

Blazing Star Wind Project

Large Wind Energy Conversion System

Certificate of Need Application

Docket No. IP6961/CN-16-215

July 20, 2016

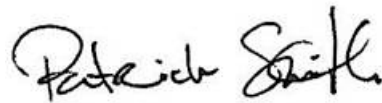
Prepared for
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Project Name: Blazing Star (Project)
Project Location: Lincoln County and the Project's footprint spans approximately 37,200 acres in Hansonville, Hendricks, and Marble Townships

Applicant: Blazing Star Wind Farm, LLC

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ACRONYMS

AADT	Annual Average Daily Traffic
Applicant or Blazing Star	Blazing Star Wind Farm, LLC
Biennial Report	2015 Biennial Transmission Projects Report
CN	Certificate of Need
Commission	Minnesota Public Utilities Commission
CPP	Clean Power Plan
Exemption Request	Request for Exemption from Certain Certificate of Need Application Content Requirements
FAA	Federal Aviation Administration
Geronimo	Geronimo Energy, LLC
IRP	Integrated Resource Plan
ITC	Investment Tax Credit
LEFG	Large Electric Generating Facility
kW	Kilowatt
kWh	Kilowatt hour
LHVTL	Large High Voltage Transmission Line
LiDAR	Light Range Detecting Unit
LWECS	Large Wind Energy Conversion System
Minn. R.	Minnesota Rules
Minn. Stat.	Minnesota Statutes
MISO	Midcontinent Independent System Operator
MnDOT	Minnesota Department of Transportation
MPCA	Minnesota Pollution Control Agency
MVP	Multi Value Project
MW	Megawatt
O&M	Operations and Maintenance
PPA	Power Purchase Agreement
Project	Blazing Star Wind Farm
PTC	Production Tax Credit
RES	Renewable Energy Standard
SCADA	Supervisory Control and Data Acquisition
SoDAR	Sonic Range Detecting Unit

Minnesota Rule	Required Information	Application Section(s)	Exemption Requested
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	4.1	--
A(1)	Accuracy of the applicant’s forecast	6.0	Yes
A(2)	Effects of applicant’s existing or expected conservation programs and state and federal conservation programs	8.0	No
A(3)	Effects of promotional practices on demand	3.2.2	Yes
A(4)	Ability of current and planned facilities, not requiring certificates of need, to meet future demand	5.2.1.8	No
A(5)	Effect of proposed facility in making efficient use of resources	4.2, 5.3.8	No
7849.0120	Criteria – A more reasonable and prudent alternative has not been demonstrated	4.2	--
B(1)	Appropriateness of size, type, and timing	4.2, 5.2	No
B(2)	Cost of facility and its energy compared to costs of reasonable alternatives	5.2.2, 5.3.1, 5.3.5, 5.3.6	No
B(3)	Effects of the facility upon natural and socioeconomic environments compared to the effects of reasonable alternatives	4.3	No
B(4)	Expected reliability compared to reasonable alternatives	4.2, 5.2, 5.3.3	No
7849.0120	Criteria – Facility will provide benefits to society	3.2.1	--
C(1)	Relationship of proposed facility to overall state energy needs	3.1, 4.1, 4.3	No
C(2)	Effects of facility upon the natural and socioeconomic environments compared to the effects of not building the facility	4.3	No
C(3)	Effects of facility in inducing future development	4.3, 3.2.3	No
C(4)	Socially beneficial uses of the output of the facility, including to protect or enhance environmental quality	4.3, 3.2.1	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	4.4, 12.0	No
7849.0210	Filing Fees and Payment Schedule	2.3	No
7849.0240	Need Summary and Additional Considerations	3.0	--
Subp. 1	Need Summary – summary of major factors justifying need for facility	3.0, 3.1	No
Subp. 2(A)	Additional Considerations – Socially beneficial uses of the output of the facility, including to protect or enhance environmental quality	3.2.1, 4.3	No
Subp. 2(B)	Additional Considerations – Promotional activities that may have given rise to the demand for the facility	3.2.2	Yes
Subp. 2(C)	Additional Considerations – Effects of the facility in inducing future development	3.2.3, 4.3	No
7849.0250	Proposed LEGF and Alternatives Application	5.0	--
A(1)	Description – Nominal generating capability and effects of economies of scale on facility size and timing	5.1.1	No

Minnesota Rule	Required Information	Application Section(s)	Exemption Requested
A(2)	Description – Anticipated operating cycle, including annual capacity factor	5.1.2	No
A(3)	Description – Type of fuel, reason for selection, projection of availability over life of facility, and alternative fuels	5.1.3	No
A(4)	Description – Anticipated heat rate	5.1.4	No
A(5)	Description – Anticipated areas where facility will be located	5.1.5	No
B(1)	Discussion of Alternatives – Purchased power	5.2.1.1	Yes
B(2)	Discussion of Alternatives – Increased efficiency of existing facilities	5.2.1.2	Yes
B(3)	Discussion of Alternatives – New transmission lines	5.2.1.3	Yes
B(4)	Discussion of Alternatives – New generating facilities of a different size and energy resource	5.2.1	Yes
B(5)	Discussion of Alternatives – Reasonable combination of alternatives	5.2.1.11	No
C	Proposed Facility and Alternatives	5.3	Yes
C(1)	Capacity cost in current dollars per kilowatt	5.3.1	Yes
C(2)	Service life	5.3.2	Yes
C(3)	Estimated average annual availability	5.3.3	Yes
C(4)	Fuel costs in current dollars per kilowatt hour	5.3.4	Yes
C(5)	Variable operating and maintenance costs in current dollars per kilowatt hour	5.3.5	Yes
C(6)	Total cost in current dollars of a kilowatt hour provided by it	5.3.6	Yes
C(7)	Estimate of its effect on rates system-wide and in Minnesota	5.3.7	Yes
C(8)	Efficiency, expressed for a generating facility as the estimated heat rate	5.3.8	Yes
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	5.3	Yes
D	System Map	5.4	Yes
E	Other relevant information about the facility and alternatives that may be relevant to a determination of need	--	--
7849.0270	Peak Demand and Annual Consumption Forecast	6.0	Yes
Subp. 1	Scope – Application shall contain pertinent data concerning peak demand and annual electrical consumption within the applicant’s service area and system	6.0	Yes
Subp. 2	Content of Forecast	6.0	Yes
Subp. 3	Forecast Methodology	6.0	Yes
Subp. 4	Data Base for Forecasts	6.0	Yes
Subp. 5	Assumptions and Special Information	6.0	Yes
Subp. 6	Coordination of Forecasts with Other Systems	6.0	Yes
7849.0280	System Capacity	7.0	Yes
7849.0290	Conservation Programs	8.0	Yes
7849.0300	Consequences of Delay	9.0	Yes

Minnesota Rule	Required Information	Application Section(s)	Exemption Requested
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	10.0	No
7849.0320	Generating Facilities	11.0	No
A	Estimated range of land requirements, including water storage, cooling systems, and solid waste storage	11.1	No
B	Estimated amount of vehicular, rail, and barge traffic generated by construction and operation of facility	11.2	No
C	Fossil-fuel facilities – Fuel	11.3.1	No
D	Fossil-fuel facilities – Emissions	11.3.2	No
E	Water Use for Alternate Cooling Systems	11.4	No
F	Sources and types of discharges to water	11.5	No
G	Radioactive releases	11.6	No
H	Types and quantities of solid wastes in tons/year	11.7	No
I	Sources and types of audible noise attributable to facility operation	11.8	No
J	Estimated work force required for facility construction and operation	11.9	No
K	Minimum number and size of transmission facilities required to provide a reliable outlet for the generating facility	11.10	No
7849.0330	Transmission Facilities	5.2.1.10	Yes
7849.0340	No-Facility Alternative	5.2.1.9	Yes

1.0 EXECUTIVE SUMMARY

Blazing Star Wind Farm, LLC (“Blazing Star” or “Applicant”) submits this application for a certificate of need (“CN”) to the Minnesota Public Utilities Commission (“Commission”) pursuant to and in accordance with Minnesota Statutes (“Minn. Stat.”) § 216B.243, and Minnesota Rules (“Minn. R.”) Chapter 7849. Blazing Star respectfully requests that the Commission issue a CN for the up to 200 megawatt (“MW”) MW Blazing Star Wind Farm (the “Project”), a “large energy facility” as defined in Minn. Stat. § 216B.2421, subd. 2(1).¹

2.0 INTRODUCTION

2.1 THE BLAZING STAR WIND PROJECT

Blazing Star is an independent power producer that proposes to construct and operate the Project at a site within Lincoln County in southwest Minnesota. The power generated by the Project will be offered for sale to wholesale customers, including Minnesota utilities and cooperatives that have identified a need for additional renewable energy.

The Project will be located in Lincoln County, and the Project’s footprint spans approximately 37,200 acres in Hansonville, Hendricks, and Marble Townships. See Figure 1. Blazing Star has not made a final selection on wind turbine generators, but is proposing to utilize between 57 and 100 turbines ranging from 2 to 3.5 MW in size. In addition to wind turbines, the Project will consist of an electrical collection system, access roads, permanent meteorological towers, Sonic or Light Range detecting unit (“SoDAR” or “LiDAR”), substation and interconnection facilities, an operation and maintenance facility, and other infrastructure typical of a wind farm. The Project will interconnect at the new Brookings to Lyon County 345 kV line, one of the lines designated by the Midcontinent Independent System Operator (“MISO”) as a Multi Value Project (“MVP”). Blazing Star plans to construct the Project on a schedule that facilitates an in-service date in 2018.

