

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF SOUTH DAKOTA**

**IN THE MATTER OF THE APPLICATION BY PREVAILING WIND PARK, LLC
FOR A PERMIT FOR A WIND ENERGY FACILITY IN BON HOMME, CHARLES MIX,
AND HUTCHINSON COUNTIES, SOUTH DAKOTA, FOR PREVAILING WIND
PARK ENERGY FACILITY**

SD PUC DOCKET EL-18-026

**PRE-FILED DIRECT TESTIMONY OF KEITH THORSTAD
ON BEHALF OF PREVAILING WIND PARK, LLC**

May 30, 2018

1 **I. INTRODUCTION AND QUALIFICATIONS**

2

3 **Q. Please state your name, employer, and business address.**

4 A. My name is Keith Thorstad. I am the owner of Thorstad Companies. My business
5 address is 101 Second Street West, PO Box 321, Chokio, Minnesota.

6

7 **Q. Briefly describe your educational and professional background.**

8 A. I have a degree in Industrial Technology. I have worked in the construction industry
9 for 40 years and have 20 years of experience working with wind energy developers
10 and owners across the United States. I have worked on more than 200 projects. A
11 copy of my resume is included as **Exhibit 1**.

12

13 **Q. What is your company's role with respect to the Prevailing Wind Park Energy
14 Facility ("Project")?**

15 A. Thorstad Companies is serving as the Engineer-Procure-Construct ("EPC")
16 contractor for the 200 megawatt ("MW") Project.

17

18 **II. PURPOSE OF TESTIMONY**

19

20 **Q. What is the purpose of your Direct Testimony?**

21 A. The purpose of my Direct Testimony is to describe the design and construction of
22 the Project.

23

24 **Q. What exhibits are attached to your Direct Testimony?**

25 A. Exhibit 1: Resume

26

27 **Q. Please identify the sections of the Application to the South Dakota Public
28 Utilities Commission for a Facility Permit ("Application") that you are
29 sponsoring for the record.**

30 A. I am sponsoring the following sections of the Application:

- 31
 - Section 8.0: General Site and Project Component Description

32

33 **III. PROJECT OVERVIEW**

34

35 **Q. Please provide an overview of the Project and its components.**

36 A. The proposed Project is an up to 200 MW wind energy facility and would include the
37 following components:

- 38 • Up to 61 wind turbines;
- 39 • Access roads to each wind turbine and associated facilities;
- 40 • An underground electrical power collector and communications systems;
- 41 • A collector substation;
- 42 • Up to four permanent meteorological (“MET”) towers;
- 43 • An operations and maintenance (“O&M”) facility; and
- 44 • Additional temporary construction areas, including crane paths, public road
45 improvements, a laydown yard, and one or more concrete batch plants (as
46 needed).

47 **Q. What is the proposed construction schedule for the Project?**

48 A. As discussed in the Direct Testimony of James Damon and Section 19.0 of the
49 Application, Prevailing Wind Park, LLC (“Prevailing Wind Park”) expects Project
50 construction to commence in the Fourth Quarter of 2018. Prevailing Wind Park
51 anticipates that the Project will achieve commercial operation in the Fourth Quarter of
52 2019. A preliminary permitting and construction schedule is included in Table 19-1 of
53 the Application.

54

55 **IV. PROJECT DESIGN AND CONSTRUCTION**

56

57 **Q. From an engineering and operational design perspective, please describe the
58 turbines that may be used for the Project.**

59 A. The Project would consist of up to 61 wind turbines that will generate up to 200 MW
60 of energy. Both representative turbine models, the GE 3.8-137 and Vestas 136-3.6,
61 have Supervisory Control and Data Acquisition (“SCADA”) communication technology
62 to control and monitor the Project. The representative turbine models also contain

63 emergency power supplies to allow operation of the control systems, braking systems,
64 yaw systems, and blade pitch systems to shut the turbine down safely if grid power is
65 lost. Additional information concerning Project turbines is included in Section 8.2 of
66 the Application.

