

# 2016cu021 – September 6<sup>th</sup>, 2016

Prepared by Richard Haugen,

Applicant/Owner: Avangrid Renewables, LLC by Mr. Jesse Bermel, for Coyote Ridge Wind Project.

Legal Description: The property boundaries are described as: Richland Township (T111N, R47W) Sections 19 & 30; Lake Hendricks Township (T112N, R47W) Sections 30 & 31 and (T111N, R47W) Sections 6,7 & 18; Sherman Township (T111N, R48W) Sections 1-4, 9-16, 24 & 25; Oak Lake Township (T112N, R48W) Sections 22-36; Argo Township (T112N, R49W) Section 25.

Article 11, Section 11.01: “A” Agricultural District: Conditional Use # 25: Wind Energy Systems (WES); Article 23, Section 23.01: Wind Energy Systems (WES) Requirements.

2016cu021: Jesse Bermel representing Avangrid Renewables (formerly known as Iberdrola Renewables and PPM Energy) has applied for a conditional use # 25: Wind Energy System to construct a wind farm for up to 99 megawatts. The application includes up to 49 wind turbines depending on the final selection of the make and model of wind turbine, construction of a substation and an operations and maintenance building (O & M). A Wind Energy System is an allowed land use in the Brookings County Comprehensive Land Use Plan, under Appendix “B” page 86. The enclosed application addresses Article 23: Wind Energy System (WES) Requirements, starting on page 23-2 of the Brookings County Zoning Ordinance. As noted in the application the final siting and size of the turbines has not been determined at this time. When the selection is completed, Avangrid will need to provide to the Zoning Office with: the final siting, turbine size, road haul and road maintenance agreements with the county or townships involved, driveway permits, laydown yard location and other requirements noted in the Findings of Facts. The wind farm would join the three existing wind projects in Brookings County: Minn-Dakota Wind Farm by PPM Energy approved in April, 2006; Buffalo Ridge I Wind Farm by Iberdrola Renewables approved in June, 2007 and Buffalo Ridge II by Iberdrola Renewables, approved in January 2009.

Public notices were published in the Brookings Register on September 20<sup>th</sup> and 27<sup>th</sup>, 2016, White Tri-City Star on September 22<sup>nd</sup> and 29<sup>th</sup>, 2016 and Hendricks Pioneer on September 21<sup>st</sup> and 28<sup>th</sup>, 2016.

Letters were sent to the landowner’s within the project boundaries, Richland Township Chairman and Clerk, Lake Hendricks Township Chairman and Clerk, Sherman Township Chairman and Clerk, Oaklake Township Chairman and Clerk and Argo Township Chairman and Clerk.

Granting the conditional use request would allow the applicant the same benefit granted to others in the area.

Denying the request would be maintaining the agricultural land use.



September 9, 2016

Mr. Richard Haugen  
Deputy Director  
Brookings County Development Department  
520 3<sup>rd</sup> St, Suite 200  
Brookings, SD 57006

Re: Conditional Use Permit Application for the Coyote Ridge Wind Project in Brookings County, South Dakota

Dear Mr. Haugen,

Heartland Wind, LLC (the Applicant) is requesting a Conditional Use Permit (CUP) to authorize construction and operation of the up to 99 Megawatt (MW) Coyote Ridge Wind Project in Brookings County, South Dakota. Heartland Wind, LLC is an unregulated wholly owned affiliate of Avangrid Renewables, LLC (formerly Iberdrola Renewables, LLC). This application has been prepared using the Wind Energy Siting (WES) Requirements (Brookings County Zoning Ordinance, Article 23, dated 11-27-2007) for the Brookings County Zoning Commission.

The Project will be dispersed throughout portions of up to 37 sections of land in northeastern Brookings County, South Dakota, east of the City of White. The Project is located in the following Brookings County Townships and sections:

- Richland Township (T111N, R47W), Sections 19 and 30
- Lake Hendricks Township (T112N, R47W) Sections 30 and 31 and (T111N, R47W), Sections 6, 7 and 18
- Sherman Township (T111N, R48W), Sections 1-4, 9-16, 24 and 25
- Oak Lake Township (T112N, R48W), Sections 22-36
- Argo Township (T112N, R49W), Section 25

The Project will consist of constructing, operating, and maintaining up to 49 wind turbine generators (WTGs), gravel access roads, underground and overhead 34.5 kV electric collector lines, a Project collection substation, upgrades to the Brookings County Substation, an Operations and Maintenance facility, communication lines (SCADA), and one permanent meteorological tower.

The Applicant is providing 13 copies of the CUP application. I will bring a \$100.00 check for the CUP application fee to your office by September 13, 2016. Thank you for your consideration of this application. Please feel free to contact me at (503) 724-2483 or [jbermel@avangrid.com](mailto:jbermel@avangrid.com) if you have any questions relating to this Project.

Sincerely,



Jesse Bermel  
Project Developer

cc: Ms. Sarah Emery - Avangrid Renewables, LLC  
Mr. Brett Koenecke - May, Adam, Gerdes & Thompson LLP

Attachments:  
Thirteen (13) copies of CUP application

APPLICATION FOR CONDITIONAL USE PERMIT

Date of Application: 09/09/2016

Permit Number: 2016cu021

To: Brookings County Planning Commission  
520 3<sup>rd</sup> St, Suite 200  
Brookings, South Dakota 57006

A.) I/We, the undersigned property owner (s), do hereby petition the Brookings County Planning & Zoning Commission of Brookings County, South Dakota, to grant a Conditional Use to the Brookings County Zoning Regulations for the purpose of:

Construction and operation of the Coyote Ridge Wind Project

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B.) Section(s) of Zoning Regulations authorizing Conditional Use:

Article 11, Section 11.01. "A" Agricultural District: Conditional Use #25, Wind Energy System (WES)

Article 23, Section 23.01 Wind Energy Systems (WES) requirements.

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C.) Legal Description of Property:

Richland Township (T111N, R47W), Sections 19 and 30

Lake Hendricks Township (T112N, R47W), Sections 30 and 31 and (T111N, R47W) Sections 6, 7 and 18

Sherman Township (T111N, R48W), Sections 1-4, 9-16, 24 and 25

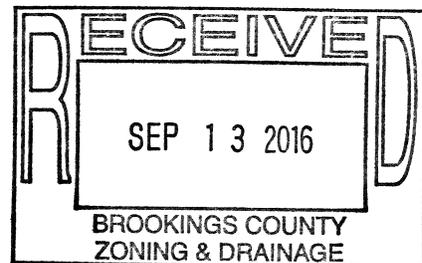
Oak Lake Township (T112N, R48W), Sections 22-36

Argo Township (T112N, R49W), Section 25

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Form continued on page 2



D.) Time and Date Set for  
Hearing before Brookings  
County Planning Commission.

