

June 4, 2020

VIA EMAIL

Steve Kahl, Executive Secretary
North Dakota Public Service Commission
600 E. Boulevard, Dept. 408
Bismarck, ND 58505

RE: MRES Ten-Year Plan

Dear Mr. Kahl:

Missouri River Energy Services (MRES) for itself and as agent for Western Minnesota Municipal Power Agency (Western Minnesota) submits this Ten-Year Plan, pursuant to NDCC 49-22-04. This report was prepared in accordance with the North Dakota Public Service Commission's Guidelines for compliance with the requirements of NDCC 49-22-04.

If you have any questions regarding this Ten-Year Plan, please contact me at 605-338-4042 or tasha.altmann@mrenergy.com.

Sincerely,

Tasha Altmann

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Certified Paralegal, Legal



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Missouri River Energy Services North Dakota Ten-Year Plan 2020

Submitted to the
North Dakota Public Service Commission

June 4, 2020

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INTRODUCTION

Missouri Basin Municipal Power Agency, doing business as Missouri River Energy Services (MRES), is a not-for-profit, joint-action agency that provides power, energy, transmission, and related services to its 61 Member communities in Iowa, Minnesota, North Dakota, and South Dakota. All 61 of the MRES Members have long-term power sales agreements with MRES and also are entitled to receive a wide range of energy-related services. MRES is governed by a 13-member Board of Directors elected by and from its Member communities.

Western Minnesota Municipal Power Agency (Western Minnesota) owns fossil-fuel electric generating facilities in Iowa, South Dakota and Wyoming, hydropower generation in Iowa, and wind generation in Minnesota. Pursuant to a long-term contract between Western Minnesota and MRES, MRES has exclusive rights to the output of these facilities to meet its power supply obligations to its Members.

MRES for itself and as agent for Western Minnesota submits this Ten-Year Plan, pursuant to NDCC 49-22-04. MRES prepared this Ten-Year Plan in accordance with the North Dakota Public Service Commission's (Commission) Guidelines for compliance with the requirements of NDCC 49-22-04.

SECTION A: Existing Energy Conversion Facilities

MRES does not own or operate any energy conversion facilities in North Dakota. Currently, the largest MRES generation resources are a 282 MW share of Laramie River Station (LRS), a coal plant located near Wheatland, Wyoming, and the three-unit Exira Station located near Atlantic, Iowa, with a total rating of 140 MW. MRES energy conversion facilities also include the Watertown Power Plant (WPP), an oil-fired combustion turbine located in Watertown, South Dakota, with a summer rating of 45.9 MW. Lastly, MRES operates and purchases output from nine wind turbines located near Marshall, Minnesota, and four wind turbines located just west of Worthington, Minnesota. The combined rated output of the units totals 22.6 MW.

MRES has no plans to retire any of its existing energy conversion facilities within the next ten years.

SECTION B: Energy Conversion Facilities Under Construction

MRES does not have any energy conversion facilities under construction in North Dakota. MRES is currently working on development of the Red Rock Hydroelectric Project (RRHP), an electric generating plant at the existing Red Rock Reservoir and Dam on the Des Moines River in Iowa. The dam is owned by the federal government and operated by the U.S. Army Corps of Engineers. The project is owned by Western Minnesota and will be operated by MRES. When completed later in 2020, RRHP will be capable of generating 36 MW of base load electricity under normal spring and summer water levels, and up to 55 MW at times of

high reservoir levels. RRHP is an attractive option for MRES because it will generate clean, renewable, and reliable baseload energy. Hydropower is the only demonstrated renewable resource that is able to add much-needed inertia to the electric grid as a baseload resource. This investment in hydropower is the first in this region in decades, and further diversifies the MRES generation portfolio with even more capacity from another non-emitting resource. In addition, RRHP also adds to the ability of MRES to comply with state renewable energy mandates and goals

SECTION C: Proposed Energy Conversion Facilities on Which Construction is Intended Within the Ensuing Five Years

MRES does not propose to start construction on any energy conversion facilities in North Dakota within the ensuing five years.

SECTION D: Proposed Energy Conversion Facilities During the Next Ten-Year Time Period

MRES has no proposed energy conversion facilities as defined by Chapter 49-22-03 of the North Dakota Century Code.

