During this timeframe, Basin Electric was also completing phase I of the North Killdeer Loop project. This project consisted of approximately 28-miles of 345kV line and two substations. One of the substations ties into the Charlie Creek - Judson line west of Watford City. The project delivers power to the service territory of the McKenzie Electric Cooperative and was placed in service in 2016. Finally, in January of 2018, Basin Electric placed into service a new 115kV line from Blaisdell to Plaza, further strengthening service to the north shore of Lake Sakakawea.

Basin Electric is currently in design phase of a project involving a 230kV line from the Neset Substation near Tioga to a new substation called North Shore, near Ross, ND. The new 230/115kV substation will also serve as a terminal for Mountrail Williams Electric Cooperative (MWEC), a member of Basin Electric, as MWEC will be constructing a 115kV line from Northshore - New Town. Southwest Power Pool issued the final Notice To Construct (NTC) for these projects which include the 230kV and 115kV transmission lines as well as the Northshore substation on June 10, 2020 to serve the growing demand in the New Town area.

Transmission studies continue to be completed within the various Southwest Power Pool processes to identify reliability upgrades needed in this region. Basin Electric and its members monitor the load growth in the area and submit plans for approval as needs develop. Future analysis that assumes substantial load growth in the region have shown potential needs for additional EHV in the area to maintain criteria standards. Possible solutions include phase II of the North Killdeer Loop project which would complete the loop from Roundup - Kummer Ridge. Additional growth may necessitate the need for a new 345kV line around the east end of Lake Sakakawea which would complete the 345kV loop back to AVS.

MISO PROJECTS

Minnkota Power Cooperative-
Construction of a new 115 kV transmission line to improve reliability in the northwest portion of Minnkota's service territory began in 2019 with completion at year's end or in early 2021. This project will 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.

Minnkota continues to systematically replace/upgrade 69 kV transmission lines and distribution substations.

Future projects include replacement of a high voltage transformer (230/115 kV) at Drayton, ND and structure replacements on the Center-Jamestown-Maple River 345 kV line. High voltage line structure replacements are anticipated but no rebuilds or high voltage transmission line additions are planned at this time.

A new 69/230 kV substation to improve reliability is proposed for the Grand Forks area in 2023 and will include a 230 kV tap line from the existing Prairie-Winger 230 kV line to the new substation site.

Rebuilds of existing 69 kV transmission lines and distribution substations is ongoing, as well as breaker and protective relaying replacements/upgrades.

Minnkota Power Cooperative future work for Minnesota includes an engineering study how to improve the reliability of the NW Minnesota bulk electric system. This is tentatively scheduled to be underway in 2022-2023 timeframe but is still pending based upon further research.

Ottertail Power Company-

Big Stone South to Ellendale (BSSE) – Otter Tail Power Company and Montana-Dakota Utilities, Co. 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 BSSE project is one of 17 Multi-Value Projects (MVPs) approved by the Midcontinent Independent System Operator, Inc. (MISO) and state regulatory agencies. As of the end of 2019, the BSSE project, in conjunction with the other MVPs, has enabled over 2200 MW of new generation projects within North Dakota and South Dakota that are either in-service, under construction, or committed through existing interconnection agreements with another 900 MW of additional generation currently under study through MISO's interconnection process.

Network Upgrades Related to Generator Interconnection Projects – Otter Tail Power Company

Due to generator interconnection activity through the Midcontinent Independent System Operator, Inc. (MISO) interconnection process, Otter Tail is undertaking upgrades to several existing transmission lines in North Dakota to allow for the reliable interconnection of new generation projects. During the reporting period encompassed within this annual report, Otter Tail has replaced numerous structures along the 230 kV system from Ellendale to Wahpeton. Looking forward to the latter half of 2020 and into early 2021, Otter Tail plans to reconductor the Ellendale – Oakes 230 kV line and the Oakes – Forman 230 kV line and replace structures to achieve increased clearances at higher loading levels. These upgrades will not only enhance transmission system capacity for additional regional generation but will also improve transmission system reliability.

Great River Energy High Voltage Direct Current (HVDC) Refurbishment -

The Great River Energy CUHVDC upgrade project, was successfully completed in May 2019. Since that time the line has been operating very well and with high efficiency. In 2019 the DC line carried 8,193 Gigawatt Hours to Minnesota. This was 42.7% of the total export of electricity from North Dakota that year.

In May of 2020, Great River Energy announced their intention to retire Coal Creek Station in August of 2022. The line can continue to be very valuable to the electric industry in North Dakota. NDTA and GRE are working together to continue to keep the line in service and useful well beyond the potential closure of Coal Creek Station.

Xcel Energy-

In October 2019, Xcel Energy completed the most recent transmission line project and substation work in the Fargo, ND area. The approximately 5 mile 115 kV, second circuit transmission line runs between the Maple River substation northwest of Fargo and the Red River substation within the northern part of Fargo. The new line parallels the existing Maple River-Red River 115 kV transmission line. Construction of the line began in 2018 and was completed at a cost of approximately $5.5 million. The project will increase reliability to electric customers in the Fargo area.

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, and upgrades in Mandan. Interconnection projects include work for the Merricourt wind farm and the Emmons Logan wind farm, and the Dakota Range wind farms.

