



BASIN ELECTRIC POWER COOPERATIVE

A Touchstone Energy[®] Cooperative 

SOUTH DAKOTA TEN YEAR PLAN

2020

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20:10:21:04 - EXISTING ENERGY CONVERSION FACILITIES

Spirit Mound Station

1. Located six miles north of Vermillion, SD and declared available for commercial operation in June, 1978.
2. The station is composed of two combustion turbines, fired with number 2 fuel oil obtained from Midwest markets. The nameplate capacity of each unit is 60 MW; the units currently have a net rating of 60 MW each.
3. Spirit Mound Station was constructed primarily as a peaking unit to be used as reserves during outages of other Basin Electric or Mid-Continent Area Power Pool (MAPP) resources. Now the station is dispatched by the Southwest Power Pool during times of low generation available on the system. Therefore, operation of the station is limited. Net generating production in 2018 was 816 megawatt-hours (MWh) and 5,441 MWh in 2019.
4. Spirit Mound Station does not require water for production of electricity.
5. Spirit Mound Station consumed 90,450 gallons of fuel oil during 2018 and 536,186 gallons during 2019.
6. A projected service removal date for Spirit Mound Station has not been determined.

PrairieWinds Chamberlain Project

1. Located at Chamberlain, SD and declared available for commercial operation in January, 2002.
2. The project is composed of two 1.3 MW wind turbines.
3. Net generating production in 2018 was 1,813 MWh and 1,567 MWh in 2019.
4. The Chamberlain project was constructed as part of Basin Electric's overall power supply to serve its members.
5. The Chamberlain project does not require water for production of electricity.
6. This is a wind power project and therefore no fuel is consumed.
7. A projected service removal date for the Chamberlain wind turbines has not been determined.

Groton Generation Station (Unit 1 & 2)

1. Located near Groton, SD, Unit 1 was declared available for commercial operation in July, 2006 and Unit 2 was declared available for commercial operation in July, 2008.
2. The station is composed of two 93-95 MW winter rated gas fired combustion turbines.
3. The Groton Generation Station produced 121,923 MWh in 2018 and 119,853 MWh in 2019.
4. The Groton Generation Station requires water for production of electricity. The Groton Generation Station used 5,358,000 gallons in 2018 and 4,267,900 gallons in 2019.
5. The fuel source is natural gas. The Groton Generation Station consumed 1,102 MMCF in 2018 and 1,090 MMCF in 2019.
6. A projected service removal date for the Groton Generation Station has not been determined.

Crow Lake Wind Project

1. Located near White Lake, SD and was fully operational in February 2011.
2. The project consists of 108 1.5MW wind turbines for a total of 162MW.
3. Net generating production in 2018 was 556,659 MWh and 527,847 MWh in 2019.
4. The Crow Lake Wind project was constructed as part of Basin Electric's overall power supply to serve its members.
5. The Crow Lake Wind project does not require water for production of electricity.
6. This is a wind power project and therefore no fuel is consumed.
7. A projected service removal date for the wind turbines has not been determined.

Deer Creek Station

1. Located near Brookings, SD and declared available for commercial operation in August, 2012.
2. The station is composed of a gas fired 2x1 Combined Cycle Unit with Duct Firing, with a 298 MW winter rating.
3. The Deer Creek Station produced 858,153 MWh in 2018 and 856,759 MWh in 2019.
4. The Deer Creek Station requires water for production of electricity. The Deer Creek Station used 3,863,000 gallons of well water in 2018 and 5,543,000 gallons in 2019.
5. The fuel source is natural gas. The Deer Creek Station consumed 5,966 MMCF in 2018 and 5,996 MMCF in 2019.
6. A projected service removal date for the Deer Creek Station has not been determined.

20:10:21:05 - PROPOSED ENERGY CONVERSION FACILITIES

Basin Electric is evaluating the development of new generating resources (coal, gas, and wind) to meet Basin Electric's forecasted load growth.

20:10:21:06 - EXISTING TRANSMISSION FACILITIES

<u>Location</u>	<u>Type</u>	<u>Conductor</u>	<u>Voltage</u>
Leland Olds-Groton-Watertown, SD	Steel Tower	2183.5 MCM	345 kV
Leland Olds-Ft. Thompson, SD	Steel Tower	2183.5 MCM	345 kV
Antelope Valley-Broadland	Steel Tower	2-2306 MCM	345/500 kV*
Philip-Philip Tap, SD	Wood Pole	954 MCM	230 kV
Broadland-Huron, SD	Steel Tower	2306 MCM	230 kV
Groton, SD Substation			345/115 kV

Spearfish-Yellow Creek, SD	Wood/Steel Pole	1272 MCM	230 kV
Yellow Creek, SD- Osage, WY	Wood/Steel Pole	1272 MCM	230 kV
New Underwood- Rapid City DC Tie	Wood/Steel Pole	1272 MCM	230 kV
Dry Creek Substation SD			230/115 kV
Crocker Substation SD			345 kV

Retirement dates on these facilities are indeterminate.

*The Antelope Valley-Broadland transmission line is constructed for 500 kV operation but is currently being operated at 345 kV. Operation at 500 kV will be considered if that is the most cost effective method of increasing system capacity to accommodate future requests for transmission service along that path.

20:10:21:07 - PROPOSED TRANSMISSION FACILITIES

Basin Electric currently has one transmission project under construction and one proposed project in South Dakota at this time. Basin Electric is currently constructing a new 345 kV substation on the Leland Olds - Ft. Thompson 345 kV line near the Ft. Thompson end in order to interconnect a wind farm. The interconnection substation will be called Chappelle Creek and will be in service at the end of 2020. Basin Electric is also proposing to rebuild the Witten 115 kV substation to accommodate additional member load. This would include additional line terminals and protective equipment at the existing Witten substation.

20:10:21:08 - COORDINATION OF PLANS

Basin Electric provides capacity and energy above WAPA's allocations to those preference customer cooperatives who have executed electric service contracts with Basin Electric. In order to provide service Basin Electric must augment WAPA's existing transmission system. Existing transmission facilities listed in section 20:10:21:06 are coordinated facilities which tie into WAPA's existing transmission system. The Miles City, MT, to New Underwood, SD, line constructed by WAPA is also a coordinated transmission line which provides service to Basin Electric, Montana-Dakota Utilities Co. and WAPA customers. The Groton 345/115 kV substation constructed by Basin Electric provides Northwestern Energy and Heartland Consumers Power District with additional capacity in the Aberdeen-Groton area. The Rapid City Asynchronous Tie and associated transmission facilities are coordinated with Black Hills Power, Inc. and the Western Area Power Administration.

On October 1, 2015 Basin Electric joined the Southwest Power Pool (SPP). One of SPP's roles is the Planning Coordinator function. SPP performs this function through their Integrated Transmission Plan process.

20:10:21:09 - SINGLE REGIONAL PLAN

The Spearfish-Yellow Creek and Yellow Creek-Osage 230 kV lines are part of a regional plan with Black Hills Power, Inc. to provide transmission service and electric power to consumers of Basin Electric's member cooperatives and Black Hills Power, Inc. in the Spearfish-Deadwood-Rapid City-Hot Springs area of South Dakota. Also, in joint effort with Black Hills Power, Inc., the Rapid City Asynchronous Tie is part of a single regional plan.

SPP provides the regional plan for the Basin Electric facilities in the eastern interconnection required for FERC Order 890 and 1000.

20:10:21:10 - SUBMISSION OF REGIONAL PLAN

Future joint transmission studies between Basin Electric and Black Hills Power, Inc., which show the potential need for transmission to support the northeast area of Wyoming and the Black Hills area of South Dakota, will be submitted to the commission.

