



AN ALLETE COMPANY

David R. Moeller
Senior Attorney
218-723-3963
dmoeller@allete.com

June 26, 2020

VIA EMAIL and U.S. MAIL
North Dakota Public Service Commission
c/o Steven Kahl, Executive Secretary
600 E. Boulevard Ave., Dept. 408
Bismarck, ND 58505

RE: Minnesota Power's Ten-Year Plan – July 2020

Dear Mr. Kahl:

Enclosed is Minnesota Power's North Dakota Ten-Year Plan pursuant to N.D.C.C. § 49-22-04. The original and a copy of the Plan will be sent to the address above with copies filed with the Mercer, Morton and Oliver county auditors.

Further, pursuant to N.D. Admin. Code 69-06-01-05, the enclosed Notice will be sent to the state agencies and officers as designated on the attached Notice Service List.

If you have any questions, or need additional information, please contact me at the number listed above.

Yours truly,

A handwritten signature in black ink that reads "David R. Moeller".

David R. Moeller

DRM:th
Enc.

1 PU-20-288 Filed 06/26/2020 Pages: 11
2020 Ten Year Plan
Minnesota Power & Light
David Moeller

TEN-YEAR PLAN

Minnesota Power
An operating division of ALLETE, Inc.
Duluth, Minnesota

Prepared for the North Dakota Public Service Commission
Pursuant to Section 49-22-04 of the
North Dakota Century Code

July 2020

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Minnesota Power's
TEN-YEAR PLAN

INTRODUCTION

Minnesota Power, an operating division of ALLETE, Inc., provides retail electric service to northeastern Minnesota and wholesale service to 15 municipal customers in Minnesota and two private utilities in Wisconsin. Minnesota Power has historically maintained an energy resource portfolio of coal, hydro, and biomass. In an effort to meet Minnesota's Renewable Energy Standard (Minn. Stat. § 216B.1691) and diversify its energy resource portfolio, Minnesota Power has been implementing a renewable development plan that began with 98.6 MW of purchased wind energy from the Oliver I and II Wind Energy Centers in Oliver County, North Dakota and has continued through the Bison 1, 2, 3, and 4 wind projects. In late 2020, an additional 250 MW of purchased wind energy (Nobles 2) is expected to be energized and added to the power supply. Minnesota Power also continues to purchase energy and capacity from Square Butte Electric Cooperative's Milton R. Young Unit 2 plant that is delivered via Minnesota Power's +/- 250kV direct current transmission line ("DC Line") that runs between the Square Butte Substation in Center, North Dakota and Minnesota Power's Arrowhead Substation near Duluth, Minnesota.

Minnesota Power's Ten-Year Plan

SECTION A: Existing Energy Conversion Facilities¹

Bison 1—81.8 MW

Bison 2—105 MW

Bison 3—105 MW

Bison 4—204.8 MW

Hydro Operations—114.6 MW

- St. Louis River System—85.6 MW
 - Knife Falls Hydro Electric Station—1.9 MW
 - Scanlon Hydro Electric Station—1.4 MW
 - Thomson Hydro Electric Station—71.3 MW
 - Fond du Lac Hydro Electric Station—11.0 MW
- Winton Hydro Electric Station—4.0 MW
- Prairie River Hydro Electric Station—0.5 MW
- Mississippi River System—24.5 MW
 - Little Falls Hydro Electric Station—4.4 MW
 - Blanchard Hydro Electric Station—16.5 MW
 - Sylvan Hydro Electric Station—1.9 MW
 - Pillager Hydro Electric Station—1.7 MW

Hibbard Energy Center—54.2 MW (summer), 47.2 MW (winter)

Boswell Energy Center Unit 3—350.5 MW

Boswell Energy Center Unit 4—585 MW (468 MW Minnesota Power capacity)

Laskin Energy Center Units 1 and 2—110 MW (natural gas)

Taconite Harbor Energy Center Units 1 and 2—150 MW (currently idled)

Taconite Ridge Wind Energy Center—25 MW

Camp Ripley Solar Facility—10 MW

(Non-regulated) Rapids Energy Center—30.8 MW

Solar Strategy Facilities—20.0 MW (expected in 2021)

Purchases

- Square Butte—Young 2—100 MW in 2020
- Oliver County Wind Energy Centers I and II—98.6 MW

¹ Nameplate capacity.