Oct 4<sup>th</sup>, 2016  
Date

8:00 pm  
Time

\_\_\_\_\_  
Approved

\_\_\_\_\_  
Rejected

\_\_\_\_\_  
Date

\_\_\_\_\_  
Chairman of Brookings County Planning  
and Zoning Commission

Mr. Jesse Bermel, Avangrid Renewables

\_\_\_\_\_  
Person filing petition – print

Jesse Bermel

\_\_\_\_\_  
Person filing petition – sign

1125 NW Couch St, Suite 700  
Address

Portland  
City

Oregon  
State

97209  
Zip Code

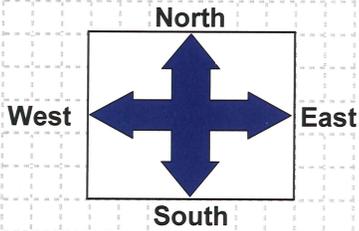
(503) 724-2483  
Telephone

**A conditional use that is granted and not used within three (3) years will be considered invalid.**

**SKETCH**

Please draw a sketch of the site. Show both the existing and the proposed structures. Include the location of public roads, septic treatment systems, feedlots, streams, lakes and drainage ditches.

See attached CUP Application for maps showing the proposed Coyote Ridge Wind Project



A large grid of dashed lines for sketching the site. The grid is approximately 30 units wide and 40 units high, starting from the top-left corner of the diagram area.

# **BROOKINGS COUNTY CONDITIONAL USE PERMIT APPLICATION**

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**Coyote Ridge Wind Project  
Brookings County, South Dakota**



**Heartland Wind, LLC**

a subsidiary of  
Avangrid Renewables, LLC

**September 2016**

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## Introduction

Heartland Wind, LLC (the Applicant) is submitting this application for a Brookings County Conditional Use Permit (CUP) to construct and operate the Coyote Ridge Wind Project (the Project) in Brookings County, South Dakota. Heartland Wind, LLC is an unregulated wholly owned affiliate of Avangrid Renewables, LLC (formerly Iberdrola Renewables, LLC). This application has been prepared using the Wind Energy Siting (WES) Requirements (Brookings County Zoning Ordinance, Article 23, dated 11-27-2007) for the Brookings County Zoning Commission.

The Project will have a nameplate capacity of up to 99 megawatts (MW) consisting of up to 49 wind turbine generators (WTGs) located in northeastern Brookings County, South Dakota (Figure 1). The Project will consist of constructing, operating, and maintaining:

- Up to 49 WTGs
- Gravel access roads to each WTG
- Underground 34.5 kilovolt (kV) electric collector lines connecting the WTGs and junction boxes
- 34.5 kV underbuild on approximately 7.8 miles of existing 115 kV overhead transmission line
- A new 34.5 kV double-circuit overhead collector line, approximately 2,100 feet (ft) in length, between the underbuild section and the Project collection substation
- A Project collection substation with a 34.5 kV to 345 kV transformer
- An approximately 800 ft 345 kV interconnection tie-line to Xcel's Brookings County Substation
- Additions and upgrades to the Brookings County Substation
- A Project Operations and Maintenance (O&M) facility
- Supervisory, control and data acquisition (SCADA) system - an underground and overhead fiber optic communication system that connects to each WTG, the O&M Facility, the meteorological tower, and the Project substation
- One permanent meteorological tower

The Applicant is planning to begin civil construction as early as May 2017 and anticipates an in-service date as early as December 31, 2018.

The Applicant proposes to permit the Project for a range of WTG sizes between 2.0 and 3.465 MW. The layout shown in this application (Figure 2) is preliminary and subject to changes during final design. However, the general layout restrictions described in the WES requirements and this application (setbacks, turbine spacing) will be adhered to when designing and constructing the Project. The Applicant understands that the CUP will become void if no substantial construction has been completed within three years of issuance.

## Project Description

The Applicant is seeking a CUP for an up to 99 MW wind project in Brookings County, South Dakota. The Project is located in the following Brookings County Townships and sections:

- Richland Township (T111N, R47W), Sections 19 and 30
- Lake Hendricks Township (T112N, R47W) Sections 30 and 31 and (T111N, R47W), Sections 6, 7 and 18
- Sherman Township (T111N, R48W), Sections 1-4, 9-16, 24 and 25
- Oak Lake Township (T112N, R48W), Sections 22-36
- Argo Township (T112N, R49W), Section 25

The Project will be dispersed throughout portions of up to 37 sections of land in northeastern Brookings County, South Dakota, east of the City of White. The Project is located south of the existing Buffalo Ridge II wind facility, and west and northwest of the existing Buffalo Ridge I and MinnDakota wind facilities (Figure 3). The Applicant has site control on land sufficient to support the Coyote Ridge Wind Project. The land easements within the Project boundaries are proprietary information; a map of easements for the WES will be filed separately as a confidential document.

The proposed Project is up to 99 MW. The Applicant has not finalized the turbine selection for the Project and proposes to permit the Project for a range of turbine sizes between 2.0 and 3.465 MW. Depending on the selected turbine size, the number of turbines in the project will vary. Figure 2 is a preliminary layout based on Gamesa G114 2.625 MW turbines, which includes 38 proposed turbine locations and 9 alternate turbine locations. Table 1 compares the specifications for the main turbine types under consideration.

**Table 1. Wind Turbine Characteristics**

Characteristics	Gamesa G114	Gamesa G132	Vestas V110	GE 116-2.3
Nameplate Capacity (MW)	2.625	2.625 to 3.465	2.0 to 2.2	2.3
Number of Turbines	38	28 to 38	45 to 49	43
Hub Height (meters)	80 to 93	84	80	80
Rotor Diameter (meters)	114	132	110	116
Total Height <sup>1</sup> (meters)	137 to 150	150	135	138
Total Height <sup>1</sup> (feet)	449 to 492	492	443	453
Rotor Swept Area (square meters)	10,207	13,685	9,503	10,568
Rotor Swept Area (square feet)	109,867	147,304	102,292	113,756
Operational Wind Speed (meter/second) <sup>2,3</sup>	3 - 25	3 - 25	3 - 21	3 - 32
Operational Wind Speed (miles/hour) <sup>2,3</sup>	7 - 56	7 - 56	7 - 47	7 - 72

<sup>1</sup> Total height = the total turbine height from the ground to the tip of the blade in an upright position

<sup>2</sup> Operational Wind Speed – the lower value is cut-in wind speed = wind speed at which turbine begins to produce power

<sup>3</sup> Operational Wind Speed – higher value is cut-out wind speed = wind speed above which turbine shuts down operation

If another turbine model is selected, the specifications will be within the range described above. Hub heights would be between 80 to 93 meters (m; 262 to 305 ft), with rotor diameters (RD) between 110 to 132 m (361 to 433 ft), resulting in a maximum total turbine height of 150 m (492 ft). The Applicant requests that Brookings County approve the Project based on the preliminary layout shown in this application, with the understanding that some of the turbine locations shown ultimately may not be constructed as part of the Project; or, alternately, that additional turbine locations may be required. A final site layout will be submitted to the County prior to construction.

It is anticipated that less than one percent of the Project site will be converted for turbines, access roads, electrical collection system, SCADA system, substation, O&M facility, and meteorological tower.

