Application for Certificate of Need

Dodge County Wind, LLC

Large Wind Energy Conversion System

MPUC Docket Number: IP6981/CN-17-306

Originally filed June 29, 2018

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APPENDICES

ACRONYM/TERM	DEFINITION
AGL	Above Ground Level
ABPP	Avian Bat Protection Plan
AC	Alternating Current
Applicant or DCW	Dodge County Wind, LLC
Capacity	The capability of a system, circuit, or device for storing electronic charge
Phase I	Cultural Resources Reconnaissance Survey – physical inspection and identification of cultural resources within a specific area.
Commission	Minnesota Public Utilities Commission
CON	Certificate of Need
dB	Decibels
Distribution	Relatively low-voltage lines that deliver electricity to the retail customer's home or business
EWG	Exempt Wholesale Generator
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
FEMA	Federal Emergency Management Agency
GE	General Electric
Generator	A machine by which mechanical energy is changed into electrical energy
Geotechnical	A science that deals with the application of geology to engineering
Hub	The central component of the wind turbine which connects the rotors to the generator.
Hz	Hertz
Interconnection	Location of project connection to the power grid.
kV	kilovolt
kV/m	Kilovolt per meter

ACRONYM/TERM	DEFINITION
kW	kilowatt
Leq	Equivalent Sound Level
LGU	Local Government Unit
LWECS	Large Wind Energy Conversion System
MBS	Minnesota Biological Survey
MET	Meteorological Towers
MF	Magnetic Field
Micrositing	The process in which the wind resources, potential environmentally sensitive areas, soil conditions, and other site factors, as identified by local, state and federal agencies, are evaluated to locate wind turbines and associated facilities.
MISO	Midcontinent Independent Transmission System Operator
MN/DOT	Minnesota Department of Transportation
MMPA	Minnesota Municipal Power Authority
MPCA	Minnesota Pollution Control Agency
MW	megawatt
NHIS	Natural Heritage Inventory System
NPDES	National Pollutant Discharge Elimination System
NRCS	National Resource Conservation Service
NRHP	National Register of Historic Places
NTIA	National Telecommunications and Information Administration
NWI	National Wetlands Inventory
O&M	Operations and maintenance facility
OSA	Office of State Archaeologist
OSHA	Occupational Safety and Health Administration

ACRONYM/TERM	DEFINITION
POI	Point of Interconnection
PPA	Power Purchase Agreement
Project	DCW Project
PTC	Production Tax Credit
PWI	Public Waters Inventory
RES	Renewable Energy Standard
Rotor	The rotor consists of three blades mounted to a rotor hub
RD	Rotor Diameter: Diameter of the rotor from the tip of a single blade to the tip of the opposite blade
ROW	Right-of-Way
SCS	Site Characterization Study
SHPO	Minnesota State Historic Preservation Office
SME	Subject Matter Expert
SMMPA	Southern Minnesota Municipal Power Agency
SNA	Scientific and Natural Area
SPCC	Spill Prevention, Control, and Countermeasure Plan
Step-up Transformer	A transformer that increases voltage
SWPPP	Storm Water Pollution Prevention Plan
USACE	US Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
V	Volt
Windlogics	Windlogics, Inc.
WMA	Wildlife Management Area
WPA	Waterfowl Protection Area

ACRONYM/TERM	DEFINITION
WRP	Wetlands Reserve Program

Rule	Required Information	Application Section(s)	Exemption
7849.0120	**Criteria – Probable result of denial would be an adverse effect upon the future adequacy, reliability, or efficiency of energy supply to the applicant, the applicant's customers, or to the people of Minnesota and neighboring states**	5.1	--
A(1)	Accuracy of the applicant's forecast	5.1, 7.0	No
A(2)	Effects of applicant's existing or expected conservation programs and state and federal conservation programs	5.1	No
A(3)	Effects of promotional practices on demand	5.1, 6.3.1.11	No
A(4)	Ability of current and planned facilities, not requiring certificates of need, to meet future demand	5.1, 6.2.4.5	No
A(5)	Effect of proposed facility in making efficient use of resources	5.1	No
7849.0120	**Criteria – A more reasonable and prudent alternative has not been demonstrated**	5.2	--
B(1)	Appropriateness of size, type, and timing	5.2.1	No
B(2)	Cost of facility and its energy compared to costs of reasonable alternatives	5.2.2	No
B(3)	Effects of the facility upon natural and socioeconomic environments compared to the effects of reasonable alternatives	5.2.3	No
B(4)	Expected reliability compared to reasonable alternatives	5.2.4	No
7849.0120	**Criteria – Facility will provide benefits to society**	5.3	--
C(1)	Relationship of proposed facility to overall state energy needs	5.3.1	No
C(2)	Effects of facility upon the natural and socioeconomic environments compared to the effects of not building the facility	5.3.2	No
C(3)	Effects of facility in inducing future development	5.3.3	No
C(4)	Socially beneficial uses of the output of the facility, including to protect or enhance environmental quality	5.3.4	No
D	Facility or suitable modification will not fail to comply with relevant policies, rules, and regulations of other state and federal agencies and local governments	5.4	No
7849.0210	**Filing Fees and Payment Schedule**	2.0	No
7849.0240	**Need Summary and Additional Considerations**	4.0	--
Subp. 1	Need Summary – summary of major factors justifying need for facility	4.1	No
Subp. 2(A)	Additional Considerations – Socially beneficial uses of the output of the facility, including to protect or enhance environmental quality	4.2, 4.2.1	No
Subp. 2(B)	Additional Considerations – Promotional activities that may have given rise to the demand for the facility	4.2.2	Partial

Rule	Required Information	Application Section(s)	Exemption
Subp. 2(C)	Additional Considerations – Effects of the facility in inducing future development	4.2.3	No
7849.0250	**Proposed LEGF and Alternatives Application**	6.0	--
A(1)	Description – Nominal generating capability and effects of economies of scale on facility size and timing	6.1.1	No
A(2)	Description – Anticipated operating cycle, including annual capacity factor	6.1.2	No
A(3)	Description – Type of fuel, reason for selection, projection of availability over life of facility, and alternative fuels	6.1.3	No
A(4)	Description – Anticipated heat rate	6.1.4	No
A(5)	Description – Anticipated areas where facility will be located	6.1.5	No
B(1)	Discussion of Alternatives – Purchased power	6.2.1	Yes
B(2)	Discussion of Alternatives – Increased efficiency of existing facilities	6.2.2	Partial
B(3)	Discussion of Alternatives – New transmission lines	6.2.3	Partial
B(4)	Discussion of Alternatives – New generating facilities of a different size and energy resource	6.2.4	Yes
B(5)	Discussion of Alternatives – Reasonable combination of alternatives	6.2.5	Partial
C	Proposed Facility and Alternatives	6.3	--
C(1)	Capacity cost in current dollars per kilowatt	6.3.1.1	Yes - Limited
C(2)	Service life	6.3.1.2	Yes - Limited
C(3)	Estimated average annual availability	6.3.1.3	Yes - Limited
C(4)	Fuel costs in current dollars per kilowatt hour	6.3.1.4	Yes - Limited
C(5)	Variable operating and maintenance costs in current dollars per kilowatt hour	6.3.1.5	Yes - Limited
C(6)	Total cost in current dollars of a kilowatt hour provided by it	6.3.1.6	Yes - Limited
C(7)	Estimate of its effect on rates system-wide and in Minnesota	6.3.1.7	Partial
C(8)	Efficiency, expressed for a generating facility as the estimated heat rate	6.3.1.8	Yes - Limited
C(9)	Majoring assumptions made in providing information in subitems (1) to (8), including projected escalation rates for fuel costs and operating and maintenance costs, as well as projected capacity factors	6.3.1.9	Yes - Limited
D	System Map	6.3.1.10	Yes
E	Other relevant information about the facility and alternatives that may be relevant to a determination of need	--	--

Rule	Required Information	Application Section(s)	Exemption
7849.0260	**Proposed LHVTL and Alternatives Application**		--
A(1)	Description – Design voltage	--	Section not applicable to Application
A(2)	Description – Number, the sizes, and the types of conductors	--	Section not applicable to Application
A(3)	Description – expected losses under projected maximum loading and under projected average loading in the length of the transmission line and at the terminals or substations	--	Section not applicable to Application
A(4)	Description – approximate length of the proposed transmission line and the portion of that length in Minnesota	--	Section not applicable to Application
A(5)	Description – approximate location of AC substations, which information shall be on a map of appropriate scale	--	Section not applicable to Application
A(6)	Description – list of all counties reasonably likely to be affected by construction and operation of the proposed line	--	Section not applicable to Application
B(1)	Discussion of Alternatives – New generation of various technologies, sizes, and fuel types	--	Section not applicable to Application
B(2)	Discussion of Alternatives – Upgrading of existing transmission lines or existing generating facilities	6.3.1.2	Section not applicable to Application
B(3)	Discussion of Alternatives – Transmission lines with different design voltages or with different numbers, sizes, and types of conductors	6.3.2.2	Section not applicable to Application
B(4)	Discussion of Alternatives – Transmission lines with different terminals or substations	6.3.2.3	Section not applicable to Application
B(5)	Discussion of Alternatives – Double circuiting of existing transmission lines	6.3.2.4	Section not applicable to Application
B(6)	Discussion of Alternatives – DC transmission line	6.3.2.5	Section not applicable to Application
B(7)	Discussion of Alternatives – Underground transmission line	6.3.2.6	Section not applicable to Application
B(8)	Discussion of Alternatives – any reasonable combinations of the alternatives listed in subitems (1) to (7)	6.3.2.7	Section not applicable to Application
C(1)	Discussion of Project and Alternatives – total cost in current dollars	6.3.2.8	Section not applicable to Application

Rule	Required Information	Application Section(s)	Exemption
C(2)	Discussion of Project and Alternatives – service life	6.3.2.9	Section not applicable to Application
C(3)	Discussion of Project and Alternatives – estimated average annual availability	6.3.2.10	Section not applicable to Application
C(4)	Discussion of Project and Alternatives – estimated annual operating and maintenance costs in current dollars	6.3.2.11	Section not applicable to Application
C(5)	Discussion of Project and Alternatives – estimate of its effect on rates systemwide and in Minnesota, assuming a test year beginning with the proposed in-service date	6.3.2.12	Section not applicable to Application
C(6)	Discussion of Project and Alternatives – efficiency, expressed for a transmission facility as the estimated losses under projected maximum loading and under projected average loading in the length of the transmission line and at the terminals or substations, or expressed for a generating facility as the estimated heat rate	6.3.2.13	Section not applicable to Application
C(7)	Discussion of Project and Alternatives – major assumptions	6.3.2.14	Section not applicable to Application
D	System Map	--	Section not applicable to Application
E	Other relevant information about the facility and alternatives that may be relevant to a determination of need	--	Section not applicable to Application
7849.0270	**Peak Demand and Annual Consumption Forecast**	7.0	Partial
7849.0280	**System Capacity**	8.0	Partial
7849.0290	**Conservation Programs**	9.0	Yes
7849.0300	**Consequences of Delay**	10.0	Partial
7849.0310	**Environmental Information – Provide environmental data in response to part 7849.0250, Item C, or 7849.0260, Item C, and information as requested in part 7849.0320 to 7849.0340**	11.0	No
7849.0320	**Generating Facilities**	12.0	No
A	Estimated range of land requirements, including water storage, cooling systems, and solid waste storage	12.1	No
B	Estimated amount of vehicular, rail, and barge traffic generated by construction and operation of facility	12.2	No
C	Fossil-fuel facilities – Fuel	12.3.1	No
D	Fossil-fuel facilities – Emissions	12.3.2	No
E	Water Use for Alternate Cooling Systems	12.4	No
F	Sources and types of discharges to water	12.5	No
G	Radioactive releases	12.6	No