The Watford Loop project will be completed in 2020 with an 11 mile 34.5 kV loop line. 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 was put in-service in February 2020 with the other 7 miles under construction and in-service in October 2020. The Ellendale to Leola project consists of a 45 mile 115 kV line connecting Ellendale to a new substation at Leola, SD. This project will be complete in September 2020. Transmission upgrades are being constructed in Mandan near the Heskett Plant in anticipation of the retirement of Heskett. A large substation addition has started at MDU's Mandan 230 Substation and a new substation will be built in 2021 to allow retirement of the Heskett Switchyard and substations.

The Merricourt wind farm upgrades at Ellendale were put in-service in May 2020. The interconnection of the Emmons Logan Wind Farm requires increasing the capacity of MDU's 230 kV transmission system. The upgrades are reconductoring approximately 100 miles of 230 kV transmission line and replacing approximately 400 transmission line structures on the Mandan to Ellendale 230 kV system. The project is currently under construction and will continue through early 2022. The Dakota Range windfarms interconnected to MDU's Ellendale to Big Stone 345 kV transmission line. The substation was put in-service in May 2020. Additional upgrades are required on MDU's Big Stone to Hankinson 230 kV transmission line and substation upgrades at the Big Stone Plant. These projects will be in-service in October 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. 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. The line has been placed in service.

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.

FUTURE TRANSMISSION CONCEPTS

SOO Green- 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 utility-scale renewable generation in MISO with customers in PJM. The permitting process is underway, and they report relatively few objections. County meetings with landowners in Iowa have been completed.

Using Soo Line railroad right of way for most of the project likely contributes to the success of the permitting. The company is also pursuing capacity certification in the PJM system. The capacity market in PJM makes it practical to receive financial benefit in PJM for the firm supply offered by the line. If approved, it will contribute to the success of the project.

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.

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

CURRENT GENERATION RESOURCES

Renewable generation - North Dakota has approximately 3,229 MW of wind generation at more at 3 locations in service. The average capacity factor for 2018 (measure of actual generation to maximum possible at rated capacity) for the fleet of North Dakota wind generators is approximately 38%.

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
14 generating units. The combined capacity of the units is approximately 4,244 MW. The average capacity factor for 2019 was 72**%.**

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.

Great River Energy announced that they will discontinue generation at the Coal Creek Station at the end of August 2022. Work is underway to determine if a successor operator can continue that operation.

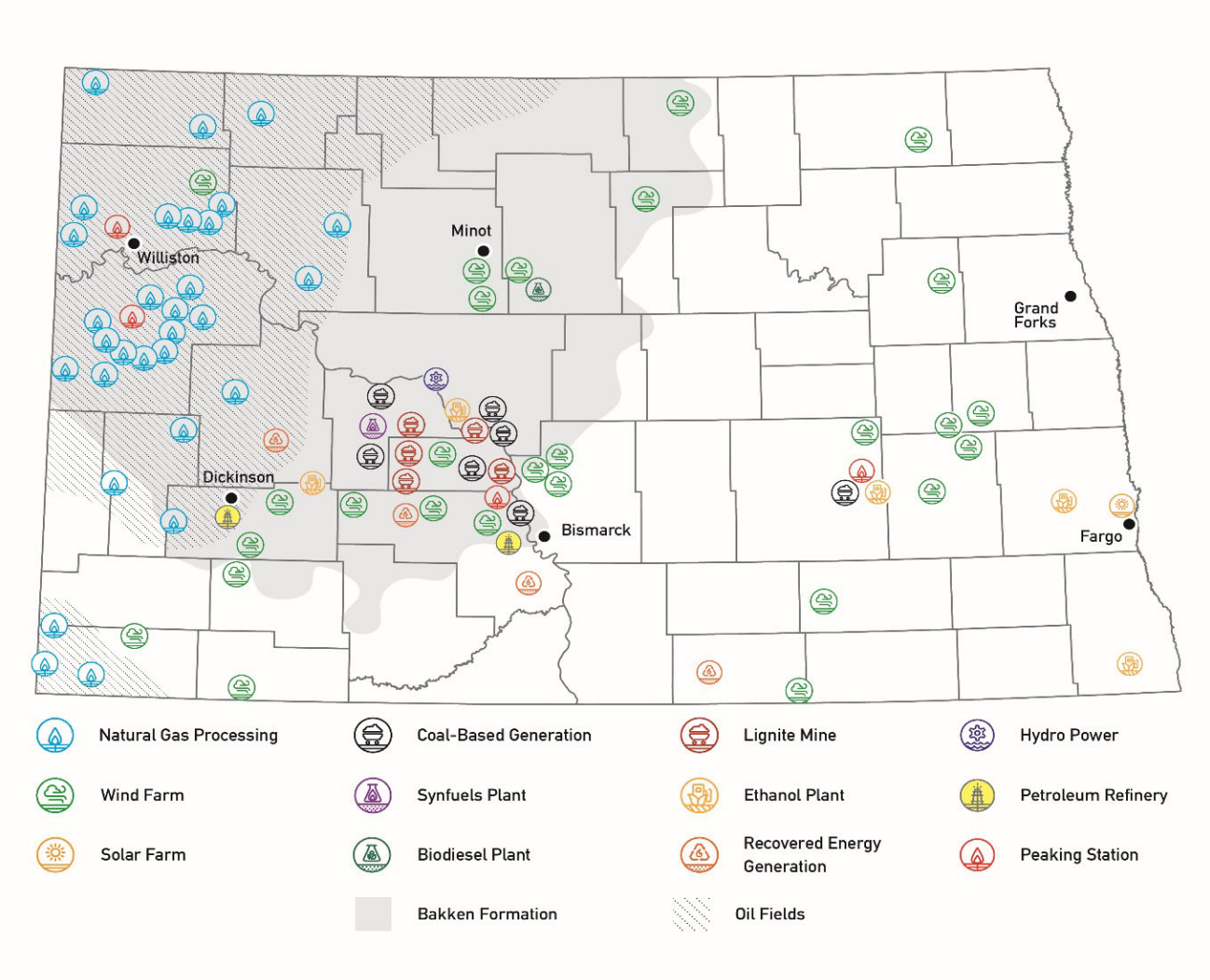
Hydro generation - North Dakota has one hydro generation site containing 5 units with a total capacity of 614 MW. The average capacity factor for 2018 for the hydro unit was 62.2%.