## Setbacks

The turbines and associated facilities will be sited on agricultural land. The Applicant will prepare the final siting layout to optimize wind resources while minimizing the impact on land resources and potentially sensitive resources. The Applicant is using the following setbacks for siting wind turbines, following those set out in the Brookings County Zoning Ordinance, Article 23, Section D.2.:

- Minimum of 305 m (1,000 ft) from existing residences, businesses, and public buildings
- Minimum of 152 m (500 ft) from the edge of public road right-of-way (ROW), or a distance that is greater than 1.1 times the total turbine height for all turbines under consideration
- Minimum of 152 m (500 ft) from any property line of unleased lands, or a distance that is greater than 1.1 times the total turbine height for all turbines under consideration
- Minimum of 3 RD spacing from any existing wind turbines

- Noise will not exceed 50 dBA at existing on and off-site residences, businesses, and public buildings. A minimum buffer of 305 m (1,000 ft) from existing residences, businesses, and public buildings will address this setback requirement (see the Noise section for additional information)

Figure 4 shows occupied residential structures within and adjacent to the Project. There are no public buildings or businesses within the Project boundary. Figure 5 shows the modeled noise contours in relation to the proposed WTG locations and residences.

## Electromagnetic Interference

Residents receive television signals from network and public stations in Sioux Falls and Brookings, South Dakota, and Marshall and Worthington, Minnesota. There are a number of underground and overhead telecommunications lines in the Project area.

The Applicant has completed a study of the potential for WTGs to obstruct microwave telecommunications paths. The Applicant is using information provided by the National Telecommunications and Information Administration, the Department of Energy and Western Area Power Administration to ensure the placement of the turbines does not affect microwave transmissions. The current preliminary layout avoids all microwave beam paths.

The Applicant will not operate the Project so as to cause microwave, television, radio, or navigational interference contrary to Federal Communications Commission (FCC) regulations or other law. In the event such interference is caused by the WES or its operation, the Applicant will take the measures necessary to correct the problem.

## Lighting

The Applicant will illuminate turbines to meet the requirements of the Federal Aviation Administration (FAA) obstruction lighting or marking of structures over 61 m (200 ft) above ground surface because they are considered potential obstructions to air traffic. The Project will require review by the FAA and the South Dakota Aeronautics Commission (SDAC), which will ensure that the Project does not cause significant impacts to air traffic. The Applicant will light the turbines to comply with FAA requirements and will not place additional lights on turbines beyond what is required by the FAA.

## Turbine Spacing

As stated above, the Applicant has not made a final selection on turbines for the Project and proposes to permit the Project for a range in turbine size from 2.0 to 3.465 MW. The leased lands, setbacks, topography of the site and the selected turbine technology will dictate turbine layout. The current preliminary layout shows WTGs spaced at least 3 RD apart for G114 turbine layout. If a different WTG is selected, the turbine internal spacing will be no closer than 3 RD. A final site layout will be submitted to the County prior to construction.

## Footprint Minimization

The Applicant will develop a final site layout that optimizes wind resources while minimizing the impact on land resources and any potentially sensitive areas. It is anticipated that less than one percent of the Project site will be converted for turbines, access roads, electrical collection system, SCADA system, substation, O&M facility, and meteorological tower.

The majority of the turbine foundation will be underground, with a buried diameter of approximately 16.5 to 20.4 m (54 to 67 ft) and a depth of 2.7 to 3.7 m (9 to 12 ft). The surface area permanently disturbed during operations will be a circular area with a radius of approximately 7.0 m (23 ft), or up to 249 m<sup>2</sup> (2,640 ft<sup>2</sup>). These dimensions include a turbine tower with a radius of up to 2.4 m (8 ft) and surrounding gravel area with a radius of up to 4.6 m (15 ft).

The control panels (housing communication and electronic circuitry) will be placed inside the base of each turbine tower. A generator step up transformer (GSU) will be installed either at the base of each wind turbine or within the turbine to increase the output voltage of the wind turbine to the voltage of the power collection system (34.5 kV). If external transformers are used, then small concrete slab foundations will be constructed adjacent to the turbine tower to support the transformers within the gravel area adjacent to the turbine.

The Project will include Class 5 gravel access roads that allow for access to the wind turbines year-round. The turbine access roads will be low profile roads to allow farm equipment to cross. Access roads will avoid crossing drainages to the extent practicable and will minimize drainage impacts to allow water to flow from upper to lower portions of watersheds. The permanent gravel access roads will be approximately 4.9 m (16 ft) wide. During construction, a larger area will be temporarily disturbed for equipment deliveries, crane operations, and turbine component assembly. There will be approximately 2 to 4 acres of temporary disturbance at each of the turbine locations for component laydown and rotor assembly. In addition, to facilitate crane movement and equipment deliveries during

construction of the Project, an additional 7.3 m (24 ft) of compacted earth or gravel roadway may be temporarily installed along the permanent access roadway for a total width of 12.2 m (40 ft). The Project will also need a temporary construction laydown yard of approximately 8 acres and a temporary batch plant for concrete mixing of approximately 5 acres. Temporary impacts will be kept to the minimum amount necessary to safely and effectively construct the Project.

## Electric Cables

The electricity generated by the turbines is stepped up in voltage to 34.5 kV and is transmitted to the Project substation by a system of underground and overhead power collection lines. The WTGs will be connected by communication and electrical power collection circuits within the wind project. At the point where access roads and public roads meet, the communication and power lines will either rise from underground to overhead lines or continue as underground collection lines. Overhead collection lines will be installed as underbuild on the existing 115 kV transmission line structures (Figure 2).

## Overhead Collection (Feeder) Lines

The Applicant will install approximately 7.8 miles of 34.5 kV overhead lines as an underbuild along the existing 115 kV transmission line that was built for the adjacent operating Buffalo Ridge II Project (Figure 2). The underbuild section would begin at the intersection of 202<sup>nd</sup> Street and 482<sup>nd</sup> Avenue, and follow the 115 kV line south to the location where it will connect to the Project substation, located on 484<sup>th</sup> Avenue just west of the Brookings County Substation. The only anticipated change to the existing 115 kV structures along this segment would be adding brackets and conductor lines below the 115 kV conductors.

To connect to the new Project substation, 8 to 10 new structures will be installed for the approximately 640 m (2,100 ft) distance between the existing 115 kV line and the Project substation. An overhead 345 kV line, approximately 240 m (800 ft) in length, also will be constructed between the Project substation and the Brookings County Substation. Before construction, the Applicant will submit a copy of the final design for the overhead lines to the County.

## Substation and Operations and Maintenance Facilities

### Project Substation

A new Project substation will be constructed to the west of the Brookings County substation, on private land in Section 25 of Sherman Township (Figure 2).

The 34.5 kV wind project collection grid and fiber optic communication network will terminate at the new Project substation. The substation will include a transformer to step up the voltage of the collection grid to 345 kV. Additional facilities located within the new substation include above ground bus structures to interconnect the substation components, breakers, a building for relays, switchgear, communications and controls, and other related facilities required for delivery of electric power. The new Project substation will have a gravel surface within a surrounding chain-link security fence, and the substation components will be placed on concrete and steel foundations.