Blazing Star’s parent, Geronimo Energy, LLC (“Geronimo”) is a utility-scale renewable energy developer headquartered in Minneapolis, Minnesota, with satellite offices located in southwest Minnesota, North Dakota, South Dakota, Illinois and Michigan. Geronimo Energy has developed several operating wind farms and solar projects throughout the United States and currently has developed more than 1,500 MW of renewable energy projects that are under construction or operational. In Minnesota, Geronimo has developed more than 500 MW of renewable energy, including five wind farms and 200 MW of solar energy. For example, Geronimo developed the Prairie Rose and Odell Wind Farms, both of which are in the same region as the Project. Prairie Rose is a 200 MW wind farm constructed in Rock and Pipestone counties; Odell is a 200 MW wind farm constructed in Cottonwood, Jackson, Martin, and Watonwan counties. Each project is expected to result in approximately \$1.1 million in

¹ The Project is also a Large Wind Energy Conversion System (“LWECS”), as defined in Minn. Stat. § 216F.01, subdivision 2.

landowner payments, \$40,000 in a community fund, and approximately \$850,000 in tax revenue per year. Geronimo and its subsidiaries partner with community members to meet common goals while constructing new wind energy generation sources that benefit the state and the region.

2.2 PROJECT CONTACTS

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2.3 FILING FEES AND PAYMENT SCHEDULE (MINN. R. 7849.0210)

The total fee for the CN 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 200 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/MW
Due with CN Application	\$5,000.00
Due 45 days after Application submittal date	\$5,000.00
Due 90 days after Application submittal date	\$5,000.00
Due 135 days after Application submittal date	\$5,000.00
Total Calculated Fee	\$20,000.00

2.4 EXEMPTION REQUEST

Minn. R. Ch. 7849 sets forth the data an applicant must provide in a CN application. 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 March 8, 2016, Blazing Star submitted a Request for Exemption from Certain Certificate of Need Application Content Requirements (“Exemption Request”). In its Exemption Request, Blazing Star requested that the Commission grant its exemptions, pursuant to Minn. R. 7849.0200, subp. 6, from certain CN data requirements that are not necessary to determine the need for an independent power production facility, or a renewable energy facility designed to satisfy the Renewable Energy Standard (“RES”) requirements set forth in Minn. Stat. § 216B.1691 or other clean energy standards.

On April 28, 2016, the Commission granted Blazing Star's Exemption Request.² Where appropriate in this Application, Blazing Star will reference the specific exemptions granted by the Commission.

² Order, *In the Matter of the Application of Blazing Star Wind Farm, LLC for a Certificate of Need for the 200 Megawatt Blazing Star Wind Project in Lincoln County, Minnesota*, Docket No. IP-6961/CN-16-215 (Apr. 28, 2016), eDockets Doc. ID 20164-120749-01.

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

3.1 NEED SUMMARY

The Project is needed to meet the growing demand for additional renewable resources needed to meet the RES and other clean energy requirements in Minnesota and neighboring states. Pursuant to Minn. Stat. § 216B.1691, utilities are required to provide 25 percent of their total retail electric sales from eligible renewable resources by 2025. As shown on Table 2, the Legislature also established interim milestones to ensure that utilities make progress towards the “25 by ’25” requirement.

Table 2: 25 X ‘25 Interim Milestones

Year	Non-Nuclear Utility Requirement	Xcel Energy Requirement
2016	17%	25%
2020	20%	30% (25% from wind)
2025	25%	30% (25% from wind)

On October 30, 2015, the Minnesota Transmission Owners jointly filed the 2015 Biennial Transmission Projects Report (the “Biennial Report”), which outlines the transmission upgrades needed to support development of renewable energy resources needed to meet RES requirements. In the Biennial Report, “[t]he utilities recognize that additional transmission and generation will be necessary for 2020 and beyond in Minnesota, and that other demands for renewable energy will impact Minnesota’s compliance status.”³ Minnesota utilities and utilities in the region must develop or purchase a significant amount of additional renewable generation in order to satisfy the RES and other clean energy standards.⁴

A review of utilities’ integrated resource plans (“IRPs”), requests for proposals, and similar documents confirms that utilities will seek additional renewable generation resources in the next several years.⁵ For example, in the MISO region, utilities have expressed a need for

³ 2015 Biennial Transmission Projects Report, Docket No. E999/M-15-439 (Oct. 30, 2015), at 138.

⁴ *Id.* at 138-39.

⁵ *E.g.*, Xcel Energy, Upper Midwest Resource Plan 2016-2030 (available at <https://www.xcelenergy.com/staticfiles/xcel/Regulatory/Regulatory%20PDFs/03-Preferred-Plan.pdf>); Minnesota Power, 2015 Integrated Resource Plan (available at <http://www.mnpower.com/Content/documents/Environment/2015-ResourcePlan.pdf>) (approved by the Minnesota Public Utilities Commission on June 10, 2015); Otter Tail Power Company, Application for Resource Plan Approval 2017-2031 (available at <https://www.otpc.com/media/838904/resource-plan.pdf>).

more than 1,000 MW of renewable energy (including wind) before 2020.⁶ Utilities will continue to require additional renewable energy generation between 2020 and 2030. Given this demand for renewable energy, a market exists for independently produced electricity generated from wind and other renewables, including the up to 200 MW to be generated by the Project.

3.2 ADDITIONAL CONSIDERATIONS

3.2.1 Socially Beneficial Uses of Energy Output

Energy produced by the Project will provide significant, numerous, and varied societal benefits. First, the Project will provide a large amount of renewable energy with minimal environmental impact. Further, regional and national security and energy reliability can be enhanced through the development of diversified generation resources such as wind.

The Project will also provide a supplementary source of income for the rural landowners and farmers on whose land the Project will be sited. The landowners in the Project footprint who host turbines will receive annual lease payments for each turbine sited on their property. Large-scale wind energy operations usually pay between \$4,000 and \$6,000 per turbine each year to lease wind rights. Because only a portion of the land will be used for the Project, farming operations can continue largely undisturbed. Specifically, although the Project will be sited over an area spanning approximately 37,200 acres, less than one half of one percent of those acres will be removed from agricultural use over the life of the Project.

3.2.2 Promotional Activities Giving Rise to Demand

Blazing Star was granted an exemption from Minn. R. 7849.0240, subp. 2(B), which requires that each large electric generating facility (“LEGF”) CN application contain “an explanation of the relationship of the proposed facility to . . . promotional activities that may have given rise to the demand for the facility.” Blazing Star has not engaged in promotional activities which could have given rise to the need for the electricity to be generated by the Project. Thus, such information is non-existent and, consistent with its determinations in past CN proceedings, the Commission granted an exemption to Blazing Star.

3.2.3 Effects of Facility in Inducing Future Development

The Project is not expected to directly affect development in Lincoln County. However, additional wind energy infrastructure in the Project area may nonetheless provide significant benefits to the local economy and local landowners. Landowners in the Project area will benefit from annual lease payments. Additional wind energy infrastructure will also provide an additional source of revenue in to the county and townships in which the Project is sited. For

⁶ *Id.*; see also MISO, *Results for MISO’s Mid-Term Analysis of EPA’s Final Clean Power Plan*, at 14 (Mar. 16, 2016) (stating that study results showed “that a cost effective way to achieve high levels of CO₂ reduction is to build wind in resource-rich areas and transmission to deliver it to the rest of MISO”) (available at <https://www.misoenergy.org/Library/Repository/Meeting%20Material/Stakeholder/PAC/2016/20160316/20160316%20PAC%20Item%2002b%20CPP%20Final%20Rule%20Analysis%20Mid%20Term%20Results.pdf>).

instance, the Project is estimated to provide annual production tax revenues ranging from approximately \$900,000 to \$1 million. Blazing Star is committed to creating an independently run community fund and providing that fund with \$40,000 annually. The fund will be administered by a local board independent from Blazing Star that will determine how to use the funds.

The Project will also provide significant income opportunities for local residents not affiliated with Project ownership. The Project is anticipated to generate approximately 250 construction jobs and 10-14 permanent operations and maintenance (“O&M”) positions. The Project has already created consulting, management, and environmental work.

At the same time the Project is providing income to local residents, it will also help contribute to making the energy those residents rely upon less susceptible to volatility.⁷ The development of wind energy technology now makes wind power’s relative price competitive with new natural gas and coal generation.⁸ The development of wind energy in Minnesota reduces dependence on turbulent fossil fuel markets and helps keep energy dollars in Minnesota.⁹

⁷ U.S. Dept. of Energy, *Wind Vision: a New Era for Wind Power in the United States*, at iivi (March 2015) (“Increased wind power adds fuel diversity, making the overall electric sector 20% less sensitive to changes in fossil fuel costs.”) U.S. Dept. of Energy, *2013 Wind Technologies Market Report*, at 62 (Aug. 2014) (stating that wind power can provide a “hedge against rising and/or uncertain natural gas prices”).

⁸ *Id.* at 21 (“[R]ecent wind PPA prices are quite competitive with natural gas fuel cost projections.”); U.S. Energy Information Administration, *Levelized Cost and Levelized Avoided Cost of New Generation Resources in the Annual Energy Outlook 2015*, at Table 1 (June 2015).

⁹ See U.S. Dept. of Energy, *Wind Vision: a New Era for Wind Power in the United States*, at iivi (March 2015) (noting benefits of decreased greenhouse gas emissions and air pollution arising from increase wind power).

4.0 COMPLIANCE WITH CERTIFICATE OF NEED CRITERIA (MINN. R. 7849.0120)

The Commission has established criteria to assess the need for an LEGF in Minn. R. 7849.0120. The Commission must grant a CN 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.

As discussed further below, the Project satisfies all four of the Commission's criteria for granting a CN for the Project.

4.1 THE PROBABLE RESULT OF DENIAL OF BLAZING STAR'S APPLICATION WOULD BE AN ADVERSE EFFECT ON THE ADEQUACY, RELIABILITY, AND EFFICIENCY OF THE REGIONAL ENERGY SUPPLY (MINN. R. 7849.0120(A))

The Project will provide up to 200 MW of nameplate capacity to meet the electricity needs of Minnesota and the region. Blazing Star plans to negotiate one or more power purchase agreements ("PPAs") with utilities with a need to purchase additional renewable energy or, if necessary, to offer the Project's output for sale on the wholesale market. Denying the application would result in the loss of a significant amount of electricity needed to satisfy state and regional demand, and would deny utilities the opportunity to purchase clean, low-cost energy that will count toward satisfying the RES and/or other clean energy standards.

As discussed in Section 3.1, there is a significant body of state legislative policy requiring utilities to obtain a certain percentage of their total energy resources from renewable energy, which supports the need for reliable, efficient renewable resources, like the wind energy produced by the Project.