SECTION E: Existing Transmission Facilities (Electric)

MRES is a joint owner in the CapX2020 Fargo-Monticello transmission line project.¹ The Fargo-Monticello project is a 345 kV transmission line between the expanded Monticello substation near Monticello, Minnesota, the new Quarry Substation northwest of St. Cloud, Minnesota, the expanded Alexandria Substation near Alexandria, Minnesota, and the new Bison Substation west of Fargo, North Dakota. The facilities were fully energized in 2015. About 34.9 miles of the Fargo-St. Cloud project is in North Dakota.

Additional information can be found at www.capx2020.com.

SECTION F: Existing Transmission Facilities (Pipeline)

Not applicable to MRES.

SECTION G: Proposed Transmission Facilities on Which Construction is Intended Within the Ensuing Five Years (Electric)

None known at this time.

¹ MRES held rights to as much as 11% of the Fargo Project. MRES chose to assign its rights to Western Minnesota Municipal Power Agency (Western Minnesota). While Western Minnesota is the owner of the 11% share of the CapX Fargo project, it will continue to be associated with MRES and the overall utility operations are unchanged.

SECTION H: Proposed Transmission Facilities on Which Construction is Intended Within the Ensuing Five Years (Pipeline)

Not applicable to MRES.

SECTION I: Proposed Transmission Facilities During the Next Ten-Year Period (Electric and Pipeline)

None known at this time.

SECTION J: Regional Coordination

MRES closely coordinates its transmission planning with other organizations to ensure cost-effectiveness and electric-service reliability in the region. MRES is a member of and participates directly in several regional entities:

- The Midcontinent Independent System Operator (MISO), which administers a tariff providing for regional transmission services, energy and ancillary services markets, and resource adequacy requirements. MISO also has responsibilities for regional transmission planning, coordination, and expansion. MRES is a transmission owning member and market participant. MISO conducts Sub-regional Planning Meetings (SPMs) three times each year to provide a forum for coordination and discussion of transmission concerns and proposed projects among utilities and other interested stakeholders. MISO's transmission expansion plans (MTEP-2019 being the most-recent approved plan) are also available at their website "Transmission Expansion Planning (MTEP)" link. Further information about MISO is available on-line at <https://www.misoenergy.org/planning/planning/mtep-2019-/>
- The Southwest Power Pool (SPP), which administers a tariff providing for regional transmission services, energy and ancillary services markets, and resource adequacy requirements. SPP also has responsibilities for regional transmission planning, coordination, and expansion. MRES became a transmission owner in SPP on October 1, 2015. MRES participates in the SPP Integrated Transmission Planning process and other planning processes. Further information about the SPP Reliability Planning is available at <https://spp.org/engineering/transmission-planning/>.
- The Midwest Reliability Organization (MRO), a non-profit organization of regional utilities with responsibilities to ensure compliance with mandatory reliability standards by entities who own, operate, or use the interconnected, international Bulk Power System, conduct assessments of the grid's ability to meet electricity demand in the region, and analyze regional system events. Further information about MRO is available on-line at www.midwestreliability.org and about NERC at www.nerc.com.
- The Minnesota Transmission Owners (MTO) group, a consortium of 16 sponsoring utilities and three participating government agencies, fulfills the utilities' statutory

obligations for transmission planning in the state of Minnesota. These obligations include the development of the Minnesota Biennial Transmission Plan, as well as studies associated with meeting the Minnesota Renewable Energy Standard (RES) requirements. Further information about the MTO group is available at www.minnelectrans.com.

- CapX2020, a joint initiative of eleven regional transmission utilities to develop a long-range vision and transmission expansion projects to ensure that load in the region can be served reliably, provide outlet capability for renewable and other generation additions and support regional reliability of the transmission system. MRES continues to participate in this group with the intent to support the region's needs.

MRES has no other recommended measures for regional coordination beyond the activities described here in Section J.