20:10:21:11 - UTILITY RELATIONSHIPS

Common Use System

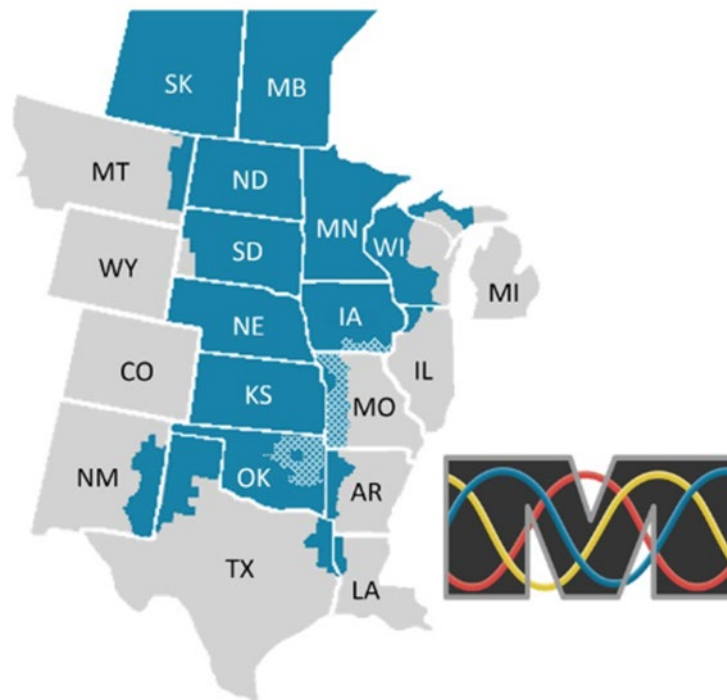
Basin Electric Power Cooperative, Powder River Energy Corporation, and Black Hills Power, Incorporated filed with the FERC a joint open access transmission system tariff (OATT) titled the Common Use System Tariff effective October 15, 2003. The Administration Agreement for the Common Use System Tariff provides for the establishment of a Coordinating Committee to jointly oversee the planning, coordination and construction of facilities in the service area of the tariff. The previous transmission agreement, between the parties titled Agreement for Transmission Service and the Common Use of Transmission Systems, dated January 1, 1986, also provided for this type of coordinated planning. Examples of this coordinated planning include the Spearfish to Yellow Creek 230 kV line, the Yellow Creek to Osage 230 kV line, and the Rapid City Asynchronous Tie.

Midwest Reliability Organization

Midwest Reliability Organization (MRO) is a non-profit organization dedicated to ensuring the reliability and security of the bulk power system in the north central region of North America, including parts of both the United States and Canada. MRO is one of eight regional entities in North America operating under authority from regulators in the United States through a delegation agreement with the North American Electric

Reliability Corporation (NERC) and in Canada through arrangements with provincial regulators. The region includes more than 200 organizations that are involved in the production and delivery of electricity including municipal utilities, cooperatives, investor-owned utilities, transmission system operators, federal power marketing agencies, Canadian Crown Corporations, and independent power producers.

The primary responsibilities of MRO are to ensure compliance with mandatory Reliability Standards, to conduct regional assessments of the grid's ability to meet the demands for electricity, and to analyze regional system events.



Southwest Power Pool

Basin Electric joined the Southwest Power Pool (SPP) in October of 2015. SPP oversees the bulk electric grid and wholesale power market in the central United States on behalf of a diverse group of utilities and transmission companies in 14 states including South Dakota. SPP establishes practices for system design, planning, adequacy, regional transmission service tariff, interconnections, operation, reliability, market designs and efficiency, and market power mitigation that will help to assure efficient and reliable power supply among the systems in SPP and SPP transmission customers. Basin Electric participates on various committees and work groups as a function of SPP.

Mid-West Electric Consumers Association

Basin Electric Power Cooperative is a member of the Mid-West Electric Consumers Association (Mid-West). Mid-West, which was founded in 1958, is a regional coalition of consumer-owned electric utilities that purchase power from the federal multi-purpose projects in the Missouri River Basin. Mid-West's Water & Power Marketing Committee

meets throughout the year to discuss and review planned additions of Mid-West member utilities.

20:10:21:12 - EFFORTS TO MINIMIZE ADVERSE EFFECTS

The primary obligation of Basin Electric is to provide an adequate wholesale supply of dependable, low-cost electric power to its member systems, consistent with the public interest. In conjunction with this, Basin Electric endeavors to maximize the socio-economic benefits associated with electrical generation and transmission projects and to minimize negative impacts associated with these projects. This is particularly true with respect to protecting the agricultural lifestyle and productivity of this region.

The Cooperative remains committed to preserving and enhancing the ecological balance of this region for the benefit of future generations. It is the policy of Basin Electric that environmental impacts be monitored and steps taken to mitigate and alleviate adverse effects. Basin Electric has instituted a variety of programs designed to maximize the most efficient use of energy and to benefit the human, agricultural, and biological environments.

Projects proposed by Basin Electric that have a federal nexus adhere to the requirements of the associated Federal Agency's Environmental Policies and Procedures which describe the procedures for compliance with the provisions of the National Environmental Policy Act (NEPA). Through the NEPA process, Basin Electric encourages state, federal and public participation in proposed projects so that once potential impact issues are identified appropriate mitigation measures can be formulated with the assistance of the participants to minimize potential impacts. An Environmental Assessment is developed which includes a comprehensive discussion and evaluation of environmental issues and serves as a baseline document for subsequent environmental regulatory permits and a federal Environmental Impact Statement when required. The goal of this process is to select a facility location that best minimizes environmental, cultural and socio-economic impacts and engineering and construction costs.

Basin Electric adheres to the appropriate South Dakota statutes regulating industrial development projects such as electrical generating facilities and high voltage transmission lines and substations. In addition, it is Basin Electric's practice to inform affected state and federal agencies when prospective projects are identified to solicit their input early in the planning process.

20:10:21:13 - EFFORTS RELATING TO LOAD MANAGEMENT

Throughout the Basin Electric service area, local rural electric cooperatives maintain load management plans that vary from voluntary peak alert programs to very sophisticated central control systems.

Basin Electric staff offers some technical assistance and assists in efforts to coordinate energy management and/or load management programs to best benefit the entire Basin Electric service area.

Basin Electric staff emphasizes the wise use and management of available resources to provide the most economical supply of energy to the consumer, rather than only a conservation or peak shaving program.

Basin Electric has a load management rate whereby four customers are participating - the City of Manning Municipal Light Plant, IA (6 MW), Cargill Wet Corn Mill Plant (4 MW) near Wahpeton, ND, the City of Dike, IA (2.5 MW), and the Mountrail Williams Electric Cooperative Office Complex (4 MW) in Williston, ND.

20:10:21:14 - LIST OF REPORTS

No reports at this time.

20:10:21:15 - CHANGES IN STATUS OF FACILITIES

No changes at this time.

20:10:21:16 - PROJECTED ELECTRIC DEMAND

1. Exhibit 1 represents Basin Electric's historical and projected sales to its Class A and D members. This exhibit represents Basin Electric's supplemental power supply responsibility to the Class A and D members. As a supplemental power supplier, Basin Electric is responsible for providing the members' requirements in excess of the fixed amount of power they receive from the Western Area Power Administration and other sources.

An econometric based load forecast was completed in early 2020. The econometric forecasting system in the load forecast is a bottom up process that begins by developing econometric equations and forecasts for each distribution cooperative. The total system consists of approximately 350 forecasting equations and over 700 explanatory variables. Annual and monthly forecasts of energy and demand are conducted for a 30+ year period. The distribution cooperative forecasts are combined up to obtain the generation and transmission cooperative forecasts (G&T's). The G&T's power requirements are then separated into various power supply responsibilities. The Basin Electric components are combined to obtain the Basin Electric total power supply

responsibility.

The modeling and forecasting is performed at Basin Electric. Throughout the modeling and forecasting process there is constant communication and review by member systems. Historical energy data is combined with external data obtained from government and private sector sources as well as membership consultation to form econometric forecasting equations. External projections of explanatory economic and demographic variables used in the forecasting process are obtained from the Food and Agricultural Policy Research Institute at the University of Missouri-Columbia, MO; Woods & Poole Economics, Inc.; IHS Markit, the US Department of Energy, Washington, D.C, along with various other sources.