### Improvements to Brookings County Substation

This Project incorporates an interconnection to Xcel Energy's Brookings County substation. Xcel Energy will design and construct the additions at Brookings County Substation to accommodate the Project interconnection. For this interconnection, the 34.5 kV collection system power would be stepped up to 345 kV in the Project substation and routed to the Brookings County substation.

The facility assessment is still being completed by Xcel Energy, but may indicate a need for some expansion to the existing Brookings County Substation to accommodate the new interconnect from the Coyote Ridge Wind Project.

### O&M Facility

The location of the O&M facility has not been determined, but it will be located on approximately five acres within private leased land in the Project area. The buildings used for this purpose are approximately 507 m<sup>2</sup> (5,460 ft<sup>2</sup>), and house the equipment to operate and maintain the wind project. A gravel parking pad will surround the building. The parking lot adjacent to the building is typically 280 m<sup>2</sup> (3,000 ft<sup>2</sup>). Once determined, the location will be provided to Brookings County.

## Decommissioning/Restoration/Abandonment

The Applicant has entered into lease agreements for placement of the WTGs and associated infrastructure with private landowners within the Project area. The Applicant will prepare and submit a decommissioning and restoration plan for the Project to Brookings County within 120 days of completion of construction. This plan will be prepared in

accordance with the requirements of Brookings County Zoning Ordinance, Article 23.09. The Applicant anticipates that the life of the Project will be no less than 40 years and reserves the right to explore alternatives regarding Project decommissioning. One such option may be to retrofit the turbines and power system with upgrades based on new technology, which may allow the wind project to produce efficiently and successfully for many more years (this is called "repowering").

Heartland Wind, LLC has a contractual obligation to the landowners to remove the Project facilities, including foundations to a depth of 1.2 m (4ft), when the wind easement expires. In the event that Heartland Wind, LLC decides to decommission the Project instead of repowering, it will advise the Brookings County Zoning Offices of the planned decommissioning activities. Heartland Wind, LLC will be responsible for all costs to decommission the Project and associated facilities.

In the event the Coyote Ridge Wind Project requires decommissioning, the following sequence for removal of the components will be used:

- Remove wind turbines -- blades, towers, hubs, and generators
- Remove wind turbine foundations to a depth of 1.2 m (4 ft)
- Remove Collection Transformers
- Remove overhead collection lines and structures
- Remove Project substation equipment
- Remove access roads (unless landowner requests they remain in writing)
- Areas disturbed by decommissioning will be graded, topsoiled, and seeded

The site will be restored within 18 months of the expiration of the Brookings County WES permit. Any exceptions to removal of the Project components will be recorded with the Brookings County Zoning Offices.

## **Tower Design and Height from Ground Surface**

The turbines used in the Project will all be singular tubular steel design. The surface will be non-reflective material. All surfaces are sandblasted and multi-layer coated for protection against corrosion.

In accordance with County regulations, the minimum height of the blades from the ground surface will be greater than 25 ft. All proposed WTGs will be greater than 25 feet from the

ground to blade tip. The minimum distance from the ground to the blade is 18 m (59 ft) for the G132 turbine. Figure 6 is a diagram of typical turbine features.

## Noise

The preliminary layout was modeled to determine at what distance turbine noise would not exceed the 50 dBA limit of the Brookings County Revised Zoning Code. The Project was modeled using the sound power level information provided by the turbine manufacturer for the G114 2.625 MW turbine. Using the manufacturer's maximum sound power levels as a basis and adding 2 dBA to that level to be conservative, the model calculates the sound pressure level that would occur at residences after losses from distance, air absorption and ground effects. The sound propagation factors used in the acoustical model have been adopted from International Organization for Standardization 9613-2, Acoustics—Sound Attenuation During Propagation Outdoors Part 2: General Method of Calculation (1996).

Figure 5 shows the Project noise level contours for the preliminary layout using the Gamesa 2.625 MW WTG. Analysis indicates that the distance to 50 dBA is approximately 213 m (700 ft) from the turbine tower. The Applicant is using a minimum setback of at least 305 m (1,000 ft) from existing residences, businesses, and public buildings to meet County Zoning Ordinance. Based on this setback distance, the Applicant will not exceed the 50 dBA noise level. If a turbine type other than the Gamesa 2.625 MW is selected, the Applicant will provide Brookings County with updated noise modeling results.

## Project Schedule

The Applicant anticipates that construction will take approximately 12 to 18 months to complete. The Applicant is planning to begin civil construction as early as May 2017 and anticipates an in-service date as early as December 31, 2018. A preliminary "best case" permitting and construction schedule for the Project is presented below but several variables could cause the schedule to be altered.

- Submit Brookings County CUP September 2016
- Road Clearing and Construction May-Nov. 2017
- WTG Foundation Construction May-Nov. 2017
- Grading, Trenching of Underground Facilities May-Nov. 2018

- Overhead 34.5 kV Transmission Line Underbuild Stringing Winter 2017/2018
- WTG Assembly, Communication & SCADA System Installation May-Nov. 2018
- Collection Substation Construction May-Sept. 2018
- WTG Testing Oct.-Dec.2018

## Mitigation Measures

The Applicant is committed to complying with all applicable standards and will coordinate with all appropriate local, state and federal agencies. Any permit conditions will be followed, including mitigation requirements.

## Site Clearance

The Applicant will disturb and/or clear the Project site only to the extent necessary for construction and maintenance of turbines, electric collection system, access roads, SCADA system, Project substation, O&M facility, meteorological tower, temporary laydown area and temporary batch plant. Direct permanent impacts will be confined mainly to areas in agricultural use.

- Existing roads will be used for construction and maintenance where possible. Road construction will be minimized.
- Access roads created for the wind facility will be located on gentle grades to minimize visible cuts and fills.
- Temporarily disturbed areas will be reseeded to blend in with existing vegetation.

## Topsoil Protection

The Applicant will prepare a Soil Erosion and Sediment Control Plan and obtain a National Pollutant Discharge Elimination System (NPDES) permit to discharge storm water from construction activities. Best Management Practices (BMP) will be used during construction and operation of the Project to protect topsoil and adjacent resources and to minimize soil erosion. Practices may include containing excavated material, protecting exposed soil, stockpiling and respreading topsoil, and stabilizing restored material. In accordance with Brookings County regulations, the Applicant will protect and segregate topsoil from subsoil in cultivated areas unless otherwise negotiated with the affected landowner.

## Compaction

Compaction of the soil is a concern where construction equipment is used intensively. Temporary construction areas will be decompacted as necessary to relieve excessive compaction due to construction. In accordance with Brookings County regulations, the Applicant will minimize the amount of compaction throughout the Project's life. Construction equipment will be confined to the smallest necessary area, and access roads will be minimized to the extent possible.

## Livestock Protection

During construction the Applicant will work with landowners to protect livestock from construction activities. After construction, livestock may graze up to the turbine pad and access roads. The Applicant will maintain all equipment and in accordance with Brookings County regulations, the Applicant will work with landowners and take precautions to protect livestock throughout the Project's life.