Natural gas generation - North Dakota has three sites for electric generation utilizing natural gas. These three sites contain 21 generating units. Nameplate capacity totals 684 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. The two locations in western North Dakota have been running at much higher capacity factors than a typical natural gas peaking plant. This is driven by the low cost of natural gas in the Bakken region and the high and uniform demand. The unit at Mandan on

the other hand operates a limited amount to respond to peak demand.

Total Generation - The combined total of all types of utility scale generation is approximately 8,863 MW. The 3,229 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

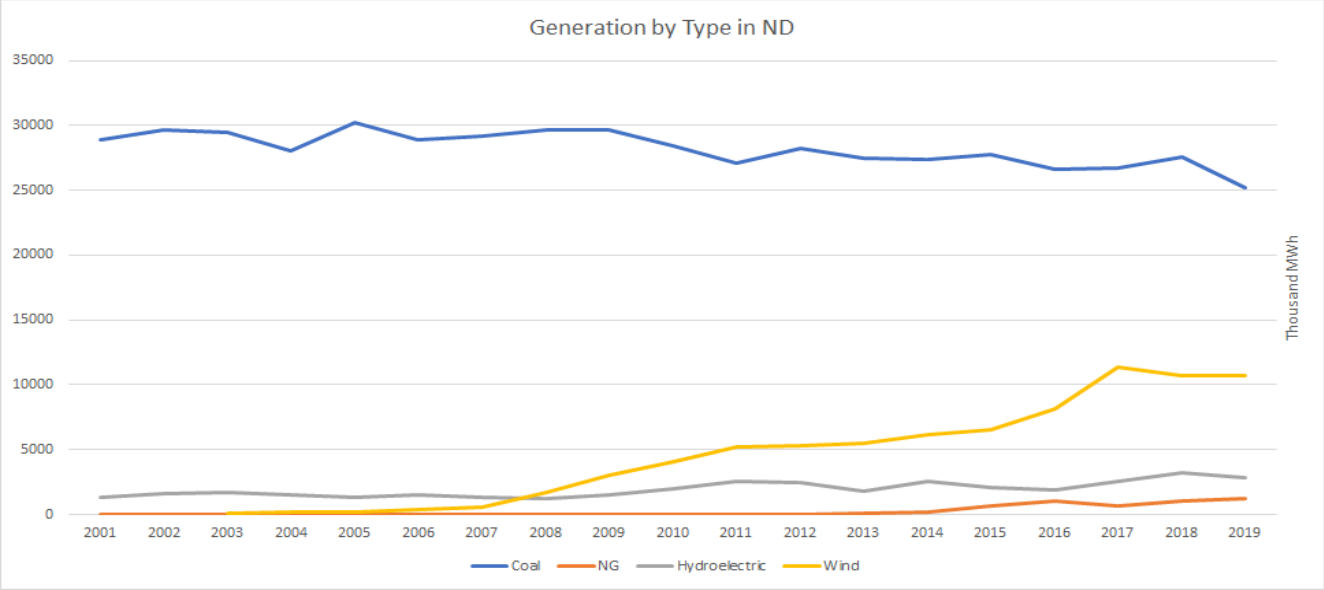


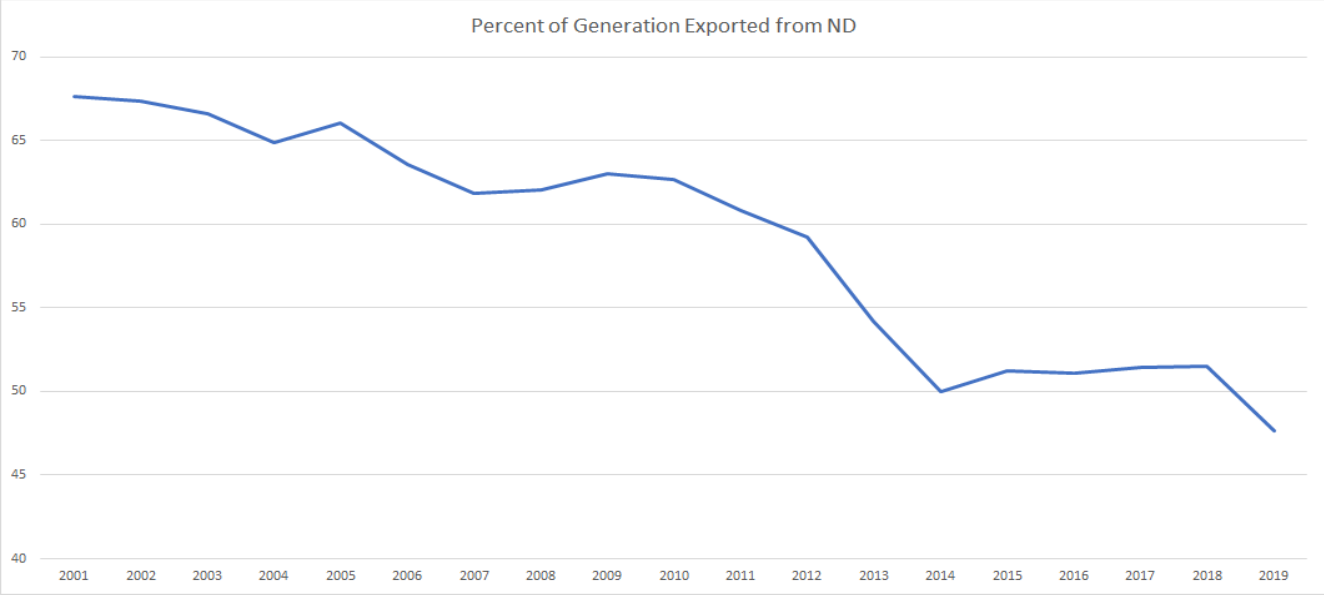
ELECTRIC GENERATION MARKET & UTILIZATION

Electric energy utilization

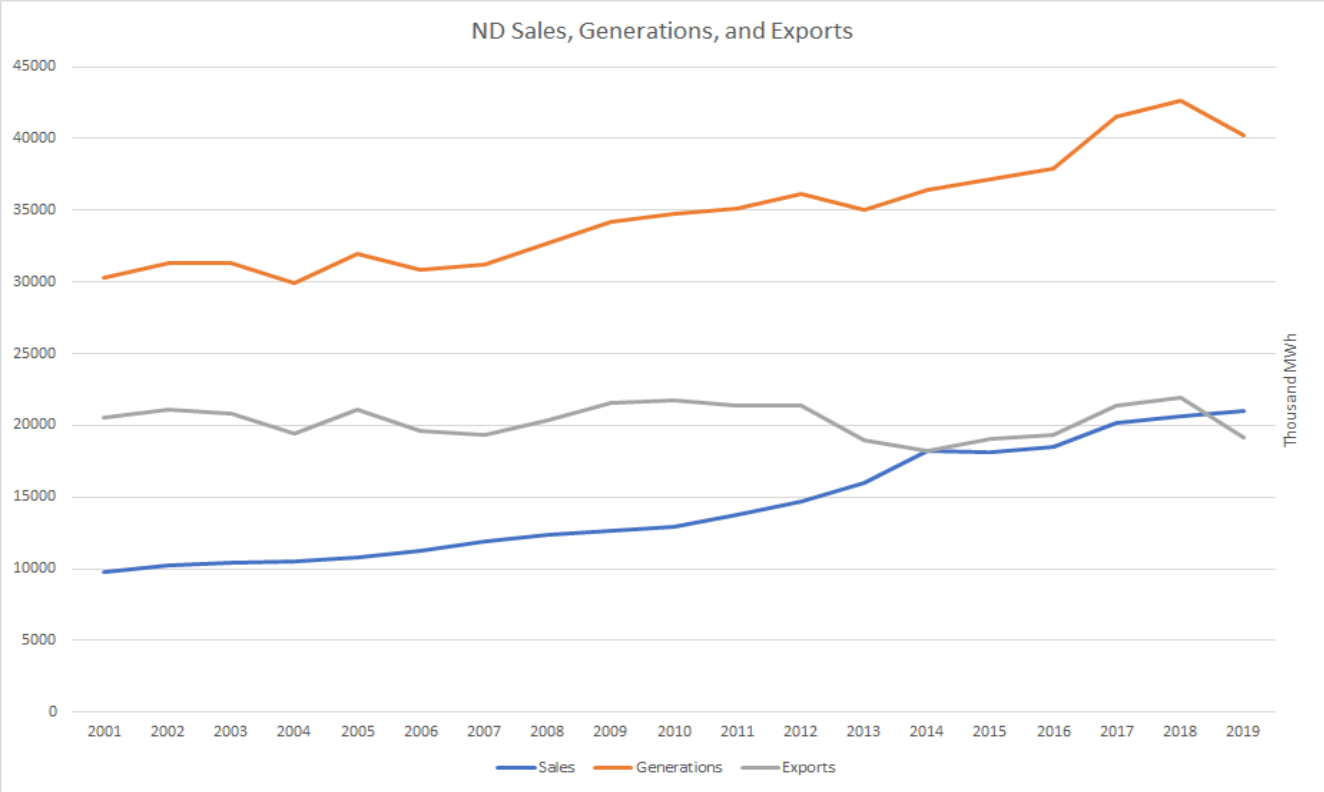
North Dakota has been a major exporter of electricity since the development of thermal lignite generation in western North Dakota beginning in the 1960s. Transmission was developed along with the generation to export the electric generation primarily to markets to the east. In more recent years North 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 2019 a total of 40,188 MWhr was generated from all sources in North Dakota. Of that total 48% was exported outside of the state.

