

**STATE OF NORTH DAKOTA  
PUBLIC SERVICE COMMISSION**

**Antelope Hills Wind Project, LLC  
Wind Energy Conversion Facility – Mercer County  
Siting Application**

**Case No. PU-14-679**

**FINDINGS OF FACT, CONCLUSIONS OF LAW AND ORDER**

**December 17, 2014**

**Appearances**

Commissioners Brian P. Kalk, Randy Christmann and Julie Fedorchak.

Brian Bjella, Attorney at Law, Crowley Fleck PLLP, 100 West Broadway, Suite 250, Bismarck, North Dakota 58501, on behalf of Applicant, Antelope Hills Wind Project, LLC.

Mitchell D. Armstrong, Attorney-at-Law, Smith, Bakke, Porsborg, Schweigert and Armstrong, PO Box 460, Bismarck, North Dakota 58502-0460, Special Assistant Attorney General on behalf of the Public Service Commission.

Wade C. Mann, Administrative Law Judge, Office of Administrative Hearings, 2911 North 14<sup>th</sup> Street, Suite 303, Bismarck, North Dakota 58503.

**Preliminary Statement**

On August 12, 2014, Antelope Hills Wind Project LLC (“Antelope Hills”) filed an Application for a Certificate of Site Compatibility for a wind energy conversion facility located in Mercer County, North Dakota.

On August 19, 2014, Antelope Hills filed a Supplement to the Application concerning replacement pages for shadow flicker and acoustic studies.

On September 17, 2014, the Commission deemed the Application complete and issued a Notice of Filings and Notice of Hearings scheduling a public hearing for October 23, 2014, at 9:00 a.m. CDT at the Council Chambers, 120 North Central Avenue, Beulah, North Dakota 58523. The Notice identified the following issues to be considered:

1. Will the location, construction and operation of the proposed facilities produce minimal adverse affects on the environment and upon the welfare of the citizens of North Dakota?



2. Are the proposed facilities compatible with the environmental preservation and the efficient use of resources?
3. Will the proposed facility locations minimize adverse human and environmental impacts while ensuring continuing system reliability and integrity and ensuring that energy needs are met and fulfilled in an orderly and timely fashion?

On October 6, 2014, the North Dakota Department of Health filed comments with respect to the Project with the Commission.

On October 9, 2014, Antelope Hills filed a supplement to its Application. On October 14, 2014, Antelope Hills filed revised maps.

On October 23, 2014, a public hearing was held as scheduled. On November 3 and 21, 2014, Antelope Hills filed late-filed Exhibits 3-7.

On December 12, 2014 Antelope Hills filed a copy of a November 10, 2014 letter from the State historical Society of North Dakota stating that it has reviewed Antelope Hills' Class III cultural resource inventory report and find it acceptable.

Having allowed all interested persons an opportunity to be heard, and having heard, reviewed and considered all testimony and evidence presented, the Commission makes the following:

### **Findings of Fact**

1. Antelope Hills Wind Project, LLC is a Delaware Limited Liability Company headquartered in Santa Barbara, California, and is registered to do business in the State of North Dakota.
2. Antelope Hills proposes to construct a wind energy facility known as the Antelope Hills Wind Energy Project (Project) in Mercer County, North Dakota, northwest of the town of Beulah, north of the towns of Zap and Golden Valley. The revised Project area consists of approximately 22,000 acres.
3. Associated facilities to be constructed within the Project area include access roads, electrical collection systems and cabling, an operation and maintenance building, and an electrical substation.

4. The Project will consist of up to 86 wind turbine generators, which will be placed throughout the Project area.

5. North Dakota Century Code § 49-22-16 provides that no energy conversion facilities shall be designated if it violates any county or city land use, zoning, building rules, regulations or ordinances. Mercer County has issued a conditional use permit for the Project.