2. Basin Electric's service area is electrically divided into four assessment areas across two electrical interconnections. The majority of Basin Electric's system resides in the eastern interconnection consisting of the Southwest Power Pool (SPP) and Midcontinent Independent System Operator (MISO) assessment areas. In the western interconnection Basin Electric's system resides in the Northwest Power Pool (NWPP) and the Rocky Mountain Reserve Group (RMRG) assessment areas. These interconnections are separated by the east-west ties which are boundaries that separate two major electrical regions of the United States. This boundary essentially runs south from Fort Peck, Montana, approximately along the South Dakota-Wyoming, Nebraska-Wyoming, and Colorado-Kansas borders.

As a result of this, Basin Electric must construct additional generating capacity or purchase capacity and energy on both sides of the ties in order to serve its member load requirements across all 4 assessment areas.

The resources available to Basin Electric to serve its members east-side requirements in SPP and MISO are as follows:

- a) Leland Olds Station: Leland Olds Unit 1 was placed in-service on January 9, 1966 and is a base-load coal fueled unit located near Stanton, ND, with a net capacity of 221 MW. Leland Olds Unit 2 is a coal fueled unit that was placed in-service on December 15, 1975 and its net capacity is rated at 445 MW. Basin Electric installed emission control equipment at the Leland Olds Station which requires an increase to the station service. This equipment was put in service after the 2012 fall outage on Unit 2 reducing the net capacity from 448 MW to 445 MW due to additional station service required. The Unit 1 emissions control equipment was placed into service after the spring 2013 maintenance outage.
- b) Antelope Valley Station: Basin Electric operates two 450 MW (net) thermal-generating base load coal fired units near Beulah, ND. Unit 1 began commercial operation on July 1, 1984 and Unit 2 began partial commercial operation on June 1, 1986.

Designed to be environmentally sound, over \$397 million have been invested in capital pollution control asset investments for AVS, to date. Dry Scrubbers use lime to capture and remove up to 90 percent of sulfur dioxide emissions from stack gases. Fabric filter bag houses capture and remove up to 99 percent of particulate matter. Each bag house contains more than 8,000, 35-foot tall bags. AVS is a “zero-discharge” facility; even water is used efficiently only leaving the plant site through evaporation.

- c) Laramie River Station: Basin Electric, together with five other consumer-owned power supply entities, began construction in July 1976 on the Laramie River Station near Wheatland, in southeast Wyoming. The station’s three units became fully operational in November 1982. As project manager and operating agent for the Missouri Basin Power Project (MBPP), Basin Electric was assigned overall responsibility for the design, construction and operation of the power plant and related transmission. Units 2 and 3 of the Laramie River Station are electrically connected to the western system; Unit 1 is electrically connected to the eastern system. The amount of power that Basin Electric receives from the east side unit is 92 MW (net).
- d) Spirit Mound Station: Basin Electric placed in service on June 30, 1978, two fuel oil-fired combustion turbines. The combined winter rating of the two units is 120 MW (net) and the summer rating is 100 MW (net). The capacity is intended to be used primarily as reserves or replacement during initial outages of base load units or during peak load periods when existing base load units cannot meet the demand. The Spirit Mound Station is located near Vermillion, SD.
- e) Earl F. Wisdom Unit 1: Basin Electric and Corn Belt Power Cooperative (Corn Belt), one of Basin Electric’s member cooperatives, negotiated a power supply contract which provides that Corn Belt will sell to Basin Electric Corn Belt’s 38 MW of uncommitted capacity and associated energy from the Earl F. Wisdom Unit 1. In return, Corn Belt entered into a wholesale power contract with Basin Electric whereby Basin Electric will sell and deliver to Corn Belt all of Corn Belt’s capacity and energy requirements in excess of the power and energy available to Corn Belt from the Western Area Power Administration. In accordance with the Utility Mercury and Air Toxics Standards (MATs), Unit 1 stopped burning coal in January of 2014. Corn Belt and Basin Electric completed a retrofit of Unit 1 to switch from coal to natural gas for fuel. This retrofit was completed in June of 2014.
- f) Earl F. Wisdom Unit 2: Basin Electric partnered with Corn Belt Power Cooperative to build the 80 MW natural gas peaking unit near Spencer, Iowa. Basin Electric owns one half of the unit which was placed in service in April 2004. Basin Electric purchases 87.5% of Corn Belt’s owned half in response to Corn Belt entering into a Wholesale Power

Contract; therefore Basin Electric has 93.75% or 75 MW from the 80 MW combustion turbine.

- g) Groton Generation Station: Basin Electric commissioned Groton Unit 1 in 2006 and Unit 2 in 2008. These LMS 100 natural gas units provide peaking power. Unit 1 has a winter rating of 96 MW and Unit 2 has a winter rating of 94 MW.
- h) Culbertson Generation Station: Basin Electric commissioned Culbertson Unit 1 in 2010. The LMS 100 natural gas unit provides peaking power. The unit has a winter rating of 98 MW.
- i) Deer Creek Station: Basin Electric commissioned the Deer Creek Station in August, 2012. The unit is a combined cycle natural gas facility that provides intermediate power. The unit has a winter rating of 298 MW.
- j) Pioneer Station: The Pioneer Station northwest of Williston, ND was built to serve the increasing demand for electricity by member cooperatives in northwest North Dakota. Unit 1 started commercial operation in 2013, Unit 2 and Unit 3 started commercial operation in 2014, and twelve natural gas reciprocating internal combustion engines (RICE) referred to as units 11 through 22 started commercial operation in 2017. Each of the first three units have 45 MW of generation capacity and the twelve RICE units have a net generating capacity of 8.9 MW each giving the station a total rating of approximately 242 MW. Unit 1 of Pioneer Generation Station features a clutch that allows the turbine to uncouple from the generator, allowing the generator to provide transmission system voltage support. This feature, if needed, is used to provide fast-acting reactive power which will stabilize the transmission system in the area.
- k) Lonesome Creek Generation Station: The Lonesome Creek Station is located near Watford City, ND. Commercial Operation for Lonesome Creek Unit 1 began in December 2013, Units 2 and 3 in January 2015, and Units 4 and 5 in March 2017. Each unit consists of a LM 6000 45MW natural gas unit and provides peaking power. The total station generation capacity is 225MW. Unit 1 has a synchronous clutch located between the combustion turbine and generator allowing the generator rotor to spin independent of the turbine providing voltage stability to the electric grid.

In 2020 Basin Electric's Board of Directors approved constructing a sixth unit, identical to the existing five units at the site, with an expected commercial operation date in late 2021. Construction on the new unit is expected to commence before the end of 2020.

- l) Chamberlain Wind Project: Basin Electric, in partnership with East River Electric Power Cooperative, has constructed a wind energy project near Chamberlain, South Dakota. The 2.6 megawatt capacity project was placed into commercial service in January 2002. The energy is delivered

to members as part of Basin Electric's overall power supply.