## Fences

Security measures will be taken during the construction and operation of the Project including temporary (safety) and permanent fencing, warning signs, and locks on equipment and wind power facilities. Turbines will sit on solid steel enclosed tubular towers in which all electrical equipment will be located, except for the pad-mounted transformer where applicable. Access to the tower is only through a solid steel door that will be locked when not in use. Where necessary, the Applicant will construct gates or fences. The Applicant will promptly replace or repair any fences or gates removed or damaged during the Project construction or operation, unless otherwise negotiated with the affected landowner.

## Roads

There may be some temporary and permanent improvements to local roads during the construction phase of the Project. The Applicant will work with the South Dakota Department of Transportation, Brookings County, and townships to obtain the appropriate access and use permits, as well as minimize and mitigate any impacts to area transportation. Prior to construction, the Applicant will determine which roads will be used as "haul roads" for the Project, and will coordinate with the appropriate governing body (state, county or township) having jurisdiction to determine if those roads are acceptable. Wherever practical, all-weather roads will be used to deliver heavy components to and from the turbine sites. At the time of this application, haul roads have not been determined. The Applicant will notify the Brookings County Zoning Office of all agreements with state and local governing bodies, including arrangements for the maintenance and repair of any haul roads that could be

subject to extra wear due to transportation of the Project's heavy components. During construction, it is anticipated that several types of light, medium, and heavy-duty construction vehicles will travel to and from the site, as well as private vehicles used by the construction personnel. That volume will occur during the peak construction time when the majority of the foundation and tower assembly is taking place. Access roads will be built adjacent to the towers, allowing access both during and after construction. Some temporary construction roads will be 12.2 m (40 ft) wide to allow an assembled crane to walk from turbine site to turbine site. These roads will be reduced in width to 5 m (16 ft) at the end of construction if they are going to serve as permanent roads. The portion of the road restored will be returned to similar pre-existing agricultural or vegetation condition. The permanent access roads will be approximately 5 m (16 ft) wide and have gravel as cover, adequate to support the size and weight of maintenance vehicles. The access roads will be low profile to allow farming equipment to cross them. The roads will be designed to not impede runoff from streams and drainageways. Specific turbine locations will determine the amount of roadway that will be constructed for this Project. The number of access roads will be minimized to the extent possible. The Applicant will repair any private roads damaged during the life of the Project, unless otherwise negotiated with the affected landowner.

During construction, soil disturbance may result in dust. The Applicant will enact reasonable measures and practices to control dust. Oil and other derivatives will not be used for dust control.

### **Soil Erosion and Sediment Control Plan**

Since the Project will disturb more than one acre of soil, an NPDES permit will be required for construction. The South Dakota Department of Environment and Natural Resources has issued a NPDES General Storm Water Permit for Construction Activities and one of the conditions of this permit is the development of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP will mandate Best Management Practices (BMPs) to control erosion and sedimentation. BMPs may include silt fencing, erosion control blankets, temporary storm water sedimentation ponds, or other methods of controlling storm water runoff and minimizing sedimentation. Since erosion and sediment control will be in place for construction and, no impacts to water quality are expected as a result of the Project. The Applicant will submit the SWPPP for the Soil Erosion and Sediment Control Plan to the Brookings County Zoning Office prior to construction. The Plan will include grading, construction and drainage plans, soils information, design features to maintain water quality downstream, a revegetation plan, and methods that will be used to minimize surface disturbance area and dispose or store excavated material. The Plan will also include information on containment, storage or disposal of excavated material, protecting exposed soil, stabilizing restored material and removal of silt fences or barriers when the area is stabilized.

## Conclusion

The Applicant has addressed all matters set forth in the sections of Brookings County Zoning Regulations authorizing Conditional Use. The Project will consist of constructing, operating, and maintaining up to 49 WTGs, access roads, underground and overhead 34.5 kV electric collector lines, a Project collection substation, upgrades to the Brookings County Substation, an O&M facility, SCADA system, and one permanent meteorological tower. The Project's current preliminary layout complies with all Brookings County siting ordinances (setbacks) and zoning codes. The Applicant will coordinate with Brookings County once the turbine type is selected and the layout is finalized, and will provide the following information:

- Final turbine type, and associated final layout (turbines, access roads and electrical)
- Modeled noise level contours associated with final layout and turbine type
- Location of O&M Facility
- Location of permanent meteorological tower
- Final design of overhead line structures
- Updates to easements, if applicable

Additionally, the Applicant will provide the following prior to construction:

- SWPPP for the Soil Erosion and Sediment Control Plan
- Site Plan that includes Haul Roads
- Notification of any road agreements with state and local governments

Finally, the Applicant will submit a decommissioning and restoration plan no later than 120 days after completion of construction.