#### Project Design

6. The Project will have a name plate generating capacity of up to 172 megawatts. The Project will consist of either Siemens 2.3-108, Vestas V-100 or Vestas V-110 turbines, along with associated facilities. For the Siemens 2.3-108 turbines, the Project layout consists of a total of 92 potential locations of which 75 represent primary turbine locations and 17 alternate locations. For the Vestas V-100 turbines, the Project layout consists of a total of 105 potential locations of which 86 represent primary turbine locations and 19 alternate locations. For the Vestas V-110 turbines, the Project layout consists of a total of 92 potential locations, of which 86 represent primary turbine locations and 6 alternate locations.

7. Each of the turbines will have a total tower height of 262 feet. The Siemens 2.3-108 has a rotor diameter of 354 feet, the Vestas V-100 has a rotor diameter of 328 feet and the Vestas V-110 has a rotor diameter of 361 feet. The total height for the Siemens 2.3-108 is 439 feet, for the Vestas V-100 the total height is 427 feet, and for the Vestas V-110 the total height is 442 feet.

8. Each of the turbines will begin operations at wind speeds of approximately 6.7 miles per hour, with a maximum of 44 miles per hour for the Vestas V-100 and Vestas V-110 turbines and a maximum of 56 miles per hour for the Siemens 2.3-108 turbines.

9. Each turbine will be secured by a concrete foundation that can vary in design depending upon soil conditions. Turbine lighting will be installed as required by the Federal Aviation Administration. Each turbine is equipped with a wind speed and direction sensor that communicates with the turbine's control system to signal when sufficient winds are present for operation. Electricity generated by each turbine is brought to a pad-mounted transformer where the electric voltage is stepped up to a power collection line voltage of 34.5 KV.

10. The underground collection line feeder system will deliver electricity to the Project substation where the voltage will be stepped up to 345 KV for transmission.

11. At the substation, the Project will interconnect with a 345 kV transmission line, which is being considered by the Commission in Case No. PU-14-678. The transmission line will be approximately 9.5 miles long extending to Basin Electric Power Cooperative's Antelope Valley Station.
12. The site for this wind energy Project was selected by Antelope Hills as optimal based upon meteorological towers previously installed to determine the wind characteristics within the Project area.
13. Construction of the Project is expected to take approximately 9-12 months, at a total estimated cost of \$240 million.
14. Antelope Hills anticipates that construction will start in the spring of 2015.
15. Antelope Hills reports that all easements needed for the Project have been obtained.
16. An Engineering, Procurement and Construction (EPC) contractor will be retained for construction of the Project. The EPC contractor will use the services of local contractors, where possible, to assist in Project construction.
17. Safety factors will be incorporated into the wind turbines. Each turbine will be equipped with a Supervisory Control and Data Acquisitions (SCADA) communication technology to control and monitor the turbines. In addition, each turbine will be equipped with a lightning protection system and will be grounded and shielded to protect against lightning.
18. Construction and operation of the Antelope Hills Wind Energy Project will conform to the requirements of the National Electric Safety Code.

#### Siting Criteria

19. North Dakota Administrative Code Chapter 69-06-08 sets forth certain criteria to guide the Commission in evaluating the suitability of granting an application for the certificate of site compatibility. The criteria set forth in North Dakota Administrative Code § 69-06-08-01 is classified as Exclusion Areas, Avoidance Areas, Selection Criteria, and Policy Criteria. With the exception of prime and unique farm land, an energy conversion facility must not be sited within an Exclusion Area. The exception for prime and unique farm land is if the Commission finds that the prime and unique farm land that will be removed from use for the life of the facility is of such small acreage as to be of negligible impact on agricultural production, then such exclusion shall not apply.