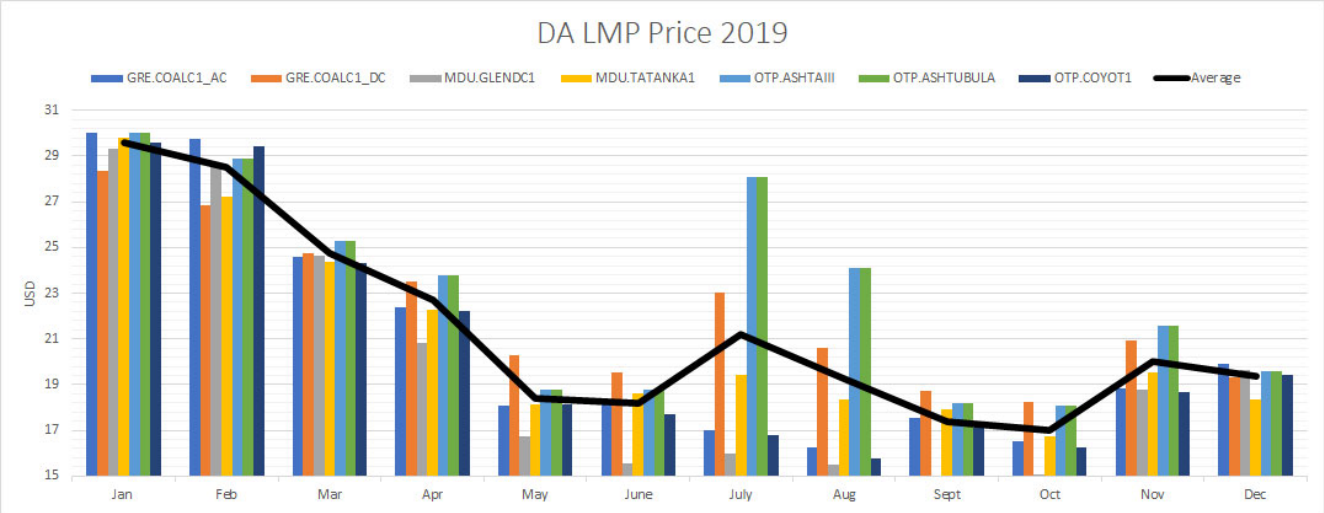


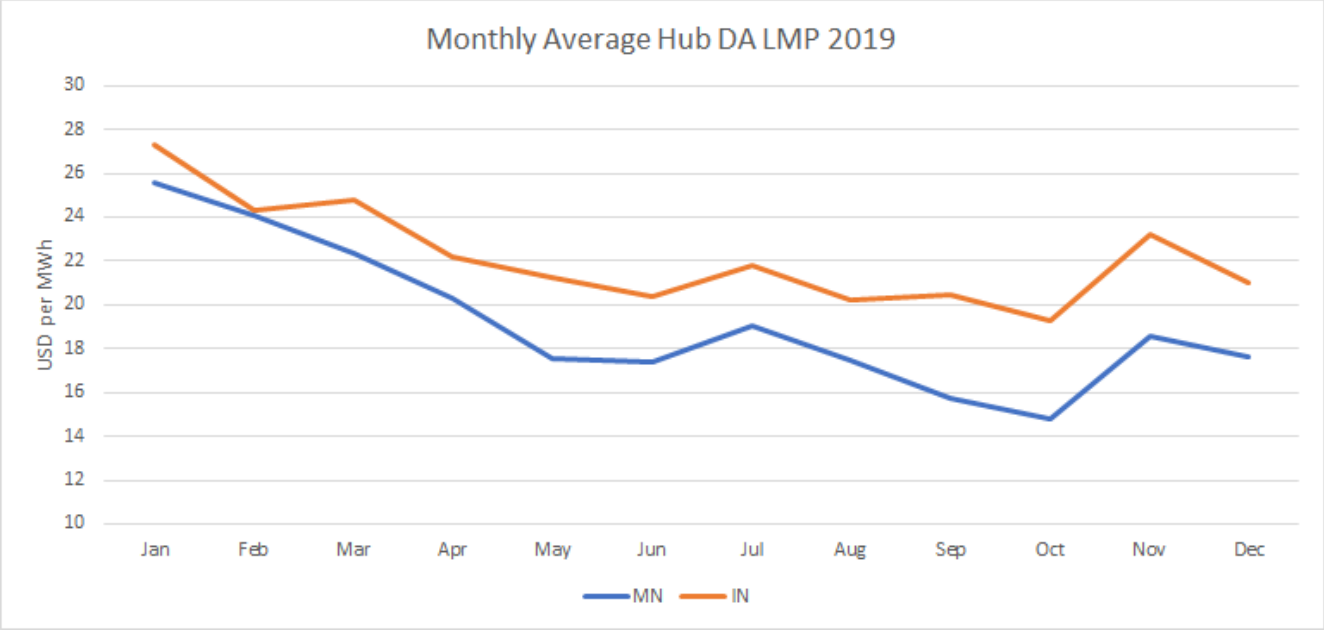


While demand in markets outside of North Dakota and in all but the western part of North Dakota has remained quite flat in recent years, the growth of demand in the Bakken region has been notable. Growth of total generation in the last 15 years has grown from 29,936 MWhr to 40,188 MWhr. Retail sales have grown from 10,516 MWhr to 21,044 MWhr due in large part to growth associated with Bakken oil development.