SECTION K: Environmental Information

a. Impact of Changing Environmental Regulations

Environmental sensitivity is a basic component of the MRES mission, and compliance with statutory and regulatory requirements applicable to generation resources and future transmission facilities is a priority. MRES constantly monitors state and federal environmental matters and developments, particularly those in the areas of air quality and emissions from generating resources, to assess potential impacts to MRES operations and ensure compliance with applicable laws and regulations. MRES takes a comprehensive approach to monitoring statutes and regulations applicable to the various generating facilities within its power supply portfolio, as well as proposed laws, regulations, and judicial decisions that may alter the regulatory regime for existing resources, potential generation portfolio additions, and transmission issues. To ensure comprehensive coverage of issues, MRES actively collaborates with several engineering and legal professional consultants, as well as state and national industry associations. In addition, MRES manages operations of its resources to ensure that the generating plants are in compliance with current and known future requirements.

b. General Environmental Matters

Air, water, and land quality are all of keen interest to MRES, and the staff manages a wide range of environmental issues regarding the generation and delivery of electricity. MRES regularly monitors air quality topics including those governed by the Clean Air Act (CAA) to reduce carbon dioxide (CO₂) emissions from existing and new power plants, Regional Haze, the rules and revisions to National Ambient Air Quality Standards (NAAQS), and other such matters.

Equally important, MRES also actively follows developments relating to surface and ground water, including those related to defining the Waters of the United States governed by the Clear Water Act, coal combustion residual (CCR) (also known as coal ash) regulations, and

other substantive environmental issues. MRES closely monitors litigation challenging any of these measures, as well as the remands and subsequent rulemakings (if any) that might result.

As a transmission-owning member of MISO and SPP, MRES also participates in regulatory matters governed by the Federal Energy Regulatory Commission (FERC), the North American Electric Reliability Corporation (NERC), the Midwest Reliability Organization, Electricity Information Sharing & Analysis Center, and other national and regional entities. Actions of these organizations could potentially directly or indirectly impact environmental issues, and MRES utilizes both staff and consultants to monitor and participate in these organizations.

c. Regional Haze Litigation

The Regional Haze provisions of the CAA require facilities that began construction between 1962 and 1977, to identify and apply Best Available Retrofit Technology (BART) to control sulfur dioxide and NO_x if their emission rates for those pollutants exceed a certain designated level. Laramie River Station (LRS), the only coal-fired generating resource in the MRES portfolio, has installed over-fire air technology, and low-NO_x burners for all three units to address these BART requirements.

The EPA signed a final settlement on April 20, 2017, in a lawsuit brought by the LRS owners and the State of Wyoming against the EPA to settle the pending appeal over regional haze issues at LRS. The agreement calls for the installation of Selective Non-Catalytic Reduction (SNCR) equipment on Units 2 and 3 by December 2018, and the installation of Selective Catalytic Reduction (SCR) equipment on Unit 1 of the plant by May 2019. This work has now been completed. The settlement is now final and the lawsuit is concluded.

d. Carbon Dioxide regulations

On June 19, 2019, the EPA issued a final rule known as the Affordable Clean Energy Rule (ACE Rule) that establishes emission guidelines for states to use when developing plans to limit CO₂ emissions at existing coal-fired power plants. The ACE Rule is being litigated before the D.C. Circuit Court of Appeals. The ultimate nature of CO₂ regulation for the power industry is unknown, and this issue is likely to remain unsettled for a number of years. Thus, it is not possible to predict the estimated financial or operational impact of any future CO₂ regulations.

SECTION L: Projected Demand for Service

Projected Demand.

MRES forecasted peak demand and energy requirements are provided in Exhibit 1.

Manner and Extent of Meeting Projected Demand.

Over the last several years, MRES has made great progress in addressing its capacity shortfall in the MISO market. With the upcoming completion of the Red Rock Hydroelectric Project, and the addition of several long-term Purchase Power Agreements, MRES is well less than 100 MW capacity deficit through 2030. MRES will continue to seek opportunities to enter agreements with potential capacity suppliers, and investigate ownership of new peaking capacity projects to further reduce the capacity deficit.

Another important task in the short term is to continue assisting members with implementing their Demand-Side Management (DSM) and conservation activities. For the Minnesota Members, this means maintaining concerted activities to pursue DSM measures to meet the Minnesota Conservation Improvement Program requirements. While Minnesota has this additional requirement, MRES offers and promotes all of the same programs to each of its member cities, regardless of which state they are located in.

