Bluestem
Sandhills LLC

Cherry County Board of Commissioners
365 N Main St #8
Valentine, NE 69201

Dear Commissioners,

Enclosed you will find a copy of Conditional Use Permit Application #01-16, along with supplemental material and a decommissioning financial security proposal. Details are listed below. If you have any questions please feel free to contact us at any time. We will also be happy to discuss the supplements at the scheduled public hearing on October 26th.

Thank you again for your time and consideration of our Permit Application.

Yours,

Eric Johnson
Vice President
Bluestem Sandhills LLC

211 N Main Street
PO Box 88
Valentine, NE 69211
(402) 676-0604

CUP #01-16

This copy of the permit application is the same as that which the Planning & Zoning Commission reviewed and voted on, July 19th. It was submitted to the Commission along with two letters addressing concerns raised at the first Planning & Zoning Commission public hearing, May 23rd. Those letters are included here.

"Clarification of Wetland Type vs. Jurisdictional Determination," from Joan Darling, provides further information on the wetland classification and jurisdictional determination process.

"Preconstruction Road Survey," from Jeff McPeak, confirms that, as the sole access point for BSH Kilgore construction vehicles will be directly on Hwy 20 and no county roads will be used, minimum design standards have been met or exceeded and Nebraska Department of Roads does not require a preconstruction road survey.

Supplemental Material

The Planning & Zoning Commission voted to recommend disapproval of the permit application based on 1) a lack of professional stamp on the Engineer's Certification, and 2) concerns regarding the Decommissioning Plan estimates of salvage value. In anticipation of the Board of Commissioners requiring that these be addressed, we include here an Engineer's Certification with professional stamp and an independent Decommissioning Costs Analysis.

The Decommissioning Costs Analysis shows that our initial estimates of salvage value were accurate, tending toward undervaluing salvage returns. The Analysis differs from our original plan, however, on disassembly and removal cost projections. The Analysis uses extremely conservative cost projections and relies on industry-wide decommissioning costs. Our plan took into account input from local contractors on disassembly and removal costs, resulting in more specific, but lower cost projections. The Analysis projects a net total decommissioning cost of $1,640,500 (disassembly and removal cost less salvage/resale value).

This net cost is an estimate of decommissioning at 25 years. Resale valuations include only parts replaced within 5 years of final operation. Table 5-2 of the Analysis shows the number of items estimated to meet this resale requirement. Note that the total items is quite low. Were decommissioning to be considered in years 1-5 of project life (an essentially unprecedented scenario), nearly all parts would be included in resale, greatly increasing the total resale value of the decommissioned project and resulting in a strong net positive value.

Decommissioning Financial Security

According to the Cherry County WECS Zoning Regulations,

> "Each Commercial/Utility WECS shall have a Decommissioning plan outlining the anticipated means and cost of removing WECS at the end of their serviceable life or upon being discontinued use. The cost estimates shall be made by a competent party; such as a Professional Engineer, a contractor capable of decommissioning or a person with suitable expertise or experience with decommissioning. The plan shall also identify the financial resources that will be available to pay for decommissioning and removal of the WECS and accessory facilities."

Although not required by Cherry County Zoning Regulations, we propose offering financial security prior to construction in the amount of $500,000.

Due to the financial structure of the project and associated federal tax credits, there is virtually zero chance of decommissioning prior to year 10. Moreover, salvage and resale value in the early years of the project will be substantially higher than decommissioning costs. In light of this we would like to additionally propose annual third-party review of decommissioning salvage and costs commencing year 10 of the project. Reviews would be conducted at project owner's cost. Project owner would also commit to providing necessary financial security in full for any shortfall (disassembly and removal cost less salvage/resale value) projected at year 10 as well as any adjustments necessary as determined by subsequent annual reviews.

We feel the initial financial security, accelerated review schedule, and full shortfall financial security from year 10 forward should address concerns regarding decommissioning cost. Nonetheless, if the Board of Commissioners request an alternate strategy regarding decommissioning financial security, we will be happy to comply.

APPLICATION FOR CONDITIONAL USE PERMIT

Cherry County, Nebraska

1. Under the provisions of Article 10 of the Cherry County, Nebraska Zoning Regulations, the undersigned hereby applies for approval of a Conditional Use to establish the following use:

   BSH Kilgore, LLC - A Commercial / Utility Grade Wind Energy Conversion System

2. Legal description of property to be affected by this application:

   Attached: Exhibit B - *Legal Description of Property.*

3. Size and dimension of the area on which the proposed Conditional Use would be located if *less* than the total property owned by the applicant:

   An area roughly 10 square miles as depicted in Exhibit C - *Affected Area.*

4. Provide a site plan which describes the use proposed which includes ALL of the following information:
   For Items a through l, see attached.
   a. The size and locations of all existing and proposed buildings and structures.
   b. The location(s) of access to public roadways.
   c. The types and locations of any easements affecting the property.
   d. A description of the provisions made for adequate water supply, sewage disposal, public utilities and erosion control.
   e. The extent and location of parking and loading areas.
   f. The location of refuse disposal and collection facilities.
   g. The locations of residential dwellings and other non-agricultural land uses within four miles of the property to be affected by the proposed Conditional Use.
   h. An indication of surface water drainage onto, through and off of the affected property.
   i. The type, size and location of all signs associated with such proposed use.
   j. For industrial uses and confined or intensive animal feeding uses, a description of how the use or uses proposed will address the compatibility issues of traffic generation, noise, odor, dust, radiation or potential air, water or soil pollution or explosion hazards.
   k. Any areas of the property subject to flooding or considered to be a wetland.
   l. If located in the Niobrara River Corridor, the location of the Niobrara River.
   m. Estimated cost of Construction $ **108,000,000.00**

5. For conditional use applications which propose the development of industrial uses, attach information which will address aspects of the use which may affect the County and/or neighboring property including: traffic generation, odor, dust, smoke, explosive hazards and any water contamination potentials.

   No traffic generation, odor, dust, smoke, explosive hazards or water contamination are anticipated on County or neighboring property.

6. For proposed confined or intensive animal feeding uses or expansion thereof, attach appropriate information to address the requirements as specified in Section 501.05 of the Cherry County Zoning Regulations

   NA

7. Signed Cattle Country easement to be filed in Register of Deeds office ($5.50 fee)

I hereby certify that I have the legal authority to file this application, that I have completed and examined this application and know the same to be true and correct. I further certify that all provisions of law and other regulations governing the use proposed in this application will be complied with, whether or not specified in this application.

Eric Johnson
Printed Name of Applicant

Signature of Applicant

Eric Johnson
BSH Kilgore LLC
4361 Lafayette Ave
Omaha NE 68131
Printed Name of Applicant

(402) 389-1668
Telephone Number

4/15/16 / 01-16
Date of Application / CUP#

BSH
KILGORE LLC

BSH Kilgore, LLC

Application for Conditional Use Permit
Submittal Date: April 18, 2016

Applicant:

BSH Kilgore, LLC

Project Owner:

Bluestem Sandhills, LLC
4361 Lafayette Avenue
Omaha, NE 68131
ATTN: Eric Johnson, President

Executive Summary:

Bluestem Sandhills LLC is pleased to submit this application to the Cherry County Board of Supervisors and the Cherry County Planning Commission for consideration and approval of a Conditional Use Permit ("CUP") for a commercial/utility grade wind energy conversion system, BSH Kilgore LLC ("Project"). Bluestem Sandhills seeks to locate the proposed Project southwest of Kilgore, Nebraska and to construct up to 30 wind turbines and appurtenant facilities. A more specific description of the Project follows below, detailing Cherry County CUP Application requirements as well as requirements, setbacks, and special safety and design standards under Cherry County Zoning Regulation 613 (*Exhibit A*).

Project Description:

The proposed Project will consist of an up to 60-megawatt (MW) wind energy generation facility. The Project area will occupy approximately 10 square miles in Cherry County, southwest of Kilgore, Nebraska. The Project proposes up to 30 wind turbines, along with access roads, an underground electrical power collection system, an approximately 3 mile overhead generation-tie line, and a transformer and substation. Bluestem Sandhills sited the wind turbine generators on public and private cropland and pasture ground to optimize wind and land resources in the area while minimizing environmental impacts to the extent practicable. The Board of Educational Lands and Funds of the State of Nebraska owns the public land in the Project. Bluestem Sandhills proposes to begin on-site construction in late fall 2016 or early 2017. The life of the Project is anticipated to be a minimum of twenty (20) years.

The Project layout and design cited in this submission are based on the Vestas V100 2.0MW turbine model. The V100 2.0MW has a hub height of 80 meters (263 feet) and rotor diameter of 100 meters (328 feet). Should alternate model or models be used, layout and design will be adjusted accordingly, meeting all setback and safety and design requirements under Cherry County Zoning Regulation 613. Per Cherry County Zoning Regulation 613, final layout, design, and certification will be provided prior to construction.

All models contemplated will include a wind turbine generator mounted on a tubular tower between 69 meters (226 feet) and 80 meters (263 feet) tall and will have a rotor diameter ranging from 100 meters (328 feet) to 117 meters (384 feet), depending on the model selected. Approximate total height will be between 403 feet and 452 feet when the tip of the blade is at the 12 o'clock position. Regardless of the turbine model selected for this Project, the turbines will be three-bladed, upwind, horizontal-axis turbines. The turbine rotor and nacelle will be mounted on top of a tubular tower and will employ an active yaw control, designed to steer the machine with respect to the wind direction. Turbines will also contain an active blade pitch control (designed to regulate turbine rotor speed) and a generator/power electronic converter system.

Project Benefits:

The Project is expected to generate approximately **$108 million** of investment into the local community. It is also expected to generate approximately **$397,560** in property taxes annually, roughly **$286,200** of which will be distributed to local schools. Over the life of the Project this would total nearly **$12,000,000** in new property tax revenue with over **$8,500,000** going to local schools. Additionally, Cherry County Wind will deposit 5% of all landowner revenues into a fund for local public improvement projects. The proposed Project would generate approximatley $15,000 for the fund annually.[1]

During the construction phase the Project is expected to employ approximately 100 full time workers. Maintenance and operation of the project is expected to require 3-4 full time employees for a minimum of 20 years from in-service date.

1 Figures based on "Impact of Wind Energy on Property Taxes in Nebraska," Baird Holm 2013.

BSH
KILGORE LLC

Submittal Requirements as listed in the Cherry County Zoning Regulations

Per Item 4 on the *Application for Conditional Use Permit*, we have included in **Exhibits** a general site plan map, *Exhibit D - Site Plan*, with additional informational and detail maps. Item 4 requirements are provided below.

4. Provide a site plan which describes the use proposed which includes ALL of the following information:

a. The size and locations of all existing and proposed buildings and structures:

Please see *Exhibit H - Existing and Proposed Buildings and Structures*.

b. The location(s) of access to public roadways:

Please see *Exhibit I - Public Roadway Access*.

c. The types and locations of any easements affecting the property:

Bluestem Sandhills has the following easements on the project area:

- Construction Easement
- Access Easement
- Preoperating Phase & Meteorological Equipment Easement
- Operating Phase Easement
- Wind Turbines Easement
- Transmission Easement
- Substations Easement
- Easement for other Wind Energy Facilities
- Wind Nonobstruction Easement
- Noise and Flicker Easement
- Overhang Easement

d. A description of the provisions made for adequate water supply, sewage disposal, public utilities and erosion control:

Bluestem Sandhills does not anticipate any onsite maintenance building facilities that would require water supply, sewage disposal, public utilities or erosion control. Maintenance facilities are anticipated to be located off the Project Area. In regards to the WECS, we will use existing water wells in the project area for water supply and existing electrical and internet/data service providers in or near the project area.

Bluestem Sandhills will use commercially reasonable efforts to minimize disturbing the land on the Property in ways that may lead to erosion. In restoring the land on the Property, Bluestem Sandhills will take appropriate measures to reduce and control erosion, including filling, stabilization, fencing, and re-vegetation of disturbed areas, and re-establishment of contours as nearly as is reasonably practicable to such conditions prior to construction of the Project.

e. The extent and location of parking and loading areas:

During construction phase a staging area will be located at each turbine with primary worker parking located within the project area in close proximity to access road.

f. The location of refuse disposal and collection facilities:

During construction phase minor refuse will be disposed of in a dumpster located at a turbine staging area and hauled off and disposed of in accordance with appropriate regulation. Major refuse will be hauled and disposed by BSH Kilgore LLC. Solid and hazardous wastes will be removed from the site promptly and disposed of in accordance with all applicable local, state and federal rules and regulations.

g. The locations of residential dwellings and other non-agricultural land uses within four miles of the property to be affected by the proposed Conditional Use:

Please see *Exhibit J - Structures Within Four Mile Boundary*.

h. An indication of surface water drainage onto, through and off of the affected property:

The WECS is not anticipated to affect any surface water drainage onto, through or off of the affected property. All turbine locations will be located at or near highpoints, which will provide natural drainage away from turbine foundation.

i. The type, size and location of all signs associated with such proposed use:

One sign, located at public roadway access, consisting of business name, designed and erected in accordance with Nebraska Department of Roads regulations for Class IIC signage.

j. For industrial uses and confined or intensive animal feeding uses, a description of how the use or uses proposed will address the compatibility issues of traffic generation, noise, odor, dust, radiation or potential air, water or soil pollution or explosion hazards:

No odor, radiation, potential air, water or soil pollution, or explosion hazards are expected. Any additional traffic generation will be confined to the Project Area and should pose no compatibility issue. Dust generated by additional roads and traffic on the Project Area will be managed during the construction phase by spraying down the roads on a regular basis. Appropriate noise study has been completed, showing that system shall not exceed 50 dBA at nearest structure occupied by humans, per Cherry County Zoning Regulation 613.03, Special Safety and Design Standards,13.; see *Exhibit P - Acoustical Analysis*.

k. Any areas of the property subject to flooding or considered to be a wetland:

Wetland review was completed by Olsson Associates. The evaluation included a review of existing resources and a site visit in July and October 2015 to delineate wetlands and waters. Wetland features totaling approximately 5.5 acres were located. All were determined non-jurisdictional based a lack of nexus with waters of the U.S.. See *Exhibit O - Wetlands Classification and Map*.

l. If located in the Niobrara River Corridor, the location of the Niobrara River:

The project is not in the Niobrara River Corridor.

BSH
KILGORE LLC

Submittal Requirements as listed in Cherry County Zoning Regulation Section 613.03

Requirements

1. The name(s) of project applicant.

BSH Kilgore, LLC.

2. The name of the project owner.

Bluestem Sandhills, LLC.

3. The legal description and address of the project.

Cherry County Wind, LLC has entered into lease and easement agreements with landowners of the Project Area. . Bluestem Sandhills, LLC has then entered into a lease and easement agreement with Cherry County Wind to develop utility scale wind projects for Cherry County Wind. BSH Kilgore, LLC is a wholly owned subsidiary of Bluestem Sandhills, LLC and serves as the Project company. BSH Kilgore is located southwest of Kilgore, Nebraska on participant landowner property totaling approximately 17 square miles, of which approximately 10 square miles are expected to be directly affected. For legal description of property, please see *Exhibit B - Legal Description of Property*.

4. A description of the project including: number, type, name plate generating capacity, tower height, rotor diameter, and total height of all wind turbines and means of interconnecting with the feeder lines. The description may be approximate and may include a range of estimates for each item.

Please see Project Description, above.

5. Site layout, including the location of property lines, wind turbines, electrical grid, and all related accessory structures. This site layout shall include distances and be drawn to scale. The site layout may include corridors within which the siting of wind turbines is flexible, as well as approximate or preliminary locations of electrical and related accessory structures.

Please see *Exhibit D - Site Plan*.

6. Certification by an Engineer competent in disciplines of WECS.

Project turbine layout and collection system was designed in accordance with Cherry County Wind Zoning Regulation by DNV-GL, a recognized worldwide leader in energy industry engineering. For certification, please see *Exhibit E - Engineering Certification*.

7. Documentation of land ownership or legal control of the property.

Please see *Exhibit B - Legal Description of Property*.

8. The latitude and longitude of individual wind turbines. These coordinates may be located in proposed corridors within which the siting of wind turbines is flexible.

Please see *Exhibit G - Proposed Turbine Locations*.

Bluestem Sandhills is proposing to use corridors within the Project Area to allow some flexibility in micro siting the turbine locations. All proposed corridor boundaries comply with the setback requirements listed.

9. A USGS topographical map, or map with similar data, of the property and surrounding area, including any other Wind Energy Conversion System not owned by the applicant, within 10 rotor diameters of the proposed Wind Energy Conversion System.

Please see *Exhibit F - Topographical Map*.

10. Location of known wetlands, designated scenic areas, and natural areas (including bluffs) within 1,320 feet of the proposed Wind Energy Conversion System.

For wetland review, please see Cherry County CUP Application **4.k**, above.

In 1999 the “Bridges to Buttes” section of U.S. Route 20 was designated an official Nebraska State Scenic Byway. This section of U.S. Route 20 passes by the affected project area. The proposed layout accords with the 1,320 feet setback requirement. Please see *Exhibit N - Scenic Byway Setback*.

11. An Acoustical Analysis that certifies that the noise requirements within this regulation can be met.

Bluestem Sandhills modeled sound propagation in and around the proposed turbines and determined predictions of sound levels for 9 potentially inhabited structures within one and a half (1.5) miles of the Project. Sound levels were modeled using the Decibel module of WindPro, version 3.0. EMD International developed WindPro, an industry-wide recognized tool for the analysis of wind farm project impacts. Factors that may affect the propagation of sound within the Project area include the elevations and distance between the turbines and receptors, the groundcover type within the Project, and the location of obstacles, such as trees and buildings near the receptor. The sound model inputs include elevations of turbines and receptors as well as a ground attenuation factor of 0.5 which represents the general level of the Project's agricultural-type groundcover.

Bluestem Sandhills completed the sound analysis using the Vestas V100 2.0MW generator. Analysis was performed to estimate the total maximum sound level expected at each receptor within the Project, as if all 30 turbines were constructed and simultaneously operating. Table 1 is a summary of the results.

Table 1 - Results of Sound Analysis for the Kilgore Wind Farm

Sound Level Range (dBA)	Number of Potentially Inhabited Buildings
Less than 35	5
35-40	2
40-45	2
45-50	0

The results of the sound analysis indicate that the Project will comply with Cherry County Regulation noise limit of 50 dBA at homes and other occupied commercial or community structures that experience daily pedestrian traffic. Full results are detailed in *Exhibit P - Acoustical Analysis*, which includes mapping of dwelling noise setbacks and noise contours.

12. Applicant shall submit FAA notices of determination of no hazard to air navigation, & FCC permit or evidence that the permit has been filed with the appropriate agency.

On April 11, 2016, Bluestem Sandhills filed 30 FAA 7460-1 forms with a total erected height of 429 feet. These filings were assigned Aeronautical Study Numbers 2016-WTE-2598-OE through 2016-WTE-2627-OE, listed in *Exhibit R - FAA Aeronautical Studies Table*. Bluestem Sandhills will obtain all required approvals from the FAA prior to commence construction to assure that none of the turbines constitute a hazard to air navigation.

13. Evidence that there will be no interference with any commercial and/or public safety communication towers, including but not limited to radio, telephone, or television signals.

No interference with microwave systems, air navigation aids, broadcast stations, cellular systems, mobile stations, and radar sites registered with the Federal Communications Commission (FCC), Universal Licensing System (ULS), and/or Renewable Energy and Defense (READ) Geospatial Database (for radar sites) is anticipated. Please see *Exhibit S - Electromagnetic Interference Analysis* for full analysis detail. Unlicensed federal government microwave paths are being addressed through consultation with the U.S. NTIA (*Exhibit T - NTIA Consultation*).

14. Decommissioning Plan as required by Special Safety & Design Standards, #12 of this regulation.

Please see Special Safety and Design Standards #12, below, and *Exhibit V - BSH Kilgore Decommissioning Plan*.

15. Description of potential impacts on nearby Wind Energy Conversion Systems and wind resources on adjacent properties not owned by the applicant.

No WECS are located or proposed on properties adjacent to the Project Area.

Setbacks

Cherry County Zoning Regulation 613 details setbacks for property lines, dwellings, rights of way, and environmental and wildlife features. Please see *Exhibit A - Cherry County Zoning Regulation 613, Setbacks* for a table itemizing the specific requirements.

The Project has been designed in accordance with all setbacks, as detailed in *Exhibit E - Engineering Certification*. Table 2 directs the reader to specific Project information for each setback.

Table 1 - Results of Sound Analysis for the Kilgore Wind Farm

Setback	**Project Information**
Property Lines	Please see *Exhibit K - Property Line Setback.*
Dwelling	Please see *Exhibit L - Dwelling Setback.*
Rights-of-Way	Please see *Exhibit M - Right of Way Setback.*
Public conservation Lands including Wildlife Management Areas and State Recreation Areas	No PCL, WMA, or SRA located in or adjacent to Project.
Wetlands, USFW Types III, IV and V	No wetlands of USFW Types III, IV, or V located in Project. Please see Cherry County CUP Application **4.k**, and *Exhibit O - Wetlands Classification and Map*.
Other structures not on the applicant's project site	Please see *Exhibit J - Structures Within Four Mile Boundary*.
Bluffs of over 15 feet	No bluffs located in or adjacent to Project.

Special Safety and Design Standards

1. The Commercial/Utility WECS owner(s) and/or operator(s) shall conduct an analysis on potential shadow flicker at any occupied building with direct line-of-sight to the WECS. The analysis shall identify the locations of shadow flicker that may be caused by the project and the expected durations of the flicker at these locations from sun-rise to sun-set over the course of a year. The analysis shall identify situations where shadow flicker may affect the occupants of the buildings for more than 30 hours per year, and describe measures that shall be taken to eliminate or mitigate the problems. Shadow Flicker on a building shall not exceed thirty (30) hours per year.

Bluestem Sandhills completed an analysis of expected shadow flicker impact at residences and other inhabited buildings within one and one-half (1.5) miles of the turbines using the Shadow module of WindPro, version 3.0. EMD International developed WindPro, an industry-wide recognized tool for the analysis of wind farm project impacts. Bluestem Sandhills completed the analysis using the Vestas V100 2.0MW generators.

Bluestem Sandhills performed the analysis to estimate the annual hours of shadow flicker expected within the Project and analyzed impact on a total of nine (9) potentially inhabited building locations within one and one-half (1.5) miles of the turbines. The analysis considered climatological information, such as wind force, wind direction, and sunshine probability. Bluestem Sandhills modeled the receptors assuming windows on all sides of the structures in the Project.

Table 3 is a summary of the results of the shadow flicker analysis. Bluestem Sandhills expects the effects of shadow flicker on inhabited buildings to be minimal based on the established setbacks and design of the Project. Results of the analysis indicate that the Project as designed accords to the Regulation threshold of 30 hours of shadow flicker per year cast on any given dwelling.

Table 3 - Annual Shadow Flicker Hours Expected at Potentially Inhabited Building Locations within 1.5 Miles of Project Turbines

Annual Shadow Hours	**Number of Potentially Inhabited Buildings (with 30 possible turbine locations)**
0	6
1-5	2
5-15	1

Full results and mapping are shown in *Exhibit Q - Shadow Flicker Analysis*.

2. Clearance of rotor blades or airfoils must maintain a minimum of 12 feet of clearance between their lowest point and the ground.

Vestas V100 2.0MW generator towers have a hub height of 80 meters (263 feet). Rotor radius is 50 meters (164 feet). This leaves a clearance of approximately 30 meters (98 feet) between lowest point and ground.

3. All Commercial/Utility WECS shall have a sign or signs posted on the tower, transformer and substation, warning of high voltage. Other signs shall be posted on the turbine with emergency contact information.

All tower, transformer, and substation facilities will be properly posted with high voltage warnings and turbines will have emergency contact information posted.

4., 5., 6., 8. All wind turbines, which are a part of a commercial/utility WECS, shall be installed with a tubular, monopole type tower.

Consideration shall be given to painted aviation warnings on all towers less than 200 feet.

Color and finish: All wind turbines and towers that are part of a commercial/utility WECS shall be white, grey, or another non-obtrusive color. Blade finishes shall be matte or non-reflective.

Lighting: Lighting, including lighting intensity and frequency of strobe, shall adhere to but not exceed requirements established by the FAA permits and regulations. Red strobe lights shall be used during nighttime illumination to reduce impacts on neighboring uses and migratory birds. Red pulsating incandescent lights should be avoided.

The Vestas V100 2.0MW generators are tubular steel monopole towers with 80 meter hub height. See Exhibit U - Vestas Turbine Specifications for turbine specifications. All towers will be white or grey color with all blades having a matte finish. Towers shall be lit in accordance with FAA regulation, and red strobe lights illuminated during nighttime.

Note: No item 7 is listed in Cherry County Zoning Regulations 613.03 Special Safety and Design Standards.

9. Other signage: All other signage shall comply with the sign regulations found in these regulations.

Please see Cherry County CUP Application **4.i.**

10. Feeder Lines: All communications and feeder lines installed as part of a WECS shall be buried, where practicable. Feeder lines installed as part of a WECS shall not be considered an essential service.

The current layout and design calls for three separate feeder lines. Each feeder line will connect up to 10 towers to the collection/sub-station. All three feeder lines will be buried. Location of communication lines is not finalized, but they will be buried.

11. Waste Disposal: Solid and Hazardous wastes, including but not limited to crates, packaging materials, damaged or worn parts, as well as used oils and lubricants, shall be removed from the site promptly and disposed of in accordance with all applicable local, state and federal rules and regulations.

Please see Cherry County CUP Application **4.f.**

12. Discontinuation and Decommissioning: A WECS shall be considered a discontinued use after one year without energy production, unless a plan is developed and submitted to the Zoning Administrator outlining the steps and schedule for returning the WECS to service. All WECS and accessory facilities shall be removed to four (4) feet below ground level within 180 days of the discontinuation of use. This period may be extended by the Zoning Administrator following a written request by an agent of the owner of the WECS.
Each Commercial/Utility WECS shall have a Decommissioning plan outlining the anticipated means and cost of removing WECS at the end of their serviceable life or upon being discontinued use. The cost estimates shall be made by a competent party; such as a Professional Engineer, a contractor capable of decommissioning or a person with suitable expertise or experience with decommissioning. The plan shall also identify the financial resources that will be available to pay for decommissioning and removal of the WECS and accessory facilities.

A full Discontinuation and Decommissioning Plan is outlined in *Exhibit V – BSH Kilgore Decommissioning Plan*.

13. Noise: No Commercial/Utility WECS shall exceed 50 dBA at the nearest structure occupied by humans. Exception: a Commercial/Utility WECS may exceed 50 dBA during periods of severe weather as defined by the US Weather Service.

Please see Cherry County Zoning Regulation Section 613.03 Requirement 11, above.

14. Interference: The applicant shall minimize or mitigate interference with electromagnetic communications, such as radio, telephone, microwaves, or television signals caused by any WECS. The applicant shall notify all communication tower operators within five miles of the proposed WECS location upon application to the county for permits.

Please see Cherry County Zoning Regulation 613.03 Requirement 13, above.

15. Roads: Applicants shall:
a. Identify all county, municipal or township roads to be used for the purpose of transporting WECS, substation parts, cement, and/or equipment for construction, operation or maintenance of the WECS and obtain applicable weight and size permits from the impacted jurisdictions prior to transportation and construction.
b. Conduct a pre-construction survey, in coordination with the appropriate jurisdictions to determine existing road conditions. The survey shall include photographs to document the condition of the public facility.
c. Be responsible for restoring the road(s) and bridges to preconstruction conditions.
d. Conduct a post-construction survey, in coordination with the appropriate jurisdictions to determine whether road conditions have been restored to pre-construction conditions.

Bluestem Sandhills has identified 'no' county, municipal, or township roads that will be used for transporting WECS or any related components mentioned in item (15.) above. Bluestem Sandhills has determined that the only anticipated roads for uses referenced are U.S. Route 20 and U.S. Route 83. Bluestem Sandhills will work with the Nebraska Department of Roads to conduct a pre-construction survey and will provide results to the Cherry County Board of Supervisors prior to construction. Additionally, Bluestem Sandhills will work with Nebraska Department of Roads to obtain any permits necessary for connecting access roads to U.S. Route 20 and restore the roads and bridges to preconstruction conditions. Once completed, Bluestem Sandhills will again work with Nebraska Department of Roads to conduct a post-construction survey to be provided to the Cherry County Board of Supervisors. Please see *Exhibit I – Public Roadway Access*.

16. Drainage System: The applicant shall be responsible for immediate repair of damage to public drainage systems stemming from construction, operation or maintenance of the WECS.

Bluestem Sandhills will coordinate with Nebraska Department of Roads to assess any public drainage systems that may be affected along U.S. Route 20 in order to connect the Project access roads. This would be the only potential public drainage system on the Project Area. Any impacts will be identified in the pre-construction survey and addressed during construction.

BSH
KILGORE LLC

Exhibits

Exhibit A - Cherry County Zoning Regulation 613

Wind Energy Conversion Facilities
Cherry County Addition to Current Zoning Regulations

SECTION 613 WIND ENERGY CONVERSION FACILITIES

613.01 Wind Energy Installation.

In any zoning district, a conditional use permit may be granted to allow wind energy conversion system, including such devices as wind charger, windmill, or wind turbine; subject to the regulations established in this section.

613.02 Small Wind Energy Systems

Purpose
It is the purpose of this regulation to promote the safe, effective and efficient use of small wind energy systems installed to reduce the on-site consumption of utility supplied electricity.