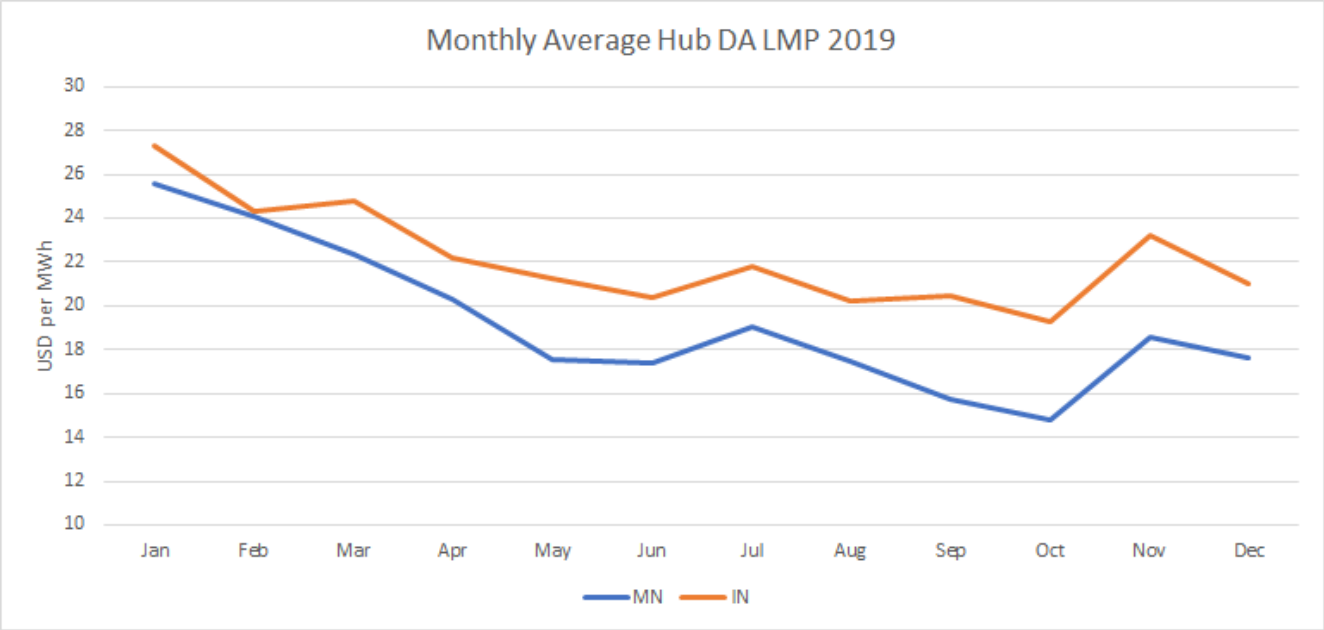


Wholesale Electric Market - With North Dakota being a net exporter of electricity, the whole sale market price is important to the generators in the state. The graphs below reflect the market price for a variety of locations into which North Dakota Electricity is marketed both in the MISO and in the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