An energy conversion facility must not be sited within an Avoidance Area unless the applicant shows that under the circumstances there is no reasonable alternative. In determining whether an Avoidance Area should be designated for a facility, the Commission may consider, among other things, the proposed management of adverse impacts; the orderly siting of facilities; system reliability and integrity; the efficient use of resources; and alternate sites. In accordance with the Commission's Selection Criteria, an energy conversion facility shall be approved only if it is demonstrated that no significant adverse impacts will result from the location, construction, and operation of the facility. In accordance with the Commission's Policy Criteria, preference may be given to an applicant demonstrating certain benefits of the energy conversion facility.

21. With the exception of prime farm land, no exclusion areas have been identified within the Project area. The Project area contains only approximately 6.8% of prime farmland. To the extent practicable, prime farmland has been avoided. The Commission finds that the prime farmland which may be disturbed by this energy conversion facility is of such small acreage as to be of negligible impact on agricultural production.

22. Approximately 56 to 64 acres of agricultural production will be permanently impacted due to turbine placement, associated access roads, project substation, and the operation and maintenance building. Wind turbine configuration will not result in significant impacts to agricultural production. No impacts on the agricultural quality of the croplands are anticipated. If compaction of soils occurs during construction, Antelope Hills will work with landowners to alleviate compaction.

23. Antelope Hills conducted a review of potentially mineable coal reserves located within the Project area. Antelope Hills consulted with representatives of The Coteau Properties Company, which requested that turbines not be placed between Basin Electric's Antelope Valley Station and four miles to the west of the station (ending at County Road 13) in order to avoid future mining operations forecasted through the year 2045. Antelope Hills complied with the request of The Coteau Properties Company and all proposed locations are outside of the identified area.

24. Antelope Hills submitted evidence to demonstrate that the proposed energy conversion facility will not have a significant impact on the Selection Criteria set forth in North Dakota Administrative Code § 69-06-08-01(5).

25. Antelope Hills submitted evidence to demonstrate its commitment to maximize the benefits of the proposed energy conversion facility so far as possible so as to meet the Policy Criteria set forth in North Dakota Administrative Code § 69-06-08-01(6).

26. No significant adverse impact is foreseen on the ability of the affected areas to provide community services, such as housing, health care, schools, police and fire protection, water and sewer, solid waste management, transportation or public safety. The proposed Project is expected to be of economic benefit to the affected area.

#### Cultural Resources

27. The results of the Class III pedestrian survey conducted in the fall of 2014 identified 28 previously unrecorded cultural resources sites and 17 previously recorded cultural resource sites. The survey also identified 15 Native American stone feature sites, a mound site, 4 scatter sites, 1 Native American/Historic Archeological site, one Historic Archeological site, and a site lead that is potentially eligible, but would require further evaluation.

28. Approximately seven (7) locations that are potentially eligible for the National Register of Historic Places are located within one (1) mile of the project boundary. All potentially eligible sites have been avoided in the layouts submitted as part of the application. Antelope Hills will provide its survey results to the North Dakota State Historic Preservation Office (SHPO). Antelope Hills will obtain a concurrence letter from the SHPO and file a copy with the Commission indicating that no significant sites and no historic properties are affected.

29. No significant impacts to cultural resources are anticipated.

#### Wetlands and Wildlife

30. Antelope Hills has consulted with the local, state and federal agencies, which are identified in the Application. These agencies include the United States Fish and Wildlife Service and the North Dakota Game and Fish Department. Antelope Hills is continuing to work with the wildlife agencies to minimize and reduce impacts associated with the Project.

31. Antelope Hills has indicated it is committed to making design changes needed to avoid any permanent impacts to wetlands. No impacts to jurisdictional wetlands are anticipated.

32. Antelope Hills completed a fixed point avian survey and raptor nest survey. No federally endangered, threatened or candidate species were recorded. No potential or occupied eagle nests have been identified within the Project area or within a one-mile buffer.

33. Antelope Hills completed a study of bat activity in the Project area during the summer and fall of 2014. Other than the Big Brown Bat, bat species are likely to use the Project area only during migration due to lack of suitable habitat. The Project is unlikely to impact the Northern Long-Eared Bat, a federal candidate species, because there is low potential for suitable habitat in the Project area.