Definitions
The following are defined for the specific use of this section.

1. *Small Wind Energy System* shall mean a wind energy conversion system consisting of a wind turbine, a tower, and associated control or conversion electronics, which has a rated capacity of not more than 100 kW and which is intended to primarily reduce on-site consumption of utility power.

2. *Tower Height* shall mean the height above grade of the hub portion of the tower, excluding the wind turbine itself.

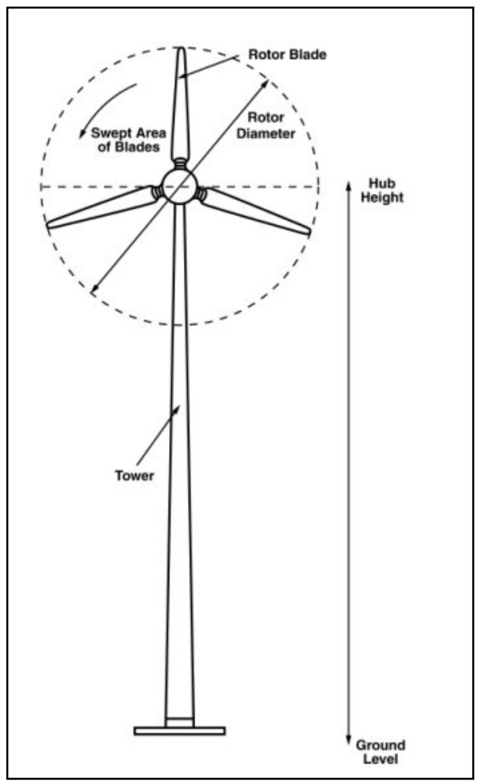


Figure 1

Requirements
Small wind energy systems shall be permitted as an Accessory Use within any district where the use is listed and allowed. Certain requirements as set forth below shall be met:

1. Tower Height
    a. For property sizes between ½ acre and one acre the tower height shall be limited to 80 feet.
    b. For property sizes of one acre or more, there is no limitation on tower height, except as imposed by FAA regulations.

2. Setbacks
    a. No part of the wind system structure, including guy-wire anchors, may extend closer than accessory building setbacks of the appropriate zoning district to the property lines of the installation site.

3. Noise

a. Small wind energy systems shall not exceed 50 dBA, as measured at the closest neighboring inhabited dwelling unit.
b. The noise level may be exceeded during short term events such as utility outages and/or severe wind storms.

4. Approved Wind Turbines
    a. Small wind turbines must have been approved under the Emerging Technologies program of the California Energy Commission or any other small wind certification program recognized by the American Wind Energy Association.

5. Compliance with Building and Zoning Codes
    a. Applications for small wind energy systems shall be accomplished by standard drawings of the wind turbine structure, including the tower base, and footings.
    b. An engineering analysis of the tower showing compliance with official building code of the governing body and/or the State of Nebraska certified by a professional engineer licensed and certified in Nebraska shall also be submitted.
    c. The manufacturer frequently supplies this analysis.
    d. Wet stamps shall not be required.

6. Compliance with FAA Regulations
    a. Small wind energy systems must comply with applicable FAA regulations, including any necessary approvals for installations close to airports.

7. Compliance with National Electrical Code
    a. Permit applications for small wind energy systems shall be accompanied by a line drawing of the electrical components in sufficient detail to allow for a determination that the manner of installation conforms to the National Electrical Code.
    b. The manufacturer frequently supplies this analysis.

8. Utility Notification
    a. No small wind energy system shall be installed until evidence has been given that the utility company has been informed of the customer's intent to install an interconnected customer-owned generator.
    b. Off-grid systems shall be exempt from this requirement.

613.03 Commercial/Utility Grade Wind Energy Systems

<u>Purpose</u>
It is the purpose of this regulation to promote the safe, effective and efficient use of commercial/utility grade wind energy systems within Cherry County.

<u>Definitions</u>
The following are defined for the specific use of this section.

1. *Aggregate Project* shall mean projects that are developed and operated in a coordinated fashion, but which have one or more entities separately owning one or more of the individual WECS within the larger project. Associated infrastructure such as power lines and transformers that service the facility may be owned by a separate entity but are also part of the aggregated project.

2. *Commercial WECS* shall mean a wind energy conversion system of equal to or greater than 100 kilowatts in total name plate generating capacity.

3. *Feeder Line* shall mean any power line that carries electrical power from one or more wind turbines or individual transformers associated with individual wind turbines to the point of interconnection with the electric power grid. In the case of interconnection with the high voltage transmission systems the point of interconnection shall be the substation serving the wind energy conversion system.

4. *Meteorological Tower* shall mean, for purposes of this regulation, a tower which is erected primarily to measure wind speed and directions plus other data relevant to siting a Wind Energy Conversion System. Meteorological towers do not include towers and equipment used by airports, the Nebraska Department of Roads, or other applications to monitor weather conditions.

5. *Dwelling* shall mean, any building or portion thereof, other than a building used for short term occupancy by human beings, which is designed and / or used for living purposes on an on-going basis.

6. *Public Conservation Lands* shall mean land owned in fee title by State or Federal agencies and managed specifically for conservation purposes, including but not limited to State Wildlife Management Areas, State Parks, federal Wildlife Refuges and Waterfowl Production Areas. For purposes of this regulation, public conservation lands will also include lands owned in fee title by non-profit conservation organizations, Public conservation lands will also include private lands upon which conservation easements have been sold to public agencies or non-profit conservation organizations.

7. *Bluff* shall mean, generally, the steep slopes along the Niobrara River Corridor. More specifically, the land included in the following soils mapping units as identified on the field sheets of the Cherry County Soil Survey, 1996: McF/MCP – McKelvie Loamy Sand 9-30% slopes; MeG/MuG – McKelvie-Fishberry Rock Outcrop complex, 11-60% slopes; MfG/MtG – McKelvie-Rock Outcrop complex, 20-6-% slopes; and, MsF/MtF – McKelvie-Fishberry complex, 9-30% slopes.

8. *Rotor Diameter or Diameter* shall mean the diameter of the circle described by the moving rotor blades as shown in Figure 1.

9. *Small Wind Energy System* shall mean a wind energy conversion system consisting of a wind turbine, a tower, and associated control or conversion electronics, which has a rated capacity of not more than 100 kW and which is intended to primarily reduce on-site consumption of utility power.

10. *Substations* shall mean any electrical facility to convert electricity produced by wind turbines to a voltage greater than 35,000 (35 kV) for interconnection with high voltage transmission lines.

11. *Total Height* shall mean the highest point, above ground level, reached by a rotor tip or any other part of the Wind Energy Conversion System.

12. *Tower* shall mean the vertical structures that support the electrical, rotor blades, or meteorological equipment.

13. *Tower Height* shall mean the total height of the Wind Energy Conversion System from grade to the hub.

14. *Transmission Line* shall mean the electrical power lines that carry voltages of at least 69,000 volts (69 KV) and are primarily used to carry electric energy over medium to long distances rather than directly interconnecting and supplying electric energy to retail customers.

15. *Wind Energy Conservation System* shall mean an electrical generating facility comprised of one or more wind turbines and accessory facilities, including but not limited to: power lines, transformers, substations and meteorological towers that operate by converting the kinetic energy of wind into electrical energy. The energy may be used on-site or distributed into the electrical grid.

16. *Wind Turbines* shall mean any piece of electrical generating equipment that converts the kinetic energy of blowing wind into electrical energy using airfoils or similar devices to capture the wind.
17. *Participant* shall mean one that receives annual monetary compensation from the WECS owner/operator.
18. *Non-participant* shall mean one that does not receive annual monetary compensation from the WECS owner/operator.

Requirements

Commercial/Utility Grade wind energy systems shall be permitted as a Conditional Use within any district where the use is listed and allowed. The following requirements and information shall be met and supplied when available but no later than the date of construction:

1. The name(s) of project applicant.

2. The name of the project owner.

3. The legal description and address of the project.

4. A description of the project including; Number, type, name plate generating capacity, tower height, rotor diameter, and total height of all wind turbines and means of interconnecting with the feeder lines. The description may be approximate and may include a range of estimates for each item.

5. Site layout, including the location of property lines, wind turbines, electrical grid, and all related accessory structures. This site layout shall include distances and be drawn to scale. The site layout may include corridors within which the siting of wind turbines is flexible, as well as approximate or preliminary locations of electrical and related accessory structures.

6. Certification by an Engineer competent in disciplines of WECS.

7. Documentation of land ownership or legal control of the property.

8. The latitude and longitude of individual wind turbines. These coordinates may be located in proposed corridors within which the siting of wind turbines is flexible.

9. A USGS topographical map, or map with similar data, of the property and surrounding area, including any other Wind Energy Conversion System not owned by the applicant, within 10 rotor diameters of the proposed Wind Energy Conversion System.

10. Location of known wetlands, designated scenic areas, and natural areas (including bluffs) within 1,320 feet of the proposed Wind Energy Conversion System.

11. An Acoustical Analysis that certifies that the noise requirements within this regulation can be met.

12. Applicant shall submit FAA notices of determination of no hazard to air navigation, & FCC permit or evidence that the permit has been filed with the appropriate agency.

13. Evidence that there will be no interference with any commercial and/or public safety communication towers, including but not limited to radio, telephone, or television signals.

14. Decommissioning Plan as required by *Special Safety & Design Standards, #12 of* this regulation.

15. Description of potential impacts on nearby Wind Energy Conversion Systems and wind resources on adjacent properties not owned by the applicant.

Aggregate Projects

1. Aggregate projects may jointly submit a single application and be reviewed under joint proceedings, including notices, public hearings, reviews and as appropriate approvals.

2. Permits may be issued and recorded separately.

3. Aggregate projects will be assessed fees as one project.

4. Setbacks to property lines, not road rights-of way, may be less when adjoining property owners are within the same aggregate project.

Setbacks

All towers shall adhere to the setbacks as measured from centerline of turbine established in the following table:

	Wind Turbine – Non Commercial	WECS Wind Turbine – Commercial/Utility WECS	Meteorological Towers
Property Lines (other than right angle corners)	Diameter plus applicable building setback	Diameter plus applicable building setback	1.1 times the total height
Right angle corner property lines	Diameter plus applicable building setback from both property lines	Behind a line on the property lines drawn between two points 150' from the property line intersection. Generator blades must not exceed the building setback lines on the non-road side, and shall not encroach on the right-of-way on the road side. (See Figure 2)	1.1 times the total height from both property lines
Dwelling *	Diameter plus applicable building setback for owner ½ mile for non-owner dwelling	1,000' feet for participant *** ½ mile for non-participant ***	1.1 times the total height plus applicable building setback
Road Rights-of-Way**	Diameter plus applicable building setback	Diameter plus applicable building setback	1.1 times the total height plus applicable building setback
Other Rights-of-Way	Diameter plus applicable building setback	Diameter plus applicable building setback	1.1 times the total height plus applicable building setback
Public Conservation Lands including Wildlife Management Areas and State Recreation Areas	Applicable building setback	Diameter plus applicable building setback	1.1 times the total height plus applicable building setback
Wetlands, USFW Types III, IV, and V	NA	600'	1.1 times the total height
Other structures not on the applicant's project site	NA	Diameter	1.1 times the total height
Bluffs of over 15 feet		1,320'	

* The setback for dwelling units shall be reciprocal in that no dwelling unit shall be constructed within the same distance required for a commercial/utility Wind Energy Conversion System.

** The setback shall be measured from any future Rights-of-Way if a planned change or expanded right-of-way is known.

*** Participants or non-participants may waive or reduce the required setback by any amount.

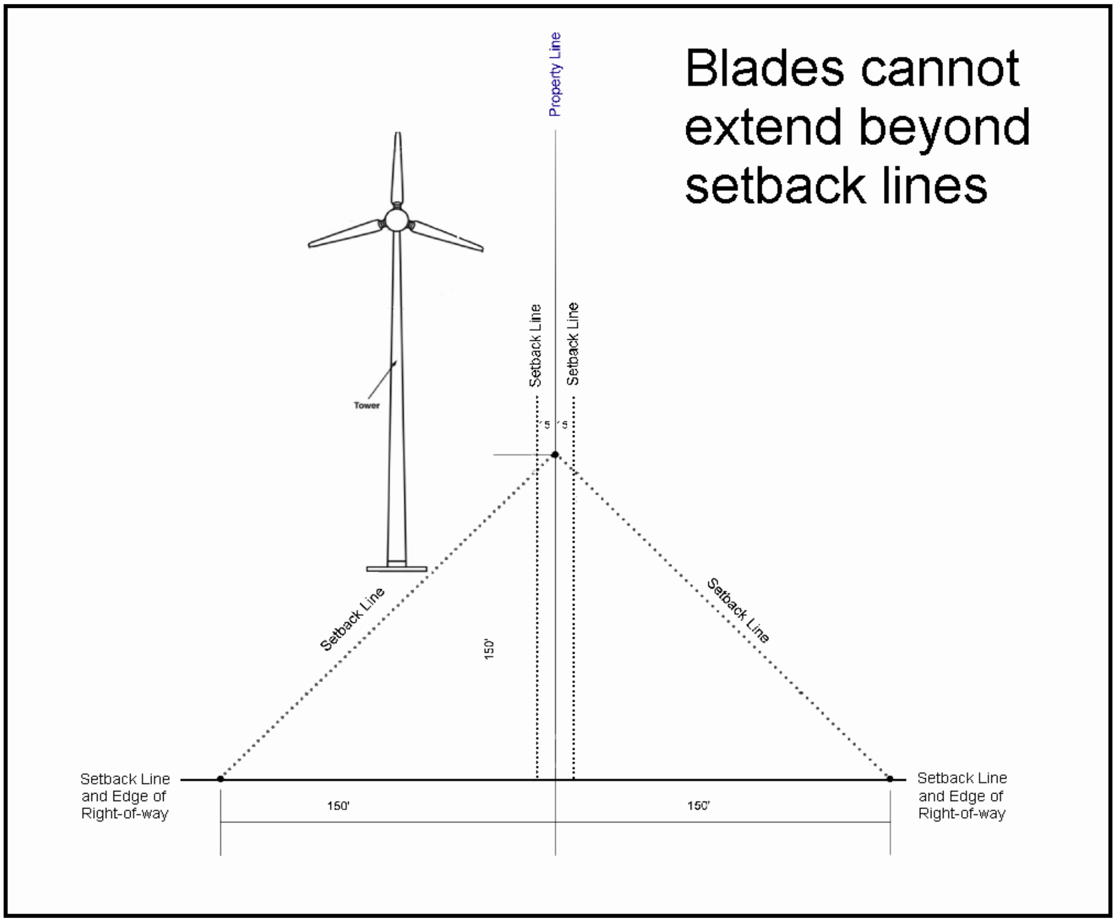


Figure 2

Special Safety and Design Standards

All towers shall adhere to the following safety and design standards:

1. The Commercial/Utility WECS owner(s) and/or operator(s) shall conduct an analysis on potential shadow flicker at any occupied building with direct line-of-sight to the WECS. The analysis shall identify the locations of shadow flicker that may be caused by the project and the expected durations of the flicker at these locations from sun-rise to sun-set over the course of a year. The analysis shall identify situations where shadow flicker may affect the occupants of the buildings for more than 30 hours per year, and describe measures that shall be taken to eliminate or mitigate the problems. Shadow Flicker on a building shall not exceed thirty (30) hours per year.

2. Clearance of rotor blades or airfoils must maintain a minimum of 12 feet of clearance between their lowest point and the ground.

3. All Commercial/Utility WECS shall have a sign or signs posted on the tower, transformer and substation, warning of high voltage. Other signs shall be posted on the turbine with emergency contact information.

4. All wind turbines, which are a part of a commercial/utility WECS, shall be installed with a tubular, monopole type tower.

5. Consideration shall be given to painted aviation warnings on all towers less than 200 feet.

6. Color and finish:
All wind turbines and towers that are part of a commercial/utility WECS shall be white, grey, or another non-obtrusive color. Blade finishes shall be matte or non-reflective.

8. Lighting:
Lighting, including lighting intensity and frequency of strobe, shall adhere to but not exceed requirements established by the FAA permits and regulations. Red strobe lights shall be used during nighttime illumination to reduce impacts on neighboring uses and migratory birds. Red pulsating incandescent lights should be avoided.

9. Other signage:
All other signage shall comply with the sign regulations found in these regulations.

10. Feeder Lines:
All communications and feeder lines installed as part of a WECS shall be buried, where practicable. Feeder lines installed as part of a WECS shall not be considered an essential service.

11. Waste Disposal:
Solid and Hazardous wastes, including but not limited to crates, packaging materials, damaged or worn parts, as well as used oils and lubricants, shall be removed from the site promptly and disposed of in accordance with all applicable local, state and federal rules and regulations.

12. Discontinuation and Decommissioning;
A WECS shall be considered a discontinued use after one year without energy production, unless a plan is developed and submitted to the Zoning Administrator outlining the steps and schedule for returning the WECS to service. All WECS and accessory facilities shall be removed to four (4) feet below ground level within 180 days of the discontinuation of use. This period may be extended by the Zoning Administrator following a written request by an agent of the owner of the WECS.

Each Commercial/Utility WECS shall have a Decommissioning plan outlining the anticipated means and cost of removing WECS at the end of their serviceable life or upon being discontinued use. The cost estimates shall be made by a competent party; such as a Professional Engineer, a contractor capable of decommissioning or a person with suitable expertise or experience with decommissioning. The plan shall also identify the financial resources that will be available to pay for decommissioning and removal of the WECS and accessory facilities.

13. Noise:
No Commercial/Utility WECS shall exceed 50 dBA at the nearest structure occupied by humans. Exception: a Commercial/Utility WECS may exceed 50 dBA during periods of severe weather as defined by the US Weather Service.

14. Interference:

The applicant shall minimize or mitigate interference with electromagnetic communications, such as radio, telephone, microwaves, or television signals caused by any WECS. The applicant shall notify all communication tower operators within five miles of the proposed WECS location upon application to the county for permits.

15. Roads:

Applicants shall:

a. Identify all county, municipal or township roads to be used for the purpose of transporting WECS, substation parts, cement, and/or equipment for construction, operation or maintenance of the WECS and obtain applicable weight and size permits from the impacted jurisdictions prior to transportation and construction.

b. Conduct a pre-construction survey, in coordination with the appropriate jurisdictions to determine existing road conditions. The survey shall include photographs to document the condition of the public facility.

c. Be responsible for restoring the road(s) and bridges to preconstruction conditions.

d. Conduct a post-construction survey, in coordination with the appropriate jurisdictions to determine whether road conditions have been restored to pre-construction conditions.

16. Drainage System:

The applicant shall be responsible for immediate repair of damage to public drainage systems stemming from construction, operation or maintenance of the WECS.

17. Public Inquiries & Complaints:

1. Should an aggrieved property owner allege that the WECS is not in compliance with the noise requirements of this Regulation, the procedure shall be as follows:

a) Noise Complaint
   - i) Notify the Cherry County Zoning Administrator in writing regarding concerns about noise level.
   - ii) If the complaint is deemed sufficient by the Zoning Administrator to warrant an investigation, the Zoning Administrator will request the aggrieved property owner deposit funds in an amount sufficient to pay for a noise level test conducted by a certified acoustic technician to determine compliance with the requirements of these regulations.
   - iii) If the test indicates that the noise level is within Regulation noise requirements, the Zoning Administrator will use the deposit to pay for the test.
   - iv) If the WECS Owner(s) is in violation of the Regulation noise requirements, the Owner(s) shall reimburse the Zoning Administrator for the noise level test and take immediate action to bring the WECS into compliance which may include ceasing operation of the WECS until Regulation violations are corrected. The Zoning Administrator will refund the deposit to the aggrieved property owner.

Exhibit B - Legal Description of Affected Property

A copy of relevant Memoranda of Agreement will be on file at the Cherry County Zoning Administrator's office. Listed below are the legal descriptions of Project property.

Taylor G. and Kerri Adamson

Southwest Quarter of the Southwest Quarter of Section 20, Township 34 North, Range 31, West of the 6th Principal Meridian, Cherry County, Nebraska

South Half of the Northwest Quarter and the Southwest Quarter of Section 28, Township 34 North, Range 31, West of the 6th Principal Meridian, Cherry County, Nebraska

South Half of Section 30, Township 34 North, Range 31, West of the 6th Principal Meridian, Cherry County, Nebraska

Section 31, Township 34 North, Range 31, West of the 6th Principal Meridian, Cherry County, Nebraska

Broken Box Company

NE1/4SE1/4, SW1/4NE1/4, NW1/4SE1/4, and S1/2S1/2 of Section 19, Township 34 North, Range 31 West of the 6th P.M., Cherry County, Nebraska

N1/2 of Section 30, Township 34 North, Range 31 West of the 6th P.M., Cherry County, Nebraska

A tract of land located in part of the SE1/4SE1/4 of Section 29, Township 35 North, Range 30, West of the 6th P.M., Cherry County, Nebraska, more particularly described as follows: Commencing at the Corner Common to Sections 28, 29, 32 & 33, T35N, R30W, thence N07°03'38" West 651.62 feet to the true point of beginning; said point also being in the Westerly Right-of-way fence of a County road; thence S89°59'44" West 319.86 feet; thence N01°41'13" West 199.37 feet; thence N00°21'55" East 154.38 feet; thence S89°59'14" East 112.12 feet; thence S81°01'12" East 233.32 feet to the Westerly Right-of-way line of an existing County road; thence S06°14'40" West on said Westerly Right-of-way line 166.20 feet; thence S00°05'30" East on said Westerly Right-of-way line 151.47 feet to the point of beginning.

Mark & Janelle Johnson

TOWNSHIP 34 NORTH, RANGE 32 WEST OF THE 5TH P.M., CHERRY COUNTY, NEBRASKA

SECTION 11: E1/2SE1/4, E1/2NE1/4

SECTION 12: SW1/4, W1/2SE1/4, NW1/4, W1/2NE1/4 and that part of the E1/2E1/2 described as follows: Commencing at the Northeast corner of Section 12, thence Westerly along the section line of a distance of 478.2 feet to the point of beginning; thence South Southwesterly along an existing fence to a point on the South line of the Section 724.1 feet West of the Southeast corner of the section, thence Westerly along the section line to the Southwest corner of the Southeast Quarter of the Southeast Quarter of Section 12, thence northerly to the Northwest corner of the Northeast Quarter of the Northeast Quarter of Section 12, thence Easterly along the North line of Section 12 to the point of beginning, said tract of land containing 87.13 acres more or less;

TOWNSHIP 34 NORTH, RANGE 32 WEST OF THE 5TH P.M., CHERRY COUNTY, NEBRASKA

SECTION 22: E1/2SE1/4, SE1/4NE1/4

SECTION 23: SW1/4, S1/2NW1/4

SECTION 25: A tract of land located in part of Section 25, Township 34 North, Range 32 West of the 6th p.m., Cherry County, Nebraska, being more particularly described as follows: commencing at the corner common to Sections 23, 24, 25 & 26, Township 34 North, Range 32 West; thence S00°05'06"W on the West line of Section 25 1616.72 feet to the true point of beginning; thence S28°02'32"E on an existing fence line 416.38 feet; thence S12°23'00"E on said existing fence line 322.96 feet; thence S00°00'08"E on said existing fence line 385.76 feet; thence S13°14'42"W on said existing fence line 282.33 feet; thence S22°44'24"W on said existing fence line 383.38 feet; thence continuing S22°44'24"W 141.89 feet to the West line of Section 25; thence N00°05'06"E on said West line of Section 25 1827.97 feet to the point of beginning.

Krajeski & Johnson, Inc.

North Half of the North Half of Section 25,Township 34 North, Range 32, West of the 6th Principal Meridian, Cherry County, Nebraska

Northeast Quarter and the North Half of the Southeast Quarter of Section 26, Township 34 North, Range 32, West of the 6th Principal Meridian, Cherry County, Nebraska

East Half of Section 23, Township 34 North, Range 32, West of the 6th Principal Meridian, Cherry County, Nebraska

Section 24, Township 34 North, Range 32, West of the 6th Principal Meridian, Cherry County, Nebraska

Section 13, Township 34 North, Range 32, West of the 6th Principal Meridian, Cherry County, Nebraska

East Half of the Northeast Quarter and the Southeast Quarter and part of the Southwest Quarter of the Northeast Quarter of Section 14, South of Highway 20, Township 34 North, Range 32, West of the 6th Principal Meridian, Cherry County, Nebraska

Part of the South Half of the Southwest Quarter of Section 18, Township 34 North, Range 31, West of the 6th Principal Meridian, Cherry County, Nebraska

Northwest Quarter of the Northeast Quarter and the Northwest Quarter and the North Half of the Southwest Quarter of Section 19, Township 34 North, Range 31, West of the 6th Principal Meridian, Cherry County, Nebraska

The Board of Educational Lands & Funds of the State of Nebraska

Township 34 North, Range 31 West of the 5th P.M. Cherry County, Nebraska Section 16: ALL

Rocking J Taylor Company

East Half of Section 6, Township 33 North, Range 31, West of the 6th Principal Meridian, Cherry County, Nebraska

South Half of the Northeast Quarter and the Northwest Quarter and the South Half of Section 29, Township 34 North, Range 31, West of the 6th Principal Meridian, Cherry County, Nebraska

North Half and the Southwest Quarter and the West Half of the Southeast Quarter of Section 32, Township 34 North, Range 31, West of the 6th Principal Meridian, Cherry County, Nebraska

South Half of the North Half and the South Half of Section 25, Township 34 North, Range 32, West of the 6th Principal Meridian, Cherry County, Nebraska EXCEPT 7.46 acres conveyed to Mark and Janelle Johnson in that part of the Southwest Quarter of the Northwest Quarter

(SW1/4NW1/4) and part of the Northwest Quarter of the Southwest Quarter (NW1/4SW1/4) of Section 25, Township 34 N, Range 32 West of the 6th P.M., Cherry County, Nebraska

West Half and the South Half of the Southeast Quarter of Section 26, Township 34 North, Range 32, West of the 6th Principal Meridian, Cherry County, Nebraska

North Half of the Northeast Quarter of Section 27, Township 34 North, Range 32, West of the 6th Principal Meridian, Cherry County, Nebraska

Southeast Quarter of the Southeast Quarter of Section 34, Township 34 North, Range 32, West of the 6th Principal Meridian, Cherry County, Nebraska

Section 35, Township 34 North, Range 32, West of the 6th Principal Meridian, Cherry County, Nebraska

Section 36, Township 34 North, Range 32, West of the 6th Principal Meridian, Cherry County, Nebraska

Rothleutner Family Limited Partnership

TOWNSHIP 34 NORTH, RANGE 31 WEST OF THE 6TH P.M., CHERRY COUNTY, NEBRASKA

SECTION 17: SE1/4; All that part of the NE1/4 lying South of U.S. Highway 20; All that part of the W1/2 lying South of U.S. Highway 20.

SECTION 18: All that part of the SE1/4 lying south of U.S. Highway 20.

SECTION 19: SE1/4 NE1/4; NE1/4 NE1/4

SECTION 20: N1/2; N1/2 S1/2; SE1/4 SW1/4; S1/2 SE1/4 SECTION 21: N1/2, SW1/4

SECTION 28: N1/2 NW1/4 SECTION 29: N1/2 NE1/4

Exhibit C - Affected Area

Exhibit D - Site Plan

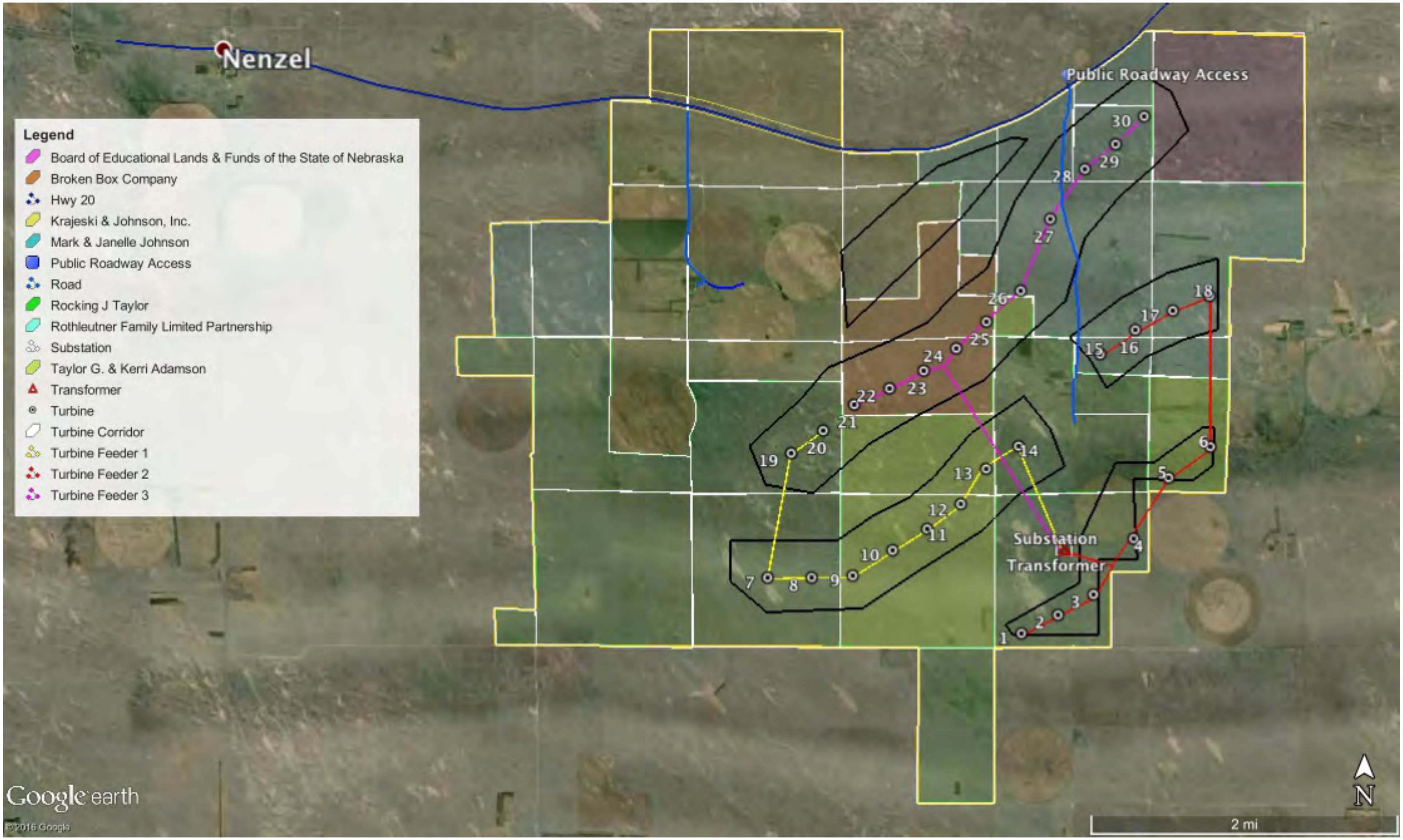


Exhibit E - Engineering Certification

DNV·GL

Memo to:
Joel Mundorf
Zoning Administrator
365 N Main St
Valentine, NE 69201

From: Garrad Hassan America, Inc. (hereafter, "DNV GL")

Date: 02 June 2016

Prep. by: Aren Nercessian, Leslie Breadner

Check. by: Daniel Schoborg, Bruce Moreira

Certification of Kilgore Wind Project Turbine Layout Setbacks

Dear Mr. Mundorf,

DNV GL is submitting a wind turbine layout as part of the Kilgore Wind Energy Project (the "Project") on behalf of BSH Kilgore, LLC (the "BSH Kilgore"). The Project is located in Cherry County, Nebraska, and will consist of 30 wind turbine generators with a tip height of 426 feet. The coordinates of the turbines are provided in Table 1.