Wind, solar, or other renewable resources will continue to be obtained as needed to continue to enhance the clean energy portion of the MRES resource mix. These renewable additions will ensure that MRES will meet the goals established by the Board of Directors of achieving both the Minnesota RES as it expands and meeting any renewable energy objectives established in Iowa, North Dakota, and South Dakota.

Further, MRES will continue its efforts to participate in activities at both the federal and state levels to develop enforceable and workable regulations to reduce CO₂ in an effort to minimize the potential reliability and economic impacts of such emission regulations. MRES is committed to active and constructive engagement on this vital issue to ensure a reasonable approach to carbon reduction and environmental stewardship, while also balancing the needs of consumers for reliable and affordable electricity to power the clean energy future.

In summary, during the next ten years MRES has a need for additional renewable resources. This might include the purchase or lease of renewable generation or the purchase of Renewable Energy Certificates (RECs). Once that need is met, under both SPP and MISO Base Case conditions, additional needs may be met through further development of DSM and conservation activities.

Load Centers.

MRES is a member-based, joint-action agency that provides power supply, transmission, and related services to its Member municipalities in Iowa, Minnesota, North Dakota, and South Dakota. Fifty-eight of the sixty-one Members receive power supply under long-term Power Sale Agreements (S-1 Agreement).² All MRES S-1 Members purchase power supply from

² “S-1 Members” are the 58 Member cities of MRES that have each executed a Power Sale Agreement (S-1) under which MRES has the obligation to provide all the supplemental power needs of those Members, that is, each Member’s power supply needs in excess of their allocation of federal hydropower from WAPA.

MRES in an amount necessary to supplement the fixed amount of their respective allocations of federal hydroelectricity based on individual long-term contracts between each S-1 Member and the Western Area Power Administration (WAPA). The three remaining Members each have individual and distinct long-term power supply agreements with MRES,³ and only one of those Members also has an allocation of federal hydropower and a WAPA contract.

Twenty-eight Members, representing about half of the MRES energy sales, are located within MISO. The remaining 33 Members are located within SPP. In regard to the five MRES Members located in North Dakota, two are within SPP, and the remaining three are within MISO. Most MRES and WAPA generation resources are within SPP.

Fuel Sources and Transportation.

Laramie River Station burns Powder River Basin sub-bituminous coal that is transported to the plant by rail.

Exira Station has three combustion turbines used for peaking purposes. These units use natural gas as their primary fuel and No. 2 fuel oil as a back-up fuel. Natural gas is transported to the plant by pipeline and fuel oil is transported by truck.

The Watertown Power Plant is an electric power generating facility utilizing a simple cycle combustion turbine that uses No. 2 fuel oil. The fuel oil is transported to the plant by truck.

³ “Non S-1 Members” are the three member cities of Atlantic and Pella, Iowa, and Hutchinson, Minnesota. Atlantic has a WAPA contract and associated hydropower allocation.

Exhibit 1

Projected Capacity Needs and Current Resources

Separate Analysis for SPP vs MISO Areas

On October 1, 2015, WAPA and other transmission owners in the Upper Midwest transferred functional control of its transmission system to the SPP market area, including facilities that serve MRES Member load. As a result, all MRES loads and resources are located within either the MISO or the SPP markets.

MRES resource planning assumes the planning reserve requirement as defined by SPP for all MRES load in SPP, along with the MISO resource adequacy requirements for load in MISO. Only resources within the same regional transmission organization (RTO), or that have appropriate firm transmission in place from another RTO, may be used to meet the capacity requirements in an RTO. MRES has very limited transmission rights between the two RTO regions. In order to calculate the overall resource requirements, the capacity expansion modeling was divided into separate models for each RTO region.

As a first step, the total load forecasts for MRES Members, as well as the DSM potential results, and capacity resources were divided between the SPP and MISO regions.

The graphs included in this Exhibit 1 show the MRES capacity requirements for the 61 member cities listed previously in this document, split into the two areas. The capacity requirement is defined as peak demand, minus conservation activities, reductions for load diversity, and additions for losses and planning reserve requirements. The graphs also show the resources used to meet these requirements, with MRES having a capacity deficit in MISO and a capacity surplus in SPP.