- m) Minot Wind Project: Basin Electric, in partnership with Central Power Electric Cooperative, has constructed a wind energy project 14 miles south of Minot, North Dakota. The 2.6 megawatt capacity wind project was placed into commercial service in February, 2002. Three additional turbines were added in December, 2009 for a total output of 7.1 MW. The energy is delivered to members as part of Basin Electric's overall power supply.
- n) PrairieWinds 1: Basin Electric has constructed a wind energy project of 77 turbines near Minot, North Dakota. The 115.5 MW capacity wind project was placed into commercial service in December, 2009.
- o) Crow Lake Wind Project: Basin Electric has constructed a wind energy project of 108 turbines near White Lake, SD. The 162 MW capacity wind project was placed into commercial service in 2011. Basin Electric owns 107 turbines or 160.5 MW and has a purchase power contract with Mitchell Technical Institute for the power out of the last turbine.
- p) WAPA Peaking Capacity: In 1968, Basin Electric executed a long-term contract with the federal government for USBR (now WAPA) hydro peaking from the dams in the Missouri River Basin. This contract currently provides Basin Electric with 268.2 MW of winter peaking capacity at load and for Basin Electric to return a like amount of energy to Western during off-peak period.
- q) George Neal IV: Basin Electric and Northwest Iowa Power Cooperative (NIPCO), one of Basin Electric's member cooperatives negotiated a new power supply contract which provides that NIPCO will sell to Basin Electric NIPCO's 31 MW of uncommitted capacity and associated energy from Unit No. 4 of the George Neal Generating Station (Neal IV). In return NIPCO entered into a wholesale power contract with Basin Electric whereby Basin Electric will sell and deliver to NIPCO all of NIPCO's capacity and energy requirements in excess of the power and energy available to NIPCO from the Western Area Power Administration.

Basin Electric and Corn Belt Power Cooperative (Corn Belt), one of Basin Electric's member cooperatives, negotiated a power supply contract which provides that Corn Belt will sell to Basin Electric Corn Belt's 73 MW of uncommitted capacity and associated energy from Unit No. 4 of the George Neal Generating Station (Neal IV). In return, Corn Belt entered into a wholesale power contract with Basin Electric whereby Basin Electric will sell and deliver to Corn Belt all of Corn Belt's capacity and energy requirements in excess of the power and energy available to Corn Belt from the Western Area Power Administration.

- r) Walter Scott 3 and 4: Basin Electric and Corn Belt Power Cooperative (Corn Belt), one of Basin Electric's member cooperatives, negotiated a

power supply contract which provides that Corn Belt will sell to Basin Electric Corn Belt's 26 MW of uncommitted capacity and associated energy from Unit No. 3 and 45 MW of uncommitted capacity and associated energy from Unit No. 4 of the Walter Scott Energy Center. In return, Corn Belt entered into a wholesale power contract with Basin Electric whereby Basin Electric will sell and deliver to Corn Belt all of Corn Belt's capacity and energy requirements in excess of the power and energy available to Corn Belt from the Western Area Power Administration.

- s) Duane Arnold Energy Center: Basin Electric and Corn Belt Power Cooperative (Corn Belt), one of Basin Electric's member cooperatives, negotiated with a power supply contract which provides that Corn Belt will sell to Basin Electric Corn Belt's 62 MW of uncommitted capacity and associated energy from the Duane Arnold Energy Center. In return, Corn Belt entered into a wholesale power contract with Basin Electric whereby Basin Electric will sell and deliver to Corn Belt all of Corn Belt's capacity and energy requirements in excess of the power and energy available to Corn Belt from the Western Area Power Administration.

In 2018 NextEra Energy Resources, the majority owner and operator of the Duane Arnold Energy Center, announced they will be retiring the facility by the end of 2020.

- t) Western Native American Purchase: Basin Electric receives a Native American Allocation of 39.7 MW in the winter and 40.8 MW in the summer season. This allocation is a result of congressional action that made federal power available to the Native Americans.
- u) Rapid City DC Tie: Basin Electric and Black Hills Power, Inc. have jointly constructed a 200 MW asynchronous tie at Rapid City, SD. This tie enables Basin Electric to serve load located west of the east-west ties, using capacity and/or energy from east side resources and vice versa, load located east of the east-west ties, using capacity and/or energy from west side resources. The Basin Electric ownership percentage is 65% and the Black Hills Power, Inc. ownership percentage is 35%. Currently, Basin Electric has rights to 130 MW of the tie.
- v) Stegall (David Hamil) DC Tie: Tri-State G&T Association constructed a 110 MW asynchronous tie at Stegall, NE. Basin Electric has acquired all rights to this tie. This enables Basin Electric to serve load located west of the east-west ties, using capacity and/or energy from east side resources and vice versa.
- w) Sidney DC Tie: Western Area Power Administration constructed a 200 MW asynchronous tie at Sidney, NE. Basin Electric has acquired 50 MW of west to east rights to this tie. This enables Basin Electric to serve load located on the eastern system using capacity and/or energy from west

side resources.

- x) Other Short Term Resources: Basin Electric has also entered into a number of short-term purchase agreements to meet contractual power supply obligations. Due to the relatively short-term duration of these arrangements no specifics are provided.
- y) Long Term Resource: Basin Electric has entered into long-term purchase agreements to meet contractual power supply obligations.
 - i) Wind Purchases:
 - a) 40 MW west of Edgeley, ND
 - b) two 49.5 MW projects near Wilton, ND
 - c) 100 MW near Baldwin, ND
 - d) 40 MW near Highmore SD
 - e) 94 MW near Pollock, SD
 - f) 99 MW near Groton, SD
 - g) 104 MW near Hebron, ND
 - h) 150 MW near Tioga, ND
 - i) Two 150 MW projects near New England, ND
 - j) 200 MW near Columbus, ND (expected COD 12/2020)
 - k) 200 MW near Avon, SD (COD Spring 2020)
 - l) 142 MW near Tioga, ND (term starting 1/2023)
 - ii) Solar Purchases:
 - a) 128 MW near Rapid City, SD (expected COD 1/2023)
 - b) Two 75 MW projects near Baker, MT (expected COD 1/2024)
 - iii) Peaking Purchases:
 - a) 10 MW City of Madison, SD diesel generators
 - b) Eight 5.5 MW waste heat recover units from Ormat Technologies Inc (3 sites in SD near Wetonka, Clark, and Estelline; 3 in ND; 1 in MT; 1 in MN)
 - c) 92 MW in purchases from CBPC
 - (1) 24.8 MW from Webster City, IA
 - (2) 12.1 MW from Estherville, IA
 - (3) 10 MW from Spencer, IA
 - (4) 45.1 MW from their share of the Superior, Lakota, Hancock, and Crosswinds wind projects in IA
 - d) ~70 MW from North Iowa Municipal Electric Cooperative Association's (NIMECA's) surplus capacity resources in IA
 - iv) Other Long Term PPAs:
 - a) Capacity and Energy
 - (1) 100 MW during the summer from Minnkota Power Cooperative (3/2019-5/2022)
 - b) Capacity Only
 - (1) 75-125 MW from Minnesota Power (6/2022-5/2025)

- (2) 100 MW from Minnesota Power (6/2025-5/2028)
- (3) 75 MW from Great River Energy (6/2020-5/2023)
- (4) 50 MW from Manitoba Hydro (ending 5/2021)
- (5) 50-80 MW from Manitoba Hydro (6/2023-5/2028)
- (6) 75-175 MW from Dairyland Power Cooperative (6/2019-5/2023)
- (7) 75 MW from Dairyland Power Cooperative (6/2023-5/2033)
- (8) 150 MW from Missouri River Energy Services (ending 9/2023)
- (9) 35-185 MW from Missouri River Energy Services (10/2020-9/2035)
- (10) 75 MW from NRG Power Marketing (6/2023-5/2025)
- (11) 101-151 MW from Evergy/Dogwood Energy Facility (6/2021-5/2024)

- z) Future Power Supply: For discussion of future power supply, please refer to Section 20:10:21:05 (Proposed Energy Conversion Facilities).