67

68 **Q. Please describe the foundations that will be constructed for the turbines.**

69 A. The expected turbine foundation would be a spread foundation design. Foundations
70 for the towers would be approximately 2,700 square feet, with a depth of up to 10
71 feet. Except for approximately 12 inches that would remain aboveground to allow
72 the tower to be appropriately bolted to the foundation, the tower foundation would
73 be underground. A specific foundation design would be chosen based on
74 geotechnical surveys conducted at each turbine location, as well as turbine tower
75 load specifications and cost considerations, among other factors.

76

77 **Q. Will the collection system be installed underground?**

78 A. Generally, yes. The 34.5-kilovolt (“kV”) electrical collection system will be installed
79 underground and bundled with the fiber-optic communication system cables.
80 Occasional junction boxes will be located aboveground at points where the cables
81 are spliced, and where the cables enter into the collector substation. Approximately
82 65 trench miles of underground collector and communication lines will be installed.
83 Directional drilling may be used in wetland and stream areas. Additional detail is
84 provided in Section 8.7.1 of the Application.

85

86 **Q. Could you describe the Project collection substation?**

87 A. A new collector substation would be constructed in the center of the Project Area,
88 on private land, where the 34.5-kV electric collection grid and fiber-optic
89 communication network would terminate. The Project collection substation will
90 include a main transformer to step up the voltage of the collection grid from 34.5 kV
91 to 115 kV, aboveground bus structures to interconnect the collector substation
92 components, breakers, a control building, relays, switchgear, cable storage,

93 communications and controls, and other related facilities required for delivery of
94 electric power to the 115-kV gen-tie transmission line.

95
96 The design of the collector substation is not finalized, but Prevailing Wind Park
97 expects it would be enclosed by a chain link fence with dimensions of roughly 350
98 feet by 450 feet (4 acres). The collector substation components would be placed on
99 concrete and steel foundations. Additional detail is provided in Section 8.7.2 of the
100 Application.

101
102 **Q. Please describe the O&M facility that will be constructed for the Project.**

103 A. The O&M facility would be located within the Project Area, in a location with proper
104 transportation, communications facilities, and easy access to Project facilities. The
105 proposed O&M facility would house the equipment to operate and maintain the wind
106 farm. A gravel parking pad would provide the building with a parking area and
107 secured outside storage. Total permanent disturbance from the O&M facility,
108 including parking, would be approximately 6 acres. Additional detail is provided in
109 Section 8.4 of the Application.

110
111 **Q. Please discuss the design and installation of the permanent MET towers.**

112 A. Prevailing Wind Park anticipates that the Project would include permanent wind
113 measurement equipment, which could consist of up to four permanent 80-meter
114 meteorological towers. The permanent meteorological towers would be self-
115 supporting and would not have guy wires. The towers would be lighted and painted
116 as necessary to comply with Federal Aviation Administration guidelines and would
117 be connected to the Project collection system for communications and power needs.

118
119 **Q. With respect to Project access roads, how will access road requirements differ
120 during and after construction?**

121 The Project's access roads will provide access to turbines and other Project facilities
122 during construction and for maintenance and monitoring during operations. During
123 construction, most access roads will have temporary widths of approximately 50 feet

124 to accommodate heavy construction equipment; access roads required to
125 accommodate movement of the turbine erection crane will have temporary widths of
126 approximately 60 feet. After construction, access roads will be reduced to
127 their permanent width of 16 feet and the crane paths will be restored.
128 Additional information concerning access roads is included in Section 8.3 and
129 Table 10-1 of the Application.

130

131 **Q. Discuss the personnel that will be involved in the construction of the Project.**

132 A. Construction of the Project will involve both skilled and unskilled labor, including
133 foremen, carpenters, iron workers, electricals, millwrights, and heavy equipment
134 operators. Thorstad Companies' employees will provide management-level
135 oversight, safety, coordination with Prevailing Wind Park and other stakeholders,
136 and quality assurance/quality control. Construction of the Project is anticipated to
137 generate approximately 245 jobs during construction at peak demand.

138

139 **Q. Will the Project components be designed and constructed in compliance with**
140 **all applicable federal, state, and local regulations?**

141 A. Yes.

142

143 **V. CONCLUSION**

144

145 **Q. Does this conclude your Direct Testimony?**

146 A. Yes.

147

148

149

150 Dated this 30th day of May, 2018.

151

152

153

154



155 Keith Thorstad.

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