

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

**IN THE MATTER OF THE APPLICATION BY ENGIE NORTH AMERICA, INC. FOR
A PERMIT FOR A WIND ENERGY FACILITY IN HYDE COUNTY, SOUTH
DAKOTA, FOR MERIDIAN WIND PROJECT**

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**PRE-FILED DIRECT TESTIMONY OF MANUELA ELIZONDO, TETRA TECH,
ON BEHALF OF ENGIE NORTH AMERICA, INC.**

April 8, 2020

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1 **Q. Please state your name, employer and business address for the record.**

2 A. My name is Manuela Elizondo and I am a Project Manager with Tetra Tech, Inc. My
3 office location is 350 Indiana Street, Suite 500, Golden, Colorado.

4 **Q. Briefly describe your educational background.**

5 A. I have a Bachelor of Arts in Environmental Studies and a Bachelor of Arts in
6 Geography from Villanova University in Radnor, Pennsylvania.

7 **Q. Briefly describe your professional experience.**

8 A. I have approximately 5 years of environmental consulting experience, largely related to
9 supporting environmental permitting and compliance activities throughout the energy and
10 transportation sectors. Within the past three years I have worked a wide range of projects in the
11 Midwestern US including state level environmental review and permitting of renewable
12 facilities.

13 **Q. Have you attached a resume or CV.**

14 A. Yes, my resume is attached.

15 **Q. Have you previously submitted or prepared testimony in this proceeding in South
16 Dakota?**

17 A. No, I have not.

18 **Q. What is the purpose of your direct testimony?**

19 A. My purpose is to support several sections of the application including:

20 Section 7- Effect on Physical Environment.

21 Section 8-Effect on Hydrology

22 Section 10-Effect on Aquatic Ecosystems

23 Section 11.4-Visual Resources

24 Section 13-Water Quality

25 Section 14-Air Quality

26 **Q. Please describe the physical environment of the proposed project area.**

27 A. The Project Area lies within the Coteau du Missouri division of the Great Plains
28 Province. The Coteau du Missouri is a north-south trending 25 to 80-mile-wide highland
29 extending through North and South Dakota. The James Basin division, located east and northeast
30 of the Project Area, is approximately 500 feet lower in elevation than the Coteau du Missouri.
31 Transition from the Coteau du Missouri to the James Basin is gradual. In Hyde County, this
32 broad low area, called the Great Ree Valley, is bounded by the Orient Hills to the north and by
33 the Ree Hills to the south. The Project Area is in south-eastern Hyde County in the Ree Hills.
34 The Ree Hills have the highest elevation in the county with an elevation of 2,190 feet above
35 mean sea level located south of the Project Area. Topographic relief within the Project Area
36 ranges from approximately 1,860 to 2,111 feet above mean sea level which represents a variation
37 of approximately 251 feet (Figures 4a through 4c, Appendix A) (Helgerson et. al. 1987; USGS
38 7.5-minute topographic quadrangles Chapelle Lake NW, Chapelle Lake and Macs Corner).

39 **Q. What is the underlying geology of the region?**

40 A. The surficial geology of Hyde County consists of late Wisconsin age glacial deposits,
41 which form a mantle up to 500 feet thick over the Pierre shale bedrock and consist primarily of
42 till and outwash. In Hyde and Hughes counties, these surficial deposits average 200 feet in
43 thickness (Helgerson et. al. 1987). Upper Cretaceous age Pierre shale is the shallowest bedrock
44 encountered and ranges from 220 to 710 feet in thickness.

45 **Q. Is there significant risk of seismic activity or subsidence in the area?**

46 A. The risk of seismic activity in the Project Area is extremely low to negligible. The

47 potential for subsidence within the Project Area is negligible.

48 **Q. Are there expected impacts on local geological conditions?**

49 A. The geologic conditions within the Project Area are appropriate for the construction of
50 the Project and will result in negligible impacts on geologic resources. Excavation, bearing and
51 groundwater conditions are anticipated to be conducive to construction and operation of the
52 Project facilities.

53 **Q. What about farmland in the area?**

54 A. Approximately 65 percent of the Project Area is classified as not prime farmland and
55 approximately 1 percent of the Project Area is classified as prime farmland (Table 7-2; Figure 5b
56 in Appendix A). Approximately 17 percent of the Project Area is classified as farmland of
57 statewide importance. The remaining land within the Project Area is considered prime farmland
58 if irrigated (17 percent).