In addition to the specific need for renewable energy to serve Minnesota utilities, many other states in the region have similar renewable energy requirements. For example, Illinois requires certain utilities to obtain 25 percent of eligible sales from renewables by 2025.¹⁰ Similarly, North Dakota has adopted the national “25 by 25” initiative, which establishes a goal of having not less than 25 percent of total energy consumed within the United States come from renewable resources by January 1, 2025.¹¹ Although 15,147 MW of wind power capacity have been installed throughout the MISO footprint,¹² the regional need for renewable resources, and the potential to produce renewable resources from wind, far exceeds this number.¹³ Based on this data, there is a need for more wind power to adequately, reliably, and efficiently meet the region’s need for renewable energy than is currently available.

4.2 NO MORE REASONABLE AND PRUDENT ALTERNATIVE TO THE BLAZING STAR WIND PROJECT HAS BEEN DEMONSTRATED (MINN. R. 7849.0120(B))

Minn. R. 7849.0120(B) requires a CN 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.

4.2.1 Size, Type, and Timing.

When evaluating alternatives, the Commission examines whether the project is the appropriate size, whether it is the right type, and whether the timing is appropriate. With respect to other proposed wind projects, the Commission has concluded that the proper inquiry in evaluating the size of the project is the appropriateness of the size of the project to the overall state and regional need for renewable energy. As demonstrated in Section 3.1, the need for renewable energy in the coming years far exceeds the amount of energy to be supplied by the Project. As shown on Table 2, Minnesota and regional utilities have a need for renewable energy beyond what is currently under contract in order to meet RES milestones.

Regarding the type of facility, the Commission granted Blazing Star 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 that will satisfy the RES and other clean energy standards.

With respect to timing, the Project is expected to be on-line and operational by the end of 2018, depending on completion of regulatory approvals and the MISO interconnection process.

¹⁰ 20 Ill. Comp. Stat. sec. 3855/1-75(c)(1).

¹¹ See N.D. Cent. Code. § 17-01-01.

¹² See American Wind Energy Association, *Annual Report 2015*, at 98.

¹³ See *id.* at 65 (describing wind capacity in the upper Midwest); MISO, MISO Transmission Expansion Plan 2015, at 102 (explaining that certain proposed transmission projects will facilitate the interconnection of “41 million MWh of wind energy to meet renewable energy mandates and goals”), <https://www.misoenergy.org/Library/Repository/Study/MTEP/MTEP15/MTEP15%20Full%20Report.pdf>.

This will help Minnesota and other electric utilities achieve the necessary renewable energy levels required to meet pending clean energy standards milestones.

4.2.2 Cost Analysis.

The Project will generate electricity at a lower cost per kilowatt hour than would other possible renewable energy options, such as solar and biomass.¹⁴ In addition, although Blazing Star has not yet secured PPAs for the sale of the energy to be produced by the Project, it is confident that it will be able to secure long-term purchasers at attractive prices and terms. Importantly, as an independent power producer, the risk of not securing PPAs or otherwise not selling the Project's output lies entirely with Blazing Star, and not with the State of Minnesota or ratepayers.

4.2.3 Potential Environmental and Socioeconomic Impacts.

The purpose of this analysis is to compare the potential impacts of various renewable generation options. The Commission and the Department have previously concluded that the environmental impacts of a wind power project are minimal and significantly less than a fossil-fuel based facility. At the same time, the socioeconomic benefits of a utility-scale wind power project are considerable, as described in Section 4.3 below. For example, the Project will allow landowners to continue to use over 99 percent of the existing cropland for agricultural and other uses.

4.2.4 Reliability.

The Project will be available at least 97 percent of the time, consistent with other utility-scale wind projects.

4.3 THE BLAZING STAR WIND PROJECT WILL BENEFIT SOCIETY IN A MANNER COMPATIBLE WITH THE NATURAL AND SOCIOECONOMIC ENVIRONMENTS (MINN. R. 7849.0120(C))

Minn. R. 7849.0120(C) requires a CN applicant to address whether the proposed project will benefit society in a manner that is compatible with protecting natural and socioeconomic environments, including human health. Applying the factors set forth in Minn. R. 7849.0120(C), the energy produced by the Project will provide significant, numerous, and varied societal benefits, with minimal negative impacts.

4.3.1 Overall State Energy Needs

As discussed in Section 3.1 above, utilities continue to require renewable energy to meet the RES and other clean energy standards, as well as to meet consumers' energy demands. Thus, the Project is compatible with Minnesota's energy needs.

¹⁴ See Energy Information Agency, *Levelized Cost and Levelized Avoided Cost of New Generation Resources in the Annual Energy Outlook 2015* (predicting that in 2020, the cost per megawatt hour of wind energy would be lower than that of other renewable energy options), https://www.eia.gov/forecasts/aeo/electricity_generation.cfm.

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

Negative impacts to socioeconomic resources will be relatively minor. Only approximately 80 to 90 acres of agricultural land will be permanently removed from production, and the areas surrounding each turbine will still be able to be farmed. Project construction will not negatively impact leading industries within the Project area. There is no indication that any minority or low-income population is concentrated in any one area of the Project.

One of the greatest attributes of wind energy is its minimal impact on the environment. The Project will not release carbon dioxide, sulfur dioxide, nitrogen oxides, mercury, or particulate matter. It will not require water for power generation and will not discharge wastewater containing any heat or chemicals during operation. It will produce energy without the extraction, processing, transportation, or combustion of fossil fuels. The Project will permanently impact less than one-half of one percent of the total acreage within the Project's boundaries, and will be sited so as to minimize environmental impacts.

The development of wind energy has been and will continue to be important in diversifying and strengthening the economic base of Lincoln County and Minnesota. Local contractors and suppliers will be used for portions of construction. Wages and salaries paid to contractors and workers in Lincoln County 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 county and the state. Expenditures made by the Applicant for equipment, fuel, operating supplies, and other products and services will benefit businesses in the county and the state. Landowners with turbines or other Project facilities on their land will receive annual lease payments for the life of the Project, and these payments will diversify and strengthen the local economy.

Long-term benefits to the county's tax base as a result of the construction and operation of the Project will contribute to improving the local economy. For example, the Project will pay a Wind Energy Production Tax to the local units of government of \$0.0012 per kWh of electricity produced, resulting in an annual Wind Energy Production Tax ranging from approximately \$900,000 to \$1 million.

Not building an electrical generation facility would result in no physical impact to the environment in Lincoln County. However, not building the Project would also not provide an additional source of tax revenues to the county, an increase in the income stream to residences and businesses, or an increase in the amount of low-cost, clean, reliable renewable energy available to state or regional utilities and their customers. The Project will have a minimal impact on the physical environment, while simultaneously providing significant benefits.

4.3.3 Inducing Future Development

Although the Project is not expected to directly affect development in Lincoln County, the Project will provide significant benefits to the local economy and local landowners. Landowners in the Project area will benefit from annual lease payments, and installation of wind energy infrastructure will increase the local tax base in the county and townships in which the

Project is sited. The Project will also provide significant income opportunities for local residents through the creation of temporary construction and permanent O&M positions.

4.3.4 Socially Beneficial Uses of Output

The Project will produce affordable, clean, renewable energy that will help meet energy demands and the RES and other clean energy standards. It will produce enough energy to meet the energy needs for over one million average Minnesota households annually. In addition, the local economy will benefit from the landowner lease payments for turbine siting, production taxes, income from jobs created, and local spending.

4.4 THE BLAZING STAR WIND PROJECT IS CONSISTENT WITH FEDERAL, STATE, AND LOCAL RULES AND POLICIES (MINN. R. 7849.0120(D))

4.4.1 The Project is Consistent with Minnesota Energy Policy

The Project will provide a significant amount of renewable energy, which is consistent with Minnesota's policy to increase renewable energy use. Wind, as renewable energy, is a favored energy resource under Minnesota law.¹⁵ In addition, as discussed previously, the RES includes the "25 by '25" requirement, which mandates increased electric generation from renewable resources.¹⁶ The state has also set a goal 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 2050.¹⁷ Adding additional sources of electric energy with no emissions, like wind energy, is essential to meeting these goals.

Further support for the conclusion that the Project is consistent with state energy policy can be found in the favorable tax treatment that wind energy facilities receive. The state legislature has exempted all real and personal property of wind energy conversion systems from property taxes.¹⁸ Wind energy conversion systems, as well as the materials used to manufacture, install, construct, repair, or replace wind systems, are also exempt from state sales tax.¹⁹

¹⁵ See Minn. Stat. § 216B.243, subd. 3a ("The commission may not issue a certificate of need under this section for a large energy facility that generates electric power by means of a nonrenewable energy source, or that transmits electric power generated by means of a nonrenewable energy source, unless the applicant for the certificate has demonstrated to the commission's satisfaction that it has explored the possibility of generating power by means of renewable energy sources and has demonstrated that the alternative selected is less expensive (including environmental costs) than power generated by a renewable energy source. For purposes of this subdivision, 'renewable energy source' includes hydro, wind, solar, and geothermal energy and the use of trees or other vegetation as fuel.").

¹⁶ Minn. Stat. § 216B.1691, sub. 2a.

¹⁷ Minn. Stat. § 216H.02.

¹⁸ Minn. Stat. § 272.02, subd. 22.

¹⁹ Minn. Stat. § 297A.68, subd. 12.

4.4.2 The Project is Consistent with Applicable Minnesota Statutory Provisions

In addition to the criteria set forth in Minn. R. Ch. 7849, there are a number of statutory provisions that may apply to a CN application. As discussed below, the Project is consistent with these statutory requirements.

4.4.2.1 Renewable Preference

Minn. Stat. § 216B.243, subd. 3a provides a preference for renewable resources:

The commission may not issue a certificate of need under this section for a large energy facility that generates electric power by means of a nonrenewable energy source, or that transmits electric power generated by means of a nonrenewable energy source, unless the applicant for the certificate has demonstrated to the commission's satisfaction that it has explored the possibility of generating power by means of renewable energy sources and has demonstrated that the alternative selected is less expensive (including environmental costs) than power generated by a renewable energy source. For purposes of this subdivision, 'renewable energy source' includes hydro, wind, solar, and geothermal energy and the use of trees or other vegetation as fuel.