- Wing River Wind—2.5 MW
- Manitoba Hydro—250 MW
- U.S. Solar—1 MW (community solar garden)
- Nemadji Trail Energy Center—262.5 MW (natural gas facility in Superior, Wisconsin and to be in-service by 2025)
- Nobles 2 Wind Energy Center—250 MW (expected online by end of 2020)

Minnesota Power’s 2015 Integrated Resource Plan (“2015 Plan”) in Minnesota Public Utilities Commission (“MPUC”) Docket No. E015/ RP-15-690 (available on the MPUC’s eDockets website: <https://www.edockets.state.mn.us/EFiling/search.jsp> or Minnesota Power’s website at: <https://www.mnpower.com/Content/Documents/Environment/2015-resource-plan.pdf>) was approved by the MPUC in a written order issued July 18, 2016. The filing provides further information on these generation facilities and is available upon request. Based on a MPUC order issued September 19, 2017, Minnesota Power’s next integrated resource plan is now due to be filed with the MPUC by October 1, 2020.

SECTION B: Energy Conversion Facilities under Construction

None.

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

Minnesota Power may make individual applications to the North Dakota Public Service Commission (“NDPSC”) for approval of additional North Dakota wind facilities when the timing is determined.

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

See response to Section C.

SECTION E: Existing Transmission Facilities (Electric)

On December 31, 2009, Minnesota Power acquired Square Butte Electric Cooperative’s +/- 250kV HVDC² Line that runs 465 miles between the Square Butte Substation in Center, North Dakota and Minnesota Power’s Arrowhead Substation near Duluth, Minnesota. In 2013 Minnesota Power upgraded the capacity of the HVDC Line to assure deliverability of the Bison Wind Projects. To accomplish this upgrade Minnesota Power entered into a transmission service agreement with Square Butte (subject to installation of a \$5.6 million transmission system improvement project at the Square Butte Substation) to increase the HVDC Line capacity from 500 MW to 550 MW.

In 2009, Minnesota Power placed in-service a 230kV alternating current (“AC”) transmission line (PU-09-587), approximately 22 miles in length that is required to transmit wind generation from the

² High voltage direct current

Bison 1 Wind Project substation to the proposed point of interconnection within the existing Square Butte Substation near Center, North Dakota. This transmission line will also be utilized as a generator outlet for future Minnesota Power wind projects.

To facilitate development of additional wind projects in North Dakota, Minnesota Power constructed additional transmission facilities that interconnect with the 230kV AC transmission line and the Square Butte Substation. Minnesota Power obtained NDPSC approval for an additional 10-mile western extension of the 230kV AC transmission line (PU-11-620) and that line is used for Minnesota Power's Bison 4 Wind Project.

Minnesota Power is a project participant in the CapX2020 transmission initiative, which includes the Twin Cities – Fargo 345kV Project that begins near Fargo, North Dakota and terminates at Monticello, Minnesota.

SECTION F: Existing Transmission Facilities (Pipeline)

None.

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

Minnesota Power is currently planning to modernize the HVDC³ system. The DC terminals were designed by General Electric (“GE”) for a 30 year operating lifetime and currently have been operating reliably for over 40 years. The main components of the HVDC terminals include the thyristor valves and cooling, converter transformers, and smoothing reactors to complete the energy conversion. The original vendor, GE, left the HVDC business in the 1980s and in recent years it has been increasingly difficult to procure spare parts as the technology is becoming obsolete and the original designers are well into retirement. Minnesota Power has researched reverse engineering solutions to this technology issue, but has had limited results and thus spare and replacement parts for the HVDC system remain limited. By taking action to modernize the HVDC system, Minnesota Power will greatly reduce the likelihood of equipment failures and line outages.

Modernization of the aging infrastructure will allow Minnesota Power to continue to provide reliable operations and access to its North Dakota wind resources. It will also provide an opportunity to upgrade the system with additional capabilities, including an increase transfer capability from the current 550 MW and a more flexible operational profile with bi-directional flows.

Minnesota Power is actively pursuing the project and looking for an opportunity to execute it while balancing system reliability needs with costs to customers and prioritization of all capital projects. Following detailed specification and competitive bidding of the project, the earliest expected in-service date for the project is 2024. Minnesota Power is not anticipating the modernization will require any permit approvals by the NDPSC.

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

None.

³ High voltage direct current.

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

See response in Section G.

SECTION J: Regional Coordination

Minnesota Power's 2015 Plan in MPUC Docket No. E015/RP-15-690 (available on the MPUC's eDockets website: <https://www.edockets.state.mn.us/EFiling/search.jsp>) contained extensive transmission and regional coordination information in Appendix F and is available upon request. Further information is available in the Minnesota Transmission Owners' Biennial Transmission Plan filed in MPUC Docket No. E999/M--19-205 and available at: <http://minnelectrans.com>.