Rule	Required Information	Application Section(s)	Exemption
H	Types and quantities of solid wastes in tons/year	12.7	No
I	Sources and types of audible noise attributable to facility operation	12.8	No
J	Estimated work force required for facility construction and operation	12.9	No
K	Minimum number and size of transmission facilities required to provide a reliable outlet for the generating facility	12.10	No
7849.0330	**Transmission Facilities**	-	Yes
7849.0340	**No-Facility Alternative**	6.2.4.6	Partial

1.0 INTRODUCTION

Dodge County Wind, LLC (DCW or Applicant) respectfully submits this updated Application for a certificate of need (CON) to the Minnesota Public Utilities Commission (Commission) in accordance with Minnesota Statutes (Minn. Stat.) § 216B.243, and Minnesota Rules (Minn. R.) Chapter 7849. This CON Application has been updated to remove information regarding the originally-proposed 23-mile 345 kilovolt generation tie line associated with the Project, which has been eliminated from the Project design for the reasons described below.

DCW is a wholly-owned indirect subsidiary of NextEra Energy Resources, LLC (NEER). NEER is a national renewable energy marketing and development company that owns and operates over 19,000 megawatts (MW) of electric generating capacity in 29 states and Canada. NEER has ownership and financial interests in: (1) the formerly operating 26.3 MW Buffalo Ridge Wind Energy Center in Lincoln County, which has been decommissioned; (2) the 98.2 MW Mower County wind facilities in Mower County; and (3) the to-be-decommissioned 102.8 MW Lake Benton II project in Pipestone County.

1.1 The Dodge County Wind Project

DCW respectfully requests that the Commission issue a CON for the approximately 170 MW Dodge County Wind Project (the Project).[1] The Project is a "large energy facility" as defined in Minn. Stat. § 216B.2421, subd. 2(1).

DCW is an independent power producer (IPP) that will develop, construct, own, and operate the Project. The Project includes turbines, a project collector substation, collection lines, an operation and maintenance (O&M) building, permanent meteorological tower(s), gravel access roads, and any associated interconnection facilities.[2] The wind facility portion of the Project site is located on 52,085 acres (81.4 square miles) in the western part of Dodge County and the eastern part of Steele County and will produce up to approximately 170 MWs, supported by 68 General Electric (GE) 2.5 MW wind turbines. Due to excessive interconnection upgrade costs, the Project will no longer be interconnected at the Southern Minnesota Municipal Power Agency Byron Substation via a 345 kV generation tie line. DCW is working to identify an alternative

[1] DCW has requested a Site Permit in Docket No. IP6981/WS-17-307. DCW originally requested a Route Permit in Docket No. IP6981/TL-17-308. Due to excessive costs of interconnecting at the originally-identified interconnection location, DCW requested to withdraw its Route Permit Application on August 15, 2019. At this time, DCW is working to identify the interconnection for the Project, and plans to file a Route Permit Application and CON Application for a generation tie-line by the end of the first quarter of 2020, in each case if necessary.

[2] Minn. Stat. § 216B.2421, Subd. 2(1) defines a "large energy facility" for which a CON is required as "any electric power generating plant or combination of plants at a single site with a combined capacity of 50,000 kilowatts or more and transmission lines directly associated with the plant that are necessary to interconnect the plant to the transmission system."

point of interconnection (POI) for the Project, and the associated facilities that would be required to interconnect at that POI. DCW's anticipated commercial operations date for the Project, including any associated facility generation tie line, is December 31, 2021.[3]

DCW has entered into a Power Purchase Agreement (PPA) with the Minnesota Municipal Power Agency (MMPA). In the PPA, MMPA agreed to purchase the full output of the Project for a 30-year term. The Project, as a generator of wind energy, qualifies as an "eligible energy technology" for the purposes of the Minnesota Renewable Energy Standard (RES), as set forth in Minn. Stat. § 216B.1691, and, therefore, will serve as a significant renewable generation addition to assist MMPA in meeting and exceeding its RES requirements.

At the time of this updated Application, it is unknown whether the PPA will continue to remain in effect due to the change in the commercial operations date and POI. DCW is actively engaged in discussions with MMPA regarding an amendment to the PPA. If no agreement can be reached and the PPA is terminated, however, DCW will pursue a PPA with another offtaker, which DCW would secure in accordance with typical Site Permit and CON conditions. DCW will notify the Commission of any amended or new PPA once finalized. Because of the uncertainty around the MMPA PPA, the CON Application has been updated to include information regarding the broader need for the Project beyond the need specific to MMPA.

1.2 Project Contacts

The authorized representatives for the Applicant are:

Mike Weich
Project Manager Renewable Development
Dodge County Wind, LLC
700 Universe Blvd
Juno Beach, FL 33408
Mike.Weich@nexteraenergy.com
(561) 694-3987

[3] DCW currently estimates that the Project will commence commercial operations in 2021, but if a Site Permit for the Project is received within a timeframe such that construction can be completed in 2020, DCW would seek to construct eight 2.3 MW wind turbines consistent with the modifications shown in DCW's Site Permit Application Amendment, filed on January 9, 2019 in Docket No. WS-17-307.

Brian J. Murphy
Managing Attorney
NextEra Energy Resources, LLC
700 Universe Blvd
Juno Beach, FL 33408
Brian.J.Murphy@nee.com
(561) 694-3814

September 6, 2019

2.0 FEES AND PAYMENT SCHEDULE (MINN. R. 7849.0210)

The total fee for the Application and the schedule for payment are shown in **Table 1**. The fee determination for the Project is based on a capacity of up to approximately 170 MW, per the requirements of Minn. R. 7849.0210, subp. 1. The payment schedule is based on Minn. R. 7849.0210, subp. 2.

Table 1: Certificate of Need Application Schedule of Payments

Fee Calculation	Amount
Fee Calculation Equation	$10,000 + ($50*MWs)
Due with CN Application	$4,625.00
Due 45 days after Application submittal date	$4,625.00
Due 90 days after Application submittal date	$4,625.00
Due 135 days after Application submittal date	$4,625.00
Total Calculated Fee	**$18,500.00**

3.0 FILING REQUIREMENT EXEMPTION REQUEST

The Commission's CON rules as set forth in Minn. R. Ch. 7849 permit applicants to request exemptions from the filing requirements that are not applicable to their project. Specifically, an applicant may be exempted from providing certain information if the applicant requests an exemption in writing that shows that the data requirement is either unnecessary to determine the need for the proposed facility or may be satisfied by submitting another document. Minn. R. 7849.0200, subp. 6.

On April 20, 2017, DCW filed with the Commission a request for exemptions from certain CON filing requirements based on DCW's status as an IPP. On July 7, 2017, the Commission issued an Order granting the following requested exemptions from the CON filing requirements:[4]

1. Exemption for the following rules conditioned upon DCW providing equivalent data from the purchaser of the output of the Project:

    - 7849.0240, subp. 2 (B): Promotional Activities;
    - 7849.0250 (B) 2, 3, and 5: Description of Certain Alternatives;
    - 7849.0250 (C) 7: Effect of Project on Rates System-wide;
    - 7849.0270: Peak Demand and Annual Consumption Forecast;
    - 7849.0280: System Capacity;
    - 7849.0300: Consequences of Delay—System; and
    - 7849.0340: The Alternative of No Facility.

2. Exemption from the following parts or portions of the rules:

    - 7849.0250 (B) 1 and 4: Description of Certain Alternatives;
    - 7849.0250 (C) 1 to 6, 8 and 9: Availability of Alternatives to the Facility;
    - 7849.0250 (D): Map of Applicant's System;
    - 7849.0290: Conservation Programs; and
    - 7849.0330: Alternatives Involving a Large High Voltage Transmission Line (LHVTL).

[4] *In the Matter of Petition of Dodge County Wind, LLC for a Certificate of Need for the 200 MW Large Wind Energy Conversion System and an Associated 345 kV Transmission Line in Dodge County, Minnesota*, Docket No. IP-6981/CN-17-306, Order Granting Exemptions (July 7, 2017) (Dodge County Wind Order Granting Exemptions). In the Commission's Order (attached as Appendix A), the Commission also approved DCW's Notice Plan filed pursuant to Minn. R. 7829.2550. A copy of DCW's Request for Exemptions is included as Appendix B.

3. Exemption from the following parts or portions of the rules based on a determination that they are not applicable:

    - 7849.0260 (A)(3) and C(6): Line Loss Data
    - 7849.0260 (B)(1): Alternatives to the Transmission Line
    - 7849.0260 (C)(5): Details Regarding Alternatives
    - 7849.0260 (D): Map of Applicant’s System

4.0 NEED SUMMARY AND ADDITIONAL CONSIDERATIONS (MINN. R. 7849.0240)

4.1 Need Summary (Minn. R. 7849.0240, subpart 1)

The Project is needed to assist in providing for the electricity needs of MMPA's members and to further MMPA's efforts to exceed the Minnesota RES and other clean energy requirements. As background, the Next Generation Energy Act of 2007 requires that utilities in Minnesota provide 25 percent of their total retail electric sales from eligible renewable resources by 2025.[5] Additionally, the Minnesota legislature has specified aggressive goals for the reduction of greenhouse gas emissions across all sectors, including the electric sector. The legislature's specific goal is to "reduce statewide greenhouse gas emissions across all sectors producing those emissions to a level at least 15 percent below 2005 levels by 2015, to a level at least 30 percent below 2005 levels by 2025, and to a level at least 80 percent below 2005 levels by 2050".[6] Between the RES and state greenhouse gas emission reduction goals, additional renewable resources will continue to be needed in Minnesota. Therefore, the Project will serve to meet this broader legislative need as well as the specific renewable energy needs of MMPA.