MISO

The following purchase transactions are included in this Ten-Year Plan as increases in resource capacity in the MISO region:

- Purchase from UUMEG of 25 MW of capacity for the years 2020 through 2023, and 5 MW for the years 2024 through 2030.
- Purchase from RPU of 26 MW of capacity for the years 2022 through 2030.
- Purchase from Morgan Stanley of 100 MW of capacity for the years 2020 through 2021.
- Purchase from NextEra of 25 MW of capacity for the years 2020 through 2021, 90 MW for the years 2022 through 2025, and 115 MW for the years 2026 through 2030.
- Purchase from GRE (via Willmar, MN) of 20 MW of capacity for the years 2020 through 2026.

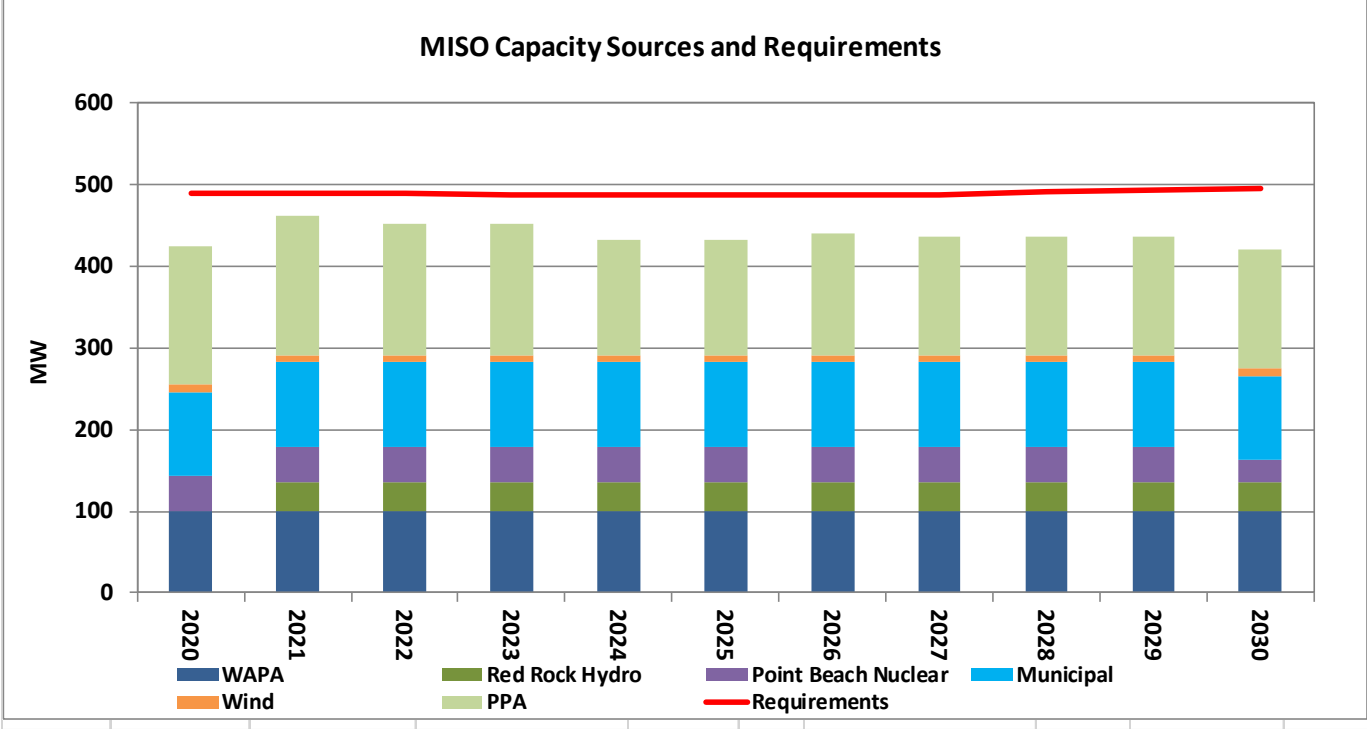
MRES continues to pursue opportunities to purchase firm capacity in MISO. To the extent MRES remains capacity deficit in each upcoming year, the deficiency must be purchased in the annual MISO capacity auction. The cost of such auction capacity could be very low, as it has been in recent years, or very high. While many contracts have been added in recent years, it is the intent of MRES to further investigate firm capacity purchases in MISO over time to eliminate most or all of its annual capacity auction purchases. Furthermore, the Red Rock

Hydroelectric Project will become available in 2021, which will reduce participation in the capacity auction.