Minn. Stat. § 216B.2422, subd. 4, is also applicable:

The commission shall not approve a new or refurbished nonrenewable energy facility in an integrated resource plan or a certificate of need, pursuant to section 216B.243, nor shall the commission allow rate recovery pursuant to section 216B.16 for such a nonrenewable energy facility, unless the utility has demonstrated that a renewable energy facility is not in the public interest.

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.

4.4.2.2 Distributed Generation

Minn. Stat. § 216B.2426 states that:

The commission shall ensure that opportunities for the installation of distributed generation, as that term is defined in section 216B.169, subdivision 1, paragraph (c), are considered in any proceeding under section 216B.2422, 216B.2425, or 216B.243.

Pursuant to Minn. Stat. § 216B.169, subd. 1(c), “distributed generation” references projects of less than 10 MW. Blazing Star assumes that it will need to compete with distributed generation alternatives as it seeks a PPA from a utility. However, the Project’s transmission opportunities and economies of scale make it a superior renewable resource choice as compared to distributed generation projects that have available transmission but not the economies of scale that should be realized through this Project.

4.4.2.3 Innovative Energy Preference

Minnesota also requires the Commission to consider an innovative energy project²⁰ 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.

4.4.2.4 RES Compliance

Minn. Stat. § 216B.243, subd. 3(10) requires the Commission to evaluate whether a CN applicant is in compliance with Minnesota’s RES. Blazing Star, however, is not subject to the RES because it has no retail sales of electricity in Minnesota. Therefore, this requirement does not apply to the Project. The Project will, however, serve as a resource for utilities that must meet the RES requirements.

4.4.2.5 Environmental Cost Planning

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. As the Commission and the Department of Commerce have determined, this statute does not apply to renewable generation facilities such as the Project.²¹

4.4.2.6 Transmission Planning Compliance

Minn. Stat. § 216B.243, subd. 3(10) requires the Commission to consider whether a utility seeking a CN is in compliance with certain transmission planning requirements to meet the RES. As an independent power producer, this statute does not apply to Blazing Star.

4.4.3 The Project is Consistent with Federal Energy Policy

4.4.3.1 Clean Power Plan

The finalized Clean Power Plan (“CPP”) was announced by President Obama and the Environmental Protection Agency on August 3, 2015. Under the CPP, carbon dioxide emissions

²⁰ An “innovative energy project” is defined as a coal-burning facility employing innovative technology and located on the Iron Range. Minn. Stat. § 216B.1694, subd. 1.

²¹ *Elm Creek*, Docket No. IP6631/CN-07-789, Commission Order Granting Certificate of Need (Jan. 15, 2008), at 12.

will be cut from existing power plants by 32% from 2005 levels.²² Despite a pending federal lawsuit, Minnesota has pledged to move forward with preparations to comply with the CPP. Accordingly, the Minnesota Pollution Control Agency (“MPCA”) is currently reviewing the CPP and assessing potential pathways for compliance. MPCA states that the Minnesota state plan “will need to consider current and new electricity production and pollution control policies in order to achieve necessary carbon pollution reductions while supporting reliable, affordable power for all Minnesotans.”²³

4.4.3.2 Tax Incentives

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.

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 the credit to be claimed when a project is operational and decreases a project’s depreciable basis by 50 percent of the value of the credit.

Although no final decisions have been made, Blazing Star expects to utilize the PTC as part of the Project’s long-term financing structure.

4.4.4 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 8 in Section 12.4 provides a list of approvals the Project may need to obtain from governmental entities to demonstrate full compliance. Blazing Star is committed to obtaining all necessary environmental and other approvals required under federal, state, and local requirements.

²² E.g., <https://www.pca.state.mn.us/air/clean-power-plan-rulemaking-minnesota>.

²³ *Id.*

5.0 DESCRIPTION OF PROJECT AND ALTERNATIVES (MINN. R. 7849.0250)

5.1 PROPOSED PROJECT (MINN. R. 7849.0250(A))

The Project will consist of an array of wind turbines, transformers, a project substation, access roads, permanent meteorological towers, a SODAR or LIDAR unit, underground electrical collection lines, gravel access roads, a transmission line (approximately 1,000 feet long), and an O&M building. The turbines will be interconnected by communication and electric power collection cables within the wind farm. See Figures 2a, 2b, 2c and 2d.

Each turbine will be accessible via all-weather gravel roads that are approximately 16-18 feet wide, depending on the turbine size selected, and will extend from public roads to the turbines. Blazing Star estimates that approximately 18-28 miles of gravel access roads will be constructed, depending on the size of the turbine selected and the final design. Land will be graded on-site for the turbine pads. Drainage systems, access roads, storage areas, and O&M facilities will be installed as necessary to fully accommodate all aspects of the construction, operation, and maintenance of the Project.

Blazing Star has not made a final selection on wind turbine generators, but is proposing to utilize between 57 and 100 turbines ranging from 2 to 3.5 MW in size. Blazing Star will make its final turbine selection based on optimization of wind and land resources, as well as cost-efficiency. The turbine selected will have Supervisory Control and Data Acquisition (“SCADA”) communication technology, which permits automatic, independent operation, and remote supervision that allows simultaneous control of the wind turbines. In addition, Blazing Star will maintain a computer program and database to track each wind turbine’s operational history.

Each tower will be secured by a concrete foundation that can vary in design depending on the soil conditions. A control panel inside the base of each turbine tower will house communication and electronic circuitry. Each turbine will be equipped with a wind speed and direction sensor that communicates to the turbine’s control system to signal when sufficient winds are present for operation. The turbines feature variable-speed control and independent blade pitch to assure aerodynamic efficiency.

At the base of each turbine, a step-up transformer will be installed to raise the voltage to power collection line voltage of 34.5 kV. Generally, the electrical lines will be buried in trenches and run to the edge of the farm field. At the public road, the power collection lines will either rise from underground to overhead lines or continue as underground lines. The collection lines will occasionally require an aboveground junction box when the collection lines from separate spools need to be spliced together.

Power generated by the Project will reach the electric grid by traveling through approximately 10 34.5 kV feeders lines to the newly-constructed project substation. The Project will then interconnect at the new Brookings to Lyon County 345 kV line, one of the lines designated by MISO as a MVP. The electrical system design and the interconnection details will be determined as a result of studies currently being conduct by, and agreements with, MISO.

5.1.1 Nominal Generating Capacity and Effect of Economies of Scale

Each turbine will have a net nominal rating of between 2 and 3.5 MW. Larger wind projects, such as the Project, can realize economies of scale by spreading out the relatively fixed transaction, operation, and maintenance costs over the entire project, resulting in decreased costs per kWh of electricity produced.

5.1.2 Annual Capacity Factor

A net capacity factor of approximately 45 to 50 percent, with projected average annual output of between approximately 788,400 and 876,000 MWh, is anticipated for the Project.

5.1.3 Fuel

The wind turbines will be powered by the wind.²⁴

5.1.4 Anticipated Heat Rate

Heat rates are not applicable to a wind project.

5.1.5 Facility Location

The Project will be located within Hansonville, Hendricks, and Marble Townships in Lincoln County. The closest cities to the Project area are Hendricks, Canby, and Ivanhoe, Minnesota. The Project area spans approximately 37,200 acres, and Blazing Star currently has site control over approximately 28,800 acres. With respect to turbine pads and access roads, only approximately 95 acres will be converted for the 2 MW turbines, and the 3.5 MW turbines will require the least amount of conversion (35 acres). Between approximately 25-68 acres will be converted for access roads, and up to an additional 33 acres will be used for construction of the Project substation and O&M building.

The Project area is rural with an agricultural-based economy. The Project site was selected based on its excellent wind resources, its close proximity to existing transmission infrastructure and substations, and the landowners' interest in participating in the Project.

5.2 AVAILABILITY OF ALTERNATIVES (MINN. R. 7849.0250(B))

The objective of this alternatives analysis is to determine whether there are other energy sources that can satisfy the need identified for the Project. As noted above, Blazing Star intends to develop a generation source that will aid utilities in satisfying the renewable energy need created by the Minnesota RES and other federal and state renewable and clean energy standards.

²⁴ Minn. R. 7849.0250(A)(3) also requests information projecting the availability of the Project's fuel source and alternative fuels. The Commission has determined that these data requirements are inapplicable to a wind facility. *See, e.g., In the Matter of the Application of High Prairie Wind Farm II, LLC for a Certificate of Need for a Large Energy Facility*, Docket No. PT-6556/CN-06-1428, Order (Dec. 11, 2006).

Therefore, non-renewable energy sources have been excluded from this alternatives analysis.²⁵ The criteria used in this analysis include: (1) is the energy source cost-effective; (2) is the energy source commercially-proven and reliable for the electrical generation output needed; and (3) is the energy source appropriate for the site selected.

Developing and operating generating sources that are cost-effective and use proven technology is particularly important to an independent power producer, like Blazing Star. Blazing Star does not have access to ratepayer funds that could provide a resource for retirement of capital investments. In addition, as a seller of electricity to utilities, Blazing Star must keep its prices – and, thus, its costs – low enough to remain competitive. For these reasons, Blazing Star must exercise diligence in deciding where and when to pursue opportunities for capital investment in new power-generating facilities.

Commercial feasibility and reliability with respect to the generation output needed are important considerations in selling the power generated, and wind is a proven and reliable resource. However, with respect to the alternatives discussed below, without a guaranty of long-term reliability and cost-effectiveness, it is difficult or impossible to convince customers that an unproven technology should be selected for purchase.

5.2.1 Alternatives Considered

5.2.1.1 Purchased Power

Blazing Star is an independent power producer and does not purchase power. Instead, Blazing Star will sell power to utilities or other potential customers. As such, this data requirement is not applicable, and the Commission granted Blazing Star an exemption.

5.2.1.2 Upgrades to Existing Resources

Blazing Star has no existing facility in Minnesota for which it might seek improved operating efficiency. As such, this data requirement is not applicable, and the Commission granted Blazing Star an exemption.