## FIGURES

Coyote Ridge Wind Project  
 Brookings County Conditional Use Permit Application

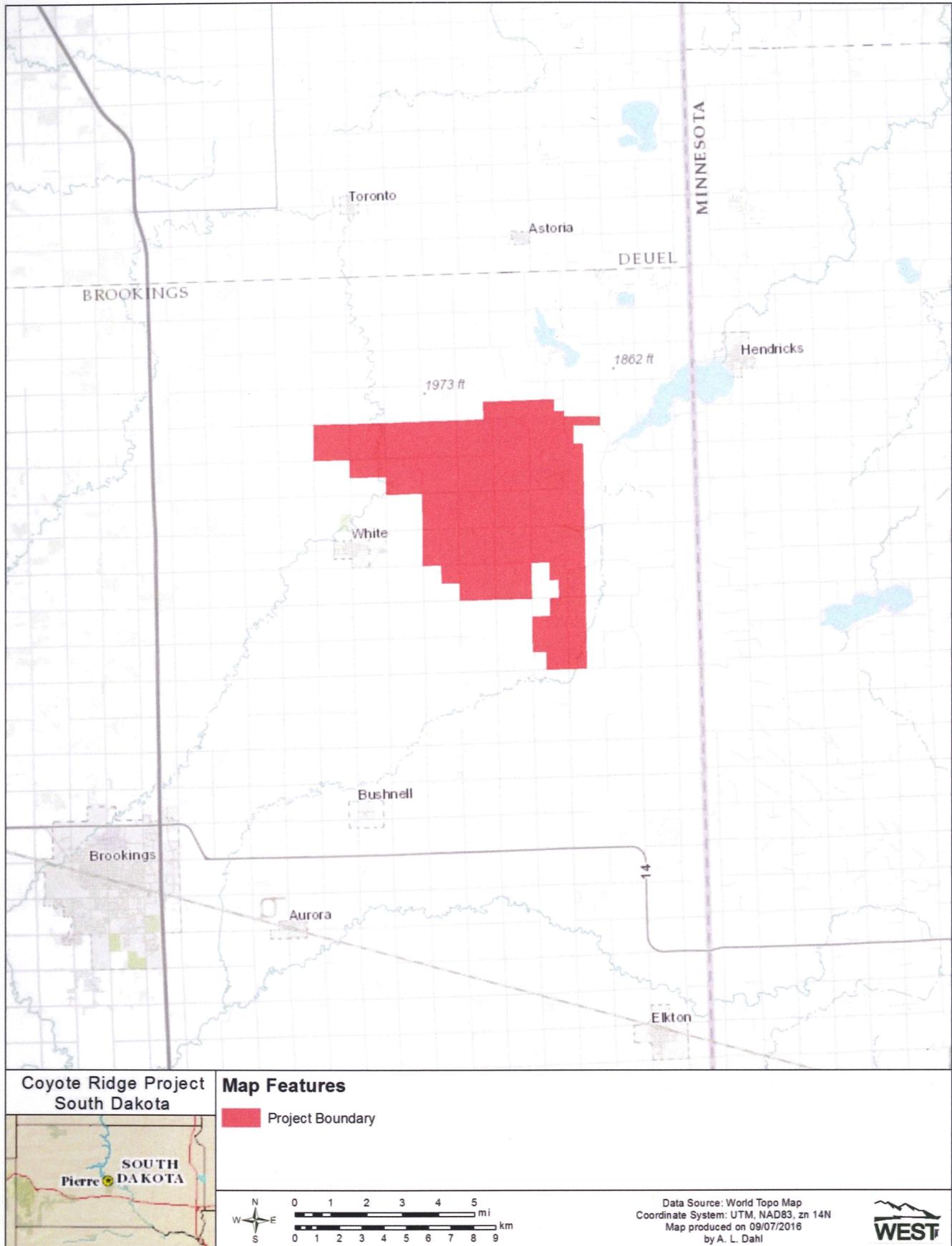


Figure 1. Coyote Ridge – Project Location

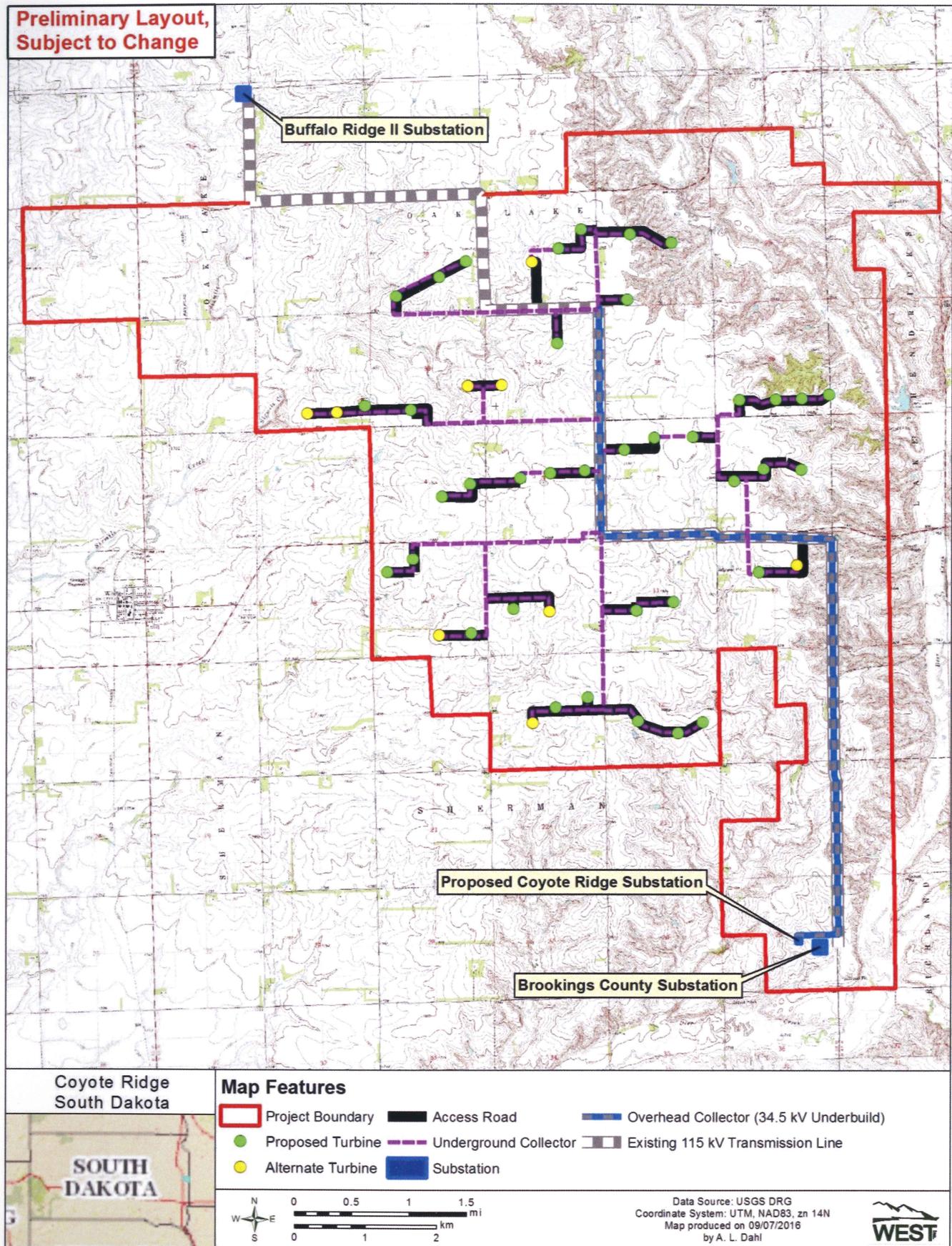