59 **Q. Are there expected impacts to soils?**

60 A. Construction activities such as clearing, grading, trench excavation and backfilling, as
61 well as the movement of construction equipment within the construction workspace, may result
62 in impacts to soil resources. Potential impacts on soil resources include soil erosion, soil
63 compaction, reduction of soil fertility and changes to other soil characteristics. Clearing removes
64 protective cover and exposes soil to the effects of wind and precipitation, which may increase the
65 potential for soil erosion and movement of sediments into sensitive environmental areas. Grading
66 and equipment traffic may compact soil, reducing porosity and percolation rates, which could
67 result in increased runoff potential. Contamination from release of fuels, lubricants and coolants
68 from construction equipment could also impact soils. The majority of these impacts are
69 temporary and related to construction activities; however, there will be permanent impacts

70 associated with aboveground facilities.

71 Table 7-2 provides a summary of farmland types affected by the Project. Land impacted
72 by the installation of these facilities will be converted to impervious surfaces, thereby resulting
73 in long-term operational impacts altering the soil composition at these locations.

74 **Q. What Mitigation Measures will be used for Soil Resources?**

75 A. Wind facilities are predominantly designed with turbines situated at higher elevations to
76 minimize obstructions to wind. The current layout sites access roads away from steep slopes to
77 the degree possible. The underground collector lines also avoid crossing steep ravines.
78 Geotechnical soil borings will be conducted at wind turbine foundation locations prior to
79 construction to determine the soil suitability to support turbine foundations. This information
80 will help dictate final design parameters of the turbine and structure foundations.

81 **Q. What permits are required for construction due to impacts on soils?**

82 A. Construction of the Project will require coverage under the South Dakota Department of
83 Environment and Natural Resources (SDDENR) General Permit for Storm Water Discharges
84 Associated with Construction Activities. To maintain compliance with provisions of this General
85 Permit, Meridian Wind will prepare a Stormwater Pollution Prevention Plan (SWPPP) to identify
86 potential sources of stormwater pollution from the Project Area and specify best management
87 practices (BMPs) to control erosion and sedimentation and minimize negative impacts caused by
88 stormwater discharges from the Project. The SWPPP will be prepared prior to construction of the
89 Project. The SWPPP will be implemented from the initiation of construction and used through
90 site restoration efforts. Once construction has been completed, Meridian Wind will backfill
91 graded and excavated areas with the stored native material and return surface conditions to pre-
92 construction conditions. During Project operation, stormwater volume, stormwater flow and

93 erosion and sediment impact to surface water and groundwater resources are not anticipated to
94 change from pre-construction conditions.

95 **Q. Have you considered impacts on groundwater resources?**

96 A. Construction of the Project is not anticipated to have long-term impacts on groundwater
97 resources. As discussed, disturbances associated with Project construction activities are primarily
98 limited to the upper 30 to 40 feet with excavations for turbine foundations and transmission line
99 structure foundations, which are above the water table of most of the aquifers in the Project Area.
100 Construction activities such as trenching and backfilling and dewatering that encounter shallow
101 surficial aquifers may result in negligible to minor short-term and very localized fluctuations in
102 groundwater levels depending on the proximity and connectivity of groundwater and extent of
103 the excavated area. Once the construction activity has been completed, the groundwater levels
104 typically recover quickly.

105 **Q. Are there mitigation techniques to be found in construction decisions?**

106 A. Turbines and the MET tower will be constructed on higher elevation portions of the
107 Project Area to maximize the wind resource and as such, generally avoid direct impacts to
108 wetlands and waterbodies, which tend to be in lower topographic positions. Prior to construction,
109 Meridian Wind will conduct wetland and waterbody delineations within the Project Area
110 according to the USACE Wetlands Delineation Manual, Great Plains Regional Supplement
111 (Environmental Laboratory 1987). Access roads, collector systems, collection substation and the
112 transmission line will be designed to avoid or minimize impacts to wetland and waterway
113 features whenever feasible. Temporary impacts associated with crane paths will also be
114 minimized. Installation of underground utilities is expected to avoid impacts by boring under
115 water features as necessary and will minimize impacts to wetlands and waterbodies or where

116 possible make them coincident with other impacts (e.g., crane paths). Where crossings of streams
117 and drainageways cannot be avoided by access roads, appropriately designed crossings (i.e.,
118 culverts, low-water crossings) will be constructed to maintain existing drainage. Temporary
119 impacts may also result from construction matting to access certain locations.