5.2.1.3 New Transmission

Blazing Star has no plans to become involved in owning or operating transmission lines beyond what could be needed for interconnection of the Project. The development, construction, and operation of transmission and distribution lines designed to deliver power to end use customers will be left to utilities with defined service area obligations to retail customers. As such, this data requirement is not applicable, and the Commission granted Blazing Star an exemption.

²⁵ Minn. R. 7849.0250(B)(4) requires an applicant to discuss the availability of new generating facilities of a different size or using a different energy source as an alternative to the proposed facility. The Commission granted Blazing Star a partial exemption from this data requirement, and Blazing Star will discuss only renewable alternatives.

5.2.1.4 Solar Power

Minnesota has a significant and important solar resource that can and is being used for capacity services within the State's generating portfolio. However, advances to make solar installations more dense would be needed to make solar a reasonable alternative to the Project. Specifically, Blazing Star estimates that, for a solar project to meet the same amount of direct energy output as the Project, the solar project would need to have more than 650 MW of nameplate capacity covering more than 4,725 contiguous acres of land. In Blazing Star's experience, assembling that large of a tract of land is prohibitively expensive.

5.2.1.5 Hydropower

Hydropower is also not an alternative to the Project. In 2010, hydropower in Minnesota produced 534,259 MWh of power, down from 574,680 MWh in 2005 and 635,541 MWh in 2000 – a 20% decrease over ten years.²⁶ According to the 2012 Quad Report, this decline is primarily caused by “[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.”²⁷

5.2.1.6 Biomass

Minnesota communities do have accessible and low-value biomass feedstocks. However, the cost of these feedstocks vary widely, and the supply of biomass feedstock is limited.²⁸ 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.

5.2.1.7 Emerging Technologies

New renewable emerging power generation technologies have been developed, and Blazing Star believes that the current approaches are not sufficiently mature to either provide the output needed or to be cost-effective and reliable.

5.2.1.7.1 Pumped Storage

The proposed site in Lincoln County is not suited to a pumped storage application because of the need to store large amounts of water in an elevated reservoir. In addition, there is

²⁶ Minnesota Department of Commerce, *Energy Policy and Conservation Quadrennial Report 2012* (hereinafter, “2012 Quad Report”), at 21.

²⁷ *Id.*

²⁸ 2012 Quad Report, at 20.

currently no net generation from pumped storage in Minnesota.²⁹ Accordingly, this technology is not an alternative to the Project.

5.2.1.7.2 Compressed Air

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

5.2.1.7.3 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.

5.2.1.7.4 Hydrogen and Fuel Cells

Hydrogen and its use in fuel cells has received a lot of attention for its potential to impact energy production and use. Fuel cells can be used to make electricity and heat to operate vehicles and buildings. Fuel cells use a chemical reaction rather than a combustion reaction, are more efficient than generation from combustion sources, and have nearly no pollution. Hydrogen, on the other hand, is an energy carrier, not an energy source. As such, its potential to “store” electricity is being explored.

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, this technology may be used with and enhance other renewable technologies, such as the Project.

5.2.1.8 Non-CN Facilities (Minn. R. 7849.0120(A)(4))

Under Minn. Stat. §§ 216B.2421 and 216B.243, subd. 2, and Minn. R. Ch. 7849, a CN is required for the Project because it is a “large energy facility,” *i.e.*, larger than 50 MW. As an independent power producer, Blazing Star must compete with other available technologies to secure a PPA with a utility. Blazing Star will be compared to other non-CN facilities at the time it submits bids to utilities, and the utility will select a resource based on a variety of factors, including price. Blazing Star has the advantage of additional economies of scale not available to smaller, non-CN facilities.

5.2.1.9 No Facility Alternative (Minn. R. 7849.0340)

The Commission granted Blazing Star an exemption from Minn. R. 7849.0340, which 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,

²⁹ EIA, Net Generation from Hydroelectric (Pumped Storage) Power by State by Sector, *available at* http://www.eia.gov/electricity/monthly/epm_table_grapher.cfm?t=epmt_1_12_a (accessed Apr. 13, 2016).

and operations. The 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).

Blazing Star does not have a “system,” nor does it have other generation and transmission facilities in Minnesota. As such, the requirements of Minn. R. 7849.0340 are not applicable to the Project and are not necessary to determine need for the facility. Instead, Blazing Star will provide data regarding the impact of the “no facility” alternative on its potential customers and the region.

Given that the Project is designed to increase the amount of energy available for purchase on the wholesale market that will satisfy clean energy standards, not building the facility is not an alternative. Not building the facility would result in no increase in renewable energy and, in turn, no opportunity for utilities to purchase the Project’s output to satisfy the RES and other clean energy standards. Such an outcome is contrary to Blazing Star’s objective for the Project and will not satisfy the state and regional need for renewable energy.

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

The Commission granted Blazing Star an exemption from Minn. R. 7849.0330, which requires the applicant to provide certain data for each alternative that would involve construction of a large high voltage transmission line (“LHVTL”). Transmission facilities are not true alternatives to the Project, since the purpose of the Project is to increase the supply of available renewable energy. The Project will interconnect via a new switch yard located along the Brookings to Lyon County MVP Line. Any transmission line for the project will be short and limited in use to connecting the project to the broader transmission system. Blazing Star does not currently plan on installing any facilities that would be defined as an LHVTL. Access to transmission facilities beyond the point of interconnection will be arranged by the utility or utilities purchasing the Project’s energy output and will depend on the buyer and the ultimate destination for the energy output. Thus, it is anticipated that the electricity generated will be transmitted via facilities owned or operated by others. For these reasons, Minn. R. 7849.0330 is not applicable, and the Commission granted Blazing Star an exemption from this data request.

5.2.1.11 Combinations

No combination of the aforementioned alternatives would be appropriate because, as compared to the Project, they would not enable Blazing Star to more efficiently or cost-effectively produce electric output to be purchased by utilities to provide needed energy, and satisfy the RES and other clean energy standards.

5.2.2 Economic Comparison

Table 3 below, taken from the EIA, demonstrates that wind energy has both a lower capital cost and a lower operating cost than other types of renewable resources. Wind continues to be the most practical of all renewable generation.

Table 3: Renewable Technology Costs³⁰

Technology	Size (MW)	Total Overnight Cost in 2014 (2013 \$/kW)	Variable O&M (2013 \$/mWh)	Fixed O&M (2013 \$/kW/yr.)
Fuel Cells	10	6,042	42.97	0.00
Biomass	50	3,399	5.26	105.58
Conventional Hydropower	500	2,410	5.76	15.15
Wind	100	1,850	0.00	39.53
Photovoltaic	150	3,123	0.00	24.68
Solar Thermal	100	3,787	0.00	67.23

5.2.3 Alternatives Summary

The Project is the best alternative for meeting the renewable energy needs in Minnesota and the region in the near term. All other potential alternatives reviewed by Blazing Star, including the use of alternative renewable resources or emerging technologies, non-CN facilities, or the no-build alternative, fall short in one or more categories. Moreover, as an independent power producer, Blazing Star does not have the right to sell its electricity to anyone. Instead, Blazing Star will compete with alternative sources of energy to obtain a purchase agreement. In this manner, the Project will have at least one other comparison to alternatives prior to its construction and operation.

5.3 DISCUSSION OF PROPOSED FACILITY AND ALTERNATIVES (MINN. R. 7849.0250(C))

The Commission granted Blazing Star a partial exemption from Minn. R. 7849.0250(C)(1) – (9), which requires a discussion of various details regarding both the proposed facility and each of the alternatives discussed in response to Minn. R. 7849.0250(B). Consistent with the Commission granting Blazing Star a partial exemption from the data requirements in Minn. R. 7849.0250(B), thereby limiting 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 discussed above, no such alternatives exist. Therefore, only information regarding the Project is applicable.

5.3.1 Capacity Cost

Wind energy projects are accredited by MISO at a fairly low rate (currently about 15% of nameplate) and are most often used as energy resources. Thus, costs for wind energy facilities are typically not expressed in terms of capacity costs. The Project will deliver energy and

³⁰ The figures in this table are taken from a report of the U.S. Energy Information Administration, *Assumptions to the Annual Energy Outlook 2015* (Sept. 2015), at 105, available at <http://www.eia.gov/forecasts/aeo/assumptions/pdf/electricity.pdf>.

accredited capacity to utilities on an as-generated basis and will receive payment for both in the form of a single \$/kWh payment. Blazing Star's estimated cost for the Project per kW is provided in Appendix A, Section 5.3.1, which has been designated trade secret. The largest component in the total cost of the Project will be the wind turbines; however, infrastructure costs for access road construction and electrical collection systems also are factors.

5.3.2 Service Life

A service life of 30 years has been assumed to estimate annualized capital costs. With proper maintenance, service, and replacement of parts, the expected life of the Project is 30 years. Blazing Star is confident that its maintenance program will result in excellent longevity for the Project.

5.3.3 Estimated Average Annual Availability

Blazing Star estimates that the Project will be available at least 97 percent of the year, which is consistent with industry standards.

5.3.4 Fuel Costs

The Project will be fueled by wind, which is free. The easements for the wind rights on the land where the turbines will be located will require annual lease payments. Nominal purchases of electricity will be necessary to run the Project, with Blazing Star ultimately selling the Project's net output.

5.3.5 Variable Operating and Maintenance Costs

Variable maintenance costs will likely be approximately \$0.000014 per kWh. An advantage of wind energy facilities is that they typically do not require going completely offline for maintenance. Individual turbines can be serviced while the rest of the facility continues to deliver energy.

5.3.6 Total Cost

Blazing Star's estimated total capital cost per kWh for the Project is provided in Appendix A, Section 5.3.6, which has been designated trade secret. This estimate assumes typical wind farm design, construction, and operational data for a 30-year estimated service life. The price for which Blazing Star will sell the energy will be determined as a result of negotiations with the purchasing utilities.

5.3.7 Estimate of Facility's Effect on Rates

Minn. R. 7849.0250(C)(7) requires an applicant to estimate its proposed project's "effect on rates systemwide and in Minnesota, assuming a test year beginning with the proposed in-service date." The Commission granted Blazing Star an exemption from this requirement because it does not have a "system" as defined by the Rules, and it is not a utility with retail rates for the power it plans to generate. As such, the data are neither available to Blazing Star nor

necessary to determine the need for the Project. Instead, Blazing Star proposes to submit data on the Project's impact on state or regional wholesale prices.