The Project is necessary to meet the growing demand for additional renewable resources needed to meet the state's renewable energy requirements and other clean energy requirements in Minnesota and nearby states. The Next Generation Energy Act of 2007 requires that utilities in Minnesota provide 25 percent of their total retail electric sales from eligible renewable resources by 2025, which amounts to roughly 6,000 to 7,000 MW of renewable capacity (hereinafter, the "RPS").[7] The Minnesota legislature has also specified aggressive goals for the progressive reduction of greenhouse gas emissions across all sectors, including the electric sector. Specifically, the specified goal is to "reduce statewide greenhouse gas emissions across all sectors producing those emissions to a level at least 15 percent below 2005 levels by 2015, to a level at least 30 percent below 2005 levels by 2025, and to a level at least 80 percent below 2005 levels by 2050" (hereinafter the "GHG Goals").[8] Wind projects are not only valuable to utilities for compliance with these state requirements and goals, the cost of wind continues to decline, resulting in wind being an "attractive resource for utility capacity additions, competitive with new natural gas-fueled capacity."[9] When combined with federal tax incentives, utilities have the incentive to acquire additional renewable assets well in advance of their RPS obligations.

[5] Minn. Stat. § 216B.1691.

[6] Minn. Stat. § 216H.02, subd. 1.

[7] Minn. Stat. § 216B.1691.

[8] Minn. Stat. § 216H.02, subd. 1.

[9] Minnesota Department of Commerce, Energy Policy and Conservation Quadrennial Report 2016 (the "2016 Quad Report") at 19.

Furthermore, utilities are able to market any renewable energy generation that is not needed for its RPS obligations directly to its customers through voluntary green pricing programs, which give customers the option to pay a premium to incentivize renewable energy generation. These programs continue to grow and evolve, further showing the demand for renewable energy generation. Thus, between the RPS, the GHG Goals, the competitive pricing of wind projects, and participation in green pricing programs, additional renewable resources will continue to be needed in Minnesota.

4.2 Additional Considerations (Minn. R. 7849.0240, subpart 2)

4.2.1 Socially Beneficial uses of the Output

The Project will produce affordable, clean, renewable energy that will help MMPA or another off-taker: (i) exceed its RES requirements; (ii) assist it in meeting the energy demands of its members or customers; and (iii) further the state's goals of reducing carbon emissions. The Project will produce enough clean, renewable energy to meet the full electrical needs of approximately 51,000 Minnesota households annually. In addition, as described in greater detail below, the local economy will benefit from the landowner lease payments for turbines, transmission right-of-way (ROW), production taxes, the income from temporary and permanent jobs associated with the Project, and local spending.

4.2.2 Promotional Activities That May Have Given Rise to the Demand for the Facility

DCW was granted an exemption from the requirement of Minn. R. 7849.0240, subp. 2(B), conditioned on MMPA providing equivalent data on its promotional activities. MMPA, however, has indicated that it has conducted no promotional activities associated with the Project, and, therefore, there is no information to submit.[10]

4.2.3 Effects of the Facility in Inducing Future Development

The Project is not expected to directly induce development in Dodge or Steele Counties. However, the Project will positively impact those counties by adding infrastructure, temporary and permanent jobs, increasing the counties' tax base, and providing lease payments to Project participants. For example, landowners involved in the Project will benefit from annual lease payments, while DCW will pay property tax and production taxes on the land and energy production to the local governments. For example, the Project will pay a Wind Energy Production Tax to the local units of government of $0.0012 per kilowatt-hour (kWh) of electricity produced. This would result in an annual Wind Energy Production Tax ranging from

[10] Avant Energy, Inc., acting as agent for MMPA, provided DCW with confirmation of the MMPA representations set forth in this Application.

approximately $60,000 to $700,000 in the first year, and between $570,000 and $700,000 annually after the first year in Dodge County, and approximately $15,000 to $160,000 in the first year, and between $130,000 and $160,000 annually after the first year in Steele County. During the first year, Energy Production Taxes may not be maximized due to partial energy generation during the startup months when the facility is not running at optimal capacity and may also only include a partial calendar year of energy production.

In addition, communities near the Project are also expected to receive positive economic benefits as construction will necessitate the need for temporary and full time positions. The Project anticipates creating approximately 200 temporary construction and approximately 5 full time O&M jobs are expected as part of the Project. DCW plans to use local contractors and suppliers, where feasible, for portions of construction which will contribute to the overall economy of the region. The local and regional purchase of products such as fuel, equipment, services, and supplies necessary to construct and operate the facilities will benefit businesses in the counties as well as in the state. The benefits to the local economy may indirectly induce future development.

5.0 CERTIFICATE OF NEED CRITERIA (MINN. R. 7849.0120)

The Commission has established criteria to assess the need for a large electric generating facility (LEGF) in Minn. R. 7849.0120. The Commission must grant a CON to an applicant upon determining that:

> A. [T]he probable result of denial would be an adverse effect upon the future adequacy, reliability, or efficiency of energy supply to the applicant, to the applicant's customers, or to the people of Minnesota and neighboring states;
>
> B. [A] more reasonable and prudent alternative to the proposed facility has not been demonstrated by a preponderance of the evidence on the record;
>
> C. [B]y a preponderance of the evidence on the record, the proposed facility, or a suitable modification of the facility, will provide benefits to society in a manner compatible with protecting the natural and socioeconomic environments, including human health; and
>
> D. [T]he record does not demonstrate that the design, construction, or operation of the proposed facility, or a suitable modification of the facility, will fail to comply with relevant policies, rules, and regulations of other state and federal agencies and local governments.

5.1 The Probable Result of Denying the DCW CON Application Would be an Adverse Effect upon the Future Adequacy, Reliability, or Efficiency of Energy Supply (Minn. R. 7849.0120(A))

The Project is needed broadly to meet the renewable electricity needs of Minnesota and nearby states in the region. More specifically, based on the current PPA, the Project is needed to help meet the electricity needs of MMPA's members and assist MMPA in its efforts to exceed the Minnesota RES and other clean energy requirements. Denying the Application would deny MMPA energy from a clean, low-cost renewable resource that would count toward exceeding its RES requirements and which MMPA has contracted for under the PPA.

The Project is the result of DCW and MMPA working together to bring additional renewable energy to MMPA's members. In its 2013 Integrated Resource Plan, MMPA explained it was exploring adding additional renewable resources through PPAs with wind developers.[11] This exploration led to MMPA's execution of the PPA with DCW in which MMPA agreed to purchase the full output of the Project for a 30-year term. MMPA's commitment to renewable energy and surpassing its RES requirements is supported by its 12 member utilities. These

[11] MMPA Application for Integrated Resource Plan Approval 2014-2028 at 38 (December 20, 2013), *available at:* https://mmpa.org/wp-content/uploads/2015/10/MMPA-IRP-2013_Public.pdf.

member utilities have a combined population of nearly 150,000 and provide power to 72,330 homes and businesses across Minnesota.[12] Denial of this application, therefore, would thwart MMPA's efforts to exceed the RES requirements and provide renewable energy to its members.

In addition, the Project will provide up to 170 MW of nameplate capacity to meet the renewable electricity needs of Minnesota and nearby states in the region. Denial of this Application would result in the loss of a significant capacity to meet demand, and would deny the opportunity to purchase low-cost renewable energy that could count toward satisfying the RPS and other clean energy standards. There are multiple state laws and policies requiring Minnesota utilities to acquire renewable energy, or that create a preference for renewable energy projects over other alternatives. For example, the Project's ability to reliably and efficiently deliver wind energy also advances the goal of adding zero-carbon generation resources to Minnesota's energy mix in keeping with the state's long-term plans to reduce greenhouse gas emissions, as discussed in **Section 4.1**. Each of these state laws and policies supports the need for wind energy facilities, such as the Project. Other states in the region also have state laws and policies regarding renewable energy. For example, Illinois requires certain utilities to, and North Dakota has a statewide goal of, having at least 25 percent of total energy consumed come from renewable energy facilities by the year 2025.[13] Thus, additional wind power generation is needed to adequately, reliably, and efficiently meet the regional need for electricity from renewable energy sources, such as the Project.

Accordingly, the Project will improve the adequacy, reliability, and efficiency of renewable wind energy supply to MMPA and its member utilities; assist MMPA in exceeding its RES requirements; and advance Minnesota's long-term plans to reduce greenhouse gas emissions statewide. Without the Project, both MMPA and electric customers in Minnesota would need to identify alternative renewable resources to meet these needs.

5.2 A More Reasonable and Prudent Alternative to the Project Has Not Been Demonstrated (Minn. R. 7849.0120(B))

Minn. R. 7849.0120(B) requires a CON applicant to examine possible project alternatives so that the Commission can determine whether a more reasonable and prudent alternative exists. Applying the factors set forth in Minn. R. 7849.0120(B), the Project has many advantages when compared to other renewable alternatives.

5.2.1 Size, Type, and Timing

[12] MMPA 2016 Annual Report at 2, available at: https://mmpa.org/wp-content/uploads/2017/07/MMPA-AnnualReport16-Spreads-150dpi.pdf.

[13] 20 Ill. Comp. Stat. §3855/1-75(c)(1); N.D. Cent. Code § 17-01-01.

The Project is intended to help satisfy the RES needs of MMPA or another off-taker and the state's carbon reduction goals, which can only be satisfied by eligible energy technologies that will reduce carbon emissions. In recognition of this limitation, the Commission granted DCW an exemption from Minn. R. 7849.0250(B) with respect to evaluating fossil fuel alternatives because such alternatives do not meet the Project's objective of providing energy to MMPA or another off-taker that will satisfy the RES and other clean energy standards.[14] Of the remaining eligible technologies, wind energy is the most proven and low-cost resource at the size contemplated for the Project (approximately 170 MW), and a resource that can be in commercial operation by the end of 2019. The Project timing also takes advantage of federal production tax incentives (discussed in **Section 5.4.3**), which translates into additional competitive pricing in the PPA. Therefore, the type of resource, a wind generation facility, is appropriate to help exceed MMPA's RES requirements and the transition of the production of energy to zero-based emissions. Similarly, the size and timing of the development of the Project is congruent with MMPA's RES needs and advances the clean energy goals of Minnesota.

5.2.2 Cost Analysis

The Project will provide renewable electricity to MMPA or another off-taker at a cost that is likely lower than other renewable technologies. The current PPA associated with DCW is the result of an arms-length negotiation between MMPA and DCW, and, thus, the price and other terms that were attractive to MMPA given its needs. Also, the Project will likely generate electricity at a lower cost per kilowatt hour than would other possible renewable energy options, such as solar and biomass. Therefore, the Project will provide competitively-priced wind energy at a lower-cost than other renewable energy resource alternatives.