The resources available to Basin Electric to serve its members west-side requirements are as follows:

- a) Laramie River Station: The Laramie River Station capacity that Basin Electric receives from Units 2 and 3 on the west is 627 MW (net)
- b) Miles City DC Tie: Basin Electric and WAPA have jointly constructed a 200 MW back-to-back, AC-DC-AC tie at Miles City, MT. This tie, which provides 40% capacity entitlement, enables Basin Electric to serve Central Montana Electric Power Cooperative Inc., a Class A member with electrical loads located primarily west of the east-west ties, using capacity from east-side resources such as Antelope Valley Station.
- c) Wyoming Distributed Generation: The Wyoming Distributed Generation consists of 9 peaking units located at 3 sites; Arvada, Hartzog and Barber Creek. These units are natural gas fired units with a total net output of 45 MW summer and 54 MW winter. These units were released for commercial operation in 2002. These units currently are utilized for reserves for Basin Electric's west side electrical requirements.
- d) Dry Fork Station: Basin Electric, together with the Wyoming Municipal Power Agency (WMPA) began construction of the Dry Fork Station near Gillette in northeast WY in 2007. The station's single unit became fully operational in November of 2011. Basin Electric owns 92.9% of the station or 376 MW (net).
- e) Long Term PPAs :
 - i) Firm Capacity and/or Firm Energy in NWPP
 - a) 50 MW from MacQuarie Energy (formerly "Cargill"; ending 12/2021)

- b) 50-75 MW from MacQuarie Energy (formerly “Cargill”; 5/2020-12/2025)
 - c) 100-150 MW from Morgan Stanley Capital Group (1/2019-12/2027)
- f) Future Power Supply: For discussion of future power supply, please refer to Section 20:10:21:05 (Proposed Energy Conversion Facilities).

The projected load values contained in Exhibit 1 were obtained from the econometric based load forecast. Loads in South Dakota are located in SPP, MISO Local Resource Zone 1, and RMRG assessment areas so Basin Electric’s loads in each of these areas have been adjusted to an at-generator system coincident basis by allowing for reserves, on-peak losses, and system diversity as outlined in Exhibit 2.

20:10:21:17 - CHANGES IN ELECTRIC ENERGY DEMAND

Exhibit 1 shows demand increases.

20:10:21:18 - SERVICE AREA MAP

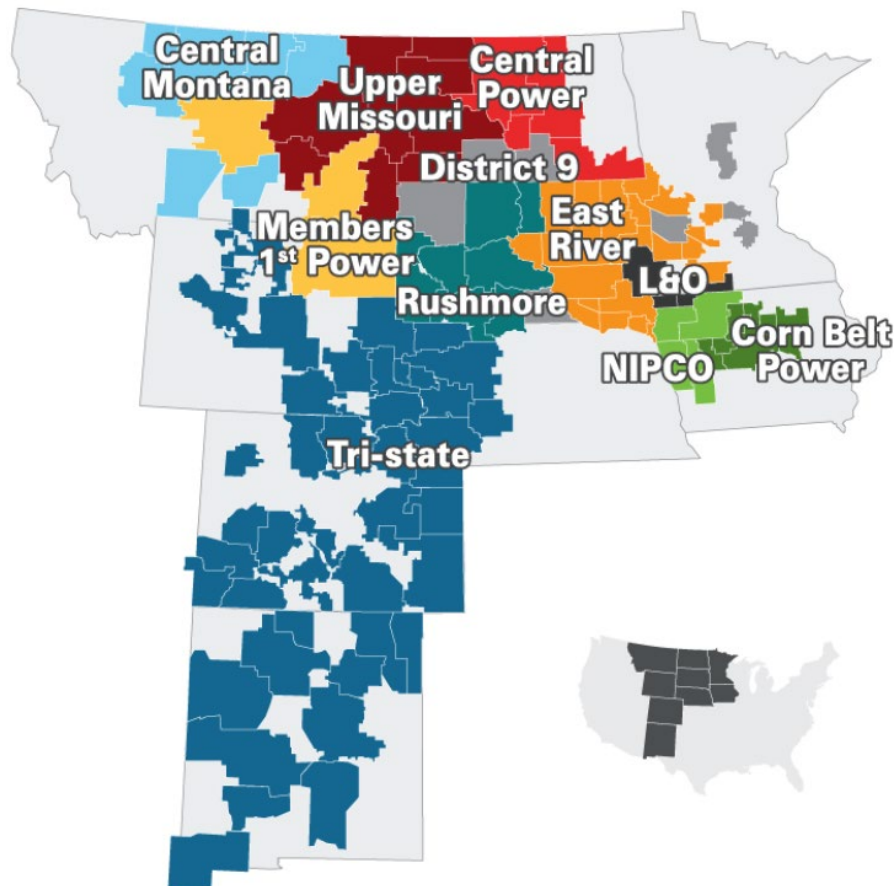


EXHIBIT 1 - SUMMER/WINTER LOADS BY STATE

Basin Electric Member Loads by State

Note: Historical 1995-2019 and Forecasted 2020-2030

SUMMER Peak Demand (MW)