The Project's energy production will be modest in comparison to the annual energy consumption of Minnesota and the region and will likely not have a measurable effect on rates. However, the Project could ultimately play a role in stabilizing or even lowering rates by offering an alternative to conventional generation sources.³¹ For instance, utilities would have the option of purchasing output from the Project to partially replace energy from generation sources with more volatile pricing, such as natural gas plants. In addition, the Project will not face the same cost-increasing hurdles to construction (*e.g.*, potential carbon regulation and higher permitting costs due to increased regulatory scrutiny) faced by conventional fossil-fuel generation sources. For example, the Project is consistent with the CPP's goal of reducing carbon emissions. Minnesota and other states are moving forward with implementing the CPP, and it is anticipated that existing coal plants will be retired in an effort to comply with the CPP's requirements.³²

5.3.8 Efficiency

Because no fuel is burned in the production of energy at the Project, this information is not applicable.

5.4 MAP OF SYSTEM (MINN. R. 7849.0250(D))

The Commission granted Blazing Star an exemption from Minn. R. 7849.0250(D), which requires an applicant to include a map showing the applicant's system. As an independent power producer, Blazing Star does not have a "system." The information requested is not available to Blazing Star or relevant to the determination of need for the Project. Instead, maps showing proposed site of the Project and its location relative to the power grid are included as Figures 2a, 2b, 2c and 2d.

³¹ *E.g.*, "Clean Power Green Jobs," Union of Concerned Scientists (2009) (analyzing impacts of meeting "25 by '25" nationally on consumer electric rates); "Wind and solar reducing consumer bills," Good Energy (Oct. 2015) (analyzing impact of renewable energy usage on electric rates in the United Kingdom).

³² *E.g.*, Jim Spencer and David Shaffer, "Minnesota vows to move ahead with clean power," StarTribune (Feb. 16, 2016); Jeffrey Tomich, "MISO projects additional coal retirements under Clean Power Plan," Midwest Energy News (Mar. 18, 2016); "Coal made up more than 80% of retired electricity generating capacity in 2015," U.S. Energy Information Administration (Mar. 8, 2016).

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

The Commission granted Blazing Star 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.” Blazing Star does not have a “service area” or “system” and, as such, the requested data are inapplicable. Moreover, Blazing Star will sell power generated by the Project at wholesale to one or more buyers affiliated with different systems and serving different areas. Given that Blazing Star does not yet know who the buyer or buyers will be, Blazing Star cannot reasonably forecast peak demand for those buyers’ service areas and systems. As an alternative to the requested data, Blazing Star provides the following data regarding the regional demand, consumption, and capacity data from credible sources to demonstrate the need for the independently produced renewable energy that will be generated by the Project. Upon execution of a PPA for the Project’s output, Blazing Star will also provide the Commission with additional system-specific information.

A review of utilities’ IRPs, requests for proposals, and similar documents confirms that utilities will seek additional renewable generation resources in the next several years.³³ For example, in the MISO region, utilities have expressed a need for more than 1,000 MW of renewable energy (including wind) before 2020.³⁴ Utilities will continue to require additional renewable energy generation between 2020 and 2030. Given this demand for renewable energy, a market exists for independently produced electricity generated from wind and other renewables, including the up to 200 MW to be generated by the Project.

³³ *E.g.*, Xcel Energy, Upper Midwest Resource Plan 2016-2030 (available at <https://www.xcelenergy.com/staticfiles/xcel/Regulatory/Regulatory%20PDFs/03-Preferred-Plan.pdf>); Minnesota Power, 2015 Integrated Resource Plan (available at <http://www.mnpower.com/Content/documents/Environment/2015-ResourcePlan.pdf>) (approved by the Minnesota Public Utilities Commission on June 10, 2015); Otter Tail Power Company, Application for Resource Plan Approval 2017-2031 (available at <https://www.otpc.com/media/838904/resource-plan.pdf>).

³⁴ *Id.*

7.0 SYSTEM CAPACITY (MINN. R. 7849.0280)

Minn. R. 7849.0280 requires a CN applicant to provide information on the ability of its existing system to meet the forecasted demand. As an independent power producer, Blazing Star does not have a “system” as defined by the Rules. Accordingly, the Commission granted Blazing Star an exemption from this requirement and permitted Blazing Star to instead provide regional demand, consumption, and capacity data from credible sources to demonstrate the need for the independently produced renewable energy that will be provided by the Project. This information is provided in Section 3.0.

8.0 CONSERVATION PROGRAMS (MINN. R. 7849.0290)

The Commission granted Blazing Star 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.

9.0 CONSEQUENCES OF DELAY (MINN. R. 7849.0300)

The Commission granted Blazing Star an exemption from Minn. R. 7849.0300, which requires the applicant to discuss the “anticipated consequences to its system, neighboring systems, and the power pool should the proposed facility be delayed one, two, and three years, or postponed indefinitely.” Blazing Star is not a utility and has no “system” as defined by the Rules. Thus, this data requirement is inapplicable to Blazing Star and is unnecessary to determine the need for the Project. Instead, Blazing Star provides the following data on the consequences of delay to its potential customers and the region.

The data presented regarding utilities’ need for additional renewable energy resources provides evidence that the energy to be generated by the Project is needed. Delaying an up to 200 MW wind project has the potential to jeopardize utilities’ efforts to obtain the necessary renewable energy in a cost-effective and reliable manner. In addition, both the PTC and the ITC will be phased down starting at the end of 2016, meaning that an extended delay could result in fewer tax benefits and potentially higher costs.

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

Blazing Star is submitting a Site Permit Application, in addition to this Application for a CN. Included below is a summary of some of the impacts to key resources found within the Project area, including visual resources, land use, and wildlife. Additional environmental information is provided in Section 11, below, and in the Site Permit Application.

10.1 IMPACTS TO VISUAL RESOURCES

10.1.1 Visual Impacts and Mitigation

The placement of turbines will have an effect on the visual quality of the site and in nearby areas. However, in addition to residences and farm buildings, this area also has a number of existing wind farms and high voltage lines that are visible from within the Project area. The physical characteristics of these facilities are similar to the characteristics of the Project's facilities. People living in or traveling through the area are accustomed to viewing wind turbines; however, the Project will add to the cumulative visual impacts.

The Federal Aviation Administration ("FAA") requires obstruction lighting or marking of structures over 200 feet aboveground to provide safe air navigation. Blazing Star will apply to the FAA for approval of a lighting plan that is compliant with FAA requirements. It is anticipated that approximately 50 percent of the wind turbines will be lit. FAA requires synchronized flashing of red lights for wind turbines within a Project. Blazing Star will also apply for tall structure permits from the Minnesota Department of Transportation ("MnDOT").

The turbines may have similar visual impacts as other human habitation or activities in the vicinity; however, persons within the Project vicinity may perceive the Project to have negative effects. The following are proposed mitigative measures:

- Turbines will be uniform in color;
- Turbines will not be located in biologically sensitive areas such as parks, WMAs, or wetlands;
- Turbines will be illuminated to meet the minimum requirements of FAA regulations;
- Existing roads will be used for construction and maintenance where possible to minimize the amount of new roads constructed; and
- Access roads created for the wind farm facility will be located on gentle grades to minimize erosion, visible cuts, and fills.

10.1.2 Shadow Flicker Impacts and Mitigation

Shadow flicker caused by wind turbines is defined as alternating changes in light intensity at a given stationary location, or receptor, such as the window of a home. In order for shadow flicker to occur, three conditions must be met: (1) the sun must be shining with no clouds to obscure it; (2) the rotor blades must be spinning and must be located between the receptor and the sun; and (3) the receptor must be sufficiently close to the turbine to be able to distinguish a shadow created by it. Shadow flicker intensity and frequency at a given receptor are determined by a number of interacting factors:

- Sun angle and sun path – As the sun moves across the sky on a given day, shadows are longest during periods nearest sunrise and sunset, and shortest near midday. They are longer in winter than in summer. On the longest day of the year (the summer solstice), the sun's path tracks much farther to the north and much higher in the sky than on the shortest day of the day (the winter solstice). As a result, the duration of shadow flicker at a given receptor will change significantly from one season to the next.
- Turbine and receptor locations – The frequency of shadow flicker at a given receptor tends to decrease with greater distance between the turbine and receptor. The frequency of occurrence is also affected by the sightline direction between turbine and receptor. A turbine placed due east of a given receptor will cause shadow flicker at the receptor at some point during the year, while a turbine placed due north of the same receptor at the same distance will not, due to the path of the sun.
- Cloud cover and degree of visibility – As noted above, shadow flicker will not occur when the sun is obscured by clouds. A clear day has more opportunity for shadow flicker than a cloudy day. Likewise, smoke, fog, haze, or other phenomena limiting visibility would reduce the intensity of the shadow flicker.
- Wind direction – The size of the area affected by shadow flicker caused by a single wind turbine is based on the direction that the turbine is facing in relation to the sun and location of the receptor. The turbine is designed to rotate to face into the wind, and as a result, turbine direction is determined by wind direction. Shadow flicker will affect a larger area if the wind is blowing from a direction such that the turbine rotor is near perpendicular to the sun-receptor view line. Similarly, shadow flicker will affect a smaller area if the wind is blowing from a direction such that the turbine rotor is near parallel to the sun-receptor view line.
- Wind speed – Shadow flicker can only occur if the turbine is in operation. Turbines are designed to operate within a specific range of wind speeds. If the wind speed is too low or too high, the turbine will not operate, eliminating shadow flicker.

- Obstacles – Obstacles, such as trees or buildings, which lie between the wind turbine and the receptor have a screening effect and can reduce or eliminate the occurrence of shadow flicker.
- Contrast – Because shadow flicker is defined as a change in light intensity, the effects of shadow flicker can be reduced by increasing the amount of light within a home or room experiencing shadowing flicker.
- Local topography – Changes in elevation between the turbine location and the receptor can either reduce or increase frequency of occurrence of shadow flicker, compared to flat terrain.