34. There is no documented occurrence of the Interior Least Tern or Piping Plover within the Project area.

35. No whooping cranes were observed during the spring and summer avian and wildlife surveys. There are no historical records of whooping cranes occurring within the Project area. The Project area has very limited wetlands which could provide suitable stopover habitat for whooping cranes during migration. During spring and fall migration periods, Antelope Hills is committed to temporarily shutting down turbines within two miles of any whooping cranes sighted until the whooping crane leaves the area.

36. Based upon the studies conducted and mitigation measures in place, no significant impacts to avian species are expected.

#### Noise and Shadow Flicker Studies

37. Antelope Hills conducted a screening level acoustic assessment to determine the feasibility of the Project to operate within acceptable noise criteria. Noise was modeled at a distance of 100 feet from each residential structure in accordance with North Dakota Administrative Code § 69-06-08-01(4), which states that sound levels within 100 feet of inhabited residences or community buildings must not exceed 50 dBA. A total of 38 residences were identified within the Project area and within a one mile buffer. Sound levels within 100 feet of any of these identified sites are not expected to exceed the 50 dBA threshold.

38. Antelope Hills completed a shadow flicker study for the three wind turbine models being considered for the Project. This analysis included both primary and alternate turbine locations. The analysis predicted shadow flicker impacts for all potential receptors. The analysis indicates the shadow flicker impacts within the Project area are expected to be minor. In addition, all the residential receptors with the higher shadow flicker hours are owned by participating landowners.

#### Further Mitigative Measures

39. Antelope Hills will comply with all setbacks established by Mercer County as well as those under Commission rule North Dakota Administrative Code § 69-06-08-01(2).

Antelope Hills will use the most restrictive setback established by either the Public Service Commission or Mercer County in construction of this Project. Mercer County's zoning ordinance establishes a setback of 1000 feet from occupied dwellings, commercial buildings or public use structures or facilities. The closest turbines are proposed to be located approximately 1,336 feet from a participating residence and approximately 1,806 feet from a non-participating residence. Both Mercer County and the Public Service Commission have adopted a setback of 1 and 1/10 times the turbine height from the property line of a non-participating landowner.

40. Setbacks from roads required under North Dakota Administrative Code § 69-06-08-1(2) are 1 and 1/10 times the height of the turbine from interstate or state roadway right-of-way; and one and one-tenth times the height of the turbine plus 75 feet from the centerline of any county or maintained township roadway. Setbacks established by Mercer County with respect to public roads are 110% of total turbine height from the edge of the right-of-way of public roads. Antelope Hills has adopted the more restrictive setback.

41. Antelope Hills will maintain groundwater protection and soil conservation practices to protect topsoil and adjacent resources, and to eliminate soil erosion during construction and operation of the Project. Best Management Practices (BMPs) for erosion and sediment control will be used to minimize wind and water erosion in the Project area during and after construction. Only land needed for the facility will be impacted. Temporarily disturbed areas will be restored and reseeded.

42. Antelope Hills completed a microwave beam path study. There are no microwave beam pathways across the Project area. The Federal Aviation Administration's preliminary screening tool indicates that the Project will have no impact to air defense and homeland security radars, or to weather surveillance radar operations.

43. Antelope Hills will participate in the North Dakota one-call excavation notice system.

44. Antelope Hills has a legal obligation to decommission the wind energy facilities. North Dakota Administrative Code Chapter 69-09-09 requires that a decommissioning plan be filed prior to operation, and provides that the Commission may require financial assurance after the tenth year of operation to cover the anticipated costs of decommissioning.

45. Antelope Hills will coordinate with local authorities and first responders regarding emergency response measures.

46. Antelope Hills made certain representations and covenants as contained in the Certification Relating to Order Provisions - Energy Conversion Facility Siting executed by Antelope Hills and filed with the Commission on October 21, 2014, which are incorporated into these Findings of Fact.