SECTION K: Environmental Information

Minnesota Power's 2015 Plan in MPUC Docket No. E015/RP-15-690 (available on the MPUC's eDockets website: <https://www.edockets.state.mn.us/EFiling/search.jsp>) contained extensive environmental information in Appendix E and is available upon request.

SECTION L: Projected Demand for Service

Minnesota Power's 2015 Plan in MPUC Docket No. E015/RP-15-690 (available on the MPUC's eDockets website: <https://www.edockets.state.mn.us/EFiling/search.jsp>) contained extensive demand and energy forecasting information and is available upon request. Minnesota Power also files annually with the MPUC an Annual Forecast Report in accordance with MPUC rules and that can be made available upon request.

PLAN Service List

Mr. Steven Kahl, Executive Secretary
Public Service Commission
600 E. Boulevard Ave., Dept. 408
Bismarck, ND 58505

Oliver County Auditor
P O Box 188
Center, ND 58530-0188

Morton County Auditor
210 Second Avenue NW
Mandan, ND 58554-3158

Mercer County Auditor
P O Box 39
Stanton, ND 58571-0039



AN ALLETE COMPANY

David R. Moeller
Senior Attorney
218-723-3963
dmoeller@allete.com

June 26, 2020

NOTICE OF FILING

Please take notice that on June 26, 2020, Minnesota Power, 30 West Superior Street, Duluth, Minnesota, filed a Ten-Year Plan with the North Dakota Public Service Commission pursuant to N.D.C.C. § 49-22-04. Notice of the filing of this plan is pursuant to N.D. Admin. Code 69-06-02-02 to the following state agencies and officers as designated in N.D. Admin. Code 69-06-01-05:

1. Aeronautics Commission
2. Attorney General
3. Department of Agriculture
4. Department of Career and Technical Education
5. Department of Commerce, Division of Community Service
6. Department of Health
7. Department of Human Services
8. Department of Labor
9. Department of Transportation
10. Economic Development & Finance Commission
11. Energy Development Impact Office
12. Game and Fish Department
13. Geological Survey
14. Governor
15. Indian Affairs Commission
16. Job Service North Dakota
17. Parks and Recreation Department
18. Soil Conservation Committee
19. State Historical Society of North Dakota
20. State Land Department
21. State Water Commission

Yours truly,

A handwritten signature in black ink that reads 'David R. Moeller'.

David R. Moeller

DRM:th

NOTICE Service List

Chairman
Aeronautics Commission
P O Box 5020
Bismarck, ND 58502-5020

Attorney General
600 East Boulevard Avenue, Dept. 125
Bismarck, ND 58505

Commissioner
Department of Agriculture
600 East Boulevard Avenue, Dept. 602
Bismarck, ND 58505-0020

Director & Exe. Officer
Dept. of Career & Tech. Edu.
600 East Boulevard Avenue, Dept. 270
Bismarck, ND 58505-0610

Director
Department of Commerce
P O Box 2057
Bismarck, ND 58503

State Health Officer
Department of Health
600 East Boulevard Avenue
Bismarck, ND 58505-0200

Executive Director
Department of Human Services
600 East Boulevard Avenue, Dept. 325
Bismarck, ND 58505-0250

Commissioner **Department of Labor**
600 East Boulevard Avenue, Dept. 406
Bismarck, ND 58505-0340

Director
Department of Transportation
608 East Boulevard Avenue
Bismarck, ND 58505-0700

Director
North Dakota Department of Commerce
Economic Develop. & Finance Division
P O Box 2057
Bismarck, ND 58503

Energy Development Impact Office
P O Box 5523
Bismarck, ND 58505-5523

Director
Game and Fish Department
100 North Bismarck Expressway
Bismarck, ND 58501-5095

State Geologist
Geological Society
600 East Boulevard Avenue
Bismarck, ND 58505-0840

Governor
State of North Dakota
600 East Boulevard Avenue
Bismarck, ND 58505-0001

Executive Director
Indian Affairs Commission
600 East Boulevard Ave. Rm 117
Bismarck, ND 58505

Executive Director
Job Service North Dakota
P O Box 5507
Bismarck, ND 58506-5507

Parks & Recreation Department
1600 East Century Avenue, Suite 3
Bismarck, ND 58503-0649

Soil Conservation Specialist
State Soil Conservation Committee
2718 Gateway Avenue, Unit 104
Bismarck, ND 58503

Director
State Historical Society of North Dakota
612 East Boulevard Avenue
Bismarck, ND 58505-0830

Commissioner
State Land Department
P O Box 5523
Bismarck, ND 58505-5523

State Engineer
State Water Commission
900 East Boulevard Avenue, Dept. 770
Bismarck, ND 58505-0850