5.2.3 Potential Natural and Socioeconomic Impacts

The Project's generation of a renewable form of energy will provide significant natural and societal benefits. As a zero-emission energy resource, the Project has significant positive attributes on the natural environment when compared to fossil generating plants. For example, the Project will not discharge air pollutants that can affect the environment, such as particulate matter, mercury, or carbon dioxide. The Project will also not need valuable water resources to generate electricity and will not release pollutants into any water body. The land area impacted by the Project is also significantly less than other renewable technologies such as solar. While the Project site encompasses approximately 52,000 acres, only an average 0.7 acres of land per turbine will be taken out of agricultural production for the siting of turbine pads and access road construction. Also, landowners may continue to plant crops near, and graze livestock up to, the turbine pads. In addition, as a renewable natural resource, wind power does not require the extraction, processing, or combustion of fuel as does a fossil fuel plant or biomass facility.

[14] Dodge County Wind Order Granting Exemptions.

DCW is consulting with the Minnesota Department of Natural Resources (MNDNR), the Minnesota State Historic Preservation Office (SHPO) and the United States Fish and Wildlife Service (USFWS) to assist with the design of the Project in order to minimize any potential impact on birds, bats, and wildlife habitat.

From a socioeconomic impact, the Project will provide benefits to participating landowners in the form of a supplementary source of income for easements to site wind turbines, obtain wind rights, and site transmission towers. For example, crops will be able to be planted up to turbine pads and access roads. Changes in agricultural equipment maneuvering routes around turbine structures will be required, but this maneuvering should only have a nominal effect on overall production.

Moreover, the Project will create approximately 200 temporary construction and approximately 5 full time O&M jobs for the Project. Many of these jobs will be filled by local or regional sources. Wages and salaries paid to contractors and workers in Dodge and Steele Counties will contribute to the total personal income of the region. At least part of the wages paid to temporary and permanent Project workers will be circulated and recirculated within the counties and the state. Expenditures made by the Applicant for equipment, fuel, operating supplies, and other products and services will benefit businesses in the counties and the state.

Also, as mentioned, county's tax base as a result of the construction and operation of the Project will contribute to improving the local economy ranging from approximately $570,000 and $700,000 annually after the first year in Dodge County, and approximately $130,000 and $160,000 annually after the first year in Steele County.

5.2.4 Reliability

The projected annual net capacity factor for the Project is approximately 38.9% to 46.5%. The projected average annual output of approximately 634,185 megawatt-hour (MWh) is anticipated for the Project.

5.3 The Project will Provide Benefits to Society in a Manner Compatible with Protecting the Natural and Socioeconomic Environments (Minn. R. 7849.0120(C))

Minn. R. 7849.0120(C) requires a CON applicant to address whether the proposed project will benefit society in a manner that is compatible with protecting the natural and socioeconomic environments, including human health. The following application of the factors set forth in Minn. R. 7849.0120(C) shows the energy produced by the Project will provide significant societal benefits.

5.3.1 Overall State Energy Needs

As explained in **Section 5.1** above, the Project addresses two state energy needs: (i) the RES requirement and (ii) the reduction in statewide carbon emissions. Thus, the Project is compatible with Minnesota's energy needs.

5.3.2 Potential Environmental and Socioeconomic Impacts Compared to No-Build Alternative

As explained in **Section 5.2.3**, the Project provides significant socioeconomic benefits, while, also, designed to minimize the impact on the natural environment. A non-build alternative would not provide these same socioeconomic benefits to the local community, and, also, would not provide the benefit of increasing the amount of renewable energy generation in the state. Therefore, the Project has significant socioeconomic and other benefits and minimal impact on the environment in comparison to a no-build alternative.

5.3.3 Inducing Future Development

The Project is not expected to directly induce the development in Dodge or Steele Counties. As described in **Section 5.2.3**, the Project will, however, provide significant benefits to the local economy and local landowners, which, in turn, may induce future development in these counties.

5.3.4 Socially Beneficial Uses of Output

The Project will produce affordable, clean renewable energy that will help MMPA or another off-taker to meet its RES requirements and the energy demands of its members, and will further the state's goals of reducing carbon emissions. The Project will produce enough energy to meet the energy needs for approximately 51,000 average Minnesota households annually. In addition, as described above, the local economy will benefit from the landowner lease payments for turbines, production taxes, income from the additional jobs created, and local spending.

5.4 The Project Complies with Relevant Policies, Rules and Regulations of Other State and Federal Agencies and Local Governments (Minn. R. 7849.0120(D))

5.4.1 The Project is Consistent with Minnesota Energy Policy

As explained, the Project is consistent with Minnesota's energy policies for the production of electricity, including the RES, preference for renewable energy sources, and state goals to reduce carbon emissions. With respect to the reduction of carbon emissions, the state goal is to reduce statewide greenhouse gas emissions across all sectors producing those emissions to a level at least 30 percent below 2005 levels by 2025 and to a level at least 80 percent below 2005 levels by 2050. Adding the Project is consistent with meeting these goals.

Irrespective of the change of presidential administrations in January 2017 and shifts in federal energy policy, Minnesota remains committed to achieving its renewable energy goals. Both Governor Mark Dayton and former Lieutenant Governor, now Senator, Tina Smith have publicly

reflected that Minnesota will not reverse course on its clean energy goals or abandon the ambitions of the Next Generation Energy Act.[15] This commitment has carried over into the new administration of Governor Tim Walz and Lieutenant Governor Peggy Flanagan, who proposed even more aggressive goals to lead Minnesota to 100 percent clean energy by 2050.[16]

Further support for the conclusion that the Project is consistent with state energy policy can be found in the favorable tax treatment for wind energy facilities. The state legislature has exempted all real and personal property of a wind energy conversion system from property taxes. A wind energy conversion system, as well as the materials used to manufacture, install, construct, repair, or replace the wind system are also exempt from state sales tax.

5.4.2 The Project is Consistent with Applicable Minnesota Statutory Provisions

Minnesota law provides a preference for renewable resources. Minn. Stat. § 216B.243, subd. 3a provides a preference for renewable resources in CON proceedings. Additionally, Minn. Stat. § 216B.2422, subd. 4 requires a finding that a renewable energy resource is not in the public interest before approving a new or refurbished nonrenewable energy facility. The Project is consistent with Minnesota's preference for renewable energy and satisfies these statutory criteria by furthering available resources to meet this renewable energy preference.

5.4.2.1 Distributed Generation

Pursuant to Minnesota Statutes § 216B.2426, the Commission is required to "ensure opportunities for the installation of distributed generation" are considered in CON proceedings. Distributed generation projects are less than 10 MW in size, and, therefore, do not offer the same economies of scale and efficiencies of a utility-scale facility like the Project. Thus, the Project is more appropriately sized to achieve the state's renewable energy policies efficiently and in a cost-effective manner.

5.4.2.2 Innovative Energy Preference

Minnesota also requires the Commission to consider an innovative energy project before authorizing construction or expansion of a fossil-fueled generation facility. Minn. Stat. § 216B.1694, subd. 2(a)(5). Because the Project is not a fossil-fuel facility, this requirement is not applicable.

5.4.2.3 Environmental Cost Planning

[15] Office of the Governor Newsroom, Statements from Governor Dayton, Lt. Governor Smith, and Commissioners on President Trump's Executive Order to Roll Back Progress on Climate Change, Clean Water (March 28, 2017) available at https://mn.gov/governor/newsroom/?id=1055-298010#/detail/appId/1/id/285412.

[16] Minnesota Department of Commerce, Walz, Flanagan Propose Plan to Achieve 100 Percent Clean Energy in Minnesota by 2050 (Mar. 4, 2019), available at https://mn.gov/commerce/media/news/?id=17-374074.

Minn. Stat. § 216B.243, subd. 3(12) requires the Commission to evaluate the extent to which an applicant has considered the risk of environmental costs and regulation. This statute, however, does not apply to renewable generation facilities such as the Project.[17]

5.4.2.4 Transmission Planning Compliance

Minn. Stat. § 216B.243, subd. 3(10) requires consideration of whether the entity seeking a CON is in compliance with applicable provisions of Minn. Stat. §§ 216B.1691 and 216B.2425, subd. 7. These statutes involve compliance with the states renewable energy objectives and reporting requirements for owners of existing transmission and distribution. Neither statute is applicable to DCW. While the Project supports the state's renewable energy objective by providing renewable energy to a retail provider in the state, as an IPP, DCW is not itself subject to these requirements since it does not own existing transmission and distribution infrastructure.

5.4.3 The Project is Consistent with Federal Energy Policy

Federal energy policy provides significant U.S. federal tax incentives to attract investment in renewable energy projects, including wind projects like the Project.

The renewable electricity Production Tax Credit (PTC) provided by Section 45 of the Internal Revenue Code provides for a federal income tax credit for each qualified kilowatt hour sold by a project during the tax year for the first ten years of the life of the project. In December 2015, the Consolidated Appropriations Act extended the expiration date for the PTC for wind facilities to December 31, 2019. The PTC is currently $0.023 per kWh and is phased down for facilities commencing construction after December 31, 2016. The Project's safe harbor turbines enable DCW to qualify for the full PTC if used in 2020, and 80% PTCs, assuming a 2021 Project COD.

In addition, the Investment Tax Credit (ITC) permits qualifying entities to elect to claim a credit of 30 percent of qualifying costs in lieu of the PTC for wind projects, with a step down of the credits from 2016 to 2019. Election of the ITC allows this credit to be claimed when a project is operational, and specifically decreases a project's depreciable basis by 50 percent of the value of the credit.

5.4.4 The Project Complies with Federal, State, and Local Environmental Regulation

The Project will meet or exceed the requirements of all applicable federal, state, and local environmental laws and regulations. **Table 2** lists the approvals the Project may need from applicable governmental entities. DCW is committed to obtaining all necessary environmental and other approvals required under federal, state, and local requirements.

[17] *Elm Creek*, Docket No. IP6631/CN-07-789, Commission Order Granting Certificate of Need at 12 (Jan. 15, 2008).