DNV GL has performed a review of applicable setbacks, including location of property lines, dwellings, certain rights of way, and wetlands, with information provided by BSH Kilgore. DNV GL subsequently designed a layout comprising 30 turbines in accordance with applicable zoning regulations.

DNV GL certifies that the current turbine positions are in compliance with the setbacks described above, corresponding to those listed in Section 613.03 of the Cherry County Zoning Regulations [1] , considering the following assumptions and caveats:

1. In determining the "applicable building setback", the more conservative minimum setback requirements of *Niobrara River Corridor Agricultural District* were applied throughout.
2. Parcel boundaries were provided by BSH Kilgore and used to generate a project boundary.
3. It is assumed that all landowners within the provided project boundary are participants and have signed waivers regarding the property boundary setbacks applicable to their parcels.
4. It is assumed that no setbacks apply to local electrical distribution lines below 69kV.
5. A high level review of public conservation lands such as national forests and wildlife refuges was undertaken and no such lands were identified near the project boundary.
6. DNV GL reviewed the classification of wetlands provided by BSH Kilgore based on known standards and applied the corresponding setbacks set forth in [1].

Figure 1 shows a county map including the proposed Project.

Figure 2 shows the project boundary including turbine locations and applicable setbacks identified as described above.

Table 1: Wind turbine coordinates

Turbine ID	UTM Coordinates	
	Easting [m]	Northing [m]
1	336601	4748672
2	336988	4748855
3	337364	4749059
4	337798	4749630
5	338179	4750255
6	338622	4750568
7	333961	4749315
8	334421	4749305
9	334852	4749315
10	335275	4749569
11	335641	4749783
12	335999	4750034
13	336273	4750393
14	336617	4750621
15	337493	4751559
16	337867	4751803
17	338263	4751994
18	338652	4752139
19	334238	4750604
20	334578	4750832
21	334909	4751095
22	335282	4751254
23	335644	4751430
24	335990	4751654
25	336312	4751925
26	336678	4752238
27	337005	4752977
28	337379	4753488
29	337707	4753740
30	338012	4754022

Coordinates in UTM zone 14, NAD83 Datum

If you have any questions or need additional information, I can be reached at michael.cookson@dnvgl.com, or +1 510-891-0446.

Best Regards,

Michael Cookson

Senior Project Manager and Team Leader, Development and Engineering Services

REFERENCES

[1] Proposed Amendments to the Wind Energy Section of the Cherry County Zoning Regulations – Section 613 Wind Energy Conversion Facilities.

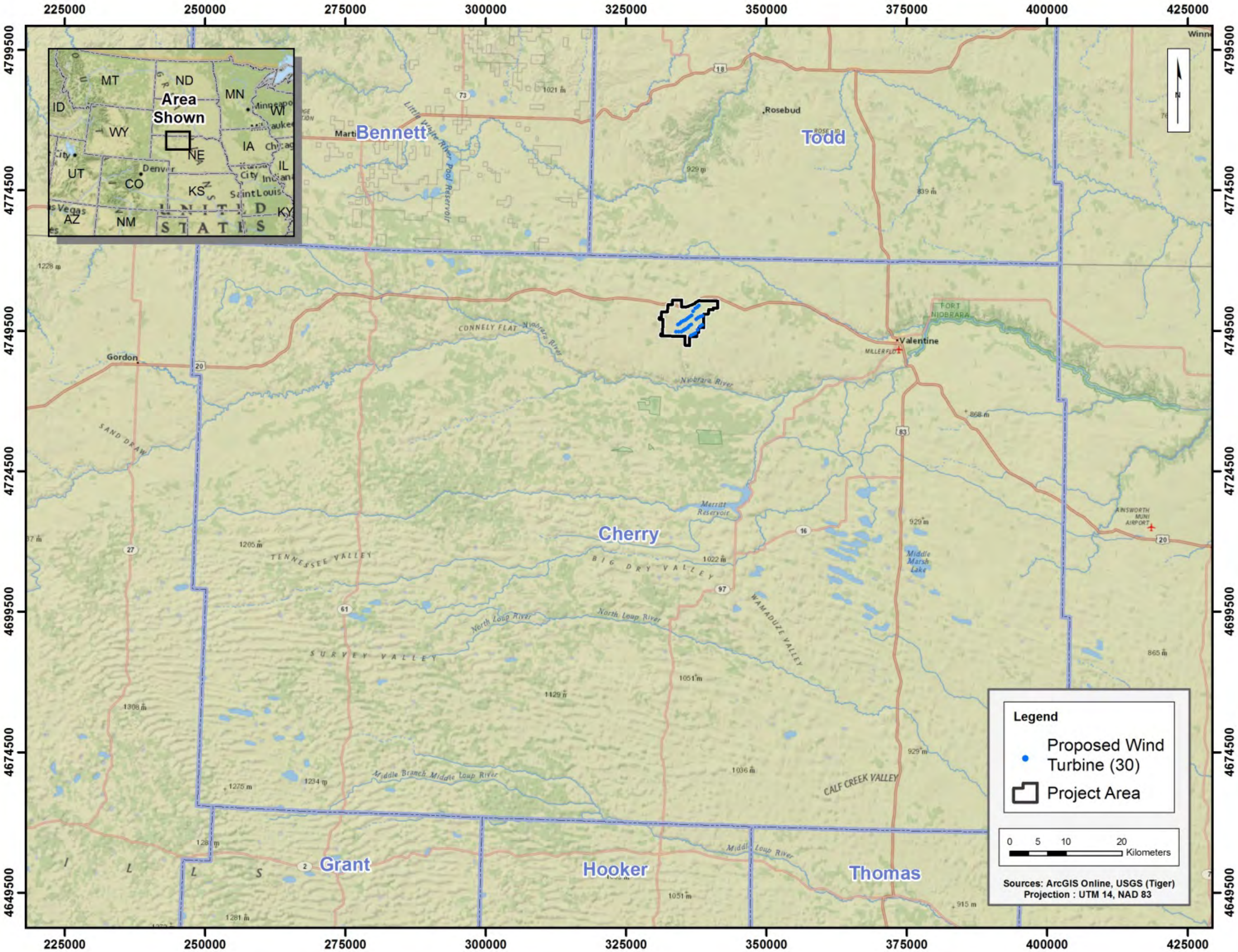


Figure 1 Project area and turbine layout (County)

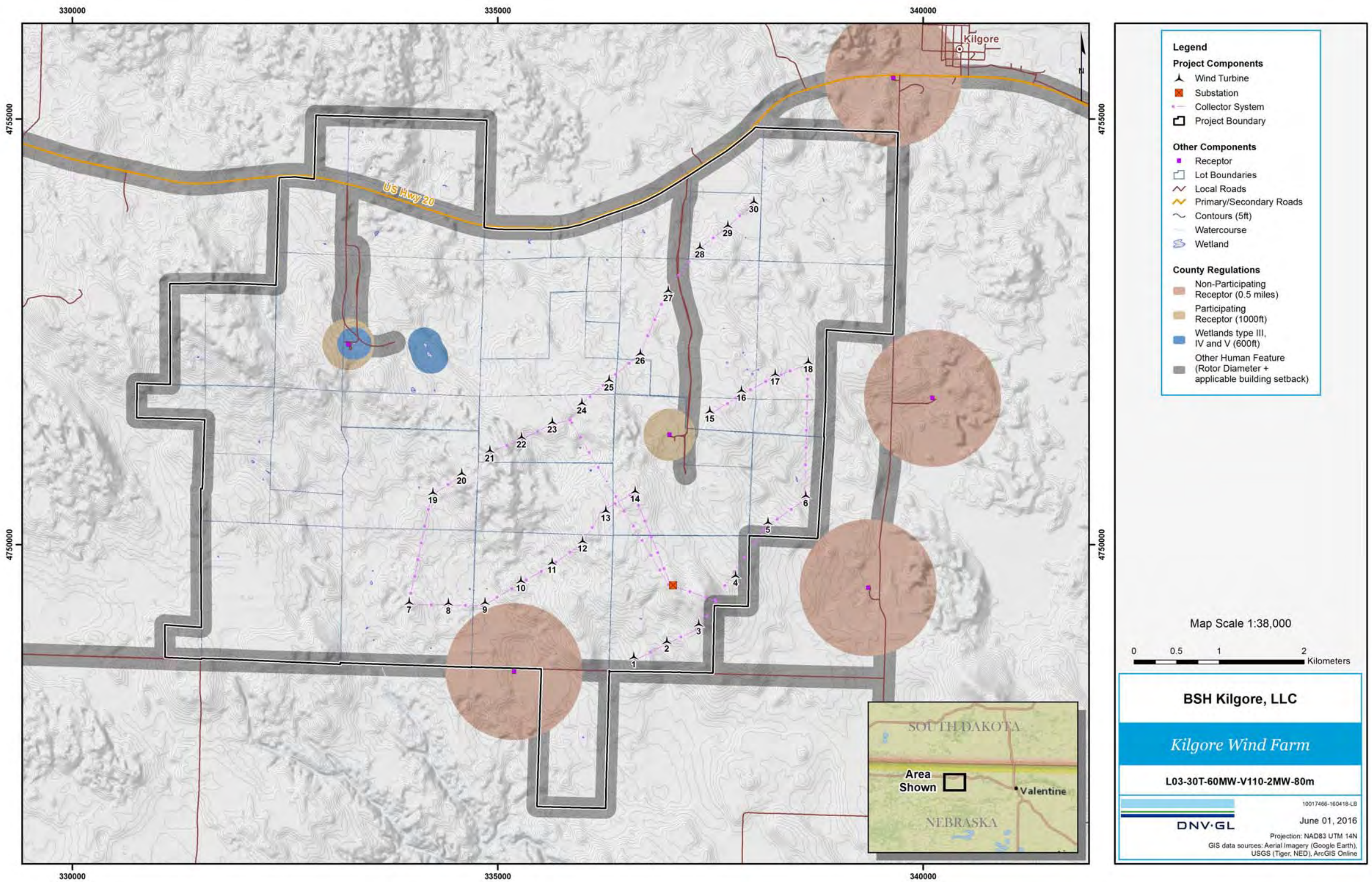


Figure 2 Turbine layout and applicable setbacks

Exhibit F - Topographical Map

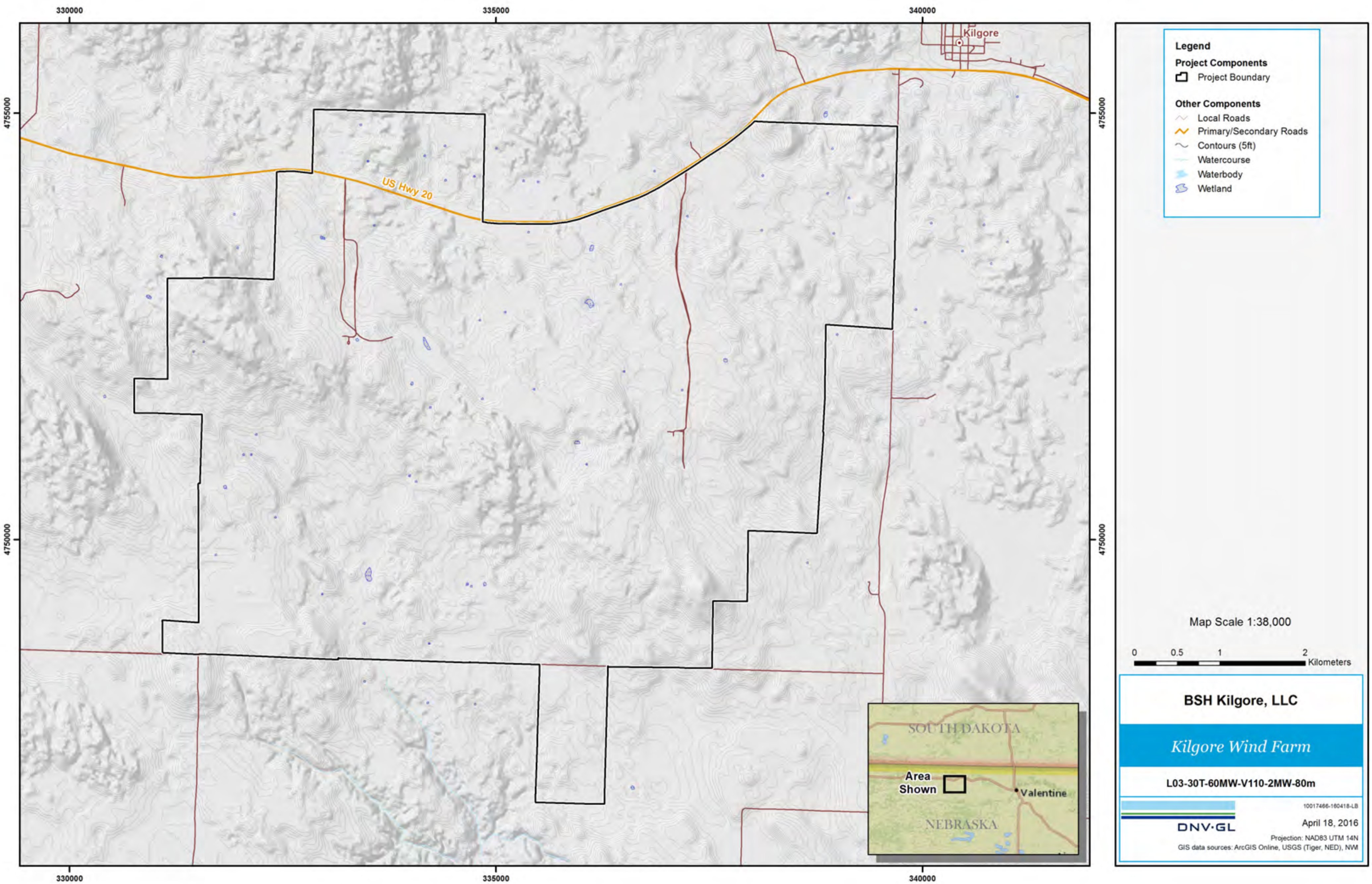


Exhibit G - Proposed Turbine Locations

Turbine	Latitude	Longitude
1	42.873170°	-101.000550°
2	42.874900°	-100.995867°
3	42.876816°	-100.991325°
4	42.882047°	-100.986180°
5	42.887753°	-100.981697°
6	42.890664°	-100.976365°
7	42.878388°	-101.033042°
8	42.878398°	-101.027410°
9	42.878581°	-101.022139°
10	42.880958°	-101.017037°
11	42.882963°	-101.012621°
12	42.885299°	-101.008313°
13	42.888589°	-101.005065°
14	42.890714°	-101.000921°
15	42.899343°	-100.990470°
16	42.901618°	-100.985963°
17	42.903421°	-100.981170°
18	42.904809°	-100.976450°
19	42.890048°	-101.030033°
20	42.892174°	-101.025939°
21	42.894613°	-101.021965°
22	42.896124°	-101.017446°
23	42.897786°	-101.013067°
24	42.899876°	-101.008897°
25	42.902385°	-101.005034°
26	42.905280°	-101.000645°
27	42.912001°	-100.996856°
28	42.916679°	-100.992425°
29	42.919017°	-100.988482°
30	42.921620°	-100.984829°

Exhibit H - Existing and Proposed Buildings and Structures

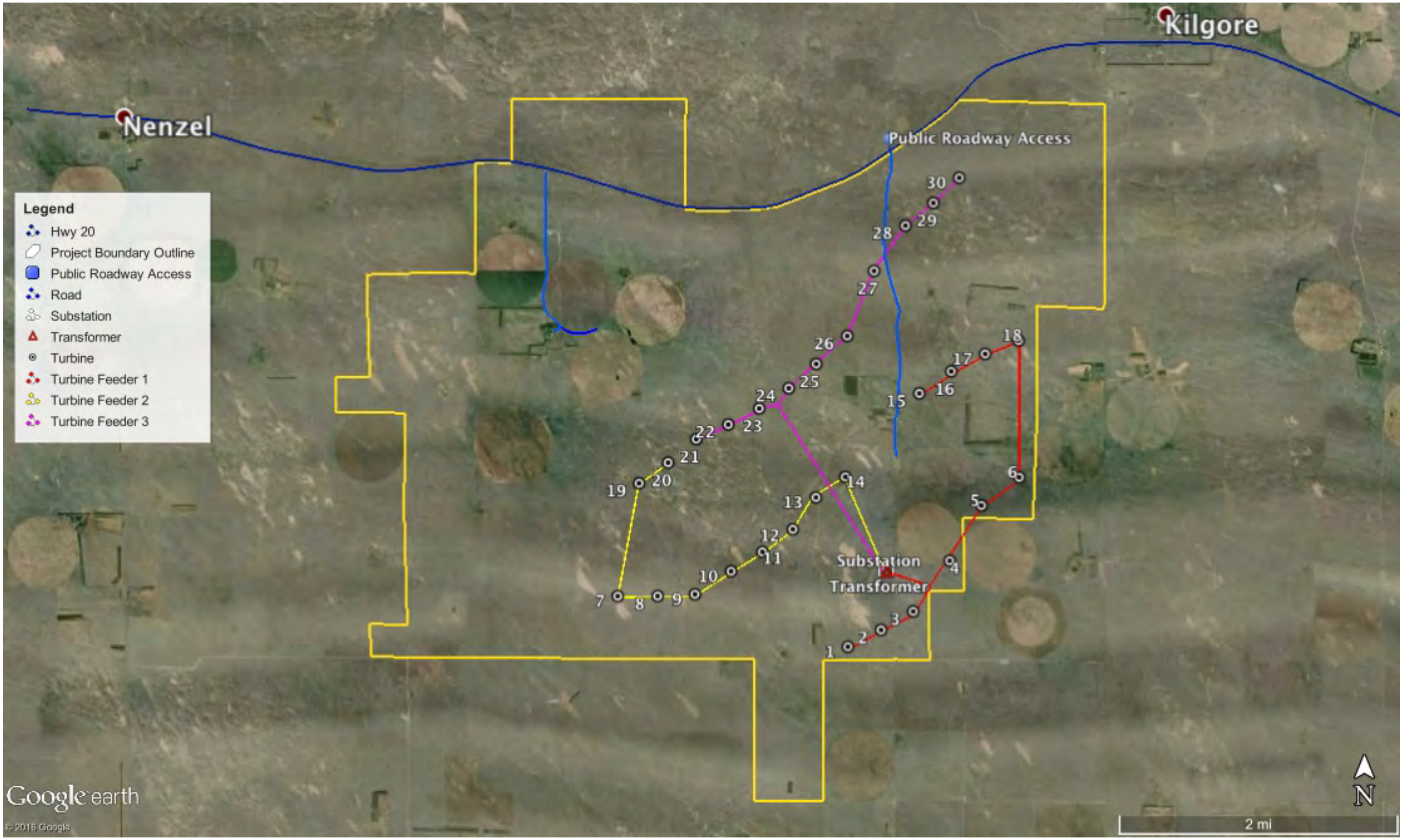


Exhibit I - Public Roadway Access

Exhibit J - Structures Within Four Mile Boundary

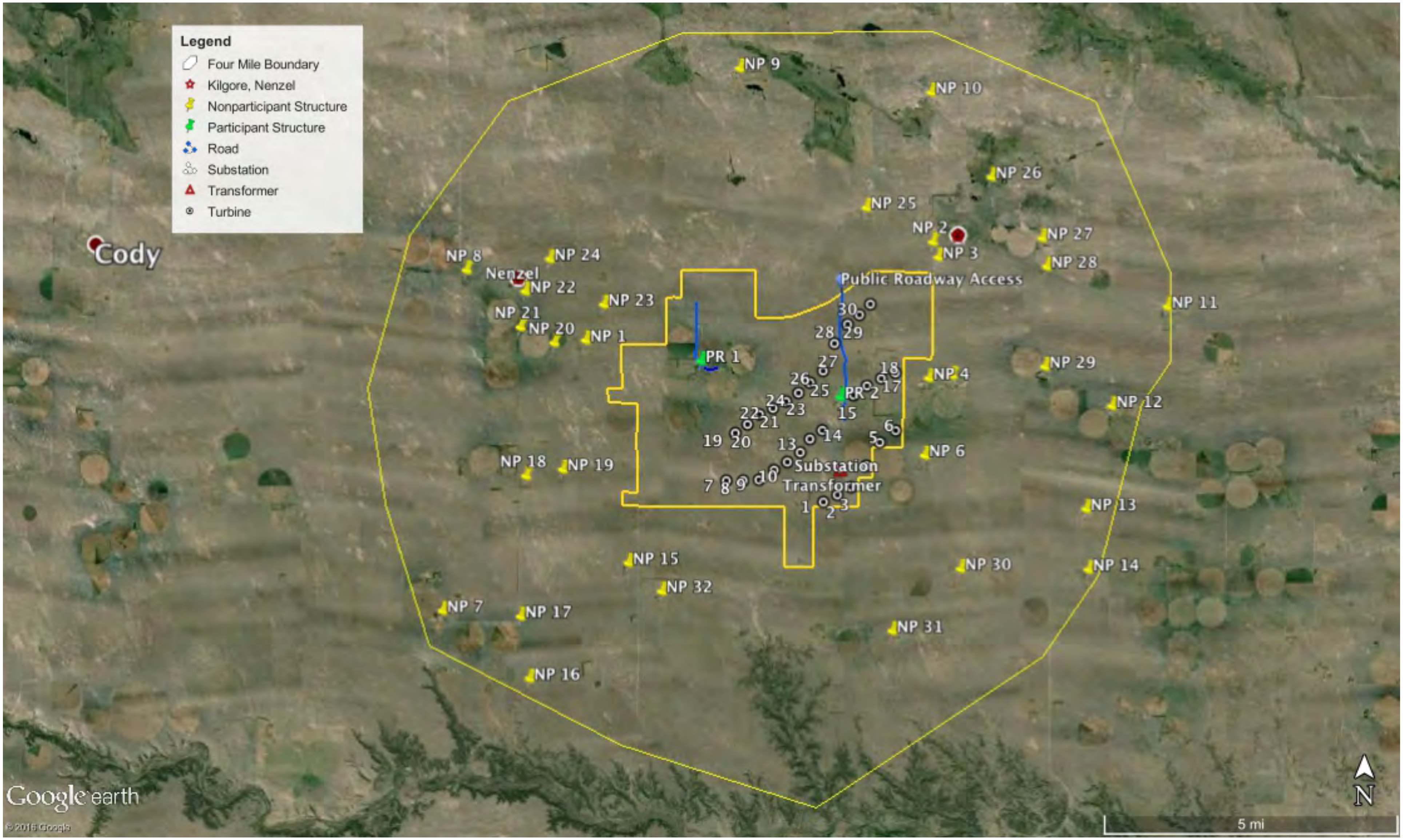


Exhibit K - Property Line Setback

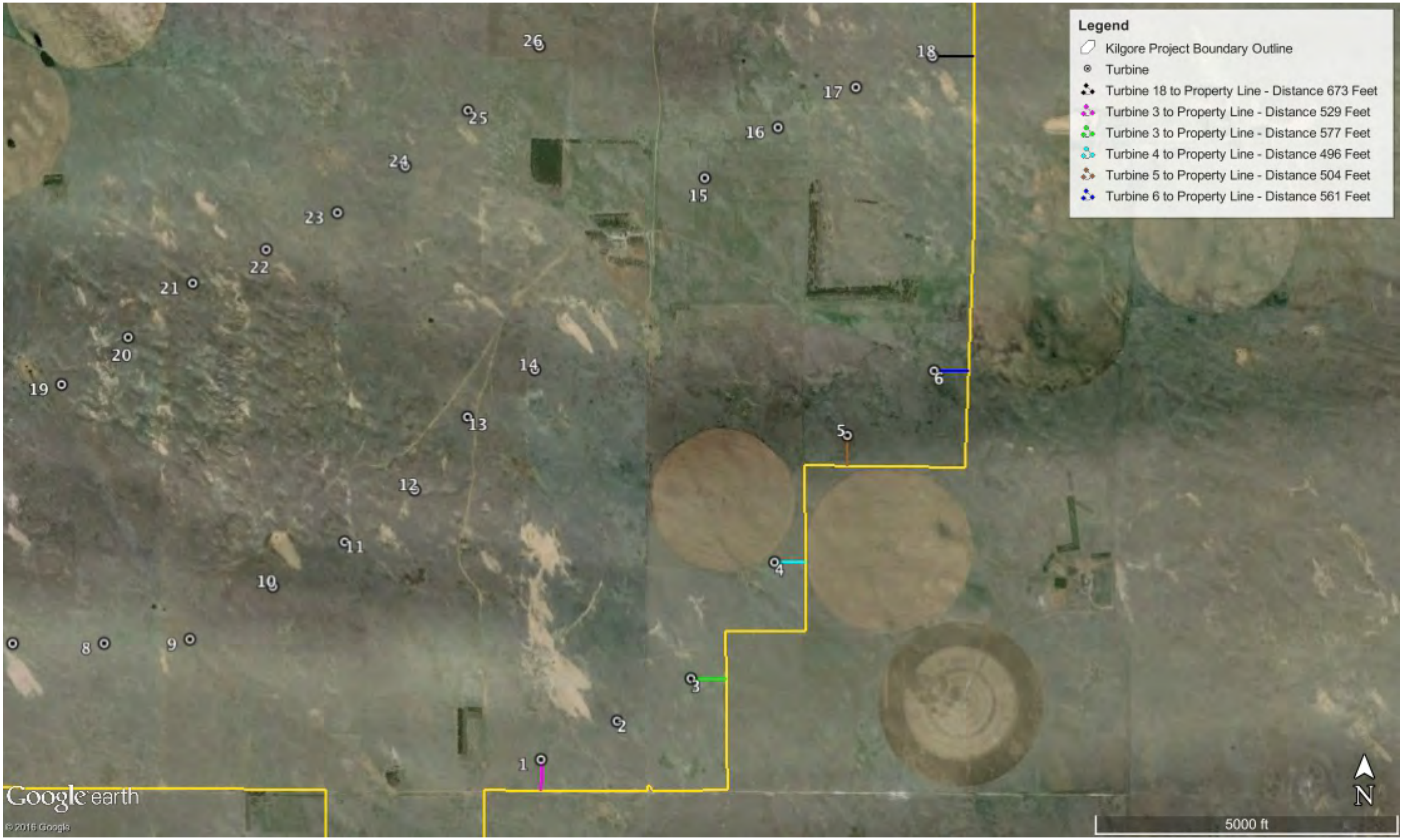
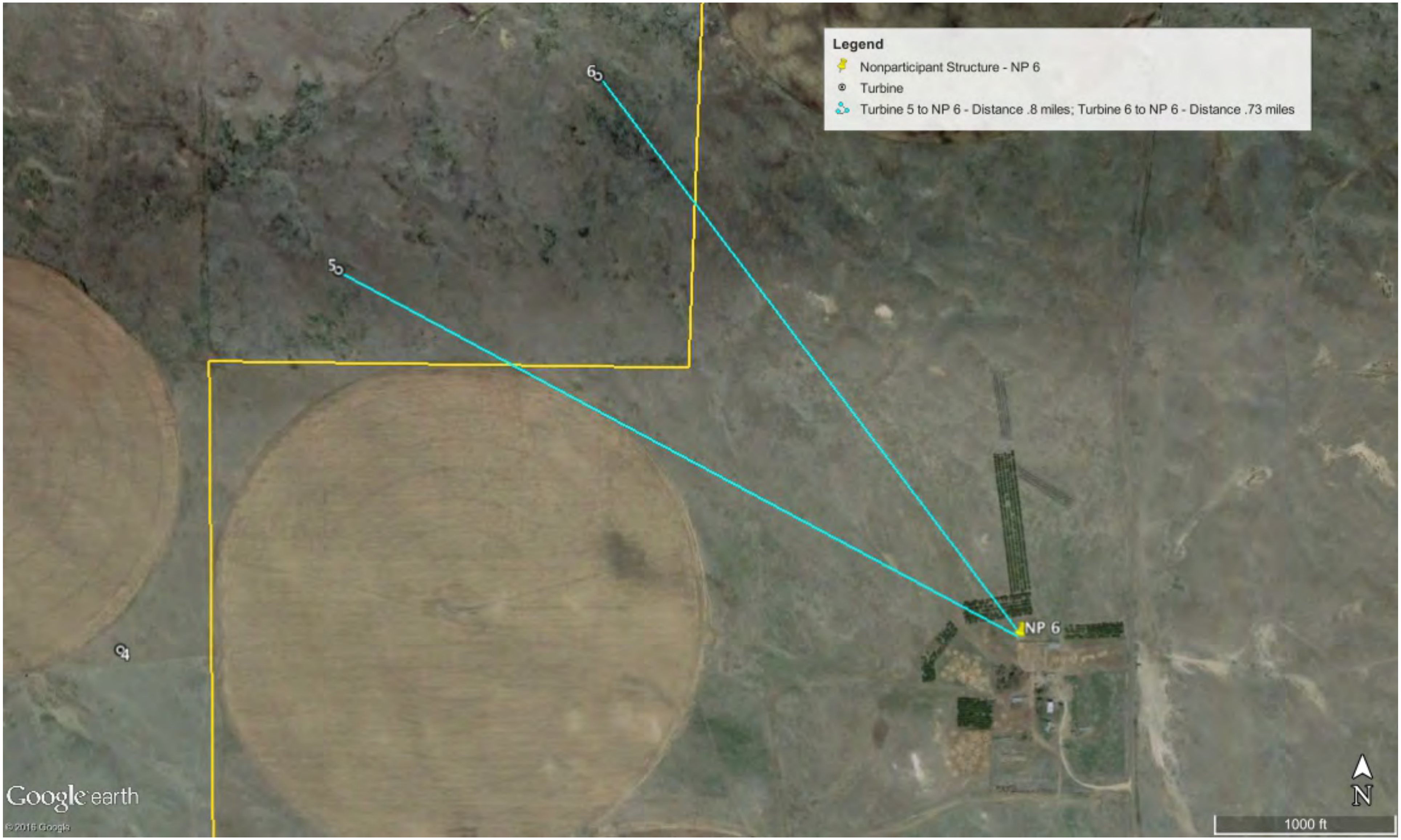