	<u>ND</u>	<u>%</u>	<u>SD</u>	<u>%</u>	<u>MN</u>	<u>%</u>	<u>IA</u>	<u>%</u>	<u>NE</u>	<u>%</u>	<u>MT</u>	<u>%</u>	<u>CO</u>	<u>%</u>	<u>WY</u>	<u>%</u>	<u>BEPC TOTAL</u>
1995	223.9	22.3%	235.9	23.5%	38.9	3.9%	71.6	7.1%	186.2	18.5%	21.2	2.1%	77.9	7.8%	148.9	14.8%	1004.5
1996	222.1	22.6%	220.2	22.4%	38.4	3.9%	67.0	6.8%	170.2	17.3%	27.8	2.8%	78.2	7.9%	160.7	16.3%	984.7
1997	244.0	22.6%	239.0	22.2%	41.3	3.8%	77.6	7.2%	195.5	18.1%	26.8	2.5%	82.3	7.6%	171.6	15.9%	1078.1
1998	248.7	21.8%	273.0	24.0%	47.1	4.1%	83.2	7.3%	211.3	18.6%	28.1	2.5%	84.3	7.4%	162.8	14.3%	1138.4
1999	267.9	22.4%	288.5	24.2%	52.5	4.4%	102.2	8.6%	197.4	16.5%	28.3	2.4%	83.9	7.0%	173.8	14.6%	1194.5
2000	292.6	23.0%	301.7	23.7%	53.9	4.2%	98.7	7.8%	214.9	16.9%	28.9	2.3%	82.4	6.5%	199.9	15.7%	1273.0
2001	306.5	22.2%	342.5	24.8%	58.0	4.2%	116.0	8.4%	227.3	16.5%	30.3	2.2%	81.9	5.9%	217.9	15.8%	1380.4
2002	315.3	21.3%	351.9	23.8%	57.7	3.9%	127.1	8.6%	253.5	17.1%	43.9	3.0%	94.6	6.4%	235.5	15.9%	1479.6
2003	353.0	22.9%	345.5	22.4%	57.8	3.8%	121.4	7.9%	239.1	15.5%	55.9	3.6%	114.0	7.4%	253.9	16.5%	1540.6
2004	328.8	21.2%	353.9	22.8%	55.4	3.6%	119.0	7.7%	233.4	15.0%	61.8	4.0%	130.1	8.4%	271.3	17.5%	1553.6
2005	356.6	20.7%	400.1	23.2%	62.0	3.6%	131.1	7.6%	269.7	15.7%	74.2	4.3%	131.6	7.6%	296.4	17.2%	1721.6
2006	400.0	20.5%	440.4	22.6%	71.4	3.7%	187.9	9.7%	272.9	14.0%	82.0	4.2%	134.3	6.9%	358.0	18.4%	1946.9
2007	451.9	21.9%	460.8	22.3%	91.6	4.4%	186.1	9.0%	261.6	12.7%	86.4	4.2%	135.2	6.6%	388.9	18.9%	2062.5
2008	464.6	22.5%	420.7	20.4%	87.5	4.2%	177.0	8.6%	270.1	13.1%	73.8	3.6%	142.2	6.9%	426.4	20.7%	2062.3
2009	448.3	21.4%	437.5	20.9%	101.6	4.9%	201.0	9.6%	231.5	11.1%	64.8	3.1%	145.4	7.0%	400.1	19.1%	2090.1
2010	509.1	20.5%	472.3	19.0%	181.0	7.3%	459.1	18.5%	237.9	9.6%	69.6	2.8%	145.4	5.9%	407.1	16.4%	2481.5
2011	543.4	20.8%	548.4	21.0%	169.2	6.5%	460.4	17.7%	280.3	10.8%	69.3	2.7%	139.6	5.4%	396.3	15.2%	2606.9
2012	693.0	23.1%	595.9	19.9%	206.5	6.9%	476.1	15.9%	333.4	11.1%	104.4	3.5%	207.8	6.9%	377.2	12.6%	2994.2
2013	812.2	26.5%	571.6	18.7%	223.5	7.3%	459.6	15.0%	298.9	9.8%	147.0	4.8%	179.7	5.9%	370.0	12.1%	3062.6
2014	889.0	29.3%	507.5	16.8%	159.9	5.3%	433.1	14.3%	311.2	10.3%	178.2	5.9%	178.5	5.9%	372.0	12.3%	3029.3
2015	1186.6	34.7%	587.0	17.2%	211.7	6.2%	425.1	12.4%	273.6	8.0%	186.1	5.4%	194.6	5.7%	356.1	10.4%	3420.7
2016	1141.3	34.2%	567.8	17.0%	212.4	6.4%	470.3	14.1%	265.5	7.9%	176.4	5.3%	200.4	6.0%	307.6	9.2%	3341.7
2017	1243.5	34.8%	584.6	16.3%	234.3	6.5%	470.9	13.2%	293.3	8.2%	244.0	6.8%	199.1	5.6%	308.6	8.6%	3578.4
2018	1288.7	35.0%	580.4	15.7%	239.5	6.5%	479.8	13.0%	260.4	7.1%	244.5	6.6%	304.3	8.3%	289.2	7.8%	3686.8
2019	1425.4	37.7%	579.1	15.3%	238.7	6.3%	479.6	12.7%	259.2	6.9%	250.4	6.6%	278.3	7.4%	272.4	7.2%	3783.2
2020	1435.8	37.4%	587.3	15.3%	264.0	6.9%	479.4	12.5%	311.0	8.1%	258.7	6.7%	269.2	7.0%	229.4	6.0%	3834.8
2021	1482.1	36.6%	617.3	15.2%	284.6	7.0%	521.9	12.9%	312.7	7.7%	259.8	6.4%	269.4	6.6%	304.4	7.5%	4052.2
2022	1700.7	39.5%	642.9	14.9%	292.6	6.8%	528.5	12.3%	314.2	7.3%	261.8	6.1%	269.7	6.3%	300.1	7.0%	4310.5
2023	1887.2	40.2%	750.7	16.0%	301.0	6.4%	532.4	11.3%	315.6	6.7%	344.7	7.3%	269.9	5.7%	294.5	6.3%	4695.9
2024	2031.0	41.3%	783.8	15.9%	310.2	6.3%	536.2	10.9%	316.9	6.4%	379.1	7.7%	270.1	5.5%	291.4	5.9%	4918.7
2025	2126.4	42.2%	795.7	15.8%	320.7	6.4%	540.1	10.7%	318.1	6.3%	383.1	7.6%	270.3	5.4%	288.8	5.7%	5043.3
2026	2210.3	42.7%	807.3	15.6%	355.1	6.9%	543.6	10.5%	319.4	6.2%	384.1	7.4%	270.4	5.2%	283.3	5.5%	5173.6
2027	2300.0	43.5%	819.6	15.5%	363.3	6.9%	547.1	10.4%	320.7	6.1%	385.1	7.3%	270.6	5.1%	277.7	5.3%	5284.2
2028	2403.6	44.4%	832.3	15.4%	373.0	6.9%	550.9	10.2%	322.0	6.0%	386.5	7.1%	270.8	5.0%	270.7	5.0%	5409.7
2029	2456.4	44.8%	845.3	15.4%	381.7	7.0%	554.6	10.1%	323.2	5.9%	387.9	7.1%	271.0	4.9%	264.1	4.8%	5484.1
2030	2516.8	45.2%	858.6	15.4%	390.6	7.0%	558.3	10.0%	324.4	5.8%	389.3	7.0%	271.2	4.9%	255.3	4.6%	5564.5

SD Summer Demand Increases/Decreases

	<u>MW Difference</u>	<u>Inc/Dec %</u>
1995		
1996	-15.7	-6.7%
1997	18.8	8.5%
1998	34.0	14.2%
1999	15.5	5.7%
2000	13.2	4.6%
2001	40.8	13.5%
2002	9.4	2.7%
2003	-6.4	-1.8%
2004	8.4	2.4%
2005	46.2	13.1%
2006	40.3	10.1%
2007	20.4	4.6%
2008	-40.1	-8.7%
2009	16.8	4.0%
2010	34.8	8.0%
2011	76.1	16.1%
2012	47.5	8.7%
2013	-24.3	-4.1%
2014	-64.1	-11.2%
2015	79.5	15.7%
2016	-19.2	-3.3%
2017	16.8	3.0%
2018	-4.2	-0.7%
2019	-1.3	-0.2%
2020	8.2	1.4%
2021	30.0	5.1%
2022	25.6	4.1%
2023	107.8	16.8%
2024	33.1	4.4%
2025	12.0	1.5%
2026	11.5	1.4%
2027	12.3	1.5%
2028	12.7	1.5%
2029	13.0	1.6%
2030	13.3	1.6%

Basin Electric Member Loads by State

Note: Historical 1995-2019 and Forecasted 2020-2030

WINTER Peak Demand (MW)