Table 2: List of Approvals and Consultations

Regulatory Authority	Permit/Approval
FEDERAL	
Federal Energy Regulatory Commission	• Exempt Wholesale Generator Self Cert. (EWG) • Authorization to sell wholesale power at Market Based Rates
Federal Aviation Administration	• Form 7460-1 Notice of Proposed Construction or Alteration (Determination of No Hazard) • Form 7460-2 Notice of Actual Construction or Alteration
Federal Communications Commission	• Non-Federally Licensed Microwave Study • NTIA Communication Study
U.S. Army Corps of Engineers	• Clean Water Act Section 404 coordination (General, Individual, or Nationwide permit if required)
U.S. Fish and Wildlife Service	• Informal consultation under Section 7 of the Endangered Species Act
Environmental Protection Agency (region 5) (EPA) in coordination with the Minnesota Pollution Control Agency (MPCA)	• Spill Prevention Control and Countermeasure (SPCC) Plan
U.S. Department of Agriculture	• Informal consultation if required for properties in Conservation / Grassland / Wetland Easement and/or Reserve Programs
Federal Emergency Management Agency	• Coordination of Flood Plain Designation
STATE	
Minnesota Public Utilities Commission	• Site Permit for Large Wind Energy Conversion System • Certificate of Need for Large Wind Energy Conversion System • Route Permit for high-voltage transmission line

Regulatory Authority	Permit/Approval
Minnesota Department of Labor and Industry	• Electrical Plan Review, Permits, and Inspections
Minnesota Department of Agriculture	• Informal coordination and preparation and/or approval of an Agriculture Impact Mitigation Plan
Minnesota State Historic Preservation Office (SHPO)	• Informal SHPO consultation for Cultural and Historical resources review including State and Natural Register of Historic Sites review
Minnesota Pollution Control Agency	• National Pollutant Discharge Elimination System/State Disposal System Permit (NPDES/SDS) – General Storm Water Permit for Construction Activity • License for a Very Small Quantity Generator of Hazardous Waste • Spill Prevention Control and Countermeasure (SPCC) Plan • Aboveground Storage Tank Notification Form • Clean Water Act Section 401 Water Quality Certification
Minnesota Department of Health	• Environmental Bore Hole approval for subsurface geotechnical studies • Plumbing Plan Review if required for O&M building • Water Well Permit if required for O&M building
Minnesota Department of Natural Resources	• Informal coordination for Endangered Species Statutes • Coordination on and/or approval of an Avian and Bat Protection Plan • General Permit for Water Appropriations, Dewatering • Wetlands/Waters coordination for Public Waters Work Permit and/or License to Cross Public Lands and Waters
Minnesota Department of Transportation	• Oversize/Overweight Permit for State Highways

Regulatory Authority	Permit/Approval
	• Access Driveway Permits for MN/DOT Roads • Tall Structure Permit • Utility Access Permit
LOCAL	
Dodge and Steele County	• Roadway Access Permit • Drainage Permit • Working in Right-of-Way Permit • Overweight/Over-Dimension Permit • Utility Permit
Dodge and Steele County Soil and Water Conservation District	• Wetland Conservation Act Approvals
Townships	Right-of-way permits, crossing permits, road access permits, and driveway permits for access roads and electrical collection system, as needed
OTHER	
MISO	• Turbine Change Study • Generator Interconnection Agreement

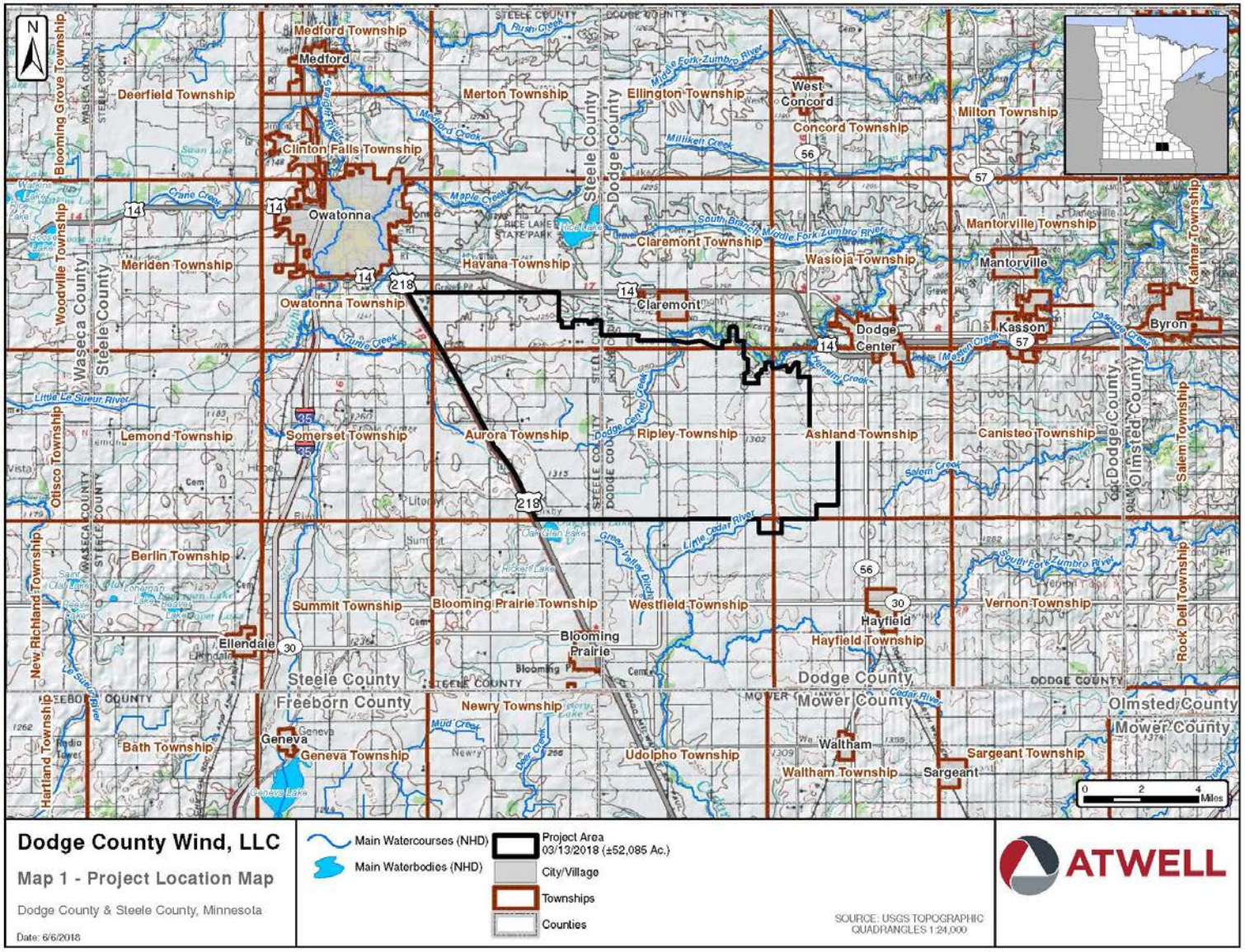
6.0 DESCRIPTION OF LEGF AND ALTERNATIVES (MINN. R. 7849.0250)

6.1 Proposed Project (Minn. R. 7849.0250(A))

The Project will consist of an array of 68 wind turbines. The turbines will be located in the eastern part of Dodge County and the western part of Steele County. All 68 wind turbines used for the Project will be GE 2.5 MW wind turbines.[18] GE 2.5 MW turbines will have 116 meter blades with 90 meter towers. Power from each turbine will be fed to a pad-mounted step-up transformer, which steps the voltage up from 690 volts to 34.5 kV. The 34.5 kV collector lines run underground from each turbine to the DCW collector substation proposed for construction approximately 7 miles southwest of the city of Dodge Center, Minnesota, where the voltage will be stepped up to a generation tie line. In all, the wind component of the Project includes turbines, a project collector substation, collection lines, an O&M building, permanent meteorological tower, and gravel access roads. A map showing the location of the wind component of the Project is provided below in **Figure 1**, with more detailed Project maps provided in **Appendix C (Wind Project Site Maps)**.

[18] If it is feasible to complete construction in 2020, DCW would plan to use eight GE 2.3 MW turbines with 116.5-meter (383.2-foot) blades and 80-meter (262.5-foot) towers.

Figure 1: Project Layout



6.1.1 Nominal Generating Capacity and Effect of Economies of Scale (Minn. R. 7849.0250 A (1))

The total nominal generating capacity of the Project is approximately 170 MW. The Project size produces economics of scale gains in procurement, construction, O&M, and interconnection costs. For example, mobilization costs for delivery of turbines and construction of the Project are lower on a per-turbine basis than they would be for a smaller wind project with fewer turbines. The result of gains in the economics of scale is a lower cost of production for electricity.

6.1.2 Annual Capacity Factor (Minn. R. 7849.0250 A (2))

The projected annual net capacity factor for the Project is approximately 38.9% to 46.5%. The projected average annual output of approximately 634,185 megawatt-hour (MWh) is anticipated for the Project.

6.1.3 Fuel (Minn. R. 7849.0250 A (3))

The fuel for the Project is wind.

6.1.4 Anticipated Heat Rate (Minn. R. 7849.0250 A (4))

Heat rates are specific to fossil generation, and, therefore, are not applicable to a wind generation facility.

6.1.5 Facility Location (Minn. R. 7849.0250 A (5))

The Project's wind turbine array will be located in the eastern part of Dodge County and western part of Steele County within the townships of Ashland, Aurora, and Ripley. The estimated size of the Wind Project area is 52,000 acres (81 square miles) of mostly agricultural land. The new collector substation will be sited approximately seven miles southwest of the city of Dodge Center, Minnesota. From the collector substation, a generation tie line will travel to the POI, which is still to be identified. The O&M facility will be located within the Project area.

6.2 Availability of Alternatives (Minn. R. 7849.0250(B))

Consistent with the Commission-granted partial exemption, non-renewable energy sources have been excluded from this alternatives analysis.[19] Thus, the criteria used in this analysis includes whether: (i) the energy source is cost-effective; (ii) the energy source is commercially-proven and reliable for the electrical generation output needed; and (3) the energy source is appropriate for the site selected.

[19] Dodge County Wind Order Granting Exemptions at 1.

Developing and operating generating sources that are cost-effective and use proven technology is particularly important to an IPP like DCW. DCW does not have access to ratepayer funds that could provide a resource for retirement of capital investments. In addition, as a seller of electricity within the terms of an agreed-upon PPA price, DCW must keep its prices – and, thus, its costs – low and competitive.

Commercial feasibility and reliability with respect to the generation output needed are important considerations in selling the power generated. Wind is a proven and reliable resource. Further, the site chosen for the Project is appropriate given the ability to achieve the approximately 38.9% to 46.5% capacity factor, while minimizing the impact to the environment and human settlement.

6.2.1 Purchased Power (Minn. R. 7849.0250 B (1))

DCW is an IPP, and, therefore, does not purchase power. Instead, DCW will sell power to the MMPA or another off-taker pursuant to a PPA. As such, this data requirement is not applicable, and the Commission granted DCW an exemption.[20]

6.2.2 Upgrades to Existing Resources (Minn. R. 7849.0250 B (2))

DCW has no existing facilities in Minnesota. Therefore, there is no facility for DCW to improve. However, consistent with DOC's recommendations on DCW's request for certain CON exemptions, DCW agreed to provide equivalent data from the purchaser of the Project's output. According to MMPA, it knows of no generating resource upgrade that could serve as an alternative to the Project. Since MMPA is in need of additional renewable energy, there is no potential upgrade to an existing MMPA facility suitable to produce approximately 170 MWs of wind energy.