Exhibit L - Dwelling Setback


Legend
Nonparticipant Structure - NP 6
Turbine
Turbine 5 to NP 6 - Distance .8 miles; Turbine 6 to NP 6 - Distance .73 miles
6
5
4
NP 6
Google earth
1000 ft
N


Legend
Participant Structure - PR 2
Turbine
Turbine 15 to PR 2 - Distance 1400 feet
15
PR 2
Google earth
800 ft
N

Exhibit M - Right of Way Setback


Legend
Right of Way Setback - Turbine 27 to Road - Distance 470 Feet
Turbine
27
300 ft
N
Google earth

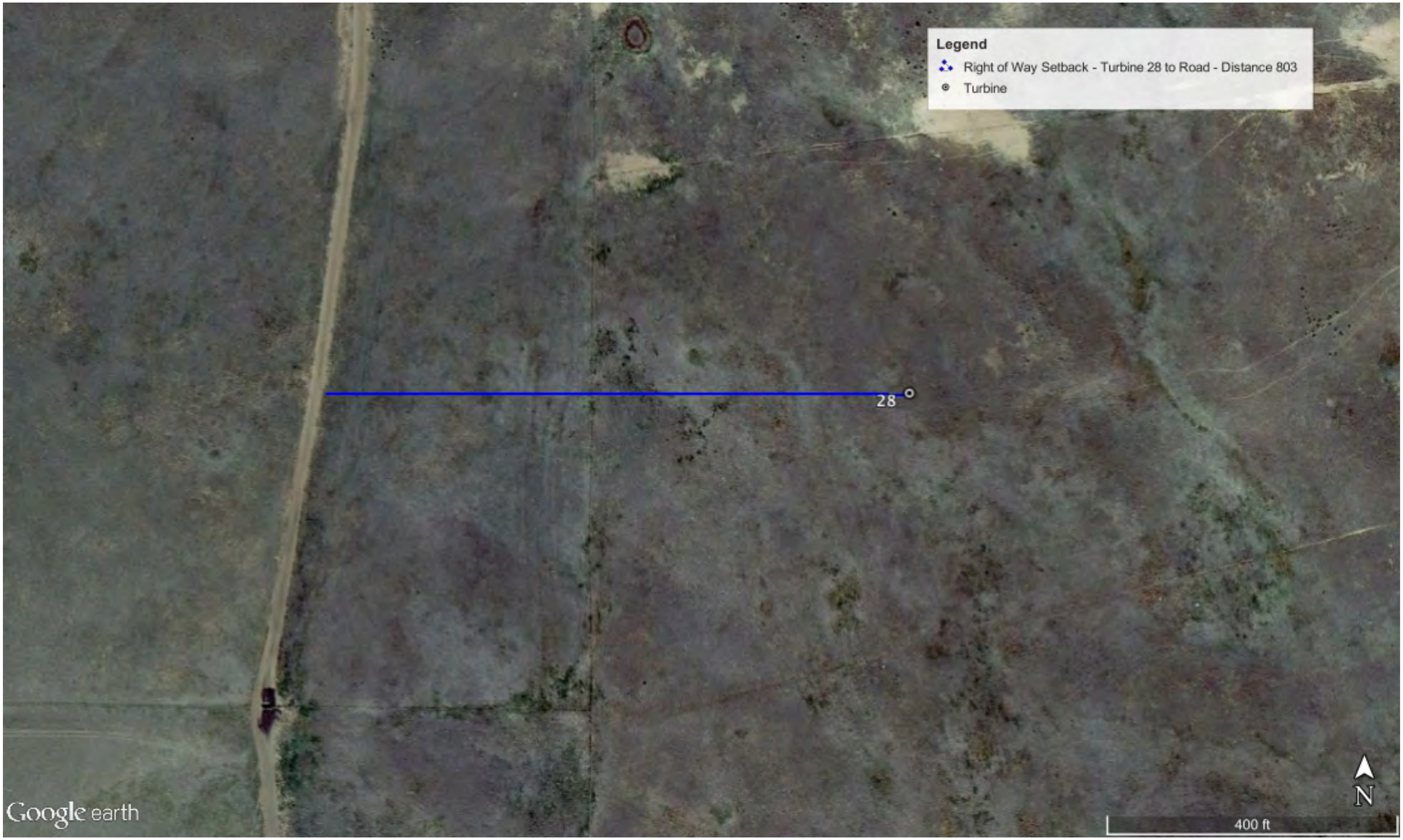

Legend
Right of Way Setback - Turbine 28 to Road - Distance 803
Turbine
28
N
400 ft
Google earth

Exhibit N - Scenic Byway Setback

Exhibit O - Wetlands Classifications and Map

Kilgore 2015 Wetlands					
ID	**NWI Cowardin**	**Cowardin Field Classification**	**Circular 39 Classification**	**Comments**	**Opinion of Jurisdictional Status**
1	PEMC	PEMA	TYPE 1	A depression in a pasture.	Likely No - this wetland is isolated within a pasture and is surrounded by uplands on all sides; therefore, no significant nexus to a TNW.
2	PEMC	PEMA	TYPE 1	A depression in a pasture.	Likely No - this wetland is isolated within a pasture and is surrounded by uplands on all sides; therefore, no significant nexus to a TNW.
3	PEMC	PEMF	TYPE 1	A flooded emergent wetland in cattle tank overflow area in a pasture.	Likely No - this wetland is isolated within a pasture and is surrounded by uplands on all sides; therefore, no significant nexus to a TNW.
4	PEMC	PEMA	TYPE 1	An emergent wetland in a pasture land.	Likely No - this wetland is isolated within a pasture and is surrounded by uplands on all sides; therefore, no significant nexus to a TNW.
5	PEMC	PEMC	TYPE 1	An emergent wetland located in a pasture.	Likely No - the wetland area is isolated and there is no significant nexus to a TNW.
6	PEMC	PEMC	TYPE 1	A depression located in a pasture.	Likely No - the depression is isolated in a pasture and there is no significant nexus to a TNW.
7	PEMC	PEMC	TYPE 1	An emergent wetland located in a depression in a pasture.	Likely No - this wetland is isolated within a pasture and is surrounded by uplands on all sides; therefore, no significant nexus to a TNW.
8	PEMC	PEMF	TYPE 1	A large depression located in a pasture.	Likely No - the wetland area is isolated and there is no significant nexus to a TNW.
9	PEMF	PEMFh	TYPE 5	A pond located adjacent to residence.	Likely No - the pond is isolated and no blue line is depicted on the topographic map.
10	PEMC	PEMC	TYPE 1	An emergent wetland in a cattle tank overflow area.	Likely No - the wetland area is isolated and there is no significant nexus to a TNW.
11	PEMC	Not found		Upland vegetation found where NWI wetland is mapped.	NA
12	PEMC	PEMC	TYPE 1	An emergent wetland in large depression in a pasture.	Likely No - this wetland is isolated within a pasture and is surrounded by uplands on all sides; therefore, no significant nexus to a TNW.
13	PEMA	PEMF	TYPE 1	Wetland in overflow area from cattle tank located in depression.	Likely No - the wetland is located in a pasture and there is no significant nexus to a TNW.
14	NA	PEMC	TYPE 1	A depression located downhill from wetland 13, overflow area for 13.	Likely No - the wetland is located in a pasture and there is no significant nexus to a TNW.
15	PEMC	PEMC	TYPE 1	An emergent wetland in the middle of cultivated cropland.	Likely No- the wetland is isolated and located in cropland, no significant nexus to a TNW.
16	PEMA	PEMC	TYPE 1	An emergent wetland located in depression in a pasture.	Likely No - the depression is isolated in a pasture and there is no significant nexus to a TNW.
17	NA	PEMA	TYPE 1	An emergent wetland located in a pasture.	Likely No - this wetland is isolated within a pasture and is surrounded by uplands on all sides; therefore, no significant nexus to a TNW.

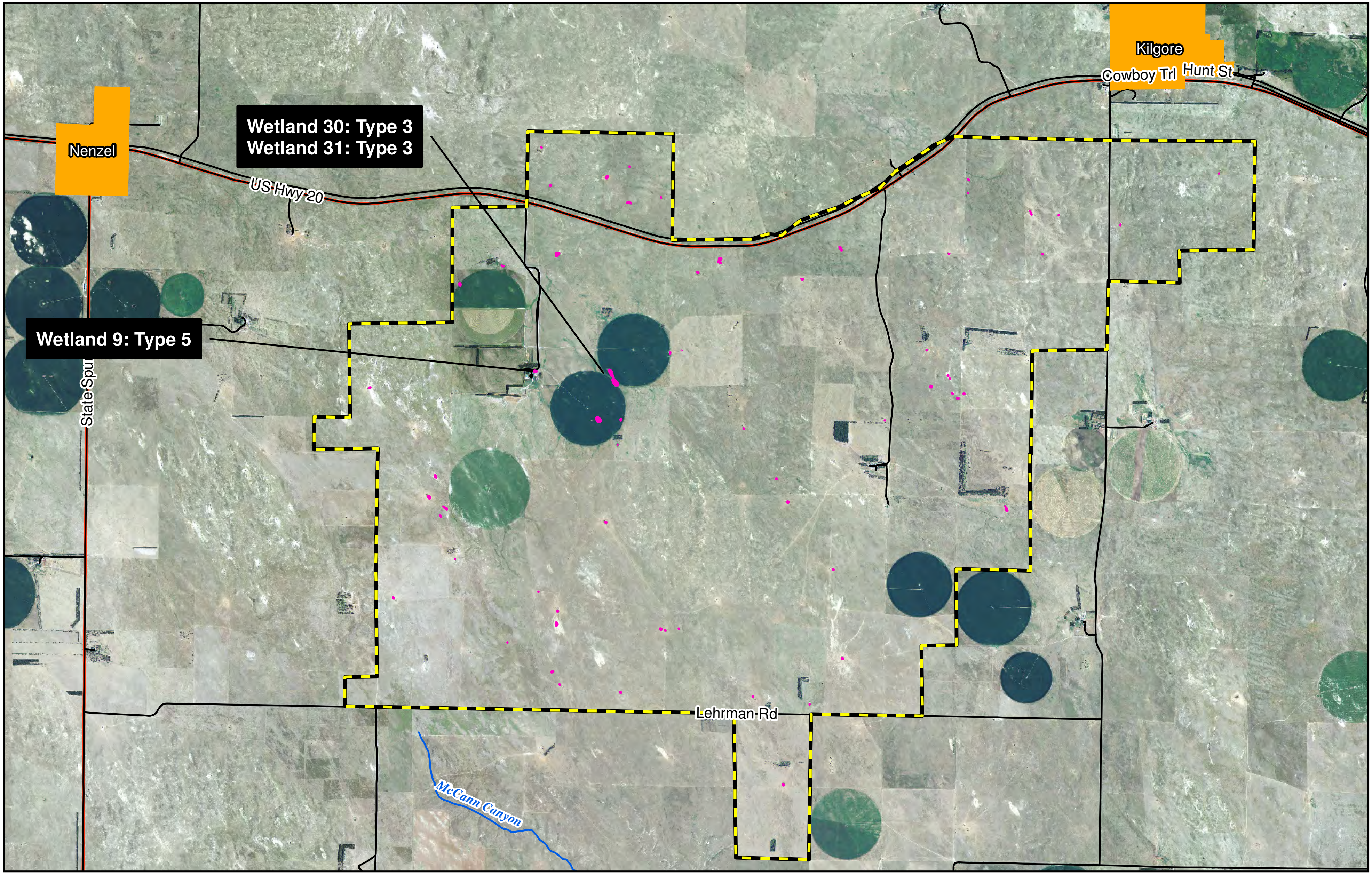
18	PEMC	PEMC	TYPE 1	An emergent wetland located in depression that is overflow area for cattle tank.	Likely No - the wetland area is isolated and there is no significant nexus to a TNW.
19	NA	PEMC	TYPE 1	A depression located downhill from wetland 18, overflow area for 18.	Likely No - the wetland is located in a pasture and there is no significant nexus to a TNW.
20	PEMC	PEMA	TYPE 1	An emergent wetland located in a pasture.	Likely No - the wetland is located in a pasture and there is no significant nexus to a TNW.
21	PEMC	PEMC	TYPE 1	An emergent wetland located in a pasture.	Likely No - the wetland is located in a pasture and there is no significant nexus to a TNW.
22	NA	PEMF	TYPE 1	Emergent wetland in overflow area from cattle tank in a pasture.	Likely No - the wetland is located in a pasture and there is no significant nexus to a TNW.
23	PEMC	PEMC	TYPE 1	An emergent wetland located in a pasture.	Likely No - the wetland area is isolated in a pasture and there is no significant nexus to a TNW.
24	PEMC	PEMC	TYPE 1	A depression located in a pasture.	Likely No - the depression is isolated in a pasture and there is no significant nexus to a TNW.
25	PEMC	PEMC	TYPE 1	An emergent wetland located on either side of a fence in depression.	Likely No - the wetland area is isolated within a pasture and is surrounded by uplands on all sides; therefore, no significant nexus to a TNW.
26	PEMF	PEMA	TYPE 1	An emergent wetland in a depression of a pasture.	Likely No - this wetland is isolated within a pasture and is surrounded by uplands on all sides; therefore, no significant nexus to a TNW.
27	PEMC	PEMC	TYPE 1	An emergent wetland located in a pasture, area is overflow for cattle tank.	Likely No - the depression is isolated in a pasture and there is no significant nexus to a TNW.
28	PEMF	PEMC	TYPE 1	An emergent wetland located in a depression in a pasture.	Likely No - the wetland area is isolated in a pasture and there is no significant nexus to a TNW.
29	PEMA	PEMC	TYPE 1	Emergent wetland located in cropland.	Likely No - the depression is isolated in cropland and there is no significant nexus to a TNW.
30	PEMC	PEMF	TYPE 3	Emergent wetland located in cropland.	Likely No - the depression is surrounded cropland and there is no significant nexus to a TNW.
31	PEMC	PEMF	TYPE 3	Emergent wetland located in cropland.	Likely No - the depression is surrounded cropland and there is no significant nexus to a TNW.
32	PEMC	Not found		Upland vegetation found where NWI wetland is mapped.	NA
33	NA	PEMC	TYPE 1	An emergent wetland located in an overflow area from a cattle tank in a pasture.	Likely No - the depression is isolated in a pasture and there is no significant nexus to a TNW.
34	NA	PEMC	TYPE 1	An emergent wetland located in an overflow area from a cattle tank in a pasture.	Likely No - the pond is isolated within a pasture and is surrounded by uplands on all sides; therefore, no significant nexus to a TNW.
35	PEMC	Not found		Upland vegetation found where NWI wetland is mapped.	NA

36	PEMC	Not found		Upland vegetation found where NWI wetland is mapped.	NA
37	PEMA	Not found		Upland vegetation found where NWI wetland is mapped.	NA
38	NA	PEMC	TYPE 1	An emergent wetland located in an overflow area from a cattle tank in a pasture.	Likely No - the wetland is located in a pasture and there is no significant nexus to a TNW.
39	PEMC	PEMC	TYPE 1	An emergent wetland located in a depression in a pasture.	Likely No - the depression is isolated in a pasture and there is no significant nexus to a TNW.
40	NA	PEMA	TYPE 1	An emergent wetland located in a pasture.	Likely No - the depression located a pasture and there is no significant nexus to a TNW.
41	NA	PEMA	TYPE 1	An emergent wetland located in a pasture.	Likely No - the depression located a pasture and there is no significant nexus to a TNW.
42	NA	PEMC	TYPE 1	An emergent wetland located in a pasture.	Likely No - the wetland is located in a pasture and there is no significant nexus to a TNW.
43	NA	PEMC	TYPE 1	An emergent wetland located in a pasture.	Likely No - the wetland is isolated in a pasture and there is no significant nexus to a TNW.
44	NA	PEMA	TYPE 1	An emergent wetland located in a pasture.	Likely No - the wetland is isolated in a pasture and there is no significant nexus to a TNW.
45	PEMC	PEMC	TYPE 1	An emergent wetland located in small depression in a pasture.	Likely No - the wetland is isolated in a pasture and there is no significant nexus to a TNW.
46	PEMA	Not found		Upland vegetation found where NWI wetland is mapped.	NA
47	PEMC	PEMC	TYPE 1	An emergent wetland located in an overflow area from a cattle tank in a pasture.	Likely No - the wetland is isolated in a pasture and there is no significant nexus to a TNW.
48	PEMC	PEMC	TYPE 1	An emergent wetland located in a pasture.	Likely No - the wetland is isolated in a pasture and there is no significant nexus to a TNW.
49	NA	PEMF	TYPE 1	An emergent wetland located downhill from a cattle tank in a pasture	Likely No - the wetland is isolated in a pasture and there is no significant nexus to a TNW.
50	PEMC	Not found		Upland vegetation found where NWI wetland was mapped.	NA
51	PEMC	Not found		Upland vegetation found where NWI wetland was mapped.	NA
52	PEMC	PEMC	TYPE 1	An emergent wetland located in an overflow area from a cattle tank in a pasture.	Likely No - the wetland is isolated in a pasture and there is no significant nexus to a TNW.
53	PEMC	PEMC	TYPE 1	A depression located in a pasture	Likely No - the depression is isolated in a pasture and there is no significant nexus to a TNW.
54	NA	PEMC	TYPE 1	An emergent wetland located downhill from a cattle tank in a pasture	Likely No - the wetland is isolated in a pasture and there is no significant nexus to a TNW.
55	PEMC	Not found		Upland vegetation found where NWI wetland was mapped.	NA

56	NA	PEMA	TYPE 1	Emergent wetland located in a pasture.	Likely No - the wetland is isolated in a pasture and there is no significant nexus to a TNW.
57	PEMC	PEMA	TYPE 1	Emergent wetland located in a pasture.	Likely No - this wetland is isolated within a pasture and is surrounded by uplands on all sides; therefore, no significant nexus to a TNW.
58	PEMA	PEMC	TYPE 1	Emergent wetland located in a pasture downhill from cattle tank.	Likely No - the wetland is isolated in a pasture and there is no significant nexus to a TNW.
59	PEMC	Not found		Upland vegetation found where NWI wetland is mapped.	NA
60	PEMA	PEMA	TYPE 1	Small depression in a pasture.	Likely No - the wetland is isolated in a pasture and there is no significant nexus to a TNW.
61	PEMA	PEMA	TYPE 1	An emergent wetland located in a pasture.	Likely No - this wetland is isolated within a pasture and is surrounded by uplands on all sides; therefore, no significant nexus to a TNW.
62	NA	PEMC	TYPE 1	Small pond located in a pasture down hill from cattle tank.	Likely No - the wetland is isolated in a pasture and there is no significant nexus to a TNW.
63	PEMC	Not found		Upland vegetation found where NWI wetland is mapped.	NA
64	PEMC	Not found		Upland vegetation found where NWI wetland is mapped.	NA
65	PEMC	Not found		Upland vegetation found where NWI wetland is mapped.	NA
66	NA	PEMC	TYPE 1	Emergent wetland located in a pasture downhill from cattle tank.	Likely No - the wetland is isolated in a pasture and there is no significant nexus to a TNW.
67	NA	PEMA	TYPE 1	An emergent wetland in a pasture downhill from cattle tank.	Likely No - the wetland is isolated in a pasture and there is no significant nexus to a TNW.
69	NA	PEMC	TYPE 1	An emergent wetland downhill from cattle tank very disturbed by cattle.	Likely No - the wetland is isolated in a pasture and there is no significant nexus to a TNW.
70a	NA	PEMF	TYPE 1	An emergent wetland located in an overflow area from a cattle tank in a pasture.	Likely No - the wetland is located in a pasture and there is no significant nexus to a TNW.
70b	NA	PEMF	TYPE 1	An emergent wetland located in an overflow area from a cattle tank, adjacent to wetland 70a in a pasture.	Likely No - the wetland is located in a pasture and there is no significant nexus to a TNW.
71	NA	PEMC	TYPE 1	Emergent wetland located in a pasture downhill from cattle tank.	Likely No - the wetland is isolated in a pasture and there is no significant nexus to a TNW.
72	PEMC	PEMA	TYPE 1	Emergent wetland located in a pasture downhill from cattle tank.	Likely No - the wetland is isolated in a pasture and there is no significant nexus to a TNW.
73	NA	PEMA	TYPE 1	Emergent wetland located in a pasture downhill from cattle tank.	Likely No - the wetland is isolated in a pasture and there is no significant nexus to a TNW.
74	PEMC	PEMA	TYPE 1	An emergent wetland located in depression in a pasture.	Likely No - the wetland is isolated in a pasture and there is no significant nexus to a TNW.
75	NA	PEMC	TYPE 1	An emergent wetland located in depression in cornfield.	Likely No- the wetland is isolated in a crop field and there is no significant nexus to a TNW
76	PEMC	PEMC	TYPE 1	An emergent wetland located in depression in cornfield.	Likely No- the wetland is isolated in a crop field and there is no significant nexus to a TNW
77	NA	PEMC	TYPE 1	An emergent wetland located in an overflow area from a cattle tank in a pasture.	Likely No - the wetland is located in a pasture and there is no significant nexus to a TNW.

78	NA	PEMC	TYPE 1	An emergent wetland located in an overflow area from a cattle tank in a pasture.	Likely No - the wetland is located in a pasture and there is no significant nexus to a TNW.

PEMA- Palustrine Emergent Temporarily Flooded
PEMC- Palustrine Emergent Seasonally Flooded
PEMF- Palustrine Emergent Semipermanently Flooded
PEMFh- Palustrine Emergent Semipermanently Flooded diked/impounded



Data Source: USDA NAIP 2012 Aerial Photograph for Cherry County; DNR Streams; Tiger 2007 Roads

Project Area
Municipal
Streams
Major Roads
Roads
Wetland

N

0 1 2 Miles

1:60,000

OLSSON ASSOCIATES

KILGORE WIND ENERGY PROJECT

Wetland Map

F:/Projects/012-2094/GIS/Maps.mxd

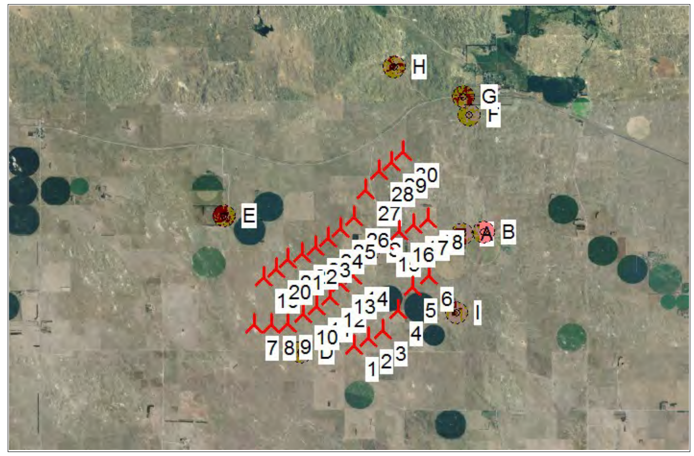
Exhibit P - Acoustical Analysis

Project:
Kilgore

Licensed user:
Bluestem Energy Solutions
4361 Lafayette Ave
US-68131 Omaha NE
402 553 1804
Matt Robinette / mrobinette@bstem.biz
Calculated:
4/12/2016 8:03 PM/3.0.639

DECIBEL - Main Result

Noise calculation model:
ISO 9613-2 General
Wind speed:
95% rated power
Ground attenuation:
General, fixed, Ground factor: 0.5
Meteorological coefficient, C0:
0.0 dB
Type of demand in calculation:
1: WTG noise is compared to demand (DK, DE, SE, NL etc.)
Noise values in calculation:
All noise values are mean values (Lwa) (Normal)
Pure tones:
Pure and Impulse tone penalty are added to WTG source noise
Height above ground level, when no value in NSA object:
1.5 m Don't allow override of model height with height from NSA object
Deviation from "official" noise demands. Negative is more restrictive, positive is less restrictive.:
0.0 dB(A)



Scale 1:200,000
New WTG
Noise sensitive area

WTGs

	Easting	Northing	Z	Row data/Description	WTG type Valid	Manufact.	Type-generator	Power, rated	Rotor diameter	Hub height	Noise data Creator	Name	Wind speed	Status	LwA,ref	Pure tones
			[m]					[kW]	[m]	[m]			[m/s]		[dB(A)]	
1	336,601	4,748,672	930.0	Unknown Point Feature<BR...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	EMD	Level 0 - Mode 0 - - 07-2013	(95%)	User value	107.0	No h
2	336,988	4,748,855	932.9	Unknown Point Feature<BR...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	EMD	Level 0 - Mode 0 - - 07-2013	(95%)	User value	107.0	No h
3	337,364	4,749,059	945.3	Unknown Point Feature<BR...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	EMD	Level 0 - Mode 0 - - 07-2013	(95%)	User value	107.0	No h
4	337,798	4,749,630	940.0	Unknown Point Feature<BR...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	EMD	Level 0 - Mode 0 - - 07-2013	(95%)	User value	107.0	No h
5	338,179	4,750,255	930.1	Unknown Point Feature<BR...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	EMD	Level 0 - Mode 0 - - 07-2013	(95%)	User value	107.0	No h
6	338,622	4,750,568	920.0	Unknown Point Feature<BR...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	EMD	Level 0 - Mode 0 - - 07-2013	(95%)	User value	107.0	No h
7	333,961	4,749,315	929.5	Unknown Point Feature<BR...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	EMD	Level 0 - Mode 0 - - 07-2013	(95%)	User value	107.0	No h
8	334,421	4,749,305	920.0	Unknown Point Feature<BR...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	EMD	Level 0 - Mode 0 - - 07-2013	(95%)	User value	107.0	No h
9	334,852	4,749,315	920.0	Unknown Point Feature<BR...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	EMD	Level 0 - Mode 0 - - 07-2013	(95%)	User value	107.0	No h
10	335,275	4,749,569	930.0	Unknown Point Feature<BR...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	EMD	Level 0 - Mode 0 - - 07-2013	(95%)	User value	107.0	No h
11	335,641	4,749,783	931.8	Unknown Point Feature<BR...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	EMD	Level 0 - Mode 0 - - 07-2013	(95%)	User value	107.0	No h
12	335,999	4,750,034	950.3	Unknown Point Feature<BR...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	EMD	Level 0 - Mode 0 - - 07-2013	(95%)	User value	107.0	No h
13	336,273	4,750,393	960.0	Unknown Point Feature<BR...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	EMD	Level 0 - Mode 0 - - 07-2013	(95%)	User value	107.0	No h
14	336,617	4,750,621	960.0	Unknown Point Feature<BR...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	EMD	Level 0 - Mode 0 - - 07-2013	(95%)	User value	107.0	No h
15	337,493	4,751,559	940.0	Unknown Point Feature<BR...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	EMD	Level 0 - Mode 0 - - 07-2013	(95%)	User value	107.0	No h
16	337,867	4,751,803	938.2	Unknown Point Feature<BR...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	EMD	Level 0 - Mode 0 - - 07-2013	(95%)	User value	107.0	No h
17	338,263	4,751,994	930.1	Unknown Point Feature<BR...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	EMD	Level 0 - Mode 0 - - 07-2013	(95%)	User value	107.0	No h
18	338,652	4,752,139	923.2	Unknown Point Feature<BR...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	EMD	Level 0 - Mode 0 - - 07-2013	(95%)	User value	107.0	No h
19	334,238	4,750,604	930.0	Unknown Point Feature<BR...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	EMD	Level 0 - Mode 0 - - 07-2013	(95%)	User value	107.0	No h
20	334,578	4,750,832	952.7	Unknown Point Feature<BR...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	EMD	Level 0 - Mode 0 - - 07-2013	(95%)	User value	107.0	No h
21	334,909	4,751,095	960.0	Unknown Point Feature<BR...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	EMD	Level 0 - Mode 0 - - 07-2013	(95%)	User value	107.0	No h
22	335,282	4,751,254	950.0	Unknown Point Feature<BR...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	EMD	Level 0 - Mode 0 - - 07-2013	(95%)	User value	107.0	No h
23	335,644	4,751,430	950.0	Unknown Point Feature<BR...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	EMD	Level 0 - Mode 0 - - 07-2013	(95%)	User value	107.0	No h
24	335,990	4,751,654	955.8	Unknown Point Feature<BR...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	EMD	Level 0 - Mode 0 - - 07-2013	(95%)	User value	107.0	No h
25	336,312	4,751,925	948.7	Unknown Point Feature<BR...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	EMD	Level 0 - Mode 0 - - 07-2013	(95%)	User value	107.0	No h
26	336,678	4,752,238	940.0	Unknown Point Feature<BR...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	EMD	Level 0 - Mode 0 - - 07-2013	(95%)	User value	107.0	No h
27	337,005	4,752,977	930.0	Unknown Point Feature<BR...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	EMD	Level 0 - Mode 0 - - 07-2013	(95%)	User value	107.0	No h
28	337,379	4,753,488	920.0	Unknown Point Feature<BR...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	EMD	Level 0 - Mode 0 - - 07-2013	(95%)	User value	107.0	No h
29	337,707	4,753,740	911.8	Unknown Point Feature<BR...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	EMD	Level 0 - Mode 0 - - 07-2013	(95%)	User value	107.0	No h
30	338,012	4,754,022	910.0	Unknown Point Feature<BR...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	EMD	Level 0 - Mode 0 - - 07-2013	(95%)	User value	107.0	No h

h) Generic octave distribution used

Calculation Results

Sound Level

Noise sensitive area No.	Name	Easting	Northing	Z	Imission height	Demands Noise	Sound Level From WTGs	Distance to noise demand	Demands fulfilled ? Noise
				[m]	[m]	[dB(A)]	[dB(A)]	[m]	
A	Noise sensitive point: (1)	339,557	4,751,691	910.0	1.5	50.0	37.8	828	Yes
B	Noise sensitive point: (2)	340,112	4,751,719	910.0	1.5	50.0	34.6	1,334	Yes
C	Noise sensitive point: (3)	337,071	4,751,280	942.6	1.5	50.0	44.6	313	Yes
D	Noise sensitive point: (4)	335,199	4,748,504	915.9	1.5	50.0	40.3	682	Yes
E	Noise sensitive point: (5)	333,249	4,752,335	958.2	1.5	50.0	33.8	1,795	Yes
F	Noise sensitive point: (6)	339,809	4,754,986	900.5	1.5	50.0	30.9	1,858	Yes

To be continued on next page...