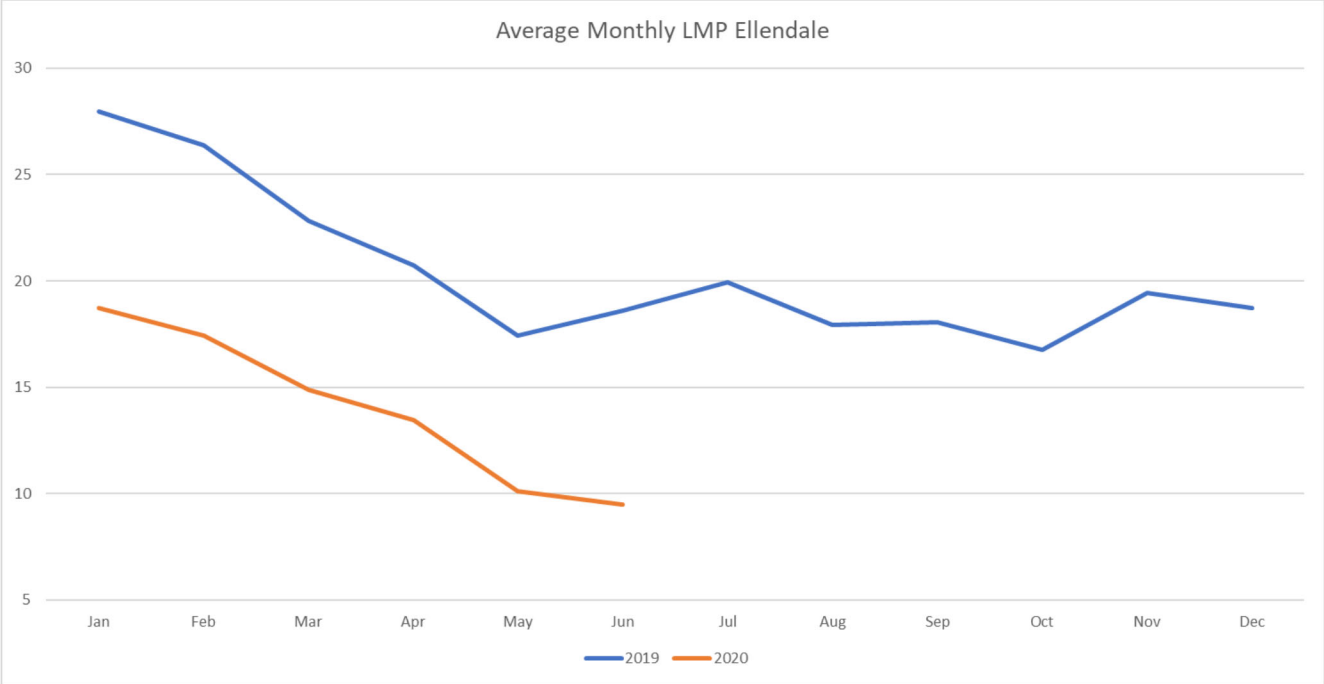


The Indiana hub is a typical point that is indicative of pricing east of MISO. As the graph below shows, pricing in that area is typically more than in Minnesota and potentially an opportunity for North Dakota electricity as avenues open up to ship power further east. However, it should be noted that Indiana (and some other states) have an Indiana first policy when approving renewable energy for the state.



Ellendale Node is an area of interest because the new transmission line from Ellendale to Big Stone was put in service in recent years. With that line in service the expectation was that wind energy in the area would be much better served since most of the generation there is intended for export. As the graph below shows, the market price there shows a steady decline. The understanding of the

industry is that congestion in transmission capacity outside of North Dakota is the primary reason for the general decline in prices and the periodic negative pricing in that market.



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.

MISO QUEUE

MISO total queue thirteen projects for 2700 MW

County	Transmission Owner	POI Name	Queue Date	Appl In Service Date	Summer MW	Winter MW	Fuel	Generating Facility	Project #
McIntosh	Montana-Dakota Utilities Co.	Wishek Junction 230 kV Substation	3/12/2018	9/1/2021	250	250	Wind	WT Wind Turbine	J1040
Mercer	Great River Energy	Stanton 230 kV Substation	3/12/2018	5/1/2022	151.8	151.8	Wind	WT Wind Turbine	J1187
Cass	Otter Tail Power Company	Buffalo 345kV Substation	4/29/2019	8/1/2022	200	200	Solar	PV Photovoltaic	J1428
Sheridan	Otter Tail Power Company	Harvey - Underwood 230 kV Line Tap	4/29/2019	9/1/2023	300	300	Wind	WT Wind Turbine	J1456
Burleigh	Montana-Dakota Utilities Co.	Nepoleon Sub 230kV	6/16/2017	9/15/2021	298	298	Wind	WT Wind Turbine	J580
Grand Forks & Nelson	Great River Energy	Ramsey - Prairie 230kV Line Tap	6/16/2017	7/1/2022	400	400	Wind	WT Wind Turbine	J628
Morton	Minnesota Power (Allete, Inc.)	Tri-county 230 kV substation	6/16/2017	10/1/2021	100	100	Wind	WT Wind Turbine	J705
Morton	Minnesota Power (Allete, Inc.)	Tri-county 230kV sub	6/16/2017	10/1/2021	100	100	Wind	WT Wind Turbine	J706
Oliver	Minnesota Power (Allete, Inc.)	Square Butte East 230kV Substation	6/16/2017	9/15/2020	300	300	Wind	WT Wind Turbine	J713
Cass	Otter Tail Power Company	Buffalo 115kV Substation	6/16/2017	9/15/2022	60	60	Solar	PV Photovoltaic	J816
Grand Forks	Great River Energy	Prairie - Ramsey 230 kV line	6/16/2017	10/1/2021	190	190	Wind	WT Wind Turbine	J897
Cass	Northern States Power (Xcel)	Bison 345kV Substation	6/16/2017	7/31/2020	200	200	Solar	PV Photovoltaic	J946
Cass	Otter Tail Power Company	Buffalo 115kV Substation	3/12/2018	10/31/2023	150	150	Wind	WT Wind Turbine	J975