6.2.3 New Transmission (Minn. R. 7849.0250 B (3))

DCW has no plans to own or operate transmission voltage level lines beyond the generation tie line needed for the interconnection of the Project. According to MMPA, there is no viable transmission alternative that would provide approximately 170 MWs of wind energy as only a wind generating plant can produce the approximately 170 MW of renewable energy contracted for in the PPA.

6.2.4 New Generating Facilities (Minn. R. 7849.0250 B (4))

6.2.4.1 Solar Power

Solar is not an alternative to the Project. The cost and reliability of wind power continues to be more favorable than for solar power despite recent substantial decreases in cost for solar. Wind

[20] Dodge County Wind Order Granting Exemptions.

continues to be more cost-effective than solar-powered electricity and remains the lowest-cost new source of renewable energy. For example, the levelized total system cost for wind power in the EIA's Annual Energy Outlook 2018 was $48.1/MWh compared with $57.7/MWh for solar photovoltaic.[21] Also, from a land-use perspective, a MW of solar requires more land be temporarily used for the life of the project to achieve the same number of MW. Further, as explained, crop production with the Project will not be significantly impacted, whereas for a solar facility the acres used would be taken out of use for the life of the solar plant. Thus, the Project, as wind generating facility, has benefits over a solar facility.

6.2.4.2 Hydropower

There has been very little increase in the use of hydropower in Minnesota over the last decade. The use of hydropower increased from 774,729 MWh in 2005 to 849,054 MWh in 2015, an increase of less than 10% over that 10-year period.[22] In that same time period, electricity generated from wind power increased more than 517%.[23] According to the 2016 Quad Report, the reason for the minimal investment in hydroelectric power is likely due to the "[c]osts of maintaining and operating dams compared to other sources of energy. . . as well as increased concern about the potential negative effect dams can have on Minnesota's river ecosystems." Finally, hydropower facilities of the same size as the Project do not qualify under the RPS, and, thus, do not meet the objective of the Project. Therefore, hydropower is not an alternative to the Project.

6.2.4.3 Biomass

Minnesota communities do have accessible and low-value biomass feedstocks. However, the cost of these feedstocks vary widely, and the unsubsidized levelized cost of energy from biomass tends to be much greater than that of wind. Further, the environmental impacts of a biomass facility may be greater than the Project, due to both the facility itself and the machinery and equipment needed to gather and transport the biomass fuel. For these reasons, a biomass plant is not an alternative to the Project.

6.2.4.4 Emerging Technologies

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[21] U.S. Energy Information Administration, Levelized Cost and Levelized Avoided Cost of New Generation Resources in the Annual Energy Outlook 2018, *available at:* https://www.eia.gov/outlooks/aeo/pdf/electricity_generation.pdf.

[22] Minnesota Department of Commerce, Energy Policy and Conservation Quadrennial Report 2016 at 28 (the 2016 Quad Report) available at: http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0ahUKEwivscvd09jbAhWOrVkKHRYyDv8QFggnMAA&url=http%3A%2F%2Fmn.gov%2Fcommerce-stat%2Fpdfs%2Fquad-report-2016.pdf&usg=AOvVaw1esivJ8In3md_S5ubtiO_P

[23] *Id.*

Emerging renewable power technologies continue to be developed. These technologies are not sufficiently mature to provide the output needed or to be cost-effective and reliable.

Pumped Storage

The proposed site in Dodge County is not suited to pumped storage, because of the need to store large amounts of water in an elevated reservoir. In addition, there is currently no net generation from pumped storage in Minnesota. Therefore, this technology is not an alternative to the Project.

Compressed Air

Highly specialized geological sites are needed to make use of compressed air technology. Such sites do exist are not located in the vicinity of the Project site. Also, this technology is not yet commercially-proven; accordingly, it is not an alternative to the Project.

Superconducting Magnets

This technology, which makes use of coils that can store electric energy, is not yet commercially-proven. Accordingly, it is not an alternative to the Project.

Hydrogen and Fuel Cells

While much research is being done regarding hydrogen and fuel cells, the technology is not yet available on a commercial scale. It is possible, however, that as research and commercial applications advance in years to come, this technology may be used to enhance other renewable technologies, such as the Project.

Table 3 provides comparative costs for the above mentioned technologies and compares them to the costs of wind generation.

Table 3: Renewable Energy Technology Costs[24]

Technology	Size (MW)	Total Overnight Cost in 2015 (2015 $/kW)	Variable O&M (2015 $/MWh)	Fixed O&M (2015 $/kW/yr)
Fuel Cells	10	7,132	45.64	0.00
Biomass	50	3,837	5.58	112.15
Conventional Hydropower	500	2,898	1.33	40.05
Wind	100	1,657	0.00	47.47

[24] The figures in this table are taken from a report of the U.S. Energy Information Administration, *Assumptions to the Annual Energy Outlook 2018: Electricity Market Module* (Apr. 2018), at 4, available at: https://www.eia.gov/outlooks/aeo/assumptions/pdf/electricity.pdf.

Technology	Size (MW)	Total Overnight Cost in 2015 (2015 $/kW)	Variable O&M (2015 $/MWh)	Fixed O&M (2015 $/kW/yr)
Photovoltaic	150	2,105	0.00	22.02
Solar Thermal	100	4,228	0.00	71.41

6.2.4.5 Non-CON Facilities (Minn. R. 7849.0120(A)(4))

Under Minn. Stat. §§ 216B.2421 and 216B.243, subd. 2, and Minn. R. Ch. 7849, a CON is required for the Project because it is a "large energy facility," *i.e.*, larger than 50 MW. As an IPP, DCW executed a PPA with MMPA through an arms-length negotiation, with MMPA determining that the Project was well-suited to meeting its renewable energy needs. Smaller facilities that do not require a CON would not be able to economically provide the amount of electricity that MMPA is seeking, and, therefore, MMPA chose the Project as the best solution for its needs. In addition, DCW has the advantages of economies of scale, which would not be available to smaller facilities.

6.2.4.6 Reasonable Combinations of Alternatives (Minn. R. 7849.0120(B)(5))

There is no combination of the aforementioned renewable alternatives that would be appropriate to consider as a substitute for the Project, because, as compared to the proposed Project, they would not produce electric output more cost-effectively or reliably than the Project.

6.2.4.7 No Facility Alternative (Minn. R. 7849.0340)

Minn. R. 7849.0340 requires an applicant to submit data for the alternative of "no facility," including a discussion of the impact of this alternative on the applicant's generation and transmission facilities, system, and operations. This rule also requires an analysis of "equipment and measures that may be used to reduce the environmental impact of the alternative of no facility." Minn. R. 7849.0340(C). DCW does not have a "system," nor does it have other generation and transmission facilities in Minnesota, and, therefore, the Commission provided a partial exemption of this requirement, conditioned upon DCW providing equivalent data from MMPA regarding a no build alternative.[25] On this point, MMPA represents that the "no-facility" alternative would have a detrimental impact to MMPA in that the purpose of the Project is to help it address and exceed its RES requirements and provide carbon-free energy to its customers and the state. Therefore, consideration of the no facility alternative is not appropriate or warranted given the needs of MMPA and the state.

[25] Dodge County Wind Order Granting Exemptions at 1.

6.2.4.8 Facility Information for Alternatives Involving Construction of a LHVTL (Minn. R. 7849.0330)

Minn. R. 7849.0330 requires the applicant to provide certain data for each alternative that would involve construction of a LHVTL. Transmission facilities are not true alternatives to the Project, since the purpose of the Project is to increase the supply of available renewable wind energy. The proposed generation tie line will be an associated facility of the Project to be constructed for the sole purpose to connect the Project to the transmission system. DCW is working to identify a new POI and the associated facilities necessary to interconnect at that POI. Access to transmission facilities beyond the POI will be arranged by the grid operator, MISO, and MMPA, as applicable. Thus, the electricity generated by the Project will be transmitted over transmission and distribution facilities owned or operated by others (with the exception of a generation tie line to be identified at a later date). For these reasons, Minn. R. 7849.0330 is not applicable, and the Commission granted DCW an exemption from this data request.[26]

6.3 Discussion of Proposed Facility and Alternatives (Minn. R. 7849.0250(C))

The Commission granted DCW a partial exemption from Minn. R. 7849.0250(C)(1)-(6), (8)-(9), which would require an analysis of various details pertaining to both the proposed facility and each of the alternatives discussed in response to Minn. R. 7849.0250(B).[27] Consistent with the Commission granting DCW a partial exemption from the data requirements in Minn. R. 7849.0250(B), which limits the discussion required to only renewable alternatives, the Commission also limited the information required under this data requirement to only those renewable alternatives discussed in response to Minn. R. 7849.0250(B)(4) that could provide electric power at the asserted level of need. As explained above, there is no such alternative. Therefore, consistent with the partial exemption, only information regarding the Project is applicable.

6.3.1 Wind Facility

6.3.1.1 Capacity Cost (Min. R. 7448.0250 C (1))

Costs for wind energy facilities are typically not expressed in terms of capacity costs. Rather, the Project will deliver energy to the MMPA on an as-generated basis and will receive payment in the form of a $/kWh payment. DCW's estimated cost for the wind component of the Project is $300 million, equating $1,765 per kilowatt.

[26] *Id.*

[27] *Id.*

6.3.1.2 Service Life (Minn. R. 7849.0250 C (2))

The Project's service life of 30 years has been assumed to estimate annualized capital costs, which is based on the extensive experience of affiliates of DCW with other wind generating plants.

6.3.1.3 Estimated Average Annual Availability (Minn. R. 7849.0250 C (3))

DCW estimates that the Project will be available at least 95 percent of the year.

6.3.1.4 Fuel Costs (Minn. R. 7849.0250 C (4))

The Project will be powered by wind, and, therefore, does not have fuel costs like fossil generation. DCW will make nominal purchases of emergency station service when the wind turbines are idle, and this station service may involve a generation mix that includes embedded fuel costs.

6.3.1.5 Variable Operating and Maintenance Costs (Minn. R. 7849.0250 C (5))

Variable maintenance costs will likely range between $0.0050 and $0.0075 per kWh. An advantage of a wind energy facility the size of the Project is that it typically does not require a complete plant outage for maintenance. Individual turbines can be serviced, while the rest of the facility continues to deliver energy.

6.3.1.6 Total Cost (Minn. R. 7849.0250 C (6))

The capital expenditure for the wind component of the Project is estimated to be $300 million. This includes all costs associated with development, design, and construction. General costs associated with project O&M, initial spare parts, operating equipment and operating supplies will be $2.5 million the first year and $750,000 over 29 years.

6.3.1.7 Effect of Project on Rates System-wide (Minn. R. 7849.0250 (C) 7)

The Commission provided a partial exemption of Minn. R. 7849.0250 (C) 7, requiring DCW to seek information on the effect of the Project on rates system-wide from the purchaser, MMPA.[28] MMPA expects the impact of the Project on rates to be minimal to none.