	<u>ND</u>	<u>%</u>	<u>SD</u>	<u>%</u>	<u>MN</u>	<u>%</u>	<u>IA</u>	<u>%</u>	<u>NE</u>	<u>%</u>	<u>MT</u>	<u>%</u>	<u>CO</u>	<u>%</u>	<u>WY</u>	<u>%</u>	<u>BEPC TOTAL</u>
95/96	325.8	29.4%	309.0	27.9%	51.2	4.6%	88.9	8.0%	33.3	3.0%	31.6	2.9%	77.4	7.0%	189.9	17.2%	1107.0
96/97	334.5	29.3%	302.7	26.6%	47.9	4.2%	98.5	8.6%	35.7	3.1%	30.2	2.6%	79.8	7.0%	210.7	18.5%	1140.0
97/98	324.0	30.5%	263.3	24.8%	42.2	4.0%	77.5	7.3%	35.8	3.4%	29.3	2.8%	83.5	7.9%	207.9	19.6%	1063.4
98/99	331.3	29.2%	291.8	25.8%	47.8	4.2%	109.2	9.6%	37.0	3.3%	30.4	2.7%	84.3	7.4%	201.2	17.8%	1133.1
99/00	312.3	28.8%	269.3	24.8%	47.9	4.4%	102.3	9.4%	31.0	2.9%	28.0	2.6%	83.9	7.7%	209.0	19.3%	1083.8
00/01	342.1	27.4%	328.0	26.2%	57.4	4.6%	124.6	10.0%	42.5	3.4%	33.6	2.7%	83.2	6.7%	238.7	19.1%	1250.0
01/02	312.5	26.2%	300.4	25.2%	47.1	3.9%	108.4	9.1%	37.4	3.1%	34.9	2.9%	82.4	6.9%	270.3	22.6%	1193.4
02/03	376.7	27.7%	342.3	25.1%	54.0	4.0%	127.8	9.4%	35.7	2.6%	55.0	4.0%	103.1	7.6%	267.5	19.6%	1362.2
03/04	416.9	27.5%	393.8	25.9%	59.7	3.9%	134.2	8.8%	35.6	2.3%	62.4	4.1%	122.5	8.1%	293.2	19.3%	1518.4
04/05	437.9	27.4%	416.6	26.1%	62.7	3.9%	138.7	8.7%	43.5	2.7%	64.0	4.0%	121.2	7.6%	314.4	19.7%	1598.9
05/06	462.6	26.8%	414.7	24.0%	65.8	3.8%	186.6	10.8%	48.4	2.8%	72.2	4.2%	120.8	7.0%	353.4	20.5%	1724.6
06/07	494.6	25.4%	484.4	24.9%	111.0	5.7%	211.5	10.9%	50.0	2.6%	70.6	3.6%	121.8	6.3%	402.6	20.7%	1946.4
07/08	562.7	26.3%	524.3	24.5%	113.3	5.3%	231.7	10.8%	50.0	2.3%	80.7	3.8%	123.5	5.8%	454.0	21.2%	2140.2
08/09	622.7	25.7%	633.9	26.2%	133.3	5.5%	276.1	11.4%	56.5	2.3%	78.3	3.2%	137.8	5.7%	481.0	19.9%	2419.5
09/10	627.3	23.5%	618.6	23.2%	169.0	6.3%	517.7	19.4%	58.8	2.2%	73.6	2.8%	137.2	5.1%	468.4	17.5%	2670.6
10/11	678.7	25.2%	621.6	23.0%	197.7	7.3%	468.3	17.4%	54.5	2.0%	55.5	2.1%	144.9	5.4%	476.7	17.7%	2697.7
11/12	834.7	29.5%	599.9	21.2%	180.5	6.4%	442.5	15.6%	49.3	1.7%	91.5	3.2%	179.9	6.4%	449.7	15.9%	2828.1
12/13	972.6	32.3%	626.7	20.8%	193.8	6.4%	457.0	15.2%	52.4	1.7%	100.6	3.3%	182.8	6.1%	428.3	14.2%	3014.2
13/14	1134.3	31.9%	777.8	21.9%	252.6	7.1%	523.1	14.7%	54.2	1.5%	183.1	5.1%	199.9	5.6%	433.9	12.2%	3558.9
14/15	1358.8	37.2%	699.7	19.2%	232.9	6.4%	495.7	13.6%	56.6	1.6%	190.9	5.2%	184.4	5.1%	432.3	11.8%	3651.3
15/16	1394.3	39.9%	634.4	18.2%	228.5	6.5%	466.0	13.3%	53.6	1.5%	160.5	4.6%	184.2	5.3%	369.2	10.6%	3490.7
16/17	1441.3	38.7%	694.5	18.7%	248.8	6.7%	476.5	12.8%	52.9	1.4%	241.9	6.5%	184.3	5.0%	380.0	10.2%	3720.1
17/18	1545.5	39.3%	718.0	18.3%	281.3	7.2%	493.2	12.6%	56.7	1.4%	244.7	6.2%	191.3	4.9%	354.0	9.0%	3929.3
18/19	1717.1	42.3%	740.9	18.2%	288.9	7.1%	516.8	12.7%	48.2	1.2%	236.0	5.8%	193.9	4.8%	318.2	7.8%	4060.0
19/20	1956.1	45.0%	721.8	16.6%	283.4	6.5%	535.2	12.3%	56.6	1.3%	265.7	6.1%	198.5	4.6%	333.7	7.7%	4350.9
20/21	1885.5	44.2%	733.4	17.2%	291.9	6.8%	522.2	12.2%	55.2	1.3%	273.8	6.4%	194.7	4.6%	313.0	7.3%	4269.7
21/22	1968.5	44.2%	748.9	16.8%	310.8	7.0%	547.1	12.3%	57.6	1.3%	267.3	6.0%	198.8	4.5%	353.2	7.9%	4452.1
22/23	2182.8	45.3%	828.7	17.2%	318.4	6.6%	554.9	11.5%	58.1	1.2%	327.5	6.8%	198.9	4.1%	346.8	7.2%	4816.1
23/24	2331.3	46.1%	872.3	17.3%	318.5	6.3%	559.3	11.1%	58.7	1.2%	372.7	7.4%	199.1	3.9%	343.2	6.8%	5055.2
24/25	2514.0	47.4%	907.5	17.1%	327.2	6.2%	564.0	10.6%	59.2	1.1%	388.5	7.3%	199.3	3.8%	340.2	6.4%	5300.1
25/26	2649.6	48.4%	920.4	16.8%	352.2	6.5%	567.6	10.4%	59.8	1.1%	391.9	7.2%	199.4	3.6%	333.9	6.1%	5479.9
26/27	2755.3	49.1%	934.3	16.7%	364.2	6.5%	572.4	10.2%	60.3	1.1%	392.9	7.0%	199.6	3.6%	327.3	5.8%	5606.4
27/28	2865.1	49.9%	948.6	16.5%	372.3	6.5%	576.8	10.1%	60.9	1.1%	394.3	6.9%	199.8	3.5%	318.9	5.6%	5736.7
28/29	2935.5	50.4%	963.4	16.5%	379.7	6.5%	581.2	10.0%	61.5	1.1%	395.8	6.8%	200.0	3.4%	310.9	5.3%	5828.0
29/30	3009.1	50.8%	978.3	16.5%	387.3	6.5%	585.1	9.9%	62.1	1.0%	397.3	6.7%	200.2	3.4%	299.7	5.1%	5919.1

SD Winter Demand Increases/Decreases

	<u>MW Difference</u>	<u>Inc/Dec %</u>
95/96		
96/97	-6.3	-2.0%
97/98	-39.4	-13.0%
98/99	28.5	10.8%
99/00	-22.5	-7.7%
00/01	58.7	21.8%
01/02	-27.6	-8.4%
02/03	41.9	13.9%
03/04	51.5	15.0%
04/05	22.8	5.8%
05/06	-1.9	-0.5%
06/07	69.7	16.8%
07/08	39.9	8.2%
08/09	109.6	20.9%
09/10	-15.3	-2.4%
10/11	3.0	0.5%
11/12	-21.7	-3.5%
12/13	26.8	4.5%
13/14	151.1	24.1%
14/15	-78.1	-10.0%
15/16	-65.3	-9.3%
16/17	60.1	9.5%
17/18	23.5	3.4%
18/19	22.9	3.2%
19/20	-19.1	-2.6%
20/21	11.7	1.6%
21/22	15.5	2.1%
22/23	79.8	10.7%
23/24	43.6	5.3%
24/25	35.2	4.0%
25/26	12.9	1.4%
26/27	13.9	1.5%
27/28	14.3	1.5%
28/29	14.8	1.6%
29/30	15.0	1.6%

EXHIBIT 2 - EASTERN SYSTEM SUMMER/WINTER LOAD RESOURCES

SPP SUMMER SEASON				
	Members' Load Projections*	Contracted Sales to Others	Losses & Diversity	Total Responsibility
2020	2,780	176	468	3,424
2021	2,892	137	488	3,517
2022	3,134	138	528	3,800
2023	3,477	137	584	4,198
2024	3,671	138	617	4,425
2025	3,782	137	635	4,554
2026	3,879	138	651	4,667
2027	3,982	137	668	4,786
2028	4,099	138	687	4,924
2029	4,168	137	698	5,003
2030	4,244	138	711	5,092

SPP WINTER SEASON				
	Members' Load Projections*	Contracted Sales to Others	Losses & Diversity	Total Responsibility
2020/21	3,164	176	504	3,844
2021/22	3,282	138	525	3,945
2022/23	3,617	138	580	4,334
2023/24	3,835	138	616	4,588
2024/25	4,064	138	653	4,855
2025/26	4,216	138	678	5,032
2026/27	4,339	138	699	5,175
2027/28	4,466	138	720	5,323
2028/29	4,555	138	734	5,427
2029/30	4,647	138	749	5,534

RMRG SUMMER SEASON				
	Members' Load Projections*	Contracted Sales to Others	Losses & Diversity	Total Responsibility
2020	498	242	69	809
2021	573	290	70	933
2022	569	290	70	929
2023	563	290	70	923
2024	560	290	70	920
2025	558	290	70	918
2026	553	290	70	912
2027	548	290	69	907
2028	541	290	69	900
2029	534	290	69	894
2030	526	290	69	885