120 **Q. What about impacts to surface waters and wetlands?**

121 A. Temporary and long-term operational impacts to surface waters and wetlands are
122 discussed in Sections 8.2.2.1 through 8.2.2.4. Construction activities in the vicinity of these
123 waterbodies and wetlands may temporarily increase sedimentation due to erosion and from
124 changes in runoff patterns and water volumes due to increased impervious surfaces. This could
125 temporarily degrade the water quality of aquatic habitat supporting these species. Impacts are
126 anticipated to be short term and localized. As described in Section 8.2.3, for surface water and
127 wetlands, BMPs will be designed and utilized to control sedimentation and erosion during the
128 construction phase of the Project.

129 **Q. Please discuss the visual impacts of the project.**

130 A. As previously discussed, Meridian Wind has collocated linear Project features such as
131 access roads and collector and communication systems with existing disturbances where
132 possible. This is consistent with the South Dakota Bat Working Group's and South Dakota
133 Department of Game, Fish and Parks (SDGFP's, Undated) Siting Guidelines for Wind Power
134 Projects in South Dakota for reducing impacts to visual resources. Similarly, operation of the
135 Project will not introduce new visual components into the Project vicinity. The Project vicinity
136 already includes wind turbines from the South Dakota Wind Energy Center, the Titan Wind
137 Project, the Triple H Wind Project, as well as existing electrical transmission lines.

138 The magnitude of visual impacts associated with the Project will depend on several

139 factors, including:

140 Distance of the proposed Project facilities from viewers;

141 Duration of views (highway travelers vs. permanent residents);

142 Weather and lighting conditions;

143 The presence and arrangements of lights on the turbines and other structures; and

144 Viewer attitudes toward renewable energy and wind power.

145 To minimize visual impacts of the Project, Meridian Wind has incorporated setback
146 requirements and commitments into the design of the Project (Table 12-1). In accordance with
147 Federal Aviation Administration (FAA) regulations, the towers will be painted to reduce
148 potential glare and minimize visual impact.

149 **Q. Are any impacts to surface or groundwater anticipated? If so, please describe them.**

150 A. Groundwater and surface water resources are discussed in Section 8.0. As discussed, the
151 excavation and exposure of soils during the construction and decommissioning of wind turbines,
152 access roads, underground collector lines and other Project facilities may temporarily cause
153 sediment runoff during rain events. This sediment may temporarily increase the total suspended
154 solids loading in receiving waters. However, erosion control BMPs will keep sediments on site
155 that might otherwise increase sediment loading in receiving waters.

156 Construction of the Project will require coverage under the General Permit for Storm
157 Water Discharges Associated with Construction Activities issued by the SDDENR. A condition
158 of this permit is the development and implementation of a SWPPP. The SWPPP will be
159 developed during civil engineering design of the Project and will prescribe BMPs to control
160 erosion and sedimentation. The BMPs may include silt fence, wattles, erosion control blankets,
161 temporary stormwater sedimentation ponds, revegetation and/or other features and methods

162 designed to control stormwater runoff and mitigate erosion and sedimentation. The BMPs will be
163 implemented to reduce the potential for impacts to drainage ways and streams by sediment
164 runoff. Because erosion and sediment control will be in place for construction, operation and
165 decommissioning of the Project, impacts to water quality are not expected to be significant.

166 The potential for fuel spills during construction and operation will be mitigated by
167 secondary containment of any on-site fuel storage that will be inspected regularly, with
168 containment being remediated promptly in accordance with the Project's Spill Prevention,
169 Control and Countermeasures Plan (SPCC) Plan. Fuel handling activities and spill remediation
170 will also adhere to the procedures outlined in the Project's SPCC Plan.

171 **Q. What impacts from construction are anticipated to air quality in the area?**

172 A. As found in Section 14, temporary construction impacts include fugitive dust emissions
173 and short-term emissions from diesel trucks and construction equipment. Temporary impacts will
174 result if a batch plant is required. Any air quality effects resulting from construction will be
175 short term and limited to the time of construction activities and will not result in North American
176 Ambient Air Quality Standards (NAAQS) exceedances for particulate matter or significantly
177 contribute to greenhouse gas emissions.

178

179

180 Dated this 8th day of April, 2020.

181 /s/ *Manuela Elizondo*

182 Manuela Elizondo, for ENGIE, NA