[28] Dodge County Wind Order Granting Exemptions at 1

6.3.1.8 Efficiency (Minn. R. 7849.0250 C (8))

No fuel is burned in the production of energy at the Project, and, therefore, there is no information to provide on this subject.

6.3.1.9 Assumptions (Minn. R. 7849.0250 (C) (9))

There are no specific assumptions other than those already identified that impacted the provision of information in response to Minn. R. 7849.0250 (C) (1-8).

6.3.1.10 Map of System (Minn. R. 7849.0250(D))

The Commission granted DCW an exemption from Minn. R. 7849.0250(D), which requires an applicant to include a map showing the applicant's system.[29] As an IPP, DCW does not have a "system." In lieu of a system map, DCW provides maps showing proposed site of the Project relative to the transmission grid in **Appendix C (Wind Map)**.

6.3.1.11 Promotional Activities (Minn. R. 7849.0240 (B))

The Commission granted DCW a partial exemption from Minn. R. 7849.0240, subp. 2 (B), requiring that it request the purchaser, MPPA, to provide equivalent data on promotional activities.[30] According to MPPA, it has not conducted promotional activities associated with the Project.

[29] *Id.*

[30] *Id.*

7.0 PEAK DEMAND AND ANNUAL CONSUMPTION FORECAST (MINN. R. 7849.0270)

The Commission granted DCW an exemption from Minn. R. 7849.0270, subps. 1-6, which require the applicant to provide "data concerning peak demand and annual electrical consumption within the applicant's service area and system."[31] DCW does not have a "service area" or "system" and, as such, the requested data is inapplicable to DCW. The Commission, however, required DCW to provide a general overview of the purchaser's system and future renewable resource needs.[32]

MMPA is comprised of 12 member municipal utilities. MMPA's member communities include Anoka, Arlington, Brownton, Buffalo, Chaska, East Grand Forks, Elk River, Le Sueur, North St. Paul, Olivia, Shakopee, and Winthrop. MMPA provides electricity to its municipal utility members who then deliver and sell that electricity to customers in their communities. According to MMPA's annual report, its members are growing, with increases in both residential and business customers.[33] MMPA's members have a combined population of nearly 150,000 and provide power to 72,330 homes and businesses across Minnesota.[34]

MMPA's most recent Integrated Resource Plan (IRP) was filed with the Minnesota Public Utilities Commission on December 20, 2013, and the next IRP is due to be filed August 1, 2018.[35] In its 2013 IRP, MMPA stated that its projected annual growth rate for the 2014 to 2018 period is less than two percent, and during the 2019 to 2028 period is around one percent.[36] MMPA also indicated that it was projected to sell 1,478,593 MWh of energy to its eleven member municipal utilities in 2013.[37] MMPA further projected that its annual REC requirements are expected to grow from 174,000 MWh in 2014 to 509,000 MWh in 2028.[38]

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[31] *Id.*

[32] *Id.* at 6.

[33] MMPA 2016 Annual Report at 2.

[34] *Id.*

[35] *See* Docket No. ET-6133/RP-17-468, Order re Minnesota Municipal Power Agency (MMPA) Request for a One-Year Extension to August 1, 2018 to file its Integrated Resource Plan (July 28, 2017).

[36] At the time of the 2013 IRP, MMPA projected its Non-Coincident Peak and Coincident Peak to grow at approximately 1% in the 2019-2028 period. MMPA Application for Integrated Resource Plan Approval 2014-2028 (December 20, 2013).

[37] MMPA Application for Integrated Resource Plan Approval 2014-2028 at 4 (December 20, 2013).

[38] *Id*. at 56.

With respect to another off-taker, utilities plan to continue to seek renewable generation resources in the next near-term planning horizon, and will continue to require additional renewable energy into 2030 and beyond. Several Minnesota utilities subject to the RPS need additional renewable resources beginning in the mid-2020s or earlier to meet their RPS requirements.[39] Utilities have noted in their resource planning before the Commission plans to add approximately 1000 MW of wind before 2020, with plans to add another 1600-1800 MW during the remainder of the planning horizon.[40] Given this utility demand for renewable energy, there exists a strong market for IPPS, such as DCW, to sell electricity from wind and other renewable projects, including the Project.

[39] Minnesota Department of Commerce, Minnesota Renewable Energy Standard: Utility Compliance (Jan. 15, 2019) at 11.

[40] Xcel Energy, Upper Midwest Resource Plan 2016-2030 (available at https://www.xcelenergy.com/company/rates_and_regulations/filings/upper_midwest_2016-2030_resource_plan); Otter Tail Power Company, 2017-2031 Resource Plan (available at https://www.otpco.com/about-us/resource-plan/); Great River Energy, 2018-2032 Integrated Resource Plan (available at http://greatriverenergy.com/we-provide-electricity/making-electricity/futureplans/).

8.0 SYSTEM CAPACITY (MINN. R. 7849.0280)

Minn. R. 7849.0280 requires a CON applicant to provide information on the ability of its existing system to meet the forecasted demand. As an IPP, DCW does not have a "system" as defined by these rules. Accordingly, the Commission granted DCW an exemption from this requirement, with the understanding that DCW would provide a general overview of the purchaser's system and future renewable resource needs.[41]

As stated in its most recent IRP, MMPA needs additional renewable capacity for the future. MMPA will begin serving Elk River Municipal Utilities as a new member on October 1, 2018. Therefore, starting with summer of 2019, MMPA's capacity requirements increase by 71 MW.[42] In 2013, MMPA projected its need for additional capacity to grow from 9 MW in 2016 to 156 MW in 2028.[43]

[41] Dodge County Wind Order Granting Exemptions at 1, 6.

[42] MMPA Application for Integrated Resource Plan Approval 2014-2028 at 2 (December 20, 2013).

[43] *Id.*

9.0 CONSERVATION PROGRAMS (MINN. R. 7849.0290)

The Commission granted DCW an exemption from Minn. R. 7849.0290, which requires an applicant to describe its energy and conservation plans, including load management, and the effect of conservation in reducing the applicant's need for new generation and transmission facilities.[44]

[44] Dodge County Wind Order Granting Exemptions at 1.

10.0 CONSEQUENCES OF DELAY (MINN. R. 7849.0300)

The Commission granted a partial exemption of this requirement with the understanding that DCW would seek equivalent data from the purchaser, MMPA.[45] According to MPPA, delay of the Project would detrimentally impact MMPA's ability to address the RES requirements, and would likely result in the cancellation of the PPA that has competitive pricing which is based, in part, on lower costs due to the PTC. With the PTC being phased out, the cost of replacement renewable energy, if available, is likely to be higher than the PPA price for the renewable energy from the Project. Hence, delay would also likely result in a lost opportunity to provide MMPA and the state with clean, cost-effective renewable energy. Delay of the Project could also nullify the environmental, policy, and socioeconomic benefits of the Project set forth herein, including the creation of jobs and the advancement of the greenhouse gas emissions reduction goals.

[45] *Id.*

11.0 ENVIRONMENTAL INFORMATION FOR PROPOSED PROJECT AND ALTERNATIVES (MINN. R. 7849.0310)

Concurrently, with this Application, DCW is submitting an update to its Site Permit in MPUC Docket No. IP6981/WS-17-307. Because the Project will no longer be interconnecting at the Byron Substation at 345 kV, DCW requested to withdraw its Route Permit application in MPUC Docket No. IP6981/TL-17-308. The following is a summary the environmental information set forth in the Site Permit application. Additional environmental information previously included in reference to the transmission line that was the subject of the Route Permit application has been updated to extent applicable to the Project and the Site Permit application.

11.1 Wind Facility

11.1.1 Impacts to Visual Resources

Wind turbines will alter the visual surroundings of the landscape within and near the Project Area. Wind turbines are not currently present within the Project Area; however, wind turbines occur within the regional vicinity of the Project Area. Turbines will likely be viewed in one of three perspectives: (i) as a visual disruption; (ii) as generally compatible with the rural agricultural heritage of the area, which includes windmills, silos and grain elevators; or (iii) as adding a positive aesthetic quality to the landscape.

The installation of wind turbines will not significantly alter the character of the regional landscape given the presence of existing wind farms in the vicinity; however, the degree of visual impact will vary based on the type of observer and individual preference.

The Project proposes 68 GE 2.5 MW turbines, which have a rotor diameter of 116 meters (381 feet). Each turbine is composed of three blades, a hub, and a monopole. The turbines will be uniform in color and painted with a non-reflective/off-white color designed to minimize visual impacts. The towers and blades will be of a color, design, operation, and appearance consistent with other turbines in the area. No advertising or graphics will be placed on any part of the tower or blades; however, the turbines will be clearly numbered for identification and emergency response. The towers will not be illuminated except as required by the Federal Aviation Administration (FAA).

The use of 68 GE 2.5 MW turbines helps to mitigate the visual impact of the Project by minimizing the number of turbines compared to the use of less MW producing turbines. DCW will implement the following mitigation measures to minimize potential visual impacts:

- Turbines will be uniform in color;
- Turbines will not be located in sensitive areas such as public parks, Wildlife Management Areas (WMAs), Scientific and Natural Areas (SNAs) or Waterfowl Production Areas (WPAs);

- Turbines will be illuminated to meet the minimum requirements of FAA regulations for obstruction lighting of wind turbine projects;
- Electric collection lines will be buried to minimize above-ground structures within the Project Area;
- Existing roads will be used for construction and maintenance, as appropriate, to minimize the number of new roads constructed; and
- Temporarily disturbed areas will be converted back to cropland or otherwise reseeded with native seed mixes appropriate for the region.

11.1.2 Shadow Flicker Impacts

With respect to wind turbines, shadow flicker can be defined as an intermittent change in the intensity of light in a given area resulting from the operation of a wind turbine due to its interaction with the sun. While indoors, an observer experiences repeated changes in the brightness of the room as shadows cast from the wind turbine blades briefly pass by windows as the blades rotate. In order for this to occur, the wind turbine must be operating, the sun must be shining, and the window must be within the shadow region of the wind turbine – otherwise there is no shadow flicker. An idle wind turbine only generates a stationary shadow similar to any other structure.

A Project-specific shadow flicker analysis was conducted using the software package, WindPRO. The WindPRO modeling was further refined by incorporating sunshine probabilities and wind turbine operational estimates by wind direction over the course of a year. The values produced by this further refinement are known as the "expected" shadow flicker. The results of the shadow flicker analysis will be included in Appendix E to the Site Permit application. Appendix E will include details regarding the methodology and results of the assessment, and presents calculated annual hours of shadow flicker at identified receptors based upon a worst-case scenario and an expected case scenario.