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Calculated:
4/12/2016 8:03 PM/3.0.639

DECIBEL - Main Result

...continued from previous page

Noise sensitive area						**Demands**	**Sound Level**		**Demands fulfilled ?**
No.	Name	Easting	Northing	Z [m]	Imission height [m]	Noise [dB(A)]	From WTGs [dB(A)]	Distance to noise demand [m]	Noise
G	Noise sensitive point: (7)	339,652	4,755,484	898.9	1.5	50.0	30.1	2,016	Yes
H	Noise sensitive point: (8)	337,844	4,756,364	910.0	1.5	50.0	29.7	2,164	Yes
I	Noise sensitive point: (10)	339,352	4,749,498	914.8	1.5	50.0	36.3	1,112	Yes

Distances (m)

WTG	A	B	C	D	E	F	G	H	I
1	4225	4649	2650	1412	4965	7082	7464	7792	2872
2	3826	4238	2427	1823	5108	6748	7144	7558	2449
3	3425	3825	2240	2235	5260	6411	6820	7321	2035
4	2709	3117	1803	2833	5292	5721	6141	6734	1559
5	1990	2425	1509	3457	5351	5003	5433	6118	1396
6	1461	1883	1707	3997	5656	4574	5023	5848	1296
7	6079	6604	3679	1480	3103	8146	8393	8048	5394
8	5663	6182	3305	1117	3249	7829	8096	7845	4934
9	5271	5783	2964	883	3419	7532	7816	7658	4503
10	4779	5293	2481	1068	3429	7064	7358	7265	4077
11	4356	4872	2071	1354	3498	6666	6971	6940	3722
12	3925	4445	1644	1727	3586	6248	6561	6593	3395
13	3531	4062	1193	2173	3594	5796	6110	6174	3206
14	3128	3663	801	2548	3779	5407	5732	5873	2956
15	2068	2624	506	3821	4314	4136	4480	4818	2776
16	1694	2247	952	4243	4648	3728	4091	4561	2742
17	1329	1869	1389	4645	5025	3367	3756	4390	2724
18	1010	1519	1799	5014	5406	3073	3491	4301	2733
19	5429	5979	2913	2310	1994	7087	7289	6796	5232
20	5052	5605	2533	2410	2006	6679	6884	6424	4957
21	4686	5240	2170	2608	2072	6256	6462	6031	4721
22	4297	4852	1789	2752	2302	5866	6082	5716	4433
23	3921	4477	1435	2960	2560	5476	5701	5402	4181
24	3567	4123	1144	3248	2824	5068	5299	5062	3994
25	3253	3806	996	3598	3090	4647	4881	4696	3890
26	2930	3473	1035	4017	3430	4165	4402	4288	3829
27	2858	3352	1698	4824	3810	3449	3646	3489	4197
28	2824	3256	2229	5440	4288	2854	3025	2913	4451
29	2761	3141	2541	5806	4674	2443	2612	2628	4550
30	2797	3117	2899	6194	5053	2039	2197	2348	4719

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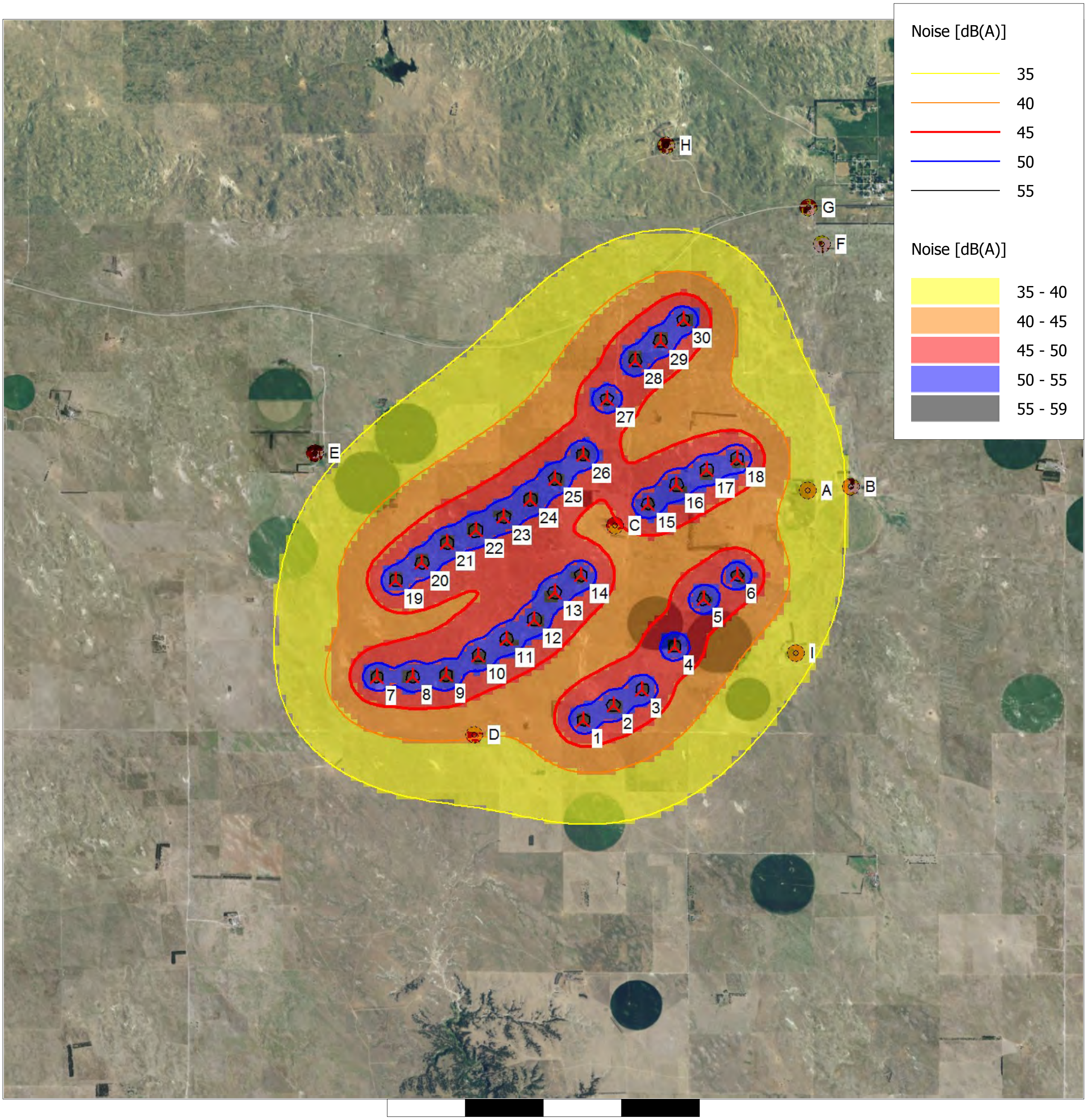
DECIBEL - Map 95% rated power



Map: US Naval Research Laboratory , Print scale 1:75,000, Map center UTM (north)-WGS84 Zone: 14 East: 336,306 North: 4,751,347

New WTG   Noise sensitive area

Noise calculation model: ISO 9613-2 General. Wind speed: 95% rated power
Height above sea level from active line object

Exhibit Q - Shadow Flicker Analysis

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SHADOW - Main Result

Assumptions for shadow calculations

Maximum distance for influence	1,500 m
Minimum sun height over horizon for influence	3 °
Day step for calculation	1 days
Time step for calculation	1 minutes

Sunshine probability S (Average daily sunshine hours) [RAPID CITY]

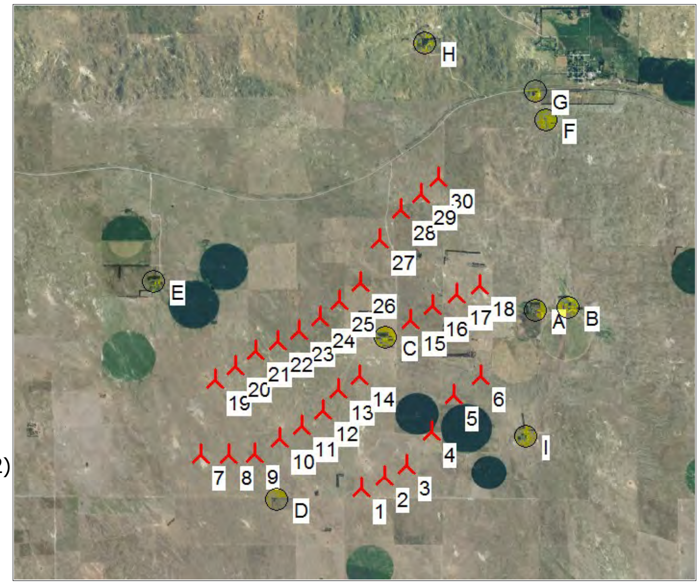
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4.81	6.29	7.19	7.42	8.80	10.06	11.17	11.03	9.14	6.93	5.36	5.33

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
747	377	276	294	391	706	1,104	772	545	634	969	1,396	8,211

Idle start wind speed: Cut in wind speed from power curve

A ZVI (Zones of Visual Influence) calculation is performed before flicker calculation so non visible WTG do not contribute to calculated flicker values. A WTG will be visible if it is visible from any part of the receiver window. The ZVI calculation is based on the following assumptions:
Height contours used: Height Contours: CONTOURLINE_ONLINEDATA_2.wpo (2)
Obstacles used in calculation
Eye height: 1.5 m
Grid resolution: 10.0 m



Scale 1:125,000
New WTG
Shadow receptor

All coordinates are in
UTM (north)-WGS84 Zone: 14

WTGs

	Easting	Northing	Z [m]	Row data/Description	WTG type Valid	Manufact.	Type-generator	Power, rated [kW]	Rotor diameter [m]	Hub height [m]	RPM [RPM]
1	336,601	4,748,672	930.0	Unknown Point Feature <B>ATTR_1</B...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	0.0
2	336,988	4,748,855	932.9	Unknown Point Feature <B>ATTR_1</B...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	0.0
3	337,364	4,749,059	945.3	Unknown Point Feature <B>ATTR_1</B...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	0.0
4	337,798	4,749,630	940.0	Unknown Point Feature <B>ATTR_1</B...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	0.0
5	338,179	4,750,255	930.1	Unknown Point Feature <B>ATTR_1</B...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	0.0
6	338,622	4,750,568	920.0	Unknown Point Feature <B>ATTR_1</B...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	0.0
7	333,961	4,749,315	929.5	Unknown Point Feature <B>ATTR_1</B...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	0.0
8	334,421	4,749,305	920.0	Unknown Point Feature <B>ATTR_1</B...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	0.0
9	334,852	4,749,315	920.0	Unknown Point Feature <B>ATTR_1</B...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	0.0
10	335,275	4,749,569	930.0	Unknown Point Feature <B>ATTR_1</B...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	0.0
11	335,641	4,749,783	931.8	Unknown Point Feature <B>ATTR_1</B...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	0.0
12	335,999	4,750,034	950.3	Unknown Point Feature <B>ATTR_1</B...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	0.0
13	336,273	4,750,393	960.0	Unknown Point Feature <B>ATTR_1</B...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	0.0
14	336,617	4,750,621	960.0	Unknown Point Feature <B>ATTR_1</B...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	0.0
15	337,493	4,751,559	940.0	Unknown Point Feature <B>ATTR_1</B...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	0.0
16	337,867	4,751,803	938.2	Unknown Point Feature <B>ATTR_1</B...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	0.0
17	338,263	4,751,994	930.1	Unknown Point Feature <B>ATTR_1</B...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	0.0
18	338,652	4,752,139	923.2	Unknown Point Feature <B>ATTR_1</B...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	0.0
19	334,238	4,750,604	930.0	Unknown Point Feature <B>ATTR_1</B...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	0.0
20	334,578	4,750,832	952.7	Unknown Point Feature <B>ATTR_1</B...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	0.0
21	334,909	4,751,095	960.0	Unknown Point Feature <B>ATTR_1</B...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	0.0
22	335,282	4,751,254	950.0	Unknown Point Feature <B>ATTR_1</B...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	0.0
23	335,644	4,751,430	950.0	Unknown Point Feature <B>ATTR_1</B...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	0.0
24	335,990	4,751,654	955.8	Unknown Point Feature <B>ATTR_1</B...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	0.0
25	336,312	4,751,925	948.7	Unknown Point Feature <B>ATTR_1</B...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	0.0
26	336,678	4,752,238	940.0	Unknown Point Feature <B>ATTR_1</B...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	0.0
27	337,005	4,752,977	930.0	Unknown Point Feature <B>ATTR_1</B...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	0.0
28	337,379	4,753,488	920.0	Unknown Point Feature <B>ATTR_1</B...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	0.0
29	337,707	4,753,740	911.8	Unknown Point Feature <B>ATTR_1</B...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	0.0
30	338,012	4,754,022	910.0	Unknown Point Feature <B>ATTR_1</B...	Yes	VESTAS	V100-2.0-2,000	2,000	100.0	80.0	0.0

SHADOW - Main Result

Shadow receptor-Input

No.	Easting	Northing	Z [m]	Width [m]	Height [m]	Height a.g.l. [m]	Degrees from south cw [°]	Slope of window [°]	Direction mode
A	339,557	4,751,691	910.0	1.0	1.0	1.0	0.0	90.0	"Green house mode"
B	340,112	4,751,719	910.0	1.0	1.0	1.0	0.0	90.0	"Green house mode"
C	337,071	4,751,280	942.6	1.0	1.0	1.0	0.0	90.0	"Green house mode"
D	335,199	4,748,504	915.9	1.0	1.0	1.0	0.0	90.0	"Green house mode"
E	333,249	4,752,335	958.2	1.0	1.0	1.0	0.0	90.0	"Green house mode"
F	339,809	4,754,986	900.5	1.0	1.0	1.0	0.0	90.0	"Green house mode"
G	339,652	4,755,484	898.9	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H	337,844	4,756,364	910.0	1.0	1.0	1.0	0.0	90.0	"Green house mode"
I	339,352	4,749,498	914.8	1.0	1.0	1.0	0.0	90.0	"Green house mode"

Calculation Results

Shadow receptor

No.	**Shadow, expected values** Shadow hours per year [h/year]
A	13:05
B	0:00
C	4:43
D	1:19
E	0:00
F	0:00
G	0:00
H	0:00
I	0:00

Total amount of flickering on the shadow receptors caused by each WTG

No.	Name	Worst case [h/year]	Expected [h/year]
1	Unknown Point Feature <B>ATTR_1</B> = 1	3:37	1:19
2	Unknown Point Feature <B>ATTR_1</B> = 2	0:00	0:00
3	Unknown Point Feature <B>ATTR_1</B> = 3	0:00	0:00
4	Unknown Point Feature <B>ATTR_1</B> = 4	0:00	0:00
5	Unknown Point Feature <B>ATTR_1</B> = 5	0:00	0:00
6	Unknown Point Feature <B>ATTR_1</B> = 6	0:00	0:00
7	Unknown Point Feature <B>ATTR_1</B> = 7	0:00	0:00
8	Unknown Point Feature <B>ATTR_1</B> = 8	0:00	0:00
9	Unknown Point Feature <B>ATTR_1</B> = 9	0:00	0:00
10	Unknown Point Feature <B>ATTR_1</B> = 10	0:00	0:00
11	Unknown Point Feature <B>ATTR_1</B> = 11	0:00	0:00
12	Unknown Point Feature <B>ATTR_1</B> = 12	0:00	0:00
13	Unknown Point Feature <B>ATTR_1</B> = 13	0:00	0:00
14	Unknown Point Feature <B>ATTR_1</B> = 14	0:00	0:00
15	Unknown Point Feature <B>ATTR_1</B> = 15	0:00	0:00
16	Unknown Point Feature <B>ATTR_1</B> = 16	0:00	0:00
17	Unknown Point Feature <B>ATTR_1</B> = 17	4:53	1:59
18	Unknown Point Feature <B>ATTR_1</B> = 18	24:58	11:06
19	Unknown Point Feature <B>ATTR_1</B> = 19	0:00	0:00
20	Unknown Point Feature <B>ATTR_1</B> = 20	0:00	0:00
21	Unknown Point Feature <B>ATTR_1</B> = 21	0:00	0:00
22	Unknown Point Feature <B>ATTR_1</B> = 22	0:00	0:00
23	Unknown Point Feature <B>ATTR_1</B> = 23	2:46	1:03
24	Unknown Point Feature <B>ATTR_1</B> = 24	8:28	3:40
25	Unknown Point Feature <B>ATTR_1</B> = 25	0:00	0:00
26	Unknown Point Feature <B>ATTR_1</B> = 26	0:00	0:00
27	Unknown Point Feature <B>ATTR_1</B> = 27	0:00	0:00

To be continued on next page...

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SHADOW - Main Result

...continued from previous page

No.	Name	Worst case [h/year]	Expected [h/year]
28	Unknown Point Feature <B>ATTR_1</B> = 28	0:00	0:00
29	Unknown Point Feature <B>ATTR_1</B> = 29	0:00	0:00
30	Unknown Point Feature <B>ATTR_1</B> = 30	0:00	0:00

Project:
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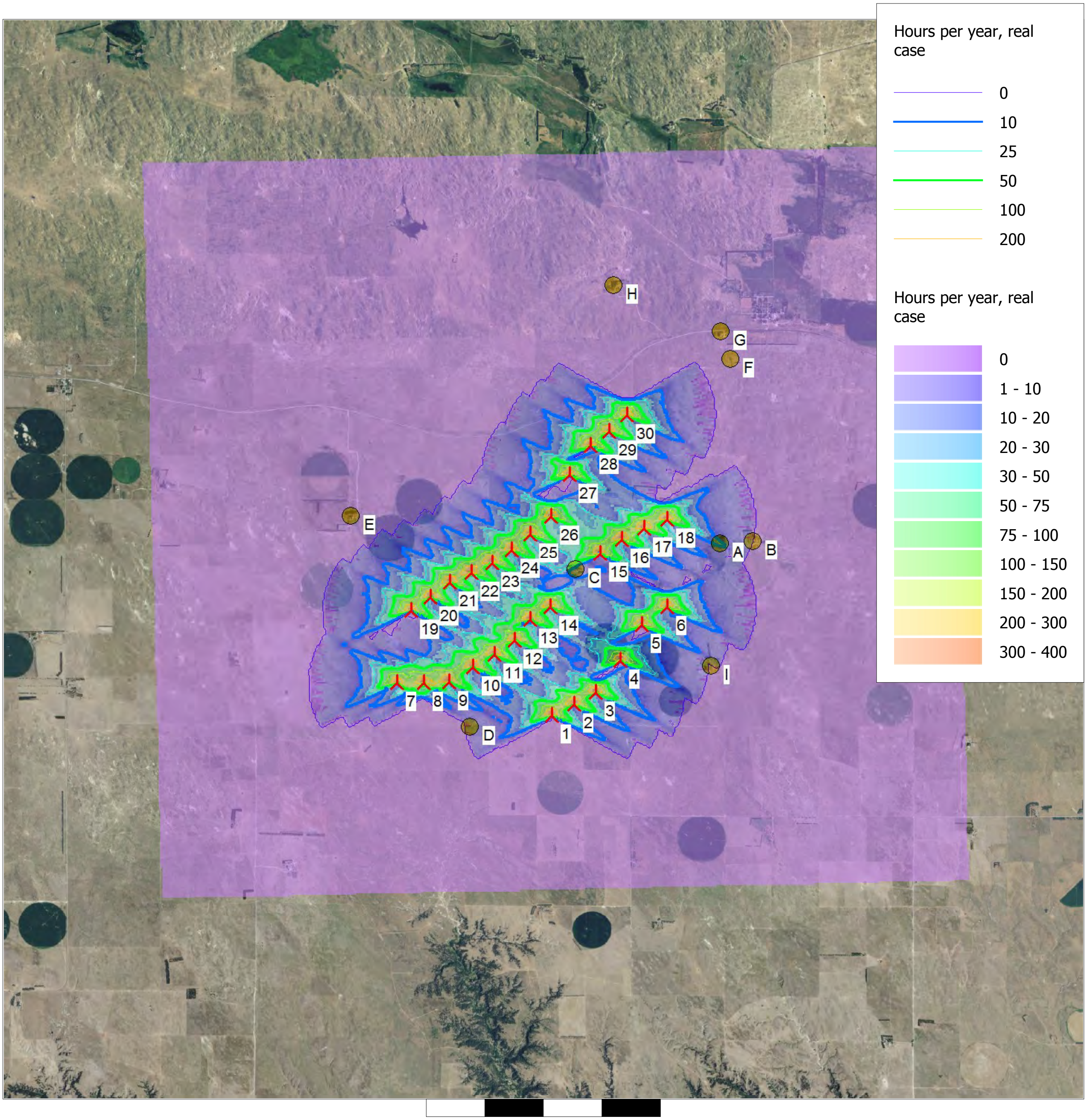
402 553 1804
Matt Robinette / mrobinette@bstem.biz
Calculated:
4/13/2016 6:58 PM/3.0.639

SHADOW - Map



Map: US Naval Research Laboratory , Print scale 1:100,000, Map center UTM (north)-WGS84 Zone: 14 East: 336,750 North: 4,752,150
New WTG   Shadow receptor
Flicker map level: Height Contours: CONTOURLINE_ONLINEDATA_2.wpo (2)

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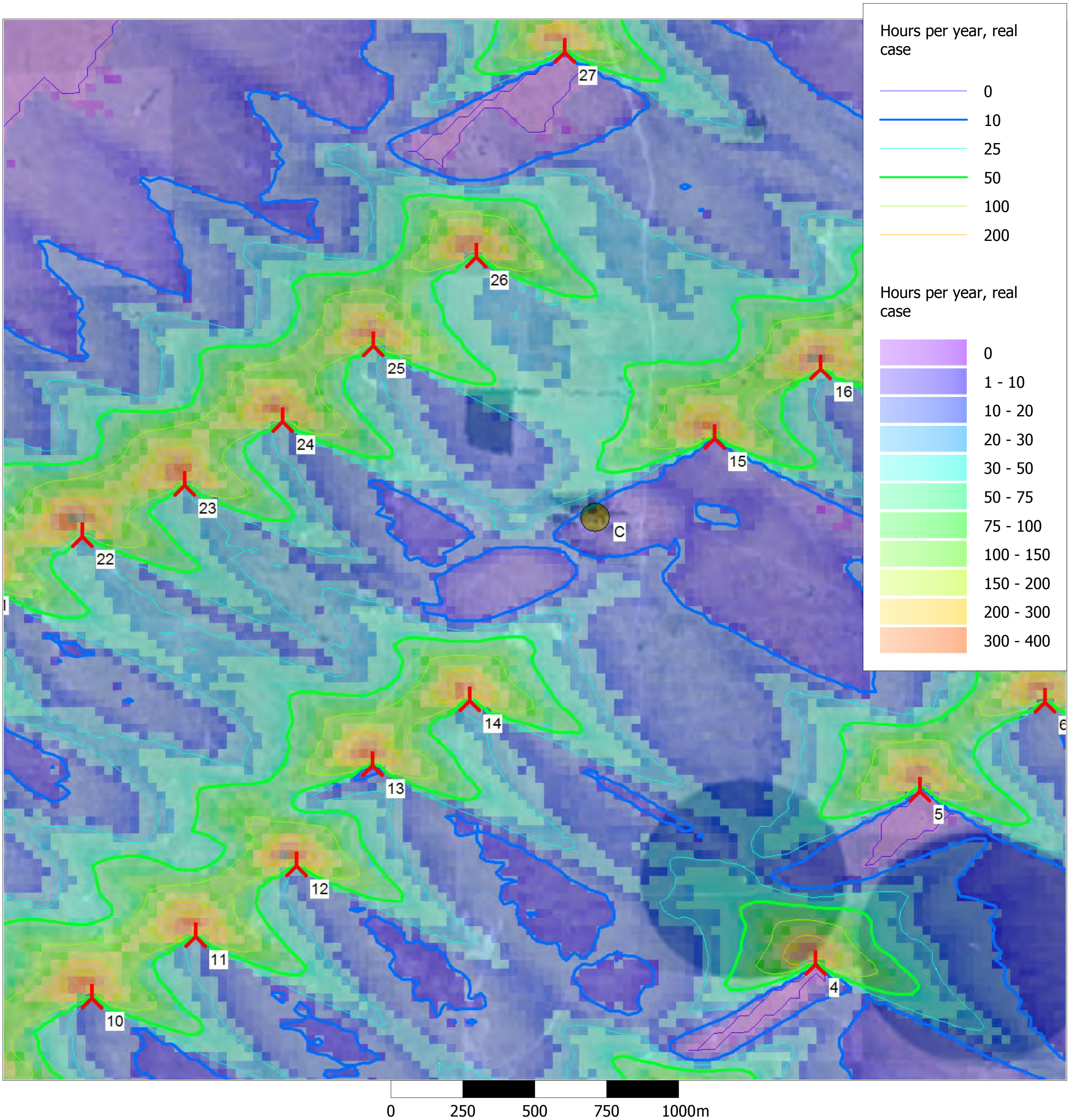
Calculated:
4/13/2016 6:58 PM/3.0.639

SHADOW - Map



Map: US Naval Research Laboratory , Print scale 1:20,000, Map center UTM (north)-WGS84 Zone: 14 East: 336,899 North: 4,751,300

New WTG   Shadow receptor

Flicker map level: Height Contours: CONTOURLINE_ONLINEDATA_2.wpo (2)