47. The revised Project area is set forth in Antelope Hills' Late-Filed Exhibit No. 6.

From the foregoing Findings of Fact, the Commission now makes its:

### **Conclusions of Law**

1. The Commission has jurisdiction over this proceeding under North Dakota Century Code Chapter 49-22.

2. The energy conversion facility proposed by Antelope Hills is an energy conversion facility as defined in North Dakota Century Code § 49-22-03(5).

3. The application submitted by Antelope Hills meets the site evaluation criteria required by North Dakota Century Code Chapter 49-22.

4. The location, construction and operation of the proposed energy conversion facility will produce only minimal adverse effects on the environment and upon the welfare of the citizens of North Dakota.

5. The proposed energy conversion facility is compatible with environmental preservation and the efficient use of resources.

6. The proposed energy conversion facility will minimize adverse human and environmental impact while ensuring continuing system reliability and integrity, and ensuring that energy needs are met and fulfilled in an orderly and timely fashion.

7. The Commission has jurisdiction to ensure compliance with National Electric Safety Code standards in the construction and operation of the energy conversion facility.

8. The proposed Project is of such design, location and purpose that will produce minimal adverse effects.

From the foregoing Findings of Fact and Conclusions of Law, the Commission now makes its:

## Order

The Commission orders:

1. Certificate of Site Compatibility Number 41 is issued to Antelope Hills for the construction, operation and maintenance of an energy conversion facility known as the Antelope Hills Wind Energy Project.
2. The site as set forth in Late-Filed Exhibit No. 6 is located in Mercer County, North Dakota, northwest of the town of Beulah, and is designated as the site for construction of the wind energy facility.
3. Within the permitted area, Antelope Hills is authorized to site and construct up to 86 wind turbines totalling 172 megawatts of total generating capacity in proposed and alternate locations, along with electric collection and communication lines, a project substation, access roads, an operations and maintenance building, along with other associated facilities as identified in the application and at the public hearing.
4. Prior to construction at turbine foundation sites, Antelope Hills shall file with the Commission a final turbine layout identifying the turbine models used along with the approved turbine locations it intends to use for this Project.
5. Antelope Hills shall maintain weed control around the turbine sites, access roads and other disturbed areas throughout the life of the project.
6. The Certification Relating to Order Provisions - Energy Conversion Facility Siting with attached Tree and Shrub Mitigation Specifications executed by Antelope Hills and filed with the Commission on October 21, 2014, are incorporated by reference and attached to this Order.

### PUBLIC SERVICE COMMISSION

  
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**Randy Christmann**  
Commissioner

  
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**Brian P. Kalk**  
Chairman

  
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**Julie Fedorchak**  
Commissioner

# **PUBLIC SERVICE COMMISSION**

## **STATE OF NORTH DAKOTA**

### **Certificate of Site Compatibility Number 41**

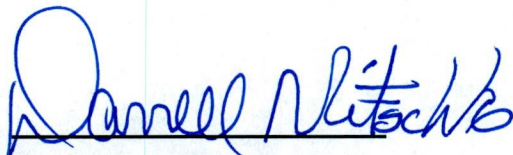
*This is to certify that the Commission has designated an energy conversion facility site for Antelope Hills Wind Project, LLC's Antelope Hills Wind Energy Project consisting of up to 172 MW of total wind turbine generating capacity and associated facilities in Mercer County, North Dakota.*

*The facility may be sited in this designated location in compliance with the energy conversion facility siting criteria. This certificate is issued in accordance with the Finding of Fact, Conclusion of Law and Order of the Commission in Case No. PU-14-679 dated December 17, 2014 and is subject to the conditions and limitations noted in the order.*

*Bismarck, North Dakota, December 17, 2014.*

**ATTEST:**

**PUBLIC SERVICE COMMISSION**



**Executive Secretary**



**Commissioner**