The predicted expected annual shadow flicker duration ranged from 0 hours, 0 minutes per year to 39 hours, 50 minutes per year (compared to 34 hours, 57 minutes per year in the originally filed Application, and 39 hours and 29 minutes per year in the amended Application). The maximum expected shadow flicker of 39 hours, 50 minutes per year occurs at receptor #125 (compared to 34 hours, 57 minutes per year at receptor #410 in the originally filed Application and 39 hours and 29 minutes per year at receptor #125 in the amended Application), a participating receptor. The maximum expected annual duration of shadow flicker at a non-participating location (#116) is 33 hours, 56 minutes per year (compared to 27 hours, 26 minutes per year at receptor #173 in the originally filed Application). The majority of the receptors (546 compared to 536 in the originally filed Application) were predicted to experience no annual shadow flicker. 97 locations were predicted to experience some shadow flicker but less than 10 hours per year (compared to 102 locations in the originally filed Application). The modeling

results showed that 39 locations would be expected to have 10 to 30 hours of shadow flicker per year (compared to 51 locations in the originally filed Application). Twelve receptors (compared to 5 in the originally filed Application) are modeled to be above 30 hours per year, one of which is non-participating (#116).

The Project was designed to minimize shadow flicker exposure of the residences in the area. DCW will use site specific mitigation measures to address shadow flicker impact, as appropriate, including the following:

- Meeting with the homeowner to determine the specifics of their complaint;
- Investigating the cause of the complaint; and
- Providing the homeowner with mitigation alternatives including shades, blinds, awnings or plantings.

11.1.3 Impacts to Land Use

The Project Area encompasses approximately 52,085 acres. The Project Area is located in western Dodge County and eastern Steele County in southeastern Minnesota, immediately southwest of Dodge Center and north of Blooming Prairie, Minnesota. Land use primarily consists of agricultural activity, including row cropping and livestock production. Temporary and permanent impacts to agricultural activities will include the removal of land from row crop production and pasture during the construction and operation of the Project. Additionally, temporary and permanent impacts to pastureland are expected to be minimal and restricted to removing small amounts of land from use. Only the land for the turbines and associated pads, certain electrical equipment, and access roads will be permanently taken out of crop production. After construction is completed, remaining land surrounding the turbines and access roads may still be farmed. The permanent loss of approximately 49 acres of agricultural land total for the Project will not result in the loss of agricultural-related jobs or net loss of income. Thus, land use impacts will be minimal.

11.1.4 Impacts to Wildlife

The USFWS Land-based Wind Energy Guidelines were issued on March 23, 2012 to provide a structured and scientific approach to wildlife concerns during all stages of land-based wind energy development (USFWS 2012). The guidelines use a tiered approach to collecting information, with each tier increasing in the detail of research and information. The tiered approach provides the opportunity for evaluation and decision-making at each step of a Project to enable the developer to abandon or proceed with development or to collect additional information.

A Tier 1 and Tier 2 Site Characterization Study was completed for the Project Area in March 2017 (Atwell 2017a). Information for this study was gathered through MNDR and the USFWS database research, additional resources, and a site visit by a qualified biologist in January 2017.

Tier 1 questions help determine potential environmental risk at the landscape scale, while Tier 2 questions help to determine potential environmental risk at the project scale (USFWS 2012). Tier 3 wildlife studies that have been completed for the Project include an Acoustic Bat Use Study in 2014 (Normandeau Associates, Inc. 2014), a Year 1 Avian Use Study in 2017 (HDR 2017), a Bald Eagle and Raptor Nest Aerial Survey in 2017 (Atwell 2017b), and a Targeted Loggerhead Shrike and Henslow's Sparrow Inventory Survey in 2017 (Atwell 2017c). A Year 2 Avian Use Study is currently underway. To the extent completed, the results of these studies will be summarized in further detail in the Site Permit application.

Field and desktop studies indicate that impacts to wildlife and wildlife habitat are expected to be minimal because grasslands, wooded areas, shrublands, and other areas identified as important to wildlife are limited within the Project Area and will largely be avoided via Project design. Minor impacts to grasslands, shrublands, and wetlands may occur.

Bird and bat mortalities that may occur at the Project during operations are unlikely to affect populations of most species, including species of conservation concern. Impacts to birds and bats as a result of the Project are not expected to differ markedly from those reported by other previous studies in agricultural settings within Minnesota (Poulton 2010, WEST 2015, Westwood 2015).

The Applicant has carefully sited the Project so as to avoid sensitive areas identified by MNDNR. This has included, among other efforts, placing all turbines and project infrastructure outside of the west-central portion of the Project Area delineated by MNDNR in a letter dated May 26, 2017. Careful siting and continued project planning includes avoidance of sensitive features and wildlife habitat. The Applicant will coordinate with the appropriate agencies regarding mitigation measures to avoid potential impacts to wildlife and Rare and Unique Natural Features in the Project Area during selection of the turbine locations and Project development and operation. In addition, the Applicant has developed a draft Avian and Bat Protection Plan for implementation during construction and operation of the Project.

12.0 FACILITY INFORMATION FOR PROPOSED PROJECT AND ALTERNATIVES INVOLVING CONSTRUCTION OF A LEGF (MINN. R. 7849.0320)

12.1 Land Requirements (Minn. R. 7849.0320(A))

The Project is located on land that is zoned for agricultural use. The wind facility will remove approximately 49 acres of land from agricultural use. Typical wind projects require approximately one-half acre per turbine for the turbine pad, transformer, access road, and associated infrastructure. The land requirements for the Project are consistent with the requirements for wind projects of a similar size. No relocation of people or businesses will be necessary for the Project. Additional land impacts are anticipated from associated interconnection facilities for the Project. These impacts will vary depending on the size, length, and location of the interconnection facilities, which are yet to be determined.

12.1.1 Land Requirements for Water Storage

The Project and associated facility will not require any land for water storage.

12.1.2 Land Requirements for Cooling System

The Project and associated facility will not require any land for a cooling system.

12.1.3 Land Requirements for Solid Waste Storage

The Project and associated facility will require minimal space for maintenance of the facilities, used for the storage of used oil and other lubricants, as well as for spare parts and tools.

12.2 Traffic (Minn. R. 7849.0320(B))

Temporary impacts are expected to public roads during the construction phase of development as materials, personnel and equipment will be brought in via existing U.S. Highways, county roads, and township roads. U.S. Highways 218 and 14 are the main access routes into the Project Area and would likely be used as corridors to bring materials and equipment to the Project site; however, the exact routes will be determined closer to construction and in coordination with local jurisdictions as appropriate. The maximum amount of construction traffic is expected to be approximately 500 trips per day during peak construction. Local roads can accommodate this traffic as the functional capacity of a two-lane paved rural highway is in excess of 5,000 vehicles per day. However, some minor, short-term traffic delays within and near the Project site may occur during turbine and equipment delivery and construction activities.

Construction of the Project is not anticipated to have permanent impacts on roadways or traffic within the proposed routes. However, construction of the Project will likely result in temporary impacts including road and lane closures and an increase in traffic congestion. Temporary road

and lane closures may be necessary to safely and efficiently install Project facilities across roadways, as necessary. Road and lane closures may cause delays, but most crossings will be able to be completed within 24-48 hours, and the road and/or lanes would be re-opened and traffic flow would resume as normal. Most of the roads to be affected have minimal daily traffic, and road and/or lane closures should not have significant impacts on local traffic. There may be some traffic impacts at the crossings of US-14 and State Highway 56.

The Project will temporarily increase traffic congestion within the route width and surrounding areas. However, due to the rural setting and generally low traffic present within a majority of the routes, this temporary increase is not anticipated to have a significant impact on local traffic. Rail and barge impacts are not expected.

12.3 Information Pertaining to Fossil-Fueled Activities (Minn. R. 7849.0320(C)-(D))

12.3.1 Fuel

The Project is not a fossil-fueled facility.

12.3.2 Emissions

The Project is not a fossil-fueled facility and will not release any emissions from the power generation process.

12.4 Water Usage for Alternate Cooling Systems (Minn. R. 7849.0320(E))

Wind power plants do not utilize cooling systems. Water requirements therefore are limited to potable water needs for Project personnel. The water requirements of the O&M building will be met through the local rural water service or the installation of a well in accordance with applicable regulations.

12.5 Water Discharges (Minn. R. 7849.0320(F))

No wastewater discharges will occur as a result of the construction or operation of the Project except for domestic-type sewage discharges of Project personnel. Temporary sanitary facilities will be provided during construction, and the O&M building may require a septic system, which will be installed in accordance with applicable regulations.

12.6 Radioactive Releases (Minn. R. 7849.0320(G))

The Project and its associated facility will not produce any radioactive releases.

12.7 Solid Waste (Minn. R. 7849.0320(H))

Hazardous materials used and stored within the Project Area during construction may consist of fuel, lubricating oil, hydraulic oil, propylene glycol, and other materials. Additionally, during operation of the wind farm, hazardous materials, such as hydraulic oil, lube oil, grease, and

cleaning solvents will be used and stored on-site as they are necessary to maintain wind turbines and other equipment. Also, pad mounted and grounding transformers required for the operation of the Project contain large quantities of cooling fluids, typically consisting of mineral oil.

Due to the presence of hazardous materials during Project construction and operations, there is the potential for Project spills and/or leaks to occur. The primary concerns associated with these potential spills and/or leaks are the potential impacts to surface and ground water resources and the potential for soil contamination within the Project Area. To avoid potential impacts to water and soil resources, hazardous materials stored outdoors will be stored within secondary containment. Secondary containment will prevent impacts and will ensure that leaks, if they occur, will be contained. Additionally, a Spill Prevention, Control, and Countermeasure Plan (SPCC) will be developed for both the construction and operational phases of the Project. The SPCC will detail the appropriate storage, cleanup, and disposal of hazardous wastes to ensure potential impacts are avoided.

12.8 Noise (Minn. R. 7849.0320(I))

The highest predicted worst-case L50 sound level from the Project wind turbines is below the 50 dBA limit at all modeled Noise Area Classification (NAC) 1 receptors. The highest predicted worst-case Project-Only L50 sound level is 47 dBA. This highest predicted worst-case Project-Only L50 sound level at a modeling receptor of 47 dBA remains below the most restrictive Minnesota Pollution Control Agency (MPCA) sound limit of 50 dBA. Appendix D (Pre-construction Sound Analysis) to DCW's revised Site Permit Application provides further details on the sound modeling analysis.

DCW has designed the wind project to meet the MPCA state noise standards and to minimize the sound levels due to the wind turbines at the homes in the community as much as possible, while also meeting the other constraints of the project design and regulatory requirements.

12.9 Work Force for Construction and Operation (Minn. R. 7849.0320(J))

Approximately 200 temporary construction and approximately 5 full time O&M jobs are expected as part of this Project.

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