Exhibit R - FAA Aeronautical Studies Table

Turbine ID	FAA Study Number	Latitude	Longitude	Site Elevation	Structure Height
T1	2016-WTE-2598-OE	42°52'23.41"N	101° 0'1.98"W	3054	429'
T2	2016-WTE-2599-OE	42°52'29.64"N	100°59'45.12"W	3066	429'
T3	2016-WTE-2600-OE	42°52'36.54"N	100°59'28.77"W	3106	429'
T4	2016-WTE-2601-OE	42°52'55.37"N	100°59'10.25"W	3107	429'
T5	2016-WTE-2602-OE	42°53'15.91"N	100°58'54.11"W	3066	429'
T6	2016-WTE-2603-OE	42°53'26.39"N	100°58'34.91"W	3011	429'
T7	2016-WTE-2604-OE	42°52'42.20"N	101° 1'58.95"W	3053	429'
T8	2016-WTE-2605-OE	42°52'42.23"N	101° 1'38.68"W	3033	429'
T9	2016-WTE-2606-OE	42°52'42.89"N	101° 1'19.70"W	3021	429'
T10	2016-WTE-2607-OE	42°52'51.45"N	101° 1'1.33"W	3057	429'
T11	2016-WTE-2608-OE	42°52'58.67"N	101° 0'45.44"W	3067	429'
T12	2016-WTE-2609-OE	42°53'7.08"N	101° 0'29.93"W	3122	429'
T13	2016-WTE-2610-OE	42°53'18.92"N	101° 0'18.23"W	3142	429'
T14	2016-WTE-2611-OE	42°53'26.57"N	101° 0'3.31"W	3161	429'
T15	2016-WTE-2612-OE	42°53'57.63"N	100°59'25.69"W	3096	429'
T16	2016-WTE-2613-OE	42°54'5.83"N	100°59'9.47"W	3077	429'
T17	2016-WTE-2614-OE	42°54'12.32"N	100°58'52.21"W	3060	429'
T18	2016-WTE-2615-OE	42°54'17.31"N	100°58'35.22"W	3040	429'
T19	2016-WTE-2616-OE	42°53'24.17"N	101° 1'48.12"W	3056	429'
T20	2016-WTE-2617-OE	42°53'31.83"N	101° 1'33.38"W	3134	429'
T21	2016-WTE-2618-OE	42°53'40.61"N	101° 1'19.07"W	3150	429'
T22	2016-WTE-2619-OE	42°53'46.05"N	101° 1'2.81"W	3126	429'
T23	2016-WTE-2620-OE	42°53'52.03"N	101° 0'47.04"W	3134	429'
T24	2016-WTE-2621-OE	42°53'59.56"N	101° 0'32.03"W	3140	429'
T25	2016-WTE-2622-OE	42°54'8.58"N	101° 0'18.12"W	3115	429'
T26	2016-WTE-2623-OE	42°54'19.01"N	101° 0'2.32"W	3083	429'
T27	2016-WTE-2624-OE	42°54'43.20"N	100°59'48.68"W	3069	429'
T28	2016-WTE-2625-OE	42°55'0.05"N	100°59'32.73"W	3020	429'
T29	2016-WTE-2626-OE	42°55'8.46"N	100°59'18.53"W	3002	429'
T30	2016-WTE-2627-OE	42°55'17.83"N	100°59'5.38"W	3004	429'

Exhibit S - Electromagnetic Interference Analysis

KILGORE WIND ENERGY PROJECT

Electromagnetic Interference Analysis

BSH Kilgore, LLC

Document No.: 10017466-HOU-R-01
Date: 18 April 2016

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Project name:	Kilgore Wind Energy Project	DNV GL - Energy
Report title:	Electromagnetic Interference Analysis	Renewables Advisory
Customer:	BSH Kilgore, LLC	333 SW 5th Ave, Suite 400
Contact person:	Eric Johnson	Portland, OR 97204
Date of issue:	18 April 2016	1-503-222-5590, x. 133
Project No.:	10017466	Enterprise No.: 94-3402236
Document No.:	10017466-HOU-R-01	
Issue:	B	
Status:	DRAFT	

Task and objective: Preliminary impact assessment of potential interference of wind turbine on electromagnetic signals

Prepared by:	Verified by:	Approved by:
Anne Beaudoin GIS Analyst, Environmental and Permitting Services	Aren Nercessian Engineer, Project Development Francis Langelier Team Leader, GIS	Michael Cookson Senior Project Manager and Team Lead

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Keywords:
EMI, radiocommunication, interference, wind turbine, Kilgore

Issue	Date	Reason for Issue	Prepared by	Verified by	Approved by
A	15 April 2016	First Issue	Anne Beaudoin	Francis Langelier Aren Nercessian	Michael Cookson
B	18 April 2016	Updated map figures	Leslie Breadner	Aren Nercessian	Danny Schoborg

1 INTRODUCTION

BSH Kilgore, LLC ("BSH Kilgore" or the "Customer") has requested Garrad Hassan America, Inc., (hereafter DNV GL), to provide an electromagnetic interference analysis for the Kilgore Wind Energy Project ("Kilgore" or "Project") located in Cherry County, NE. The Project is intended to consist of 30 Vestas V100-2 MW wind turbine generators (WTG).

WTGs can have an effect on communication towers and radar systems in the vicinity of the Project. The objective of this assessment is to understand the presence of any radio communication systems within the Project area that should be considered in siting turbines or other Project infrastructure.

This technical note includes tables detailing all available information on registered radio communication systems in the vicinity of the Project area, along with recommendations and concluding comments.

2 INTERFERENCE BACKGROUND

Wind turbines can disrupt the functioning of radiocommunication and radar systems by interfering with the propagation of electromagnetic waves. Although a wind turbine does not itself emit electromagnetic waves, its presence can cause interference by disrupting the waves travelling between an emitter and a receptor. The waves are modified by different physical mechanisms such as reflection, dispersion and diffraction.

Interference can manifest itself in various ways, mainly by creating a shadow zone where the signal is weakened or by generating a parasite signal by reflection, thus interfering with the direct signal.

Shadow interference occurs behind an obstacle, i.e. on the side opposite that of the emitter position. By disturbing the propagation of electromagnetic signals, the wind turbine may partially or completely deprive the signal in the zone located behind it, thus modifying the coverage and range of the signal. The signal level may drop below the threshold of the receptor's sensitivity.

Reflection interference occurs when the wind turbine structure reflects, towards the receptor, part of the signal that it receives from the emitter, creating a parasite signal which interferes with the direct signal. At the receptor location, the parasite signal is characterized by its amplitude and delay with respect to the signal having arrived via a direct path. Having been reflected by various obstacles, the receptor can thus receive the same signal multiple times, though spread over a period of time. This type of interference, referred to as "multiple path distortion," increases the noise perceived by the receptor, and can thereby compromise its operation. Moreover, because of the constantly rotating blades, the reflected signal can be modulated in amplitude, frequency and/or phase.

Wind turbine-caused interference is difficult to predict with certainty. Generally speaking, modelling electromagnetic wave propagation and interference mechanisms is a complex task given the large number of variables. The level of interference depends on several factors related to the emitter, the receptor, the wind turbine, and the propagation environment, including:

- Relative positions of emitter, receptor and wind turbines;
- Transmittal power (strength of emitted signal);
- Radiating patterns of the antennas used;
- Frequency and modulation of signal;
- Information transfer rate and bandwidth of the system;
- Noise sensitivity of receptor system;
- Site topography and ground cover;
- Meteorological conditions;
- Size and shape of wind turbines;
- Number and layout of wind turbines;
- Material composing the wind turbine;
- Orientation of blades and rotor; and
- Rotor rotation speed.

This section describes the main types of telecommunication and radar systems to be considered in siting WTGs, namely:

- Point-to-point systems;
- Broadcast transmitters – including AM, FM, TV stations;
- Cellular type networks;
- Land mobile and fixed radio systems;
- Aeronautical stations and radio navigational aids – including air defence and air traffic control systems; and
- Weather radar systems.

2.1 Point-to-Point Systems

Point-to-point links are used to relay information from one tower to another without having to resort to coaxial cables, fibre optics, or satellite. Point-to-point links have a wide range of applications, such as TV broadcasting where they are used to link a production studio with a local transmitter antenna or in cellular telecommunications where they serve to link the cellular base station to relay centers.

Wind turbines affect point-to-point systems at either the emitters' locations or along the path, and with a severity that depends mainly on the system frequency. In the microwave frequencies, the links require that the two communication towers be in a direct line of sight and that no obstacle obstructs the signal propagation corridor. At lower frequencies (below 890 MHz), the link's range may be greater and the towers do not necessarily have to be in the direct line of sight. Lower frequency links also have limited capacity and wide radiation pattern antennas which make them more robust to interferences. Grilli (2007) suggests that the worst scenario may occur when these systems operate over obstructed paths while there is a direct line of sight between each system and turbines [1].

WTGs located in the vicinity of an antenna could interfere with a microwave signal. The near-field clearance distance is calculated based on the diameter of the antenna and the frequency. In most of the cases, the near-field clearance distance is a few hundred meters. No near-field radiation interference is anticipated if WTGs are located over 1 km from any microwave towers.

For links above 890 MHz, DNV GL also established and mapped a conservative setback of width around the link connecting the two towers. As shown in the equation below, the size of the buffer zone (L_c) is a function of the operating frequency (F) and the distance (D) covered by the link (R being the diameter of the rotor). It is based on taking three times the maximum width of the 1st Fresnel zone. The clearance of this zone is considered to be a conservative measure to avoid interference with a microwave link.

$$L_c = R + 52\sqrt{\frac{D}{F}}$$

2.2 Broadcast Transmitters

Broadcast transmitters use antennas to propagate electromagnetic signals such as radio or television signals. The information is encoded using different types of modulation (analog AM and FM modulation, digital modulation, etc) and is transmitted using variable configurations to account for the specificities of the service zone. Such configurations are comprised of omnidirectional antennas, directional antennas or repeaters.

2.3 Cellular Type Network and Land Mobile Radio Networks

Land-based cellular telephony requires the service provider to deploy a radiocommunication network wherein the entire coverage area is divided into a number of cells. In the center of each cell is a base station which ensures communication with each mobile station (the cellular telephone of the user). Base stations are in turn linked to control stations and relay stations (switching stations) by microwave hops (or other means) in order to establish communication.

A multitude of systems of this type are deployed to facilitate the communication of diverse parties covering vast territories. These systems operate by means of networks with fixed stations in liaison, mobile stations in liaison via a fixed repeater, or any arrangement dictated by a specific application.

If a wind turbine is located too close to an antenna, the metallic tower of the turbine could modify the radiation pattern and thus the quality of the service.

2.4 Aeronautical Stations and Radionavigational Aids

A number of systems are used in aeronautics for controlling and directing air traffic, including:

- Primary Surveillance Radars (PSR);
- Secondary Surveillance Radars (SSR);
- Precision Approach Radars (PAR);
- Distance Measurement Equipment (DME);
- Instrument Landing Systems (ILS);
- Microwave Landing Systems (MLS);
- Non-directional Beacons (NDB);
- Tactical Air Navigation (TACAN); and
- VHF Omnidirectional Range (VOR).

The majority of these systems are located along the periphery of airports, though some may also be scattered along aviation routes.

2.5 Weather Radar Systems

Weather radars are used to evaluate the probability of precipitation and to detect and forecast extreme weather events. Wind turbines could potentially impact radar signals in different ways. The National Oceanic and Atmospheric Administration (NOAA) radar operation center has developed a comprehensive process to evaluate potential adverse impact to the Nexrad weather radar as a function of distance and other factor such as topography. NOAA is notified as part of the U.S. National Telecommunications and Information Administration (U.S. NTIA) informal process for reviewing wind energy projects.

3 SUMMARY OF THE WORK

For the purpose of this analysis, the following data review was conducted:

- Review of Federal Communications Commission (FCC) Universal Licensing System (ULS) and information related to microwave systems, air navigation aids, broadcast stations, cellular systems, mobile stations, and radar sites.
- High level review of Renewable Energy and Defense (READ) Geospatial Database for radar sites (air route surveillance, airport surveillance, Nexrad weather);
- Licensed microwave path analysis, including the calculation of the microwave beam.

Radiocommunication systems that are not registered with the FCC were not included in this analysis. WTGs could interfere with unlicensed microwave paths or federal government paths. This is currently being addressed by DNV GL through consultation with the U.S. NTIA [2].

Because the coordinates available through the FCC Universal Licensing System may be inaccurate, FCC systems in vicinity of the site have been validated on aerial imagery where possible.

Broadcasting service contours are included in this report for illustrative purposes.

The FM and TV station service contours (60 dBu and 36 dBu respectively) can generally be interpreted as the area where the signal is protected by the FCC from interference caused by other stations [3]. While this does not guarantee that all signals within this area will be completely free of interference (caused by other structural obstructions), nor does it mean that signals outside this area cannot be clearly received, the contour can be considered in practical terms as the general service area of a given broadcasting tower.

For AM signals, this is represented as a groundwave contour value of 2.0 mV/m for nighttime and 0.5 mV/m for daytime.

The findings of this analysis are summarized in Table 1 to Table 4 and shown on the maps in Figure 1 to Figure 3 in the following pages.

Table 1. Radiocommunication systems within 5 miles (8 km) of the Project area.

Call Sign	Radio Service Code	Description	Frequency (MHz)	Distance from closest Wind Turbine (km/mi)	Latitude (NAD83)	Longitude (NAD83)	Location	City	Licensee	Contact
KNKN802	CL	Cellular - 47 Cfr Part 22	880.02 835.02 891.51 846.51	7.6/4.7	42.90582	-101.12109	1.6 Miles Southwest of Nenzel	Nenzel	Alltel Communications of Nebraska LLC	Verizon Wireless
KAG556	IG	Land Mobile - Private	153.73	9.8/6.1	42.785277	-101.0012	Hyannis Substation	Hyannis	Panhandle Rural Electric Membership Association Inc	First Wireless Inc
WQDH889	IG	Land Mobile - Private	151.90	3.1/1.9	42.941666	-100.95703	W Columbus Street	Kilgore	Rothleutner Family Ltd. Partnership	Federal License Management
WQPH347	IG	Land Mobile - Private	152.95	2.0/1.2	42.905417	-101.04300	37587 E Anderson Bridge Rd	Kilgore	Weinreis Brothers	Action Communications Inc.
KNJG654	PW	Land Mobile - Private	153.80	3.3/2.1	42.946944	-100.96375	Kilgore School House Bldg	Kilgore	Cherry, County of	Platte Valley Communications Of Kearney

Note: The following towers could not be validated with aerial imagery: KNJG654, WQPH347, KAG556

Table 2. Microwave links within the Project area.

Call Sign 1	Latitude 1 (NAD 83)	Longitude 1 (NAD83)	Station Location 1	Call Sign 2	Latitude 2 (NAD83)	Longitude 2 (NAD83)	Station Location 2	Licensee Name	Frequency (MHz)
WQGK465	42.90806	-100.56319	Nenzel	WQGK466	42.90908	-101.12267	Valentine	USCOC Nebraska / Kansas, LLC	6315.84
									6063.80
WQGW334	42.92917	-101.16331	Crookton S	WQOZ951	42.89419	-100.78811	Cody	NE Colorado Cellular, Inc.	6256.54
									6004.5

Table 3. Television Broadcasting Stations (100 km around Project WTGs)

Call Sign	Frequency (MHz)	Distance from closest turbine (km/mi)	Latitude (NAD83)	Longitude (NAD83)	Station Location	Licensee Name
KZSD-TV	180 - 186	73.4/45.6	43.433216	-101.55533	Martin	South Dakota Board of Directors For Educational Telecommunication
KRNE-TV	204 - 210	59.8/37.2	42.676872	-101.711259	Merriman	Nebraska Educational Telecommunications Commission

Table 4. AM / FM Stations (100 km around Project WTGs)

Call Sign	Type	Frequency	Distance from closest turbine (km/mi)	Latitude (NAD83)	Longitude (NAD83)	Station Location	Licensee Name
KDJL	FM	99.5 MHz	33.7/20.9	42.908518	-100.56376	Kilgore	Dj Broadcasting Inc.
KINI	FM	96.1 MHz	24.2/15.0	43.130596	-100.90139	Crookston	St. Francis Mission
KKNL	FM	89.3 MHz	34.5/21.4	42.88967	-100.55438	Valentine	American Family Association
KMBV	FM	90.7 MHz	34.6/21.5	42.888056	-100.553056	Valentine	My Bridge Radio
KOYA	FM	88.1 MHz	36.4/22.6	43.216944	-100.791111	Rosebud	Rosebud Sioux Tribe
KRNE-FM	FM	91.5 MHz	59.8/37.2	42.676872	-101.711259	Merriman	Nebraska Educational Telecommunications Commission
KZSD-FM	FM	102.5 MHz	73.4/45.6	43.43323	-101.55530	Martin	South Dakota Board of Directors For Ed. Telecommunications
KVSH	AM	940 kHz	37.4/23.2	42.86516	-100.51919	Valentine	Heart City Radio Company

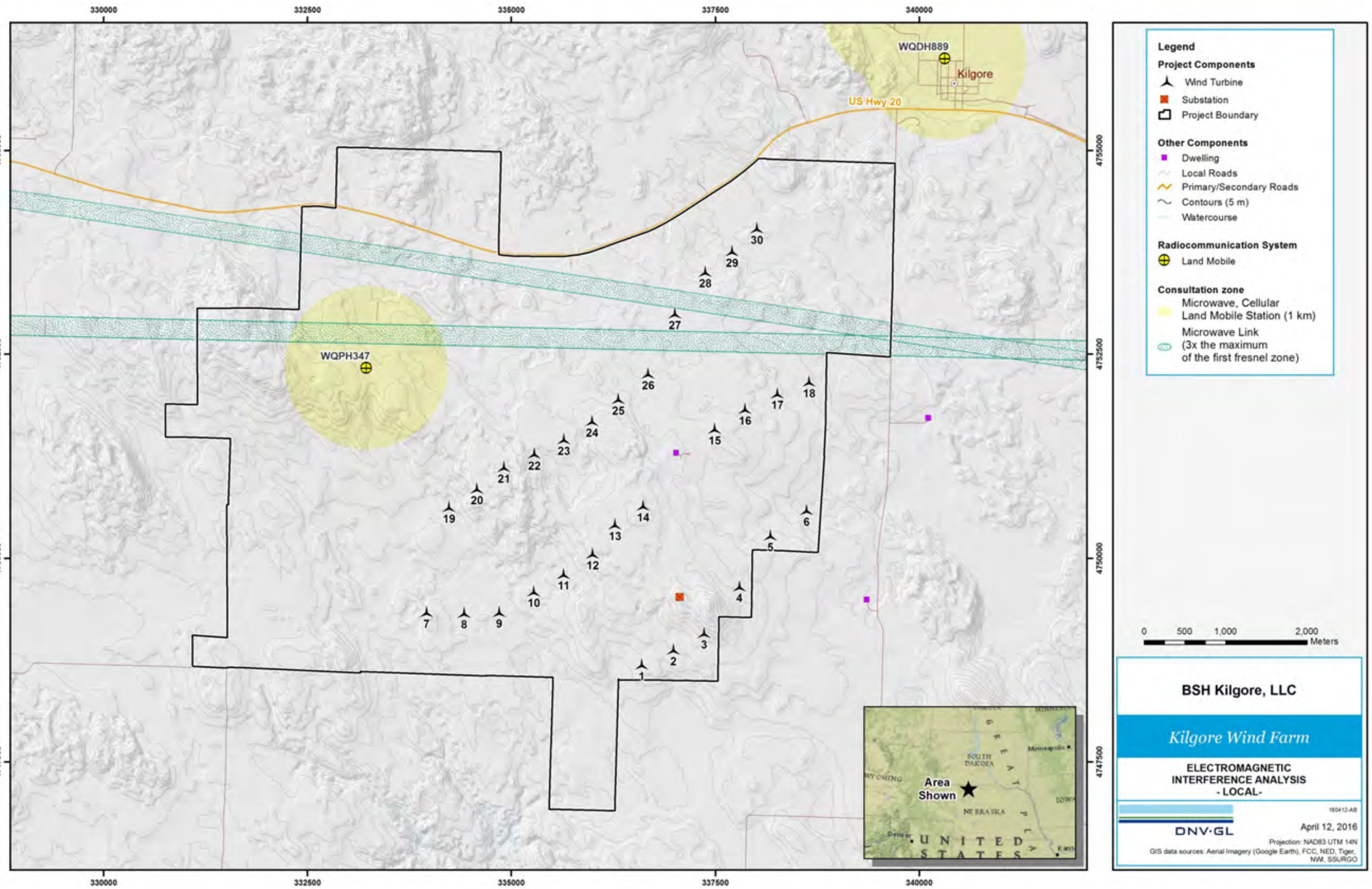

Figure 1 EMI Local Map

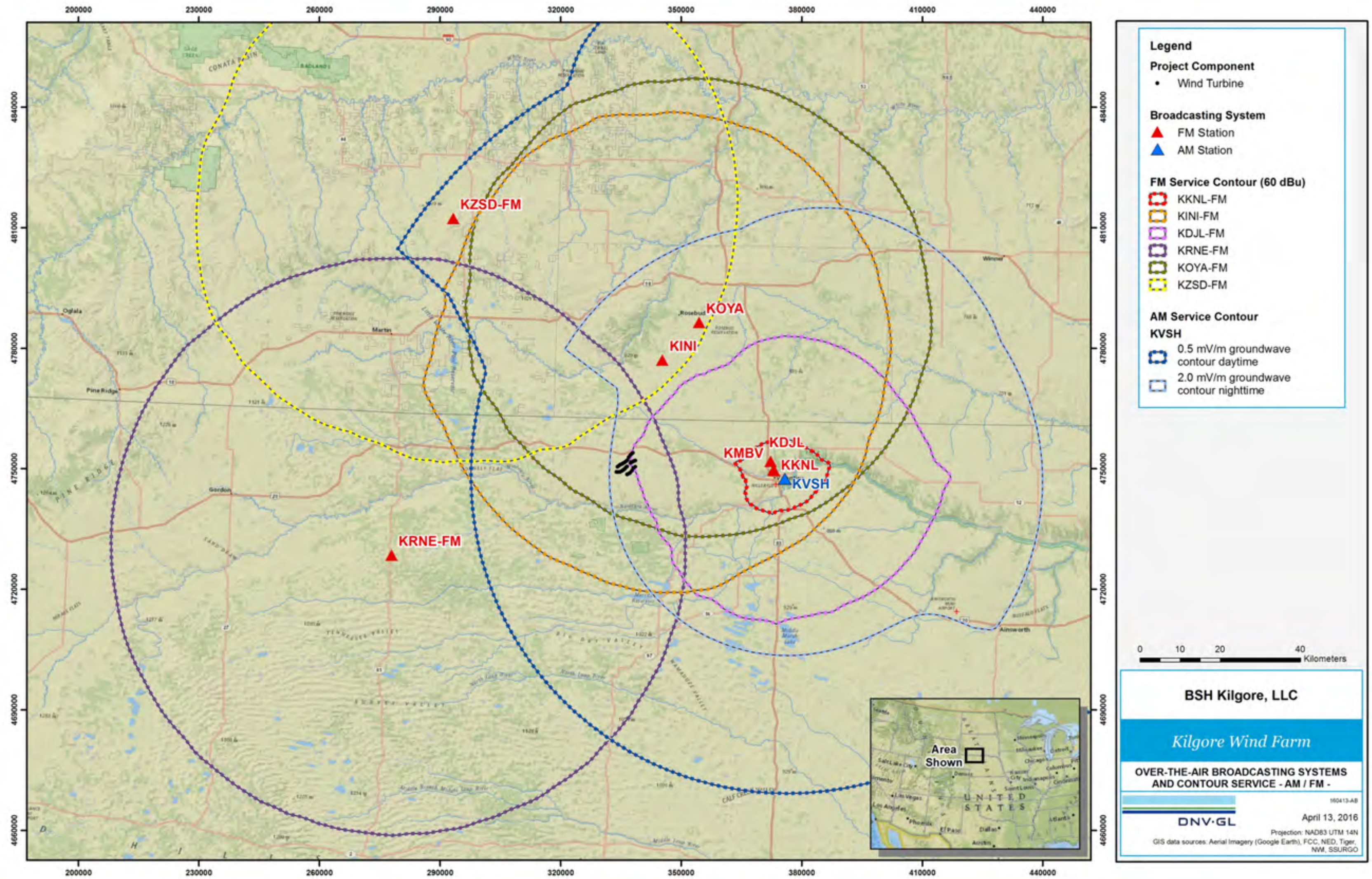

Figure 2 Broadcasting system Map (AM / FM Station)

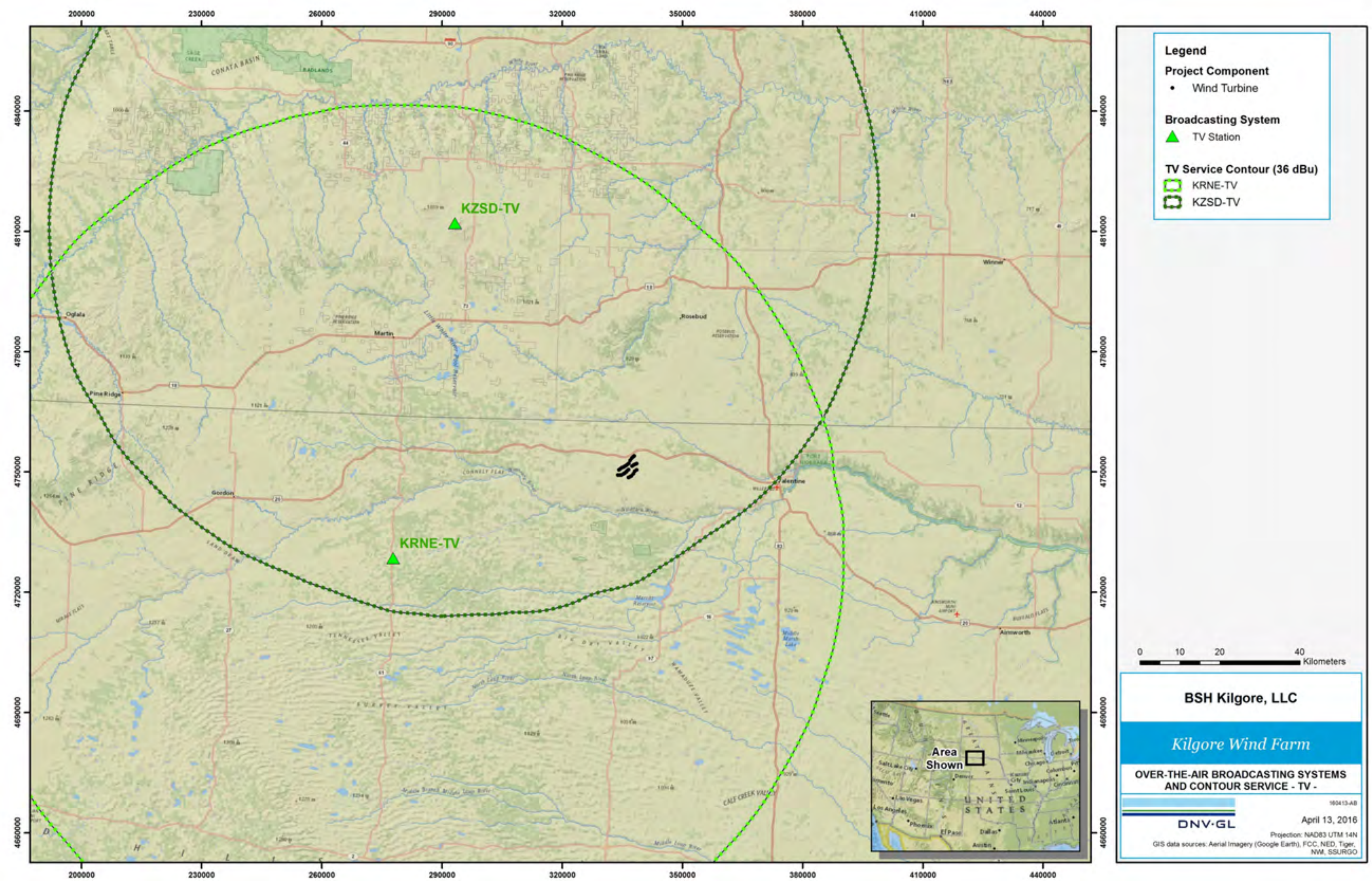

Figure 3 Broadcasting System Map (TV Station)

4 CONCLUSIONS AND RECOMMENDATIONS

The conclusion of this electromagnetic interference analysis is that no interference with the inventoried systems should be anticipated.

- Potential interference (obstruction or reflection) with broadcasting systems (TV, AM, FM) is not anticipated since the turbines are not in close enough proximity to any broadcasting tower to directly obstruct a signal, nor are they close enough to residences to reflect a strong enough signal. The closest distance between a turbine and a broadcasting tower is over 24 km and the closest distance to a potential dwelling is over 500 m.
- Two microwave links have been identified within the Project Area. DNV GL confirmed that the wind turbine layout does not overlap with industry best practice setback of each link (equivalent to 3 times the maximum of the first Fresnel zone). The potential of interference should be reviewed if the layout is updated.

Consultation with the U.S. NTIA is currently in process in order to investigate potential impacts to radiocommunication systems owned by federal departments and agencies.

A high level review of air navigation systems and weather radars demonstrates that the risk of interference with such systems is negligible. This needs to be confirmed through the FAA permitting process and the NTIA consultation letter [2].