Figure 2. Coyote Ridge – Project Layout

Coyote Ridge Wind Project  
 Brookings County Conditional Use Permit Application

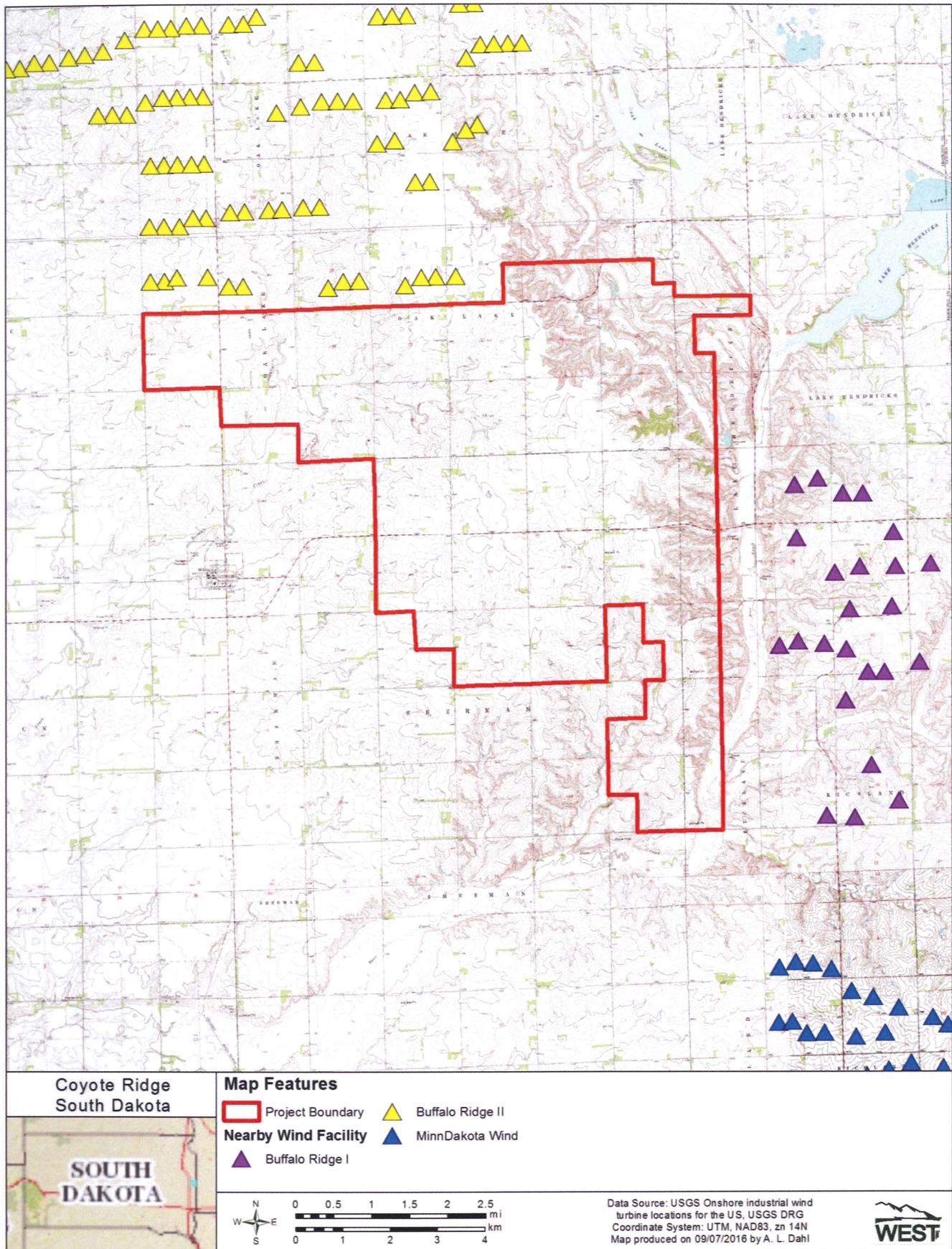


Figure 3. Coyote Ridge – Nearby Wind Generation

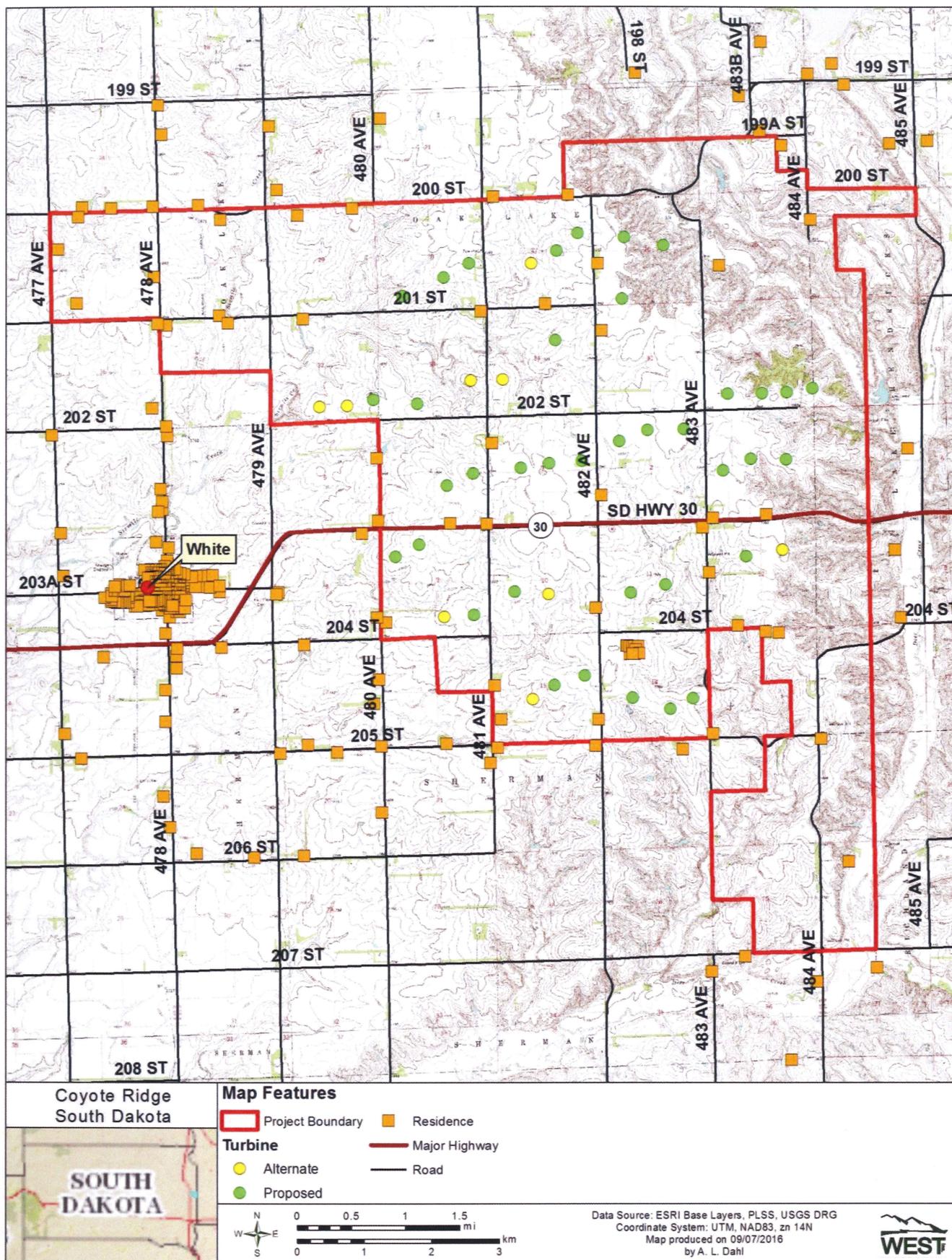