RMRG WINTER SEASON				
	Members' Load Projections*	Contracted Sales to Others	Losses & Diversity	Total Responsibility
2020/21	557	242	68	867
2021/22	591	290	69	950
2022/23	585	290	69	944
2023/24	581	290	69	940
2024/25	579	290	69	937
2025/26	573	290	69	931
2026/27	567	290	68	925
2027/28	559	290	68	917
2028/29	551	290	68	909
2029/30	540	290	68	898

MISO Z1 SUMMER SEASON				
	Members' Load Projections*	Contracted Sales to Others	Losses & Diversity	Total Responsibility
2020	220	0	23	242
2021	239	0	25	264
2022	247	0	26	273
2023	254	0	27	282
2024	263	0	28	291
2025	272	0	29	301
2026	286	0	31	317
2027	293	0	32	325
2028	302	0	33	335
2029	309	0	34	343
2030	317	0	34	351

MISO Z1 WINTER SEASON				
	Members' Load Projections*	Contracted Sales to Others	Losses & Diversity	Total Responsibility
2020/21	287	0	30	317
2021/22	294	0	31	325
2022/23	301	0	32	333
2023/24	304	0	32	336
2024/25	312	0	34	346
2025/26	325	0	35	360
2026/27	331	0	36	368
2027/28	339	0	37	376
2028/29	346	0	38	384
2029/30	353	0	38	391

* Load Projections include diversity adjustments to account for load levels at time of each assessment area's coincident peak

2020 Resources

Summer Season																									
SPP																				RMRG			MISO Z1		
LOS	LRS East	AVS ¹	Neal4	WS ²	Wisdom1	Wisdom2	SMS	GGG	CGS	DCS	PGS	LCS	Madison	Webster City	Estherville	Spencer	Wind	Waste Heat	Solar	Purchases	LRS West	DFS	WY Dist Gen	Purchases	
2020	660.0	92.0	900.0	104.0	72.0	36.3	65.0	99.6	172.2	85.5	297.0	235.3	206.2	10.0	21.0	9.3	10.0	230.7	24.5	-	223.5	627.0	362.3	45.0	300.0
2021	660.0	92.0	900.0	104.0	-	36.3	65.0	99.6	172.2	85.5	297.0	235.3	206.2	10.0	21.0	9.3	10.0	260.7	24.5	-	381.3	627.0	362.3	45.0	350.0
2022	660.0	92.0	900.0	104.0	-	36.3	65.0	99.6	172.2	85.5	297.0	235.3	246.2	10.0	21.0	9.3	10.0	259.6	24.5	-	430.3	627.0	362.3	45.0	325.0
2023	660.0	92.0	900.0	104.0	-	36.3	65.0	99.6	172.2	85.5	297.0	235.3	246.2	10.0	21.0	9.3	10.0	280.8	24.5	62.5	429.5	627.0	362.3	45.0	325.0
2024	660.0	92.0	900.0	104.0	-	36.3	65.0	99.6	172.2	85.5	297.0	235.3	246.2	10.0	21.0	9.3	10.0	280.8	24.5	137.5	277.7	627.0	362.3	45.0	325.0
2025	660.0	92.0	900.0	104.0	-	36.3	65.0	99.6	172.2	85.5	297.0	235.3	246.2	10.0	21.0	9.3	10.0	280.8	24.5	137.5	276.7	627.0	362.3	45.0	255.0
2026	660.0	92.0	900.0	104.0	-	36.3	65.0	99.6	172.2	85.5	297.0	235.3	246.2	10.0	21.0	9.3	10.0	280.8	24.5	137.5	275.9	627.0	362.3	45.0	255.0
2027	660.0	92.0	900.0	104.0	-	36.3	65.0	99.6	172.2	85.5	297.0	235.3	246.2	10.0	21.0	9.3	10.0	280.8	24.5	137.5	275.2	627.0	362.3	45.0	255.0
2028	660.0	92.0	900.0	104.0	-	36.3	65.0	99.6	172.2	85.5	297.0	235.3	246.2	10.0	21.0	9.3	10.0	280.8	24.5	137.5	274.5	627.0	362.3	45.0	75.0
2029	660.0	92.0	900.0	104.0	-	36.3	65.0	99.6	172.2	85.5	297.0	235.3	246.2	10.0	21.0	9.3	10.0	271.3	24.5	137.5	253.9	627.0	362.3	45.0	75.0
2030	660.0	92.0	900.0	104.0	-	36.3	65.0	99.6	172.2	85.5	297.0	235.3	246.2	10.0	21.0	9.3	10.0	271.0	24.5	137.5	253.2	627.0	362.3	45.0	75.0

Winter Season																									
SPP																				RMRG			MISO Z1		
LOS	LRS East	AVS ¹	Neal4	WS ²	Wisdom1	Wisdom2	SMS	GGG	CGS	DCS	PGS	LCS	Madison	Webster City	Estherville	Spencer	Wind	Waste Heat	Solar	Purchases	LRS West	DFS	WY Dist Gen	Purchases	
2020/21	660.0	92.0	900.0	104.0	72.1	37.9	75.0	120.0	190.0	95.0	297.7	240.5	225.0	10.0	25.6	9.3	10.0	714.2	27.1	-	255.3	627.0	376.2	54.0	300.0
2021/22	660.0	92.0	900.0	104.0	-	37.9	75.0	120.0	190.0	95.0	297.7	240.5	270.0	10.0	25.6	9.3	10.0	714.2	27.1	-	380.3	627.0	376.2	54.0	350.0
2022/23	660.0	92.0	900.0	104.0	-	37.9	75.0	120.0	190.0	95.0	297.7	240.5	270.0	10.0	25.6	9.3	10.0	754.6	27.1	12.5	429.5	627.0	376.2	54.0	325.0
2023/24	660.0	92.0	900.0	104.0	-	37.9	75.0	120.0	190.0	95.0	297.7	240.5	270.0	10.0	25.6	9.3	10.0	754.8	27.1	27.5	428.7	627.0	376.2	54.0	325.0
2024/25	660.0	92.0	900.0	104.0	-	37.9	75.0	120.0	190.0	95.0	297.7	240.5	270.0	10.0	25.6	9.3	10.0	754.8	27.1	27.5	276.7	627.0	376.2	54.0	325.0
2025/26	660.0	92.0	900.0	104.0	-	37.9	75.0	120.0	190.0	95.0	297.7	240.5	270.0	10.0	25.6	9.3	10.0	754.8	27.1	27.5	275.9	627.0	376.2	54.0	255.0
2026/27	660.0	92.0	900.0	104.0	-	37.9	75.0	120.0	190.0	95.0	297.7	240.5	270.0	10.0	25.6	9.3	10.0	754.8	27.1	27.5	275.2	627.0	376.2	54.0	255.0
2027/28	660.0	92.0	900.0	104.0	-	37.9	75.0	120.0	190.0	95.0	297.7	240.5	270.0	10.0	25.6	9.3	10.0	754.8	27.1	27.5	274.5	627.0	376.2	54.0	255.0
2028/29	660.0	92.0	900.0	104.0	-	37.9	75.0	120.0	190.0	95.0	297.7	240.5	270.0	10.0	25.6	9.3	10.0	717.8	27.1	27.5	253.9	627.0	376.2	54.0	75.0
2029/30	660.0	92.0	900.0	104.0	-	37.9	75.0	120.0	190.0	95.0	297.7	240.5	270.0	10.0	25.6	9.3	10.0	715.7	27.1	27.5	253.2	627.0	376.2	54.0	75.0

Footnotes:

- 1) BEPC owns 24.166% of AVS unit 2 and leases the remaining portion from other owners. The term of the lease, currently stated to end on 12/30/2020, is being extended by 10 years through 2030.
- 2) WS 3 & 4 were pseudo tied into SPP for the 2020/2021 planning year and Basin Electric plans to return them back to MISO Local Resource Zone 3 thereafter