Shadow flicker frequency calculations for the Project were modeled by 390 residences (receptors) with WindPRO 3.0.654. The maximum predicted shadow flicker impacts that occurred at a residence for each turbine layout are show in Tables 4.1 and 4.2.

Table 4.1: Maximum Predicted Shadow Flicker Impacts – Participating Residences

Participating Residences				
Statistic	Acciona	Vestas	GE	Gamesa
Max - Worst Case	192.9	179.7	188.7	177.8
Avg - Worst Case	31.9	32.9	32.3	32.6
Max - Real Case	56.1	51.2	54.2	51.6
Avg - Real Case	9.6	9.9	9.7	9.9

Table 4.2: Maximum Predicted Shadow Flicker Impacts – Non-Participating Residences

Non Participating Residences				
Statistic	Acciona	Vestas	GE	Gamesa
Max - Worst Case	87.1	88.3	89.6	82.7
Avg - Worst Case	2.9	4.7	2.7	2.9
Max - Real Case	19.3	30.3	20.0	18.3
Avg - Real Case	0.8	1.5	0.8	0.9

WindPRO 3.0.654 calculates the number of hours per year as well as the maximum minutes per day during which a given receptor could realistically expect to be exposed to shadow flicker from nearby wind turbines. Simulated conditions for the worst case scenario were:

- There is always sunshine.
- The turbines are always in operation.
- The wind direction always orients the rotors perpendicular to the sun-receptor sightline.

- There are no local obstacles blocking potential shadows, such as buildings or vegetation.
- Specific window configurations on houses are not considered.
- Receptors are assumed to be exposed to the sky in all directions, and the shielding influence of terrain is not considered (“greenhouse receptors”).

The worst case scenario model was refined to represent a less conservative expected scenario by incorporating the following more realistic features in the expected case scenario model:

- Wind direction – Turbine rotors do not orient themselves to the sun all day, every day, as modeled in the worst case scenario. To adjust for actual rotor direction, wind data is entered into the model. For the analysis included in this application, wind data was taken from the temporary meteorological tower located within the Project area.
- Turbine operating hours – The turbine will not be operational all of the time due to local winds being outside of turbine operation specifications. Project-specific wind data again was incorporated to reflect the frequency of sufficient wind speed to activate the turbine. The expected percentage of time the turbine is activated is multiplied by the number of minutes of shadow flicker.
- Consideration of maintenance and other downtime – Turbines, project facilities, and even the transmission grid may be unavailable due to routine maintenance activities or emergency situations. Industry best estimates are turbine availability of 97%, balance-of-plant availability of 99%, and grid availability of 99.8%. A 4.2% reduction in the annual operating hours was included to account for these factors.
- Actual sunshine hours – Sunshine hours are affected by cloud cover, fog or haze, time of day, and time of year. Monthly average sunshine probabilities are taken from the National Climatic Data Center Comparative Climatic Data. For the shadow flicker analysis, the Sioux Falls, SD, station was chosen because it is the closest station in the database.

Combining these three mitigating factors creates a less conservative scenario which aims to produce a scenario closest to the actual expected results. These “expected” results represent a significant reduction in shadow flicker hours per day or per year in contrast to a worst case scenario. However, by including the above factors into the model, it is possible – although not likely – to have lower modeled results compared to actual results in the field. This is due to the fact that true meteorological factors like wind direction or sunshine hours could be different from the averages used in a way that is worse for shadow flicker.

There is one non-participating residence which the model calculates will receive more than 30 hours of shadow flicker per year in the real case. However, the model did not include the trees surrounding the residence; thus, in operation, it is anticipated that the level of shadow flicker actually experienced will be much less.

At a distance of 1,000 feet or greater (the Project minimum setback for residences), receptors will typically experience shadow flicker only when the sun is low in the sky, and only when the factors described above in this Section 10.1.2 are present. If a receptor does experience shadow flicker, it most likely will be only during a few days per year from a given turbine, and for a total of only a fraction (typically less than 1 percent) of annual daylight hours.

Shadow flicker from the proposed turbines is not harmful to the health of photosensitive individuals, including those with epilepsy. The frequency of shadow flicker due to wind turbines is a function of the rotor speed and number of blades, and it is generally no greater than approximately 1.5 hertz (i.e., 1.5 flashes per second). The Epilepsy Foundation has determined that generally, the frequency of flashing lights most likely to trigger seizures is between 5 and 30 flashes per second.

Blazing Star will consider shadow flicker when siting wind turbines to minimize impacts to area residents. Flicker mitigation will be addressed as situations arrive wherein a residence is experiencing inordinately more flicker than anticipated in the modeling, although it is highly unlikely more flicker than modeled will occur. In order to assess site-specific mitigation measures, flicker occurrences should be documented daily for several consecutive months including time of location, day and duration. Mitigation measures will be considered and implemented based on individual circumstances of residences experiencing shadow flicker, and as a reasonable function of the amount of flicker experienced. Such mitigation measures may include:

- Providing education about how to minimize the effect of shadow flicker.
- Providing indoor screening, such as curtains or blinds in windows, where appropriate and reasonable.
- Providing exterior screening, such as a vegetation bugger or awnings over windows, where appropriate and reasonable.
- Turbine Control Software programmed to temporarily shut down a specific turbine for a few minutes if conditions are present to create flicker.

10.2 IMPACTS TO LAND USE

The Project area includes a total of approximately 37,200 acres, and Blazing Star currently has site control over approximately 28,800 of these acres. Of acres within the Project area, less than one half of one percent will be permanently converted from agricultural fields to sites for wind turbines, access roads, and transformer pads. With respect to turbine pads and access roads, only approximately 95 acres will be converted for the 2 MW turbines, and the 3.5 MW turbines will require the least amount of conversion (35 acres). Between approximately 25-

68 acres will be converted for access roads, and up to an additional 33 acres will be used for construction of the Project substation and O&M building. The existing land use will continue on the remainder of the land. No relocation of people or businesses will be necessary for the Project. Thus, land use impacts will be minimal.

10.3 IMPACTS TO WILDLIFE

Blazing Star is conducting pre-construction avian, bat, and habitat assessment studies consistent with the USFWS Land Based Wind Energy Guidelines and MDNR protocols. This work has informed the turbine siting process. No turbines will be placed within WMAs, SNAs, or WPAs. Additionally, turbines will avoid mapped native prairie and native plant communities as well as Sites of Biodiversity Significance ranked moderate, high, or outstanding. Turbines are predominately located within cultivated fields or heavily grazed grassland. Habitat assessment studies have evaluated grasslands in which turbines are proposed and found them to be unsuitable for grassland breeding birds and federally-listed butterflies (Dakota skipper and Poweshiek skipperling) due to the presence of invasive species, evidence of grazing activity or recent haying, and small patch size. By avoiding high quality habitats, the Project will minimize impacts to wildlife.

Development of the wind farm, including the construction and operation of the Project, is expected to produce minimal impacts to wildlife. Based on studies of existing wind power projects in the United States and Europe, the impact to wildlife would primarily occur to avian and bat populations. Two wind projects in southern Minnesota, Prairie Rose and Lakefield, performed formal post-construction monitoring at their sites in recent years. Prairie Rose's (a project developed by Geronimo) one year of post-construction monitoring in 2014 estimated bird fatality rates to be 0.74 birds per turbine per study period (or 0.44 bird fatalities per MW per study period) and bat fatality rates to be 0.69 bats per turbine per study period (or 0.41 bat fatalities per MW per study period). Similarly, Lakefield conducted post-construction monitoring in 2012 and 2014 and estimated bird fatality rates to be 4.13 birds per turbine (2.75 birds per MW) and 1.60 birds per turbine (1.07 birds per MW), in 2012 and 2014, respectively. Bat fatality estimates were estimated to be 29.80 bats per turbine (19.87 bats per MW) and 30.28 bats per turbine (20.19 bats per MW) in 2012 and 2014, respectively.³⁵

Blazing Star expects that the data collected at these two projects will be representative of the range of fatality rates expected from the Project due to their geographies and similar land uses. Blazing Star will develop an Avian and Bat Protection Plan and is in the process of completing a site specific risk assessment based on avian observations at the project. Additional impacts may include a small reduction in the available habitat that some wildlife uses for forage or cover. Operation of the Project will not change existing land uses. Overall, the impact of the Project on wildlife is expected to be minimal.

³⁵ Quarterly Avian Mortality Report; Prairie Rose Wind, LLC, MPUC Docket No. IP-6830/WS-10-425 at pp. 12-13 (February 3, 2015) (eDocket No. 20152-107006-01); Avian and Bat Fatality Monitoring Report, Lakefield Wind Project, LLC, MPUC Docket No. IP-6829/WS-09-1239 at pp. 25-27 (January 15, 2013) (eDocket No. 20131-82775-01); Avian and Bat Fatality Monitoring Report, Lakefield Wind Project, LLC, MPUC Docket No. IP-6829/WS-09-1239 at p 21 (April 14, 2015) (eDocket No. 20154-109264-01).

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

11.1 LAND REQUIREMENTS (MINN. R. 7849.0320(A))

The Project is located on land that is zoned for agricultural use. The Project will remove a total of between approximately 80 to 90 acres from agricultural use. Typical wind farms 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.

11.1.1 Land Requirements for Water Storage

The Project will not require any land for water storage.

11.1.2 Land Requirements for Cooling System

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

11.1.3 Land Requirements for Solid Waste Storage

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

11.2 TRAFFIC (MINN. R. 7849.0320(B))

The maximum construction workforce is expected to generate approximately 375 large truck trips per day and up to 875 small-vehicle (pickups and automobiles) trips per day during peak construction periods. The functional capacity of a two-lane paved rural highway is in excess of 5,000 vehicle trips per day. Table 5 provides the Annual Average Daily Traffic (“AADT”) for the project area. Currently the roads around the project are well below capacity, the addition of construction vehicle trips per road segment would be perceptible, but similar to seasonal variations such as autumn harvest.