Figure 4. Coyote Ridge – Residence Locations

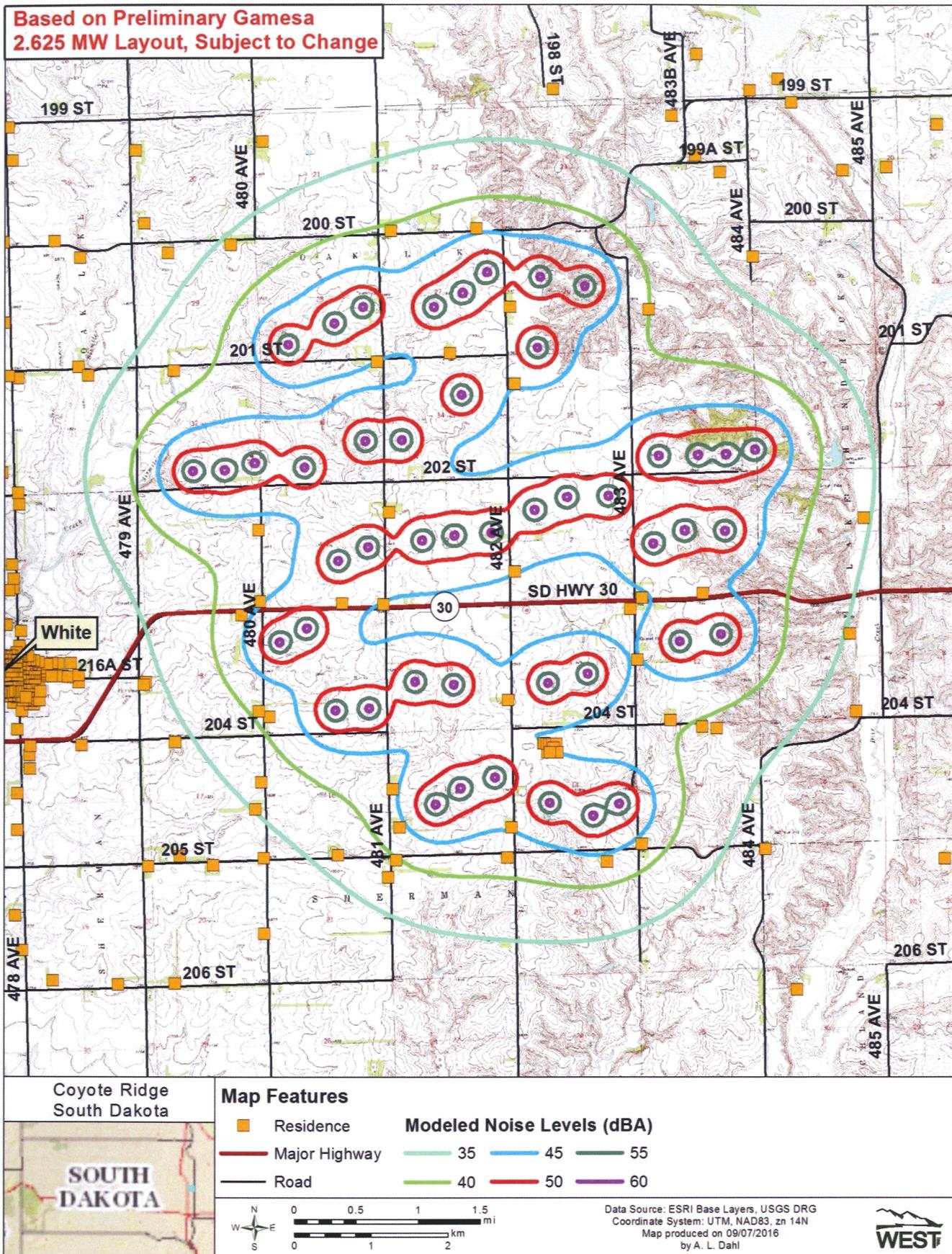


Figure 5. Coyote Ridge – Modeled Noise Contours

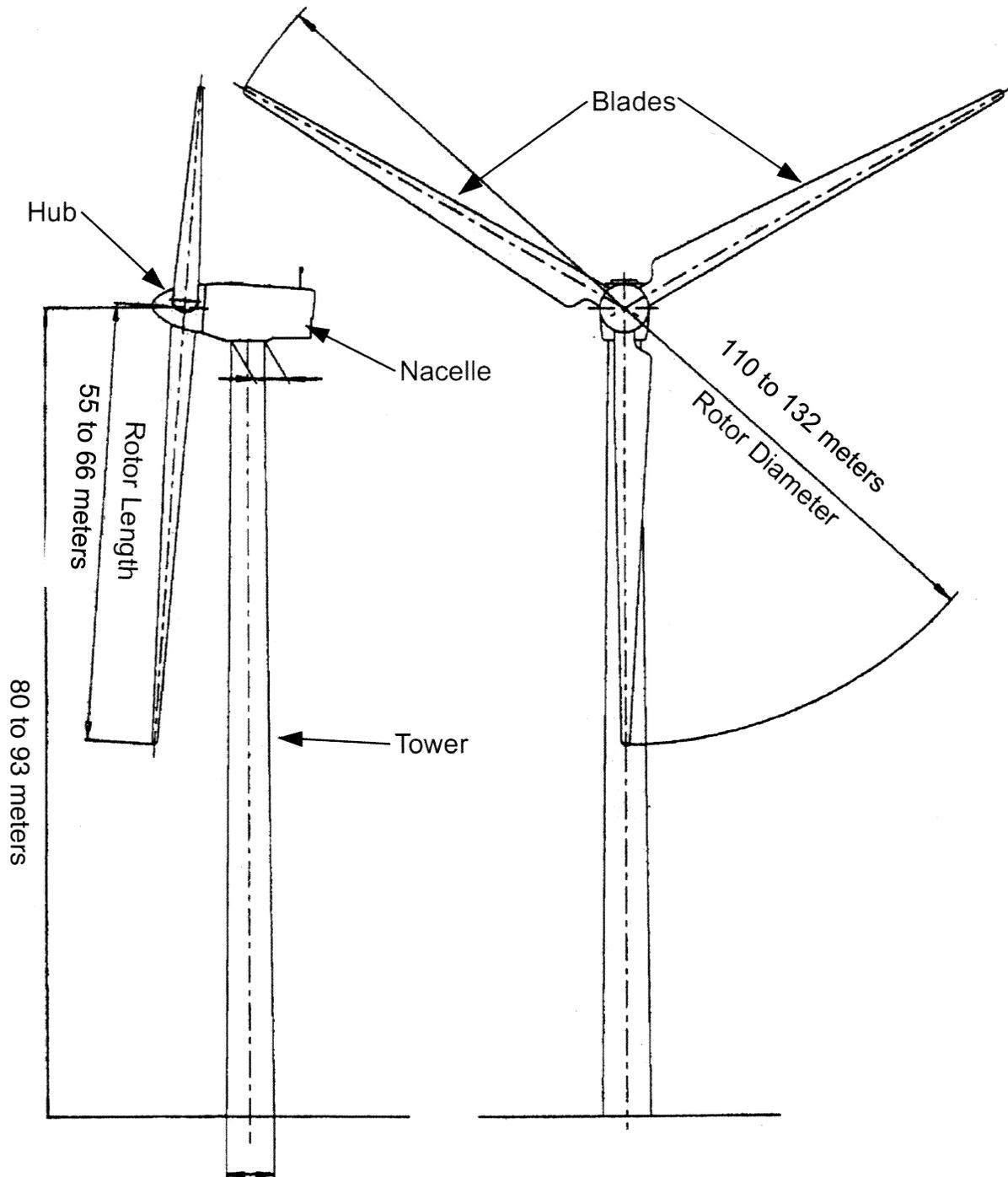


Figure 6. Coyote Ridge – Wind Turbine Generator Typical Dimensions