5 REFERENCES

[1] Grilli, A., the Join Radio Company Ltd, UK. Can Wind Energy and Radio Co-exist? Reconciling a conflict between wind turbines and radio systems, Windtech International. March 2007.

[2] DNV GL. Submittal of the Kilgore Project For Review by Federal Agencies (NTIA). April 2016.

[3] FM and TV Propagation curves. “https://www.fcc.gov/media/radio/fm-and-tv-propagation-curves”

Exhibit T - NTIA Consultation

DNV·GL

Memo to:

Mrs. Joyce Countee Henry
U.S Department of Commerce,
National Telecommunications Information Administration

From: DNV GL Energy

Date: 13 April 2016

Prep. by: Anne Beaudoin, GIS Analyst

Submittal of the Updated KilgoreProject For Review by Federal Agencies

Dear Mrs. Henry,

I am submitting the Kilgore Wind Energy Project (the "Project") to the National Telecommunications Information Administration for review by federal agencies. The Project is located in Cherry, Nebraska, and will consist of approximately 30 wind turbine generators, at a tip height of approximately 426 feet. Additional information is included below in the requested format.

If you have any questions or need additional information, I can be reached at kendra.kallevig-childers@dnvgl.com, or +1 503-222-5590 x133.

Best Regards,

Kendra Kallevig

Date: 13 April 2016

Type of Notification: Revision 1

Project: Kilgore Wind Energy Project

County: Cherry

State: Nebraska

Project Sponsor:

BSH Kilgore, LLC
211 N Main St, PO Box 88
Valenine, NE 6920

Contact: Kendra Kallevig-Childers
Kendra.kallevig-childers@dnvgl.com
(503) 222-5590, x133

Turbine Description:

Number of Turbines: 30
Turbine Hub Height AGL (meters): 80
Turbine Blade Diameter: 100
Maximum Blade Tip Height AGL (meters): 130

Turbine locations: Turbine locations are included in the attached Excel spreadsheet, using datum NAD83.

Wind Farm Boundary Points: Wind farm boundary points are included in the attached Excel spreadsheet, using datum NAD 83.

Maps: Figures 1 and 2, below, show the Project vicinity and Project area with turbine layout.

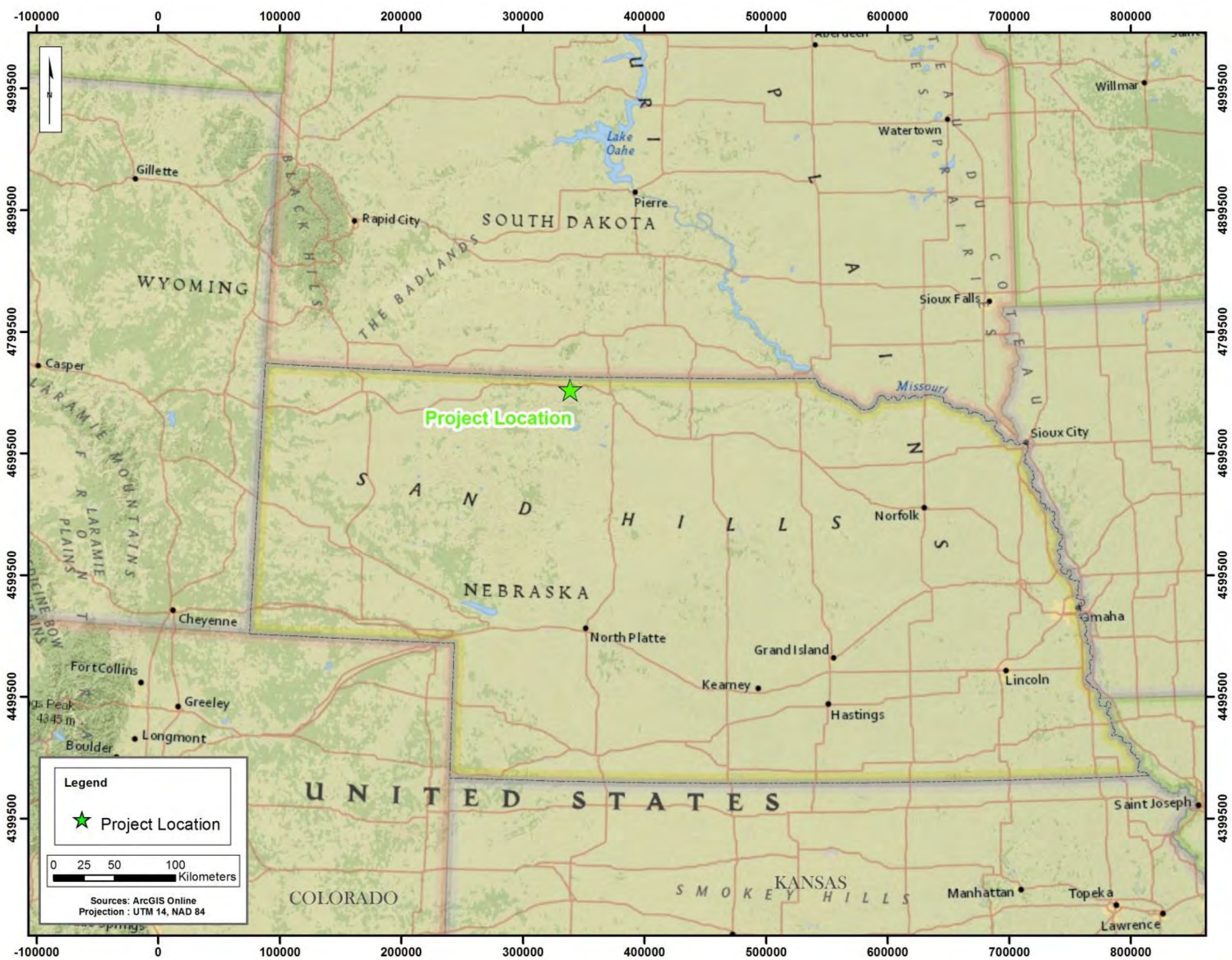

Figure 1 Project Vicinity (State)

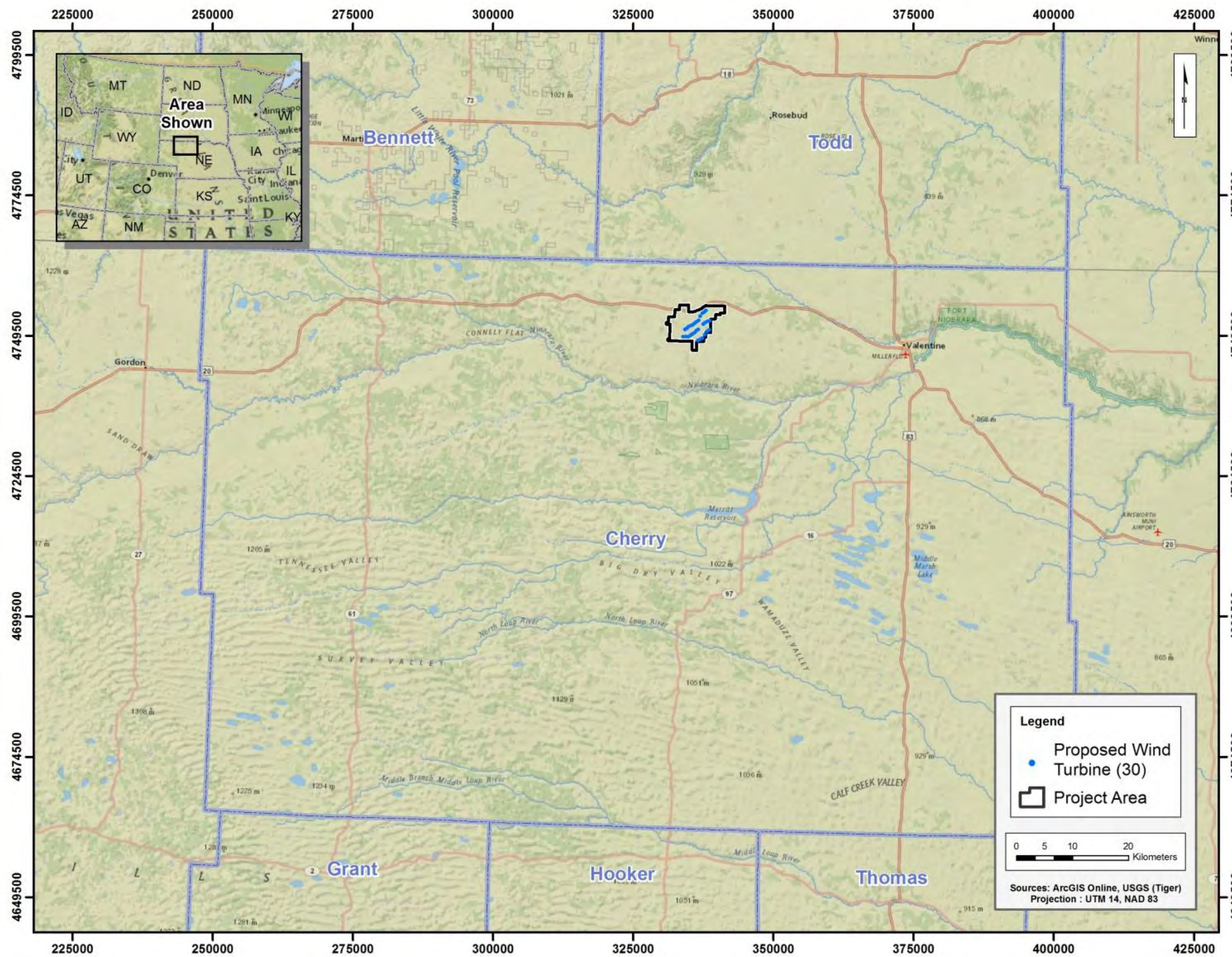

Figure 2 Project area and turbine layout (County)

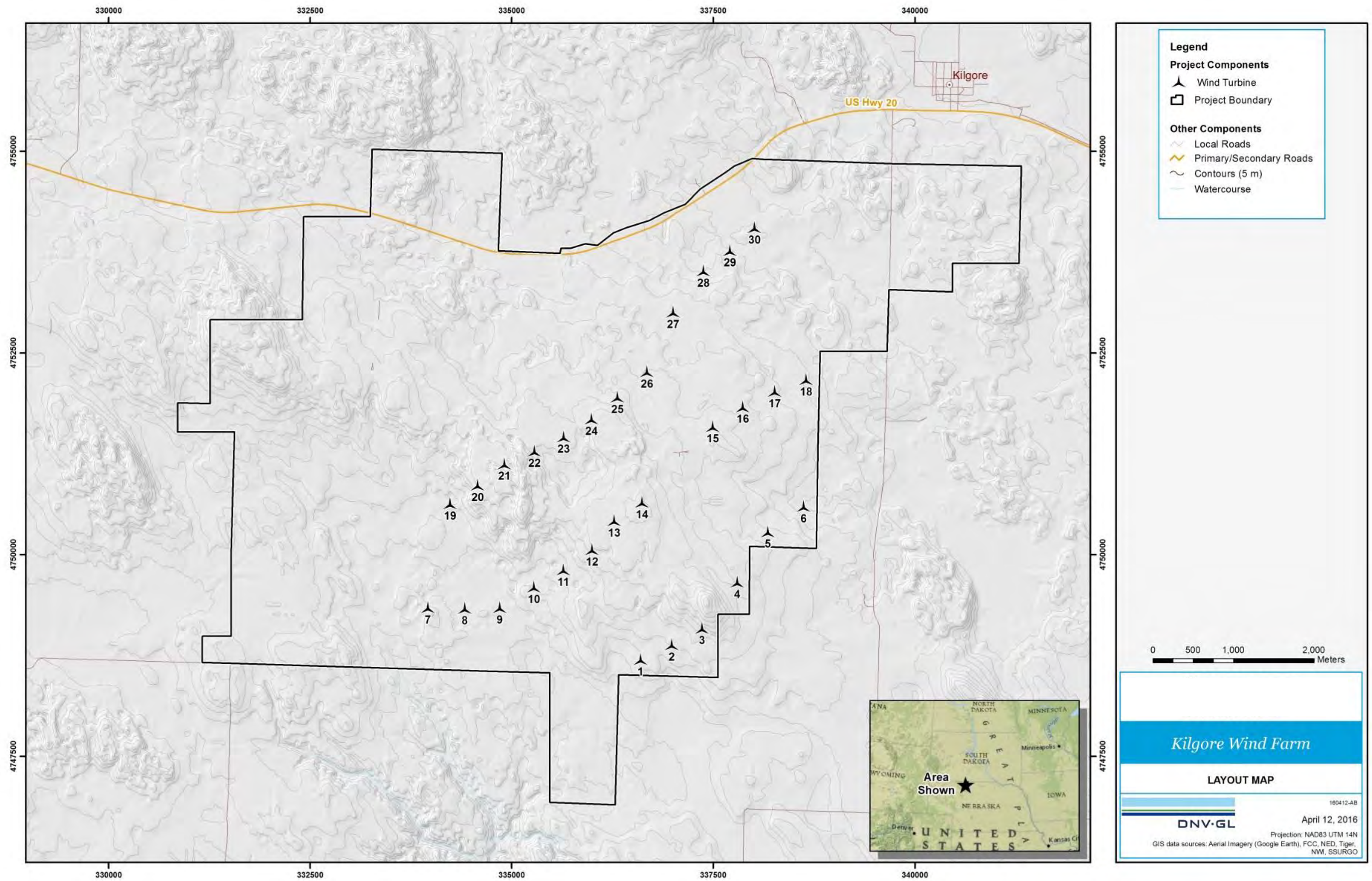

Figure 3 Project area and turbine layout

Point Identifier	Latitude*	Longitude*
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2	42:52:29.639	-100:00:14.878
3	42:52:36.537	-100:00:31.228
4	42:52:55.370	-100:00:49.754
5	42:53:15.911	-100:01:05.891
6	42:53:26.389	-100:01:25.086
7	42:52:42.196	-101:58:01.048
8	42:52:42.231	-101:58:21.323
9	42:52:42.891	-101:58:40.299
10	42:52:51.449	-101:58:58.665
11	42:52:58.667	-101:59:14.564
12	42:53:07.076	-101:59:30.072
13	42:53:18.919	-101:59:41.767
14	42:53:26.571	-101:59:56.685
15	42:53:57.635	-100:00:34.306
16	42:54:05.827	-100:00:50.534
17	42:54:12.317	-100:01:07.788
18	42:54:17.312	-100:01:24.782
19	42:53:24.174	-101:58:11.881
20	42:53:31.827	-101:58:26.620
21	42:53:40.605	-101:58:40.926
22	42:53:46.047	-101:58:57.194
23	42:53:52.030	-101:59:12.960
24	42:53:59.555	-101:59:27.972
25	42:54:08.584	-101:59:41.877
26	42:54:19.007	-101:59:57.679
27	42:54:43.202	-100:00:11.318
28	42:55:00.045	-100:00:27.269
29	42:55:08.462	-100:00:41.465
30	42:55:17.832	-100:00:54.617

***All coordinates are in Geographic system, datum NAD83**

Point Identifier	Latitude*	Longitude*
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3	42:53:10.932	-100:00:56.088
4	42:52:43.536	-100:00:56.628
5	42:52:43.248	-100:00:39.600
6	42:52:17.940	-100:00:40.428
7	42:52:18.120	-101:59:46.104
8	42:51:25.812	-101:59:45.780
9	42:51:26.172	-101:59:10.212
10	42:51:52.884	-101:59:09.312
11	42:52:18.156	-101:59:08.448
12	42:52:18.192	-101:58:34.428
13	42:52:18.516	-101:57:25.704
14	42:52:18.912	-101:56:14.136
15	42:52:18.984	-101:55:58.440
16	42:52:29.496	-101:55:58.152
17	42:52:29.748	-101:56:13.812
18	42:52:39.972	-101:56:13.524
19	42:53:05.136	-101:56:12.768
20	42:53:25.908	-101:56:12.732
21	42:53:51.900	-101:56:12.912
22	42:53:51.252	-101:55:41.772
23	42:54:02.988	-101:55:41.592
24	42:54:02.952	-101:55:59.160
25	42:54:36.648	-101:55:58.152
26	42:54:37.548	-101:56:48.408
27	42:54:53.208	-101:56:48.192
28	42:55:18.876	-101:56:47.868
29	42:55:19.524	-101:57:24.264
30	42:55:46.632	-101:57:24.408
31	42:55:46.344	-101:58:35.544
32	42:55:07.068	-101:58:34.680
33	42:55:06.708	-101:59:08.520
34	42:55:08.724	-101:59:08.952
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40	42:55:20.748	-101:59:56.904
41	42:55:23.880	-100:00:04.860
42	42:55:27.624	-100:00:16.596
43	42:55:33.744	-100:00:24.192
44	42:55:41.016	-100:00:38.412
45	42:55:43.320	-100:00:42.660
46	42:55:46.632	-100:00:52.452
47	42:55:46.416	-100:00:58.248
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Point Identifier	Latitude*	Longitude*
49	42:55:45.804	-100:02:08.916
50	42:55:46.092	-100:03:19.692
51	42:55:20.064	-100:03:19.620
52	42:55:06.996	-100:03:19.584
53	42:55:06.456	-100:02:43.368
54	42:54:54.900	-100:02:43.692
55	42:54:55.188	-100:02:08.808
56	42:54:30.456	-100:02:08.556
57	42:54:29.880	-100:01:32.088

***All coordinates are in Geographic system, datum NAD83**

UNITED STATES DEPARTMENT OF COMMERCE
National Telecommunications and Information Administration
Washington, D.C. 20230

JUN 10 2016

Ms. Kendra Kallevig-Childers
Project Analyst
DNV-GL ENERGY
333 SW 5th St., Suite 400
Portland, OR 97204

Re: Kilgore Project, Revision 2: Cherry County, NE

Dear Ms. Kallevig-Childers:

In response to your request on April 18, 2016, the National Telecommunications and Information Administration provided to the federal agencies represented in the Interdepartment Radio Advisory Committee (IRAC) the plans for the Kilgore Wind Project, Revision 2, located in Cherry County, Nebraska.

After a 45 day period of review, no federal agencies identified any concerns regarding blockage of their radio frequency transmissions.

While the IRAC agencies did not identify any concerns regarding radio frequency blockage, this does not eliminate the need for the wind energy facilities to meet any other requirements specified by law related to these agencies. For example, this review by the IRAC does not eliminate any need that may exist to coordinate with the Federal Aviation Administration concerning flight obstruction.

Thank you for the opportunity to review this proposal.

Sincerely,

Peter A. Tenhula
Deputy Associate Administrator
Office of Spectrum Management

Exhibit U - Vestas Turbine Specifications

General Description

Vestas Turbines

Contents

1 Drawings

1.1 Structural design – illustration of V110 outer dimension

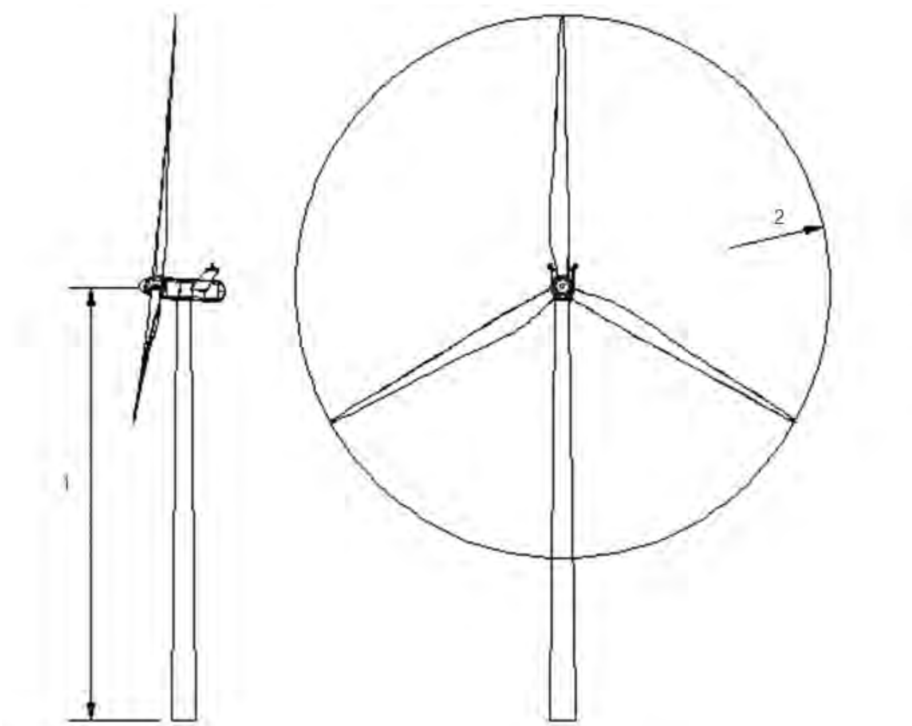
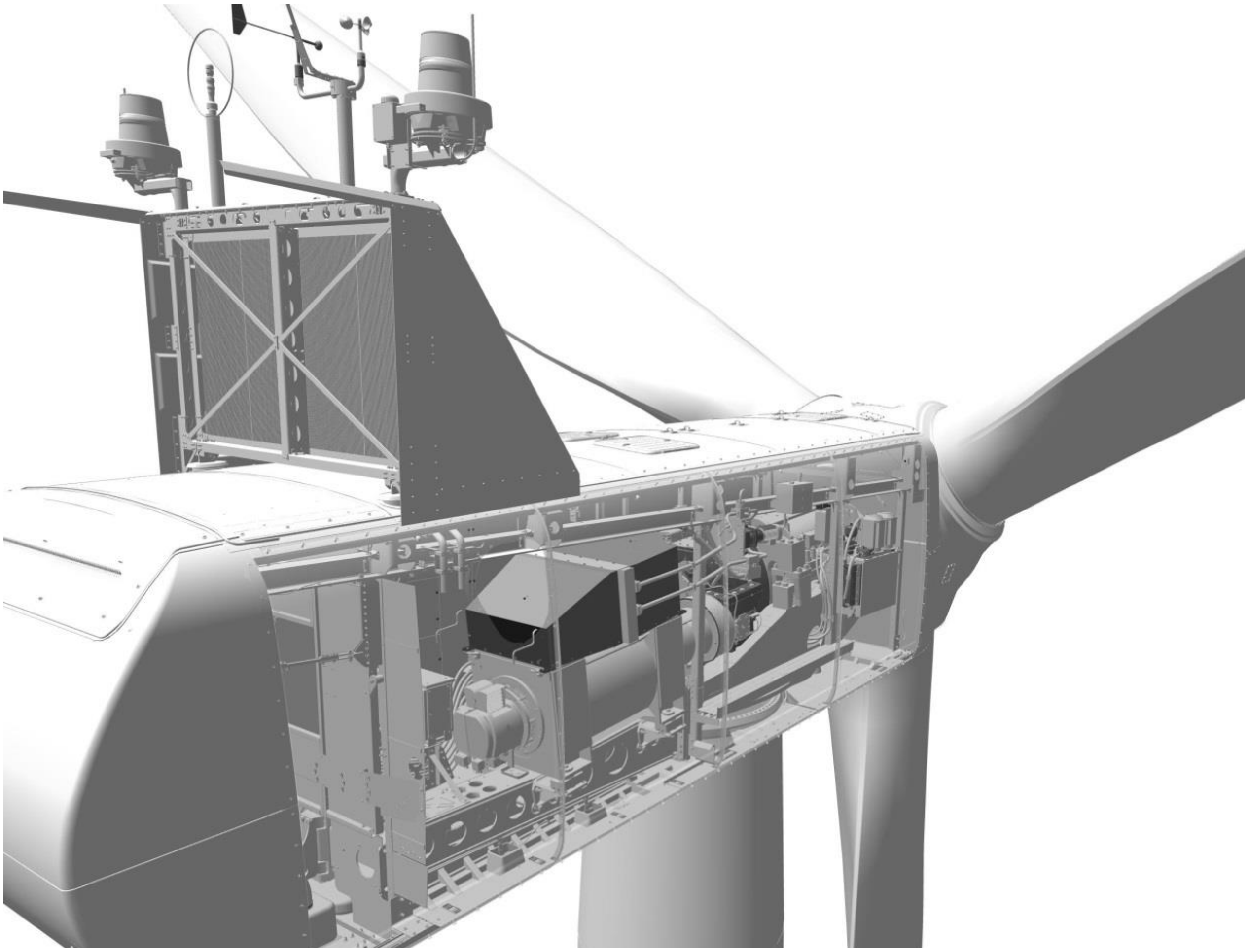


Figure 1: V110 Structural Dimensions

1: Hub Height 80 m 2 : Rotor Diameter 110 m

1.2 V110 Side View Drawing



1.3 Structural design – Illustration of V117 outer dimensions

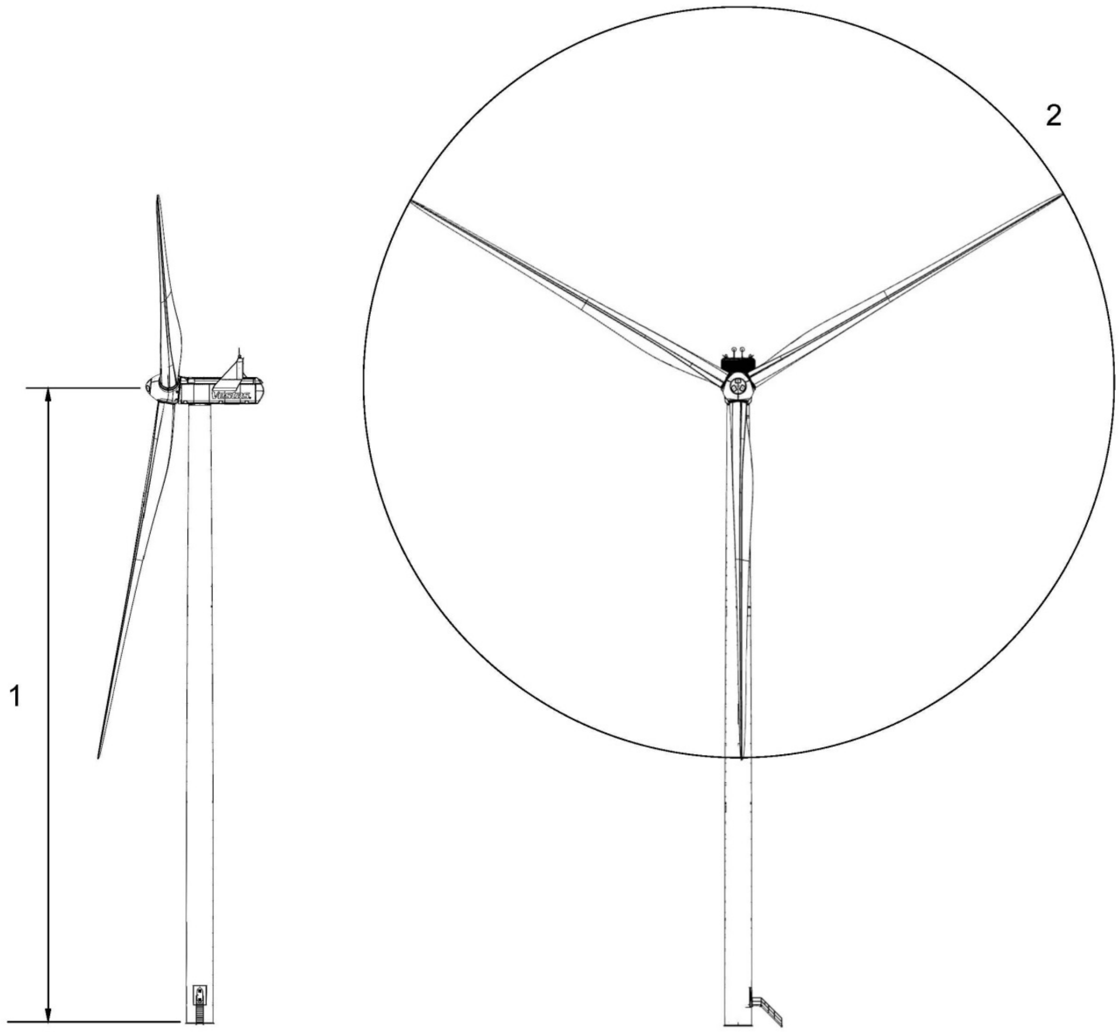


Figure 2: V117 Structural Dimensions

1: Hub Height 91.5 m **2** : Rotor Diameter 117 m

1.4 Structural design – Illustration of V126 outer dimensions

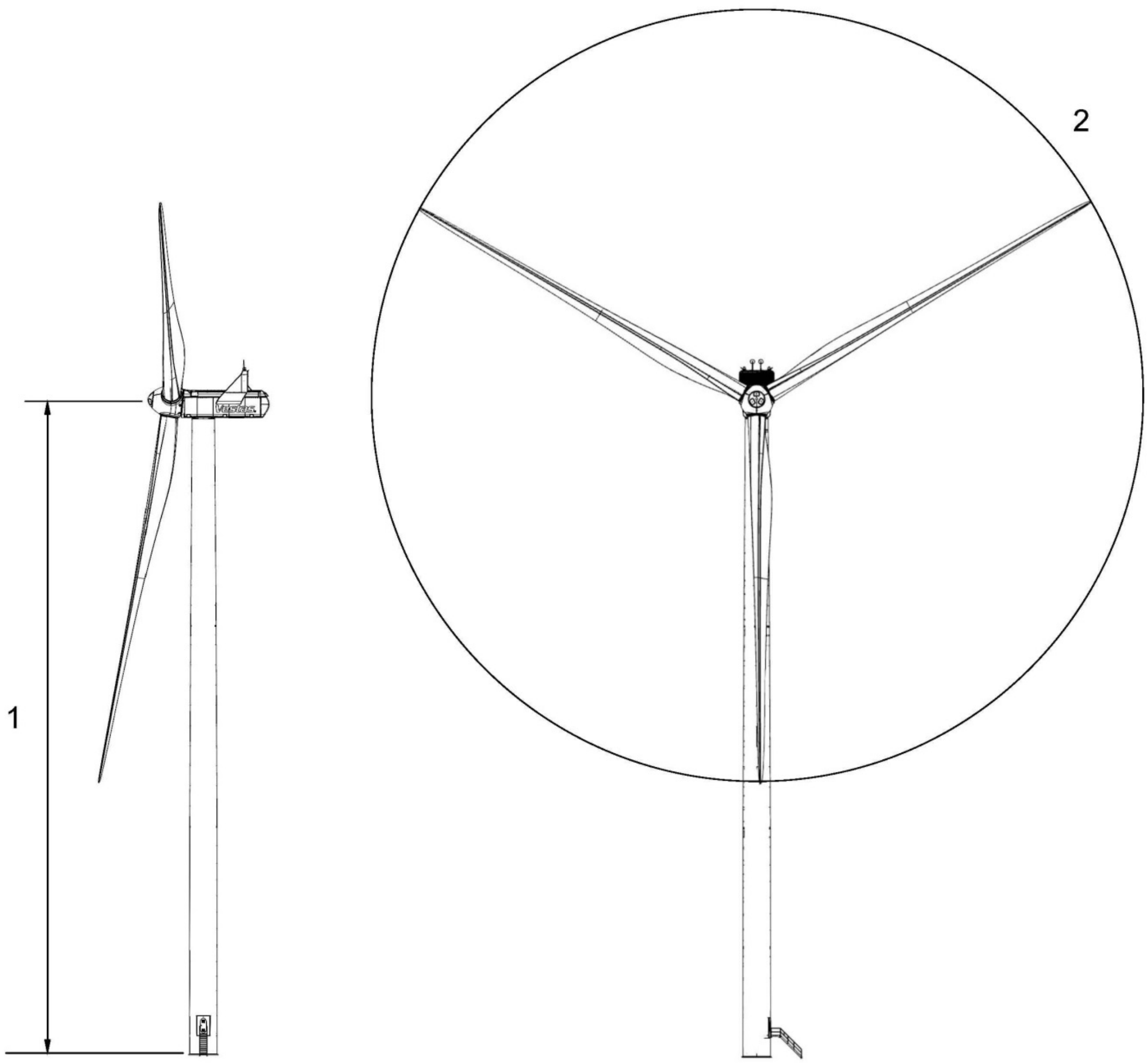


Figure 3: V126 Structural Dimensions

1: Hub Height 87 m **2** : Rotor Diameter 126 m

1.5 Structural Design – V126 and V117 Side View Drawing

Vestas®

2 MW PLATFORM

Wind. It means the world to us.™

V100-2.0 MW® IEC IIB
Facts & figures

POWER REGULATION — Pitch regulated with variable speed

OPERATING DATA

Rated power	2,000 kW
Cut-in wind speed	3 m/s
Cut-out wind speed	22 m/s
Re cut-in wind speed	20 m/s
Wind class	IEC IIB