In the short-term, exposure to the capacity auction presents a manageable cost risk and allows flexibility in the event of greater-than-anticipated reduction in demand. MRES actively manages its energy risk by evaluating whether to lock in additional bilateral capacity purchases or pay the auction price for this shortfall for every year. MRES has a formalized policy to manage such risks, and the implementation of that policy is subject to monthly review by its Risk Oversight Committee. The actual amount of shortfall will be affected by any load forecast error or the loss (or gain) of retail customers.

The Ten-Year Plan assumes that new resources can be added (through ownership of new or purchase of existing capacity) to avoid all forecasted capacity deficits.

MISO S-1 Capacity Sources and Requirements									
Year	WAPA Hydro	Red Rock Hydro	Point Beach Nuclear	Municipal	Wind	Purchase Transactions	Capacity	Requirements	Surplus
2020	100.0	0.0	42.5	103.5	8.7	170.0	424.7	489.2	-64.5
2021	100.0	36.5	42.5	103.5	8.7	170.0	461.2	489.1	-27.9
2022	100.0	36.5	42.5	103.5	8.7	161.0	452.2	488.6	-36.4
2023	100.0	36.5	42.5	103.5	8.7	161.0	452.2	488.4	-36.2
2024	100.0	36.5	42.5	103.5	8.7	141.0	432.2	488.2	-56.0
2025	100.0	36.5	42.5	103.5	8.7	141.0	432.2	488.1	-55.9
2026	100.0	36.5	42.5	103.5	8.7	149.4	440.6	488.1	-47.5
2027	100.0	36.5	42.5	103.5	8.7	146.0	437.2	487.8	-50.6
2028	100.0	36.5	42.5	103.5	8.7	146.0	437.2	490.7	-53.5
2029	100.0	36.5	42.5	103.5	8.7	146.0	437.2	493.5	-56.3
2030	100.0	36.5	25.9	103.5	8.7	146.0	420.6	496.0	-75.4



SPP

The largest resources are the MRES share of LRS, the only MRES coal resource, located near Wheatland, Wyoming, and Exira Station, a natural gas peaking plant located near Atlantic, Iowa.

The following capacity sales transactions are included in this Ten-Year Plan as reductions in resource capacity of WPP (Watertown Peaking Plant) and Exira in the SPP region:

- Sale to Basin Electric Power Cooperative of 150 MW of capacity for the year 2020, 185 MW for the years 2021 through 2028, and 165 MW for the years 2029 through 2030.

MRES has a substantial surplus of capacity in the SPP region. The cost of firm transmission makes it uneconomical to transfer capacity rights to the MISO market, where MRES has a capacity deficit. Given this excess SPP capacity that is uneconomical for MISO load, MRES has made several short-term capacity sales, and is continuously investigating additional sales, using the revenue from the sale to purchase additional capacity in MISO.

SPP S-1 Capacity Sources and Requirements

Year	WAPA Hydro	LRS Coal	Municipal	Exira Nat Gas	WPP Diesel	Capacity	Requirements	Surplus
2020	216.4	276.0	28.1	35.0	5.0	560.5	483.1	77.4
2021	216.4	276.0	28.1	0.0	5.0	525.5	487.6	37.9
2022	216.4	276.0	28.1	0.0	5.0	525.5	489.0	36.5
2023	216.5	275.0	28.1	0.0	5.0	524.5	490.3	34.3
2024	216.5	275.0	28.1	0.0	5.0	524.5	491.6	32.9
2025	216.5	275.0	28.1	0.0	5.0	524.5	492.9	31.6
2026	216.5	276.0	28.1	0.0	5.0	525.5	494.3	31.3
2027	216.5	276.0	28.1	0.0	5.0	525.5	495.6	30.0
2028	216.5	276.0	28.1	0.0	5.0	525.5	499.8	25.7
2029	216.5	276.0	28.1	20.0	5.0	545.5	504.0	41.5
2030	216.5	276.0	28.1	20.0	5.0	545.5	508.2	37.4

SPP Capacity Sources and Requirements