SPP QUEUE

SPP total queue is twenty-two projects for 2902 MW total

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	

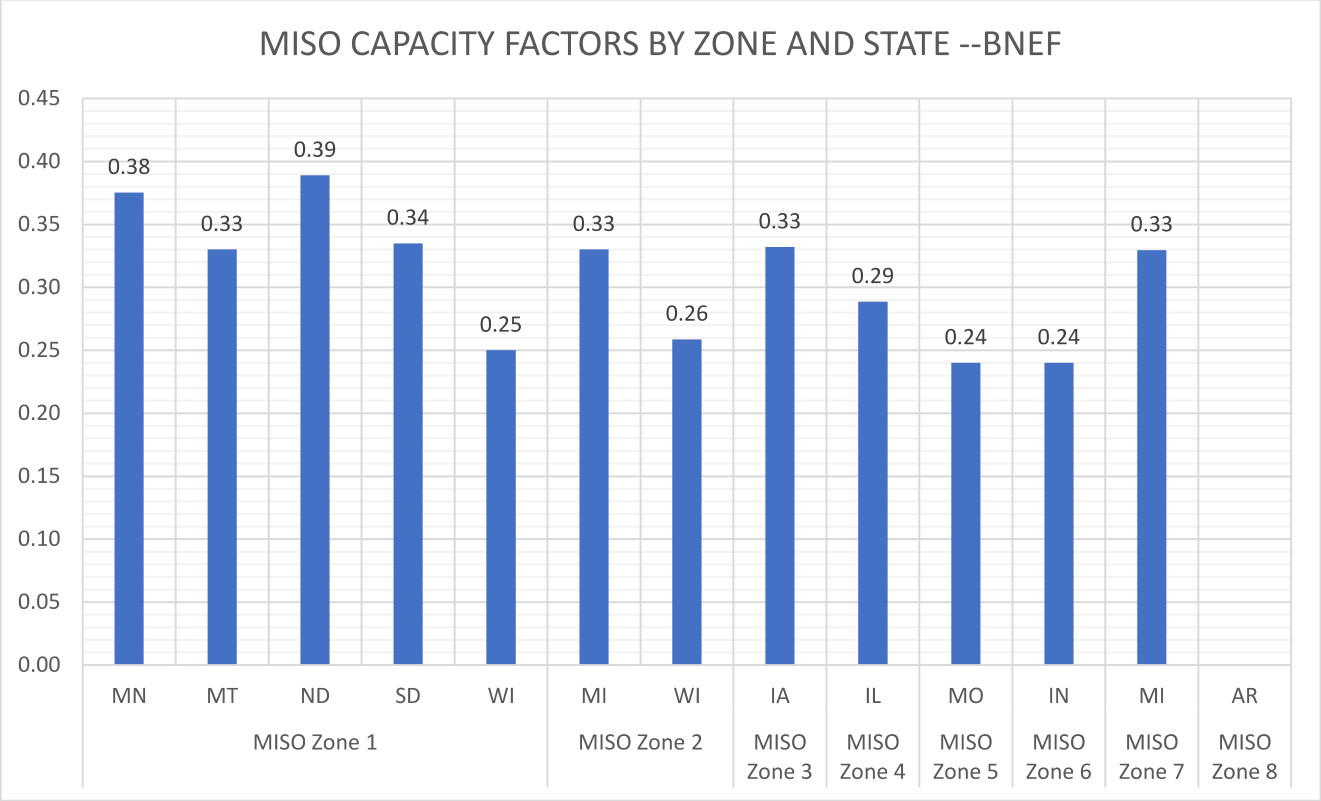
MINNKOTA QUEUE

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

Minnkota total queue has six project for 1351 MW
The sum of the three queues in ND contain **6,953 MW**

Capacity factors for Wind Generation in the region- The following graph shows the average capacity factors for wind in the region by state. With North Dakota having the highest capacity factor the investment dollars for wind generation will get a better return on investment if the transmission capacity is available to get the generation to market. Since the market demand is primarily to the east that is where the transmission capacity need is the greatest. Wisconsin, Michigan, Illinois and Indiana are states where renewable energy is in demand and where planners would like to be able to transfer generation from North Dakota. Developers weigh the higher return available and the higher prices at the eastern markets nodes against the cost of transmission to reach those markets. At this time however the high transmission costs are preventing development in ND with market focus on that region. Resolving that transmission barrier is a focus of the NDTA.



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.

Many companies are using the RECs as evidence of their commitment to renewable energy. The challenges of grid attributes needed as we move toward a higher level of renewable energy on the grid is not addressed by the use of RECs so it is important to recognize that a commitment beyond the use of RECs will be required in the near future.

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, the Bank of North Dakota 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.

The Public Service Commission, the Governor's staff and the NDTA participated in the Midwest Governors association work on setting goals for grid modernization. This brought opportunity to help staff and commissions from several states in the region to understand the "all of the above" energy policy of North Dakota.

CONCLUSION

The electric transmission system in North Dakota is operating well and serving the load reliably with the current generation. However, transmission congestion is increasing and in parallel with that the wholesale prices are more volatile. The increased retail demand in North Dakota has contributed to the current good operation of the grid. The events of 2020 resulted in demand destruction both in the Bakken area and the surrounding markets. Recovery from the low oil prices and from impacts of Covid-19 will tell the story on whether the demand returns to its previous growth in the Bakken area. The reduced size of the queues at MISO, MPC and SPP is evidence of the transmission issues that exist outside of ND as well. Early in the 2019-2020 fiscal year most projects that received their allocated transmission interconnect cost were cancelled due to the high costs. Meanwhile the MISO regions to the east of North Dakota are seeking to utilize the outstanding potential for renewable energy once transmission is enhanced. Meanwhile, some counties such as Mercer and McLean passed ordinances limiting to renewable generation and wildlife considerations have tempered ability to permit wind generation in some areas of the state.

The Direct Current Transmission line from Coal Creek Station to Minnesota will be a good demonstration case as all or portions of that line capacity become available on a subscription basis. If renewable generation interests subscribe to the available capacity on the line as the future of the concept of subscription-based transmission it will be a signal for financing of future transmission capacity.

The uncertainty created by to potential closure of Coal Creek Station and the resulting uncertainty of the future of the DC transmission line associated with the plant has raised the stakes for long term planning of transmission capacity for North Dakota as a method of keeping the generation of both lignite based electricity and renewable generation robust. With much of the transmission requirements occurring outside of North Dakota it is a good time to evaluate long term visions, ways to partner with others and alternatives to reaching additional markets.

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