Table 5: Existing AADT Along Road Segments Serving the Project³⁶

Roadway Segment Description	Existing Annual (AADT)
CSAH 17 between MN 271 and CSAH 4	570
CSAH 17 between CSAH 4 and US 75	510
CSAH 19 between CSAH 1 and US 75	235
MN 19 between MN 271 and 190 th Avenue	960
MN 271 between MN 19 and CSAH 17	1050
CSAH 20 between CSAH 1 and 170 th Avenue	20
CSAH 18 between CSAH 4 and US 75	85

Specific additional truck routes will be dictated by the location required for delivery. Blazing Star assumes that traffic will primarily come along U.S. Highway 75 and State Highway 19, including traffic related to turbine deliveries. Final delivery routes will be determined by the manufacturers of the Project components and equipment. Additional operating permits will be obtained from the relevant road authorities for oversized truck movements.

The operations phase of the Project will require a small maintenance crew driving through the area to monitor and maintain the wind turbines. The maintenance crew will monitor the wind turbines as needed. There would be a slight increase in traffic for occasional turbine and substation repair, but not impacts to traffic function would result from this small increase.

11.3 INFORMATION PERTAINING TO FOSSIL-FUELED ACTIVITIES (MINN. R. 7849.0320(C)-(D))

11.3.1 Fuel

The Project is not a fossil-fueled facility. The Project will be fueled by wind.

11.3.2 Emissions

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

³⁶ 2014 Traffic Volume General Highway Map, Lincoln County, MN, available at <http://www.dot.state.mn.us/traffic/data/maps/trunkhighway/2014/counties/lincoln.pdf>.

11.4 WATER USAGE FOR ALTERNATE COOLING SYSTEMS (MINN. R. 7849.0320(E))

Wind power plants do not utilize cooling systems. Water requirements are, therefore, minimal, and 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.

11.5 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.

11.6 RADIOACTIVE RELEASES (MINN. R. 7849.0320(G))

The Project will not produce any radioactive releases.

11.7 SOLID WASTE (MINN. R. 7849.0320(H))

The only solid waste generated during the operation of the Project will be domestic wastes and used lubricants and other maintenance materials. These wastes and their disposition are summarized in Table 6.

Table 6: Summary of Wastes and Disposition

Waste	Solid/Liquid	Description	Generation Rate	Disposition Method
Oil/Grease	L/S	Hydraulic fluid, lubrication oil, grease	~1.13 tons per turbine/yr	Used oil recycler, incinerator
Maintenance Materials	S	Oily and greasy rags, materials packaging, cleaning residues, fluorescent light bulbs	~5.63 tons/yr	Solid waste landfill or, as necessary, hazardous waste treatment/disposal facility

11.8 NOISE (MINN. R. 7849.0320(I))

When in motion, the wind turbines emit a perceptible sound. The level of this noise varies with the speed of the turbine and the distance of the listener from the turbine. Sound is generated from the wind turbine at points near the hub or nacelle from the blade tips as they rotate. Noise standards are regulated by the MPCA under Minn. Rules Ch. 7030. The most stringent of these standards is a 50 dB limit for nighttime noise levels.

Blazing Star conducted a preliminary noise assessment to estimate levels of noise from the Project at nearby dwellings and potentially eliminate turbine locations which would result in exceeding Minnesota's noise standards. Blazing Star's analysis accounted for all noise

generating elements associated with wind turbines. A conservative model configuration was used in which two decibels was added to the manufacturer’s warranted sound power level. Table 7 below presents the analysis results for each of the turbine models currently under consideration for the Project. As shown in Table 7 below, the Project will comply with MPCA noise regulations:

Table7: Project-Related Noise Levels

Turbine Make and Model	Maximum Project-Related Leq, dBA	Maximum Project-Related Leq, dBA, at Non-Participating Residences
Gamesa G126	48.4	43.6
Vestas V110	48.0	45.0
GE 2.3-116	48.6	44.4
Acciona AW132	48.3	43.8

As shown in Table 7, the maximum calculated noise level is within the standards established by MPCA. Blazing Star will also continue to evaluate operational modifications that may be available to mitigate noise impacts and meet the MPCA noise standards.

11.9 WORK FORCE FOR CONSTRUCTION AND OPERATION (MINN. R. 7849.0320(J))

Onsite, physical construction of the Project is anticipated to be completed by 2018. During this time, approximately 250 construction jobs will likely be created. Between 10 and 14 permanent positions will likely be created to operate the Project.

The civil contractor will be the lead entity for the construction management of the Project. The primary civil, erection, and electrical contractors will use, where possible, the services of local contractors to assist in the construction of the Project.

Blazing Star will augment its O&M staff as needed with appropriate contractors to service and maintain the Project. The operations phase of the Project will require a two-person maintenance crew driving through the area to monitor and maintain the wind turbines.

11.10 NUMBER AND SIZE OF TRANSMISSION FACILITIES (MINN. R. 7849.0320(K))

At the base of each turbine a step-up transformer will be installed to raise the voltage to power collection line voltage of 34.5 kV. Power will be run through an underground and/or overhead collection system. Generally, the electrical lines will be buried in trenches and run to the edge of the farm field. At the public road at the edge of the farm field, the power collection lines will either rise from underground to overhead lines or continue as underground lines. The collection lines will occasionally require an aboveground junction box when the collection lines from separate spools need to be spliced together.

Power generated by the Project will reach the electric grid by traveling through 10 34.5 kV feeder lines to a new Project substation. From that location, the Project will interconnect at the new Brookings to Lyon County 345 kV line, one of the lines designated by the Mid-Continent Independent System Operator as an MVP.

The interconnection details will be determined as a result of studies, discussions, and agreements with MISO. Access to transmission facilities beyond interconnection will be arranged by the utility or utilities purchasing the Project's energy output, and will depend on the buyer and the ultimate destination for the energy output.

12.0 OTHER FILINGS AND PERMITS

12.1 EXEMPTION REQUEST

On March 4, 2016, Blazing Star requested an exemption from several of the informational requirements in Minn. R. Ch. 7849. On April 28, 2016, the Commission granted Blazing Star’s Exemption Request.³⁷

12.2 ENVIRONMENTAL REPORT

Pursuant to Minn. R. 7849.1000 - .2100, the Department of Commerce is required to prepare an Environmental Report for any large energy facility for which a CN must be obtained.

12.3 SITE PERMIT

Blazing Star will also submit to the Commission a Site Permit Application for a Large Wind Energy Conversion System, as required by Minn. Stat. § 216F.04.

12.4 OTHER PROJECT PERMITS

Project permits and approvals that may be necessary to complete the Project are listed in Table 8. Blazing Star will obtain these approvals, as necessary, prior to Project construction.

Table 8: Project Permits and Approvals

Regulatory Authority	Permit/Approval
Federal Approvals	
U.S. Army Corps of Engineers	Wetland Delineation Approvals
	Jurisdictional Determination
	Federal Clean Water Act Section 404 and Section 10 Permit(s)
U.S. Fish and Wildlife Service	Review for Threatened and Endangered Species
Environmental Protection Agency (region 5) (EPA) in coordination with the Minnesota Pollution Control Agency (MPCA)	Spill Prevention Control and Countermeasure (SPCC) Plan

³⁷ Order, *In the Matter of the Application of Blazing Star Wind Farm, LLC for a Certificate of Need for the 200 Megawatt Blazing Star Wind Project in Lincoln County, Minnesota*, Docket No. IP-6961/CN-16-215 (Apr. 28, 2016), eDockets Doc. ID 20164-120749-01.

Lead Federal Agency (National Historic Preservation Act)	Federal Section 106 Review (Class I Literature Review / Class III Cultural Field Study)
Federal Aviation Administration	Form 7460-1 Notice of Proposed Construction or Alteration (Determination of No Hazard)
	Notice of Actual Construction or Alteration (Form 7460-2)
Department of Defense	Agreement related to impact mitigation for Tyler Radar facility
Federal Land Manager (BLM, USBR, Forest Services)	Right-of-Way Grant over Federal Lands
National Historic Preservation Act	Class I Literature Review / Class III Cultural Field Survey
U.S. Department of Agriculture	Form AD-1006
	Conservation / Grassland / Wetland Easement and Reserve Program releases and consents
	Farm Services Agency Mortgage Subordination & Associated Environmental Review
Federal Communications Commission	Non-Federally Licensed Microwave Study
	NTIA Communication Study
Federal Energy Regulatory Commission	Exempt Wholesale Generator Self Cert. (EWG)
	Market-Based Rate Authorization
Federal Emergency Management Agency	Flood Plain Designation
State of Minnesota Approvals	
Minnesota Department of Labor and Industry	Electrical Plan Review, Permits, and Inspections
Minnesota Public Utilities Commission	Site Permit for Large Wind Energy Conversion System (LWECS)
	Certificate of Need
Minnesota State Historic Preservation Office (SHPO)	Cultural and Historic Resources Review and Review of State and National Register of Historic Sites and Archeological Survey
Minnesota Pollution Control Agency	Section 401 Water Quality Certification
	National Pollutant Discharge Elimination System Permit (NPDES) – MPCA General Storm water Permit for Construction Activity

	Very Small Quantity Generator (VSQG) License – Hazardous Waste Collection Program
	Aboveground Storage Tank (AST) Notification Form
Minnesota Department of Health	Environmental Bore Hole (EBH) Water Supply Well Notification Plumbing Plan Review
Minnesota Department of Natural Resources	License to Cross Public Land and Water Native Prairie Protection Plan Biological Surveys General Permit for Water Appropriations (DeWatering) Public Waters Work Permit
Minnesota Department of Transportation	Utility Permits on Trunk Highway Right-of-way Oversize/Overweight Permit for State Highways Access Driveway Permits for MnDOT Roads Tall Structure Permit
Local Approvals	
Lincoln County	Right-of-way permits, crossing permits, driveway permits for access roads, building permit for O&M building, oversize/overweight permits for County Roads
Townships	Right-of-way permits, crossing permits, driveway permits for access roads, building permit for O&M building, oversize/overweight permits for township roads
Lincoln County Soil and Water Conservation District	Wetland Conservation Act Approvals
Watershed Districts	Land/Water Alteration Permits
Other	
MISO	Turbine Change Study Generator Interconnection Agreement

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