Standard operating temperature range from -20°C* to 40°C

SOUND POWER

Maximum	105 dB*

* Noise modes available

ROTOR

Rotor diameter	100 m
Swept area	7,854 m²
Air brake	full blade feathering with 3 pitch cylinders

ELECTRICAL

Frequency	50/60 Hz
Generator type	4-pole (50 Hz)/6-pole (60 Hz) doubly fed generator, slip rings

GEARBOX

Type	two planetary stages and one helical stage

TOWER

Hub heights	80 m (IEC IIB) and 95 m (IEC IIB)

NACELLE DIMENSIONS

Height for transport	4 m
Height installed (incl. CoolerTop®)	5.4 m
Length	10.4 m
Width	3.5 m

HUB DIMENSIONS

Max. transport height	3.4 m
Max. transport width	4 m
Max. transport length	4.2 m

BLADE DIMENSIONS

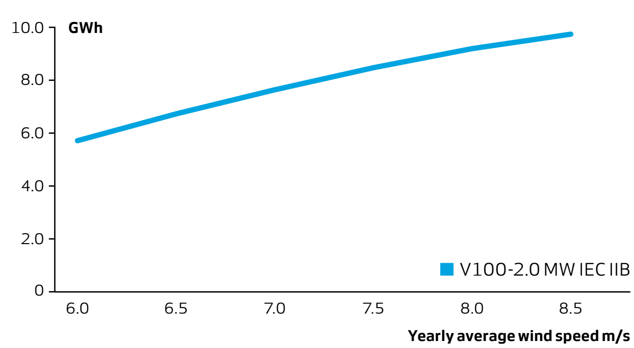
Length	49 m
Max. chord	3.9 m

Max. weight per unit for transportation	70 metric tonnes

TURBINE OPTIONS

- Power Mode (site specfic)
- Condition Monitoring System
- Vestas Ice Detection
- Smoke Detection
- Shadow Detection
- Low Temperature Operation to -30°C
- Aviation Lights
- Aviation Markings on the Blades
- Obstacle Collision Avoidance System (OCAS™)

ANNUAL ENERGY PRODUCTION



Assumptions
One wind turbine, 100% availability, 0% losses, k factor =2,
Standard air density = 1.225, wind speed at hub height

V110-2.0 MW™ IEC IIIA
Facts & figures

POWER REGULATION

Pitch regulated with variable speed

OPERATING DATA

Rated power	2,000 kW
Cut-in wind speed	3 m/s
Cut-out wind speed	20 m/s
Re cut-in wind speed	18 m/s
Wind class	IEC IIIA

Standard operating temperature range from -20°C* to 40°C

SOUND POWER

Maximum	107.6 dB*

* Noise modes available

ROTOR

Rotor diameter	110 m
Swept area	9,503 m²
Air brake	full blade feathering with 3 pitch cylinders

ELECTRICAL

Frequency	50/60 Hz
Generator type	4-pole (50 Hz)/6-pole (60 Hz) doubly fed generator, slip rings

GEARBOX

Type	two planetary stages and one helical stage

TOWER

Hub heights	80 m (IEC IIIA), 95 m (IEC IIIA/IEC IIIB), 110 m (IEC IIIB), 120 m (IEC IIIB) and 125 m (IEC IIIB)

NACELLE DIMENSIONS

Height for transport	4 m
Height installed (incl. CoolerTop®)	5.4 m
Length	10.4 m
Width	3.5 m

HUB DIMENSIONS

Max. transport height	3.4 m
Max. transport width	4 m
Max. transport length	4.2 m

BLADE DIMENSIONS

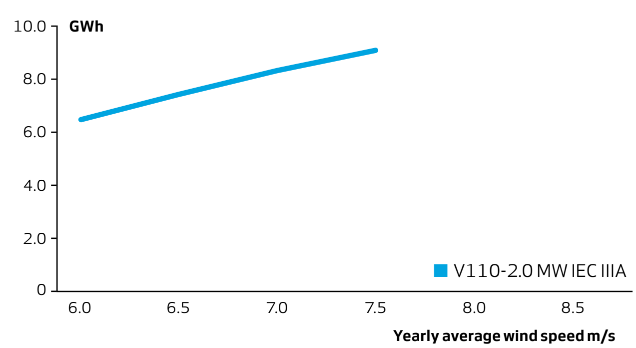
Length	54 m
Max. chord	3.9 m

Max. weight per unit for transportation	70 metric tonnes

TURBINE OPTIONS

- Power Mode (site specific)
- Condition Monitoring System
- Vestas Ice Detection
- Smoke Detection
- Shadow Detection
- Low Temperature Operation to -30°C
- Aviation Lights
- Aviation Markings on the Blades
- Obstacle Collision Avoidance System (OCAS™)

ANNUAL ENERGY PRODUCTION



Assumptions
One wind turbine, 100% availability, 0% losses, k factor =2,
Standard air density = 1.225, wind speed at hub height

Vestas

3 MW PLATFORM

Wind. It means the world to us.™

V112-3.45 MW™ IEC IA
Facts & figures

POWER REGULATION Pitch regulated with variable speed

OPERATING DATA

Rated power	3,450 kW
Cut-in wind speed	3 m/s
Cut-out wind speed	25 m/s
Re cut-in wind speed	23 m/s
Wind class	IEC IA

Standard operating temperature range from -20°C* to +45°C with de-rating above 30°C

*subject to different temperature options

SOUND POWER

(Noise modes dependent on site and country)

ROTOR

Rotor diameter	112 m
Swept area	9,852 m²
Air brake	full blade feathering with 3 pitch cylinders

ELECTRICAL

Frequency	50/60 Hz
Converter	full scale

GEARBOX

Type	two planetary stages and one helical stage

TOWER

Hub height	69 m (IEC IA) and 94 m (IEC IA)

NACELLE DIMENSIONS

Height for transport	3.4 m
Height installed (incl. CoolerTop®)	6.9 m
Length	12.8 m
Width	4.2 m

HUB DIMENSIONS

Max. transport height	3.8 m
Max. transport width	3.8 m
Max. transport length	5.5 m

BLADE DIMENSIONS

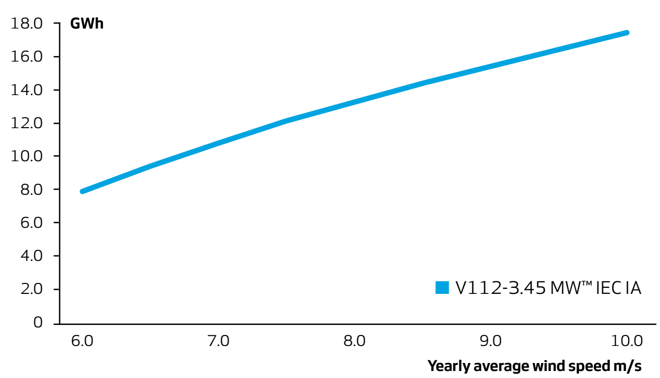
Length	54.7 m
Max. chord	4 m

Max. weight per unit for transportation	70 metric tonnes

TURBINE OPTIONS

- Power Optimised Mode
- Condition Monitoring System
- Service Personnel Lift
- Vestas Ice Detection
- Vestas De-Icing
- Low Temperature Operation to - 30°C
- Fire Suppression
- Shadow detection
- Increased Cut-In
- Nacelle Hatch for Air Inlet
- Aviation Lights
- Aviation Markings on the Blades
- Obstacle Collision Avoidance System (OCAS™)

ANNUAL ENERGY PRODUCTION



Assumptions
One wind turbine, 100% availability, 0% losses, k factor =2,
Standard air density = 1.225, wind speed at hub height

V117-3.45 MW™ IEC IB/IEC IIA
Facts & figures

POWER REGULATION Pitch regulated with variable speed

OPERATING DATA

Rated power	3,450 kW
Cut-in wind speed	3 m/s
Cut-out wind speed	25 m/s
Re cut-in wind speed	23 m/s
Wind class	IEC IB/IEC IIA

Standard operating temperature range from -20°C* to +45°C with de-rating above 30°C

*subject to different temperature options

SOUND POWER

(Noise modes dependent on site and country)

ROTOR

Rotor diameter	117 m
Swept area	10,751 m²
Air brake	full blade feathering with 3 pitch cylinders

ELECTRICAL

Frequency	50/60 Hz
Converter	full scale

GEARBOX

Type	two planetary stages and one helical stage

TOWER

Hub heights	80 m (IEC IB), 91.5 m (IEC IB) and 116.5 m (IEC IB/IEC IIA/DIBtS)

NACELLE DIMENSIONS

Height for transport	3.4 m
Height installed (incl. CoolerTop®)	6.9 m
Length	12.8 m
Width	4.2 m

HUB DIMENSIONS

Max. transport height	3.8 m
Max. transport width	3.8 m
Max. transport length	5.5 m

BLADE DIMENSIONS

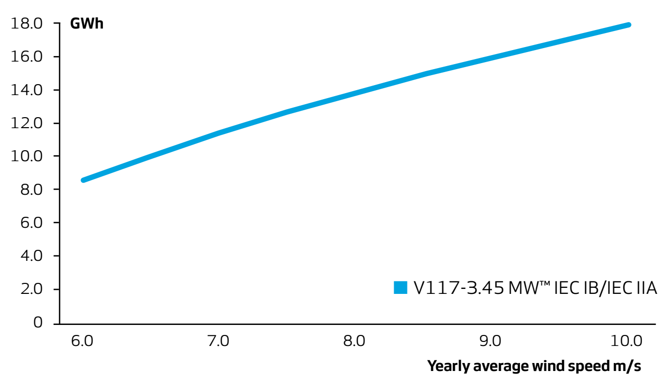
Length	57.2 m
Max. chord	4 m

Max. weight per unit for transportation	70 metric tonnes

TURBINE OPTIONS

- Power Optimised Mode
- Condition Monitoring System
- Service Personnel Lift
- Vestas Ice Detection
- Vestas De-Icing
- Low Temperature Operation to - 30°C
- Fire Suppression
- Shadow detection
- Increased Cut-In
- Nacelle Hatch for Air Inlet
- Aviation Lights
- Aviation Markings on the Blades
- Obstacle Collision Avoidance System (OCAS™)

ANNUAL ENERGY PRODUCTION



Assumptions
One wind turbine, 100% availability, 0% losses, k factor =2,
Standard air density = 1.225, wind speed at hub height

Exhibit V - BSH Kilgore Decommissioning Plan

BSH Kilgore, LLC

DECOMMISSIONING PLAN

BSH Kilgore

System Description

BSH Kilgore is proposed to be a 60 Megawatt (MW) wind energy conversion system located in Cherry County, Nebraska. The Project consists of 30 Vestas V100 2.0 MW wind turbines. This decommissioning report will address the units and auxiliaries located in Cherry County. The proposed wind farm will consist approximately of the following primary components:

Item	Quantitiy	Unit Measure
Wind Turbines	30	Each
Wind Turbine Foundations	30	Each
Substation	1	Each
Access Roads	49,421	Linear Foot
Crane Pads	30	Each
Overhead Tranmission Line	16,368	Linear Foot
Collection System Line	62,356	Linear Foot

Note: The exact number of turbines, lengths of access roads, overhead transmission lines and collection system lines may change prior to construction. BSH Kilgore, LLC will provide as-built plans to the county following construction.

Decommissioning Sequence

In the event the Project requires decommissioning and removal, the following sequence for removal of the components may be anticipated:

- Remove Rotors and Turbines
- Remove Towers and Internals
- Partially Remove Wind Turbine Foundations
- Remove Access Roads
- Remove Substations
- Remove Overhead Transmission Line

After removal of all equipment and materials the disturbed areas will be re-graded and 6 inches of topsoil will be restored.

Wind Turbine Technical Data

The Project currently plans to use 30 Vestas V100 2.0MW Wind Turbines manufactured by Vestas for a local generating capacity of approximately 60 MW. The towers are painted monopole tubular steel, white in color, with a hub height of 80 meters (264 feet). The project will use 100 meter (330 feet) diameter rotors. Each turbine and rotor will reach a total height of approximately 130 meters (429 feet) above ground surface.

Properly maintained wind turbines have a minimum life of 20 years (Ton van de Wekken 2007). At the end of the project life, depending on market conditions and project viability, the wind turbines may be "re-powered" with new nacelles, towers, and/or blades. Alternatively, the wind turbines may be decommissioned and removed. The major components of the wind turbines (the tower, nacelle, rotor, and blades) are modular items that allow for ease of construction and/or disassembly during decommissioning or replacement. Each tower is made up of approximately 139.9 tons of painted steel, which is salvageable (Vestas 2014). The nacelle has an overall unit weight of 76.1 tons and is constructed of a combination of steel and various other materials. Portions of the components within the nacelle and generators can also be salvaged for scrap.

Salvage Background

Based on the general construction details presented for the Vestas V100 2.0MW turbine and associated tower and components, one can assume that the nacelle will yield approximately 80 percent salvageable materials. Since the turbine tower and the hub assembly are of manufactured steel, it is anticipated that the components will yield 100 percent salvageable metallic materials. Copper salvage estimates were derived by assuming 5 percent of the total tower and nacelle weight consists of salvageable copper bearing materials. Since the rotor/blades are constructed of predominantly non-metallic materials (fiberglass reinforced epoxy and carbon fibers), no salvage value for the rotor/blades was used to develop the decommissioning cost estimate.

The current market value of steel, based on November 2015 (*Steelonthenet.com)* is approximately $353 per ton. Assuming the steel from each turbine assembly and tower will be salvaged, the salvage value of each turbine and tower assembly is estimated to be approximately $79,453 each. Given that market values fluctuate and the price of steel historically has shifted from $276 to $461 per ton, turbine salvage values could range from $62,122 to $103,762.

The market value of copper has fluctuated dramatically this past year. As of March 2016 (www.infomine.com) the price is approximately $2.31 per pound ($4,620 per ton). Therefore, estimated salvage value for copper is approximated to be $46,200 per turbine. The table below summarizes the potential salvage value per turbine.

Item	Quantity (Tons)	Price/Ton	Salvage Value/Turbine
Tower (100% steel)	139.90	$353	$49,385
Nacelle (80% steel)	76.10	$353	$21,491
Hub (100%)	21.30	$353	$7,519
Anchor Bolts	3.00	$353	$1,059
Total Steel Value			**$79,453**
Copper	10.00	$4,620	$46,200
Total Salvage Value			**$125,653**

The 2016 estimated cost of erecting a turbine tower, hub, blades, and nacelle is approximately $85,000. Therefore, the dismantling costs will be approximately $85,000 per turbine location in 2016 costs. The removal costs are summarized in the conclusions of this report. The remainder of this report addresses the decommissioning costs for the surface and subsurface components.

Wind Turbine Foundations

Wind Turbine Spread Foundation Design/Decommissioning

Each octagonal spread foundation pedestal and base is required by Cherry County to be removed to a depth of 48 inches below the proposed final ground surface. The upper 48 inches of the turbine foundation will be removed by a jack hammer mounted on a bobcat or excavator.

Complete off-site removal for demolition and disposal of the removed portions of the foundations is required per the lease agreement between the Project and the landowners hosting turbines. For the purpose of this report, the cost of removal and disposal off site is used to estimate the decommissioning costs of the foundations.

There is essentially no salvage value to the turbine foundations. The spread footing foundation design generally consists of a solid reinforced concrete circular pedestal with dimensions of approximately 18 feet diameter, and an overall pedestal height of approximately 5 feet, 0 inches. Below the foundation pedestal is the foundation base section, of octagonal geometry that varies in dimensions according to the soil conditions. The removal and disposal of the foundations to an elevation of 48 inches below the final surface are estimated as follows:

Activity	Quantity	Unit Cost	Cost/Foundation
Mobilization & Excavation	30	$3,000	$90,000
Concrete Demolition	30	$20,000	$600,000
Disposal/Backfill	30	$4,000	$120,000
Total Cost for Foundation Removal			**$810,000**

Access Roads

Typical Access Road Construction Details

For the purposes of this report, the total length of access roads for the Project has been estimated at 49,421 linear feet, or 9.36 miles. The final access roads to each turbine will be approximately 16 feet wide with enlarged areas at the turbine sites and at the intersection with U.S. Route 20. Minimal disturbance practices will be used in constructing roads. Where possible roads will be placed directly on top of existing soils with no disturbance to the soil. When needed existing soils will be excavated, shaped, and graded to match the typical contour of the land adjacent to the access road and compacted prior to construction of the roads. The construction of the access roads will consist of a geotextile fabric placed on top of the existing grade or on a prepared subgrade with up to 4 inches of aggregate base and 6 inches of aggregate surface resulting in the estimated quantities shown below:

Item	Quanity	Unit Measure
Geotextile Fabric	87,859	Square Yards
Aggregate Base Course	9,762	Cubic Yards
Aggregate Surface Course	14,643	Cubic Yards

Access Road Decommissioning and Public Street Repair

Access road decommissioning will involve the removal and transportation of the aggregate materials from the project site to a nearby site where the aggregate can be processed for salvage. It is possible that the local ranchers or farmers may accept this material without processing to use on their local roads; however, for the purpose of this report it is assumed that the materials will be removed and hauled to a reprocessing site within 25 miles of the wind farm site. While damage is not anticipated, any public road damaged due to the reclamation process will be repaired.

The decommissioning will also involve the removal and proper disposal of the geotextile fabric. It is assumed that during excavation of the aggregate a large portion of the geotextile will be "picked up" and sorted out of the aggregate at the aggregate reprocessing site. Geotextile fabric that is remaining, or large pieces that can readily be removed from the excavated aggregate, will be disposed of offsite at a landfill.

Salvage value for the road materials assumes that 75 percent of the aggregate surface course can ultimately be salvaged for future use as aggregate base course. It is also assumed that 50 percent of the aggregate base course could be reused as aggregate base course. The remaining materials would be viable for general fill in non-structural fill applications. The geotextile fabric cannot be salvaged. The following salvage values are used for the road materials assuming they will be picked up and hauled from the process site by others:

Removal Items	Value	Unit
Reprocessed Aggregate to be used as Base Course	$10	Cubic Yard
Remaining Aggregate to be used as Fill	$5	Cubic Yard

The decommissioning cost of the roads is based upon removal and salvage of the aggregate for use as base course or inert fill within a 25-mile radius of the wind farm site or self haul from the aggregate processing site to further distances. The estimated costs for access road decommissioning would be as follows:

Removal Items	Quantity	Removal Cost	Salvage Value	Net Cost
Geotextile Fabric (Square Yards)	87,859	$65,894	-	$65,894
Aggregate Base Course (Reprocessed as Aggregate Base Course)	4,881	$48,811	$48,811	$0
Aggregate Base Course (Reprocessed as Fill)	4,881	$48,811	$24,405	$24,405
Aggregate Surface Course (Reprocessed as Aggregate Base Course)	10,982	$109,824	$109,824	$0
Aggregate Surface Course (Reprocessed as general fill)	3,661	$36,608	$18,304	$18,304
Totals		**$309,948**	**$201,344**	**$108,604**

Crane Pads

Crane pads will be approximately 50 feet by 80 feet and consist of compacted native material and approximately 1 foot of base fill. After decommissioning activities, crane pad aggregate will be removed and pad areas will be filled and scarified, as necessary. The restoration will be performed in consultation with the landowner and pad sites will be restored as near as practicable to their original condition with native seed and soils.

Cable Wire and Trench Typical Installation

All cable in trenches will be installed at a minimum of 60 inches below the ground surface. In all cable locations outside of access roads, the trenches are backfilled with on-site earthen materials with at least 6 inches of topsoil. At roads, the cables will be in conduits, which are a minimum of 60 inches below the final surface. The estimated total collection system line length is 62,356 lineal feet.

Cable Wire and Trench Decommissioning

Since the cables will be located well below the ground surface and will not impose an obstacle to farm activities, physical removal of the cables is not considered to be required to restore the former use of the ground except in areas where a junction box is present and will be removed.

Overhead Transmission Lines

There will be approximately 16,368 feet (3.1 miles) of 115kv overhead transmission line cable. The conductors, insulators, and other pole top material will be removed. The supporting poles will be removed and the holes will be filled in with compatible subgrade material. The aluminum conductor steel reinforced cable will be removed and have an estimated salvage value of $3,683. As of March 2016 (www.infomine.com) the salvage value of aluminum was $0.73 lb. The copper conductor steel reinforced cable will be removed and have an estimated salvage value of $37,441.8. As of March 2016 (www.infomine.com) the salvage value of copper was $2.31 lb. There are 49,104 feet of copper overhead transmission line cable. The total salvage value of the aluminum and copper cables is $41,125. Decommissioning costs is estimated to be $38,750 for removal of the overhead transmission line with only the aluminum and copper cables salvageable.

Collector Substation

Substation and Interconnect Facilities

The collector substation decommissioning requires the deconstruction of the control house/switchgear, main power transformer, breakers, bus work, ground grid, steel supports, foundations, and yard rock base as well as reclamation of the substation site. Most of the equipment is scrapped, the main power transformers will be sold, and the remaining materials disposed. The estimated costs for decommissioning the collector substation are as follows:

Item	Quantity	Unit	Unit Cost	Total
Coordination and De-energize Substation	2	Days	$3,000	$6,000
Dismantling Substation and Equipment	10	Days	$4,500	$45,000
Transformer Removal	3	Days	$2,400	$7,200
Foundation Removal and Disposal	5	Days	$5,300	$26,500
Transportation of Control Building	1	Each	$3,000	$3,000
Small Crane Work	3	Days	$4,800	$14,400
Transportation of Transformer	1	Each	$4,000	$4,000
Transportation of Steel and Other Equipment	10	Trips	$315	$3,150
Miscellaneous Waste	15	CY	$60	$900
Earth Work	1	Acre	$5,000	$5,000
Total Cost				**$115,150**

The collector substation's steel, copper ground grid, aluminum bus, and copper wire can also be salvaged for scrap. The typical transformer of this magnitude has a 40 year life. It is assumed based on industry standard that the transformers can be sold at 25 percent of the original price. The estimated salvage values of the collector substation are as follows:

Item	Quantity	Unit	Unit Value	Total
Substation Steel Scrap (Tons)	33	Ton	$353	$11,649
Resale of Substation Transformer	1	Each	$250,000	$250,000
Substation Ground Grid Scrap	3	Tons	$4,620	$11,550
Substation Aluminum Bus Scrap	4	Tons	$700	$2,800
Substation Wire Scrap (Tons)	2	Tons	$4,620	$6,930
Total Salvage Value				**$282,929**

Earthwork and Topsoil Restoration

Once all of the aboveground improvements are removed, the remaining work to complete Project decommissioning will consist of shaping and grading of the surface areas as near as practicable to their original contour prior to construction of the turbine sites and access roads. Reseeding of native grasses will be done in coordination with project landowners to fit their needs and preference.

It is estimated that approximately 6,300 cubic yards of earthwork and topsoil will be necessary for restoration. Based upon the typical cost for this type of work within the Cherry County area, and the assumption that earth and topsoil can be found within 30 miles of the wind farm site, the following estimate of decommissioning cost for earthwork and topsoil restoration is provided:

Item	Quantity	Unit Cost	Total Cost
Earth Fill (access roads, crane pad, and foudation) (cubic yards)	4,200	$15	$63,000
Topsoil (cubic yards)	2,100	$10	$21,000
Seed Planting (acres)	48	$400	$19,200
Total Cost			**$103,200**

Operation and Maintenance Building

There is no operations and maintenance building anticipated to be located on the Project Area. BSH Kilgore will instead seek a building to be located in one of neighboring towns Nenzel, Kilgore, or Cody to be refurbished and upgraded to suit the needs of Operation and Maintenance activities.

After decommission of the project the Operations and Maintenance Building will be sold as a commercial building or sold for repurposing by a new owner.

Summary of Decommission Costs

The following is a summary of the total estimated costs for BSH Kilgore Project Decommissioning. This estimate was developed using the various cost resources listed below:

- Historical Data
- Previous Vendor/ Budget estimates
- Current/Historic Commodity Prices
- Estimator Judgment

Summary of Decommission Costs

Salvage Item	
Turbine Components	$3,769,597
Collection Substation	$282,929
Overhead Transmission Line	$41,125
Total Salvage Value	**$4,093,651**

Decommissioning Item	
Turbine Removal	$2,550,000
Turbine Foundation Removal	$810,000
Access Road Removal	$108,604
Crane Pad Removal	$9,450
Collection Substation Removal	$115,150
Earthwork and Topsoil	$103,200
Overhead Transmission Line Removal	$38,750
Total Costs	**$3,735,154**
Salvage Less Decommissioning	**$358,497**
Net Salvage Value per Turbine	**$11,950**

Therefore, it is estimated that the total decommissioning costs of the Project can be completely recovered by the salvage and resale value of the turbine components. Note that these values are based on 2016 costs and do not assume any inflation costs or other market fluctuations.

Financial Assurance

For Cherry County, financial assurance in an amount sufficient to adequately perform the required decommissioning per this plan and according to all local, state, and federal environmental regulations will be secured by BSH Kilgore, LLC. BSH Kilgore will provide financial assurance in the amount equal to the professional engineer's certified estimate of the decommissioning costs on or by the fifteenth (15^{th}) year of operations. To the extent that the estimate of the decommissioning costs are zero (or negative), financial assurance shall not be required on the part of BSH Kilgore, provided, however, that BSH Kilgore shall re-evaluate the need for financial assurance at least annually after the fifteenth (15^{th}) year of operations by a qualified engineer certified in the State of Nebraska.

References

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OLSSON
ASSOCIATES

June 17, 2016

BSH Kilgore, LLC
Attn: Eric Johnson
211 N Main Street
Valentine, Nebraska 69201

RE: Clarification of Wetland Type vs. Jurisdictional Determination

Dear Mr. Johnson,

This letter is to clarify the distinction between classification of wetland types, and a jurisdictional determination of wetlands.

Wetland Type Classification. The Cherry County zoning ordinances include a setback for wind turbines from several types of wetland, US Fish and Wildlife Service Types III, IV, and V, as described in Circular 39. Wetland types are identified during a wetland delineation by the typical plant communities and water regime of each wetland. As the type of wetland is classified by the consultant while conducting the wetland delineation, not by the U.S. Army Corps of Engineers or other regulatory agency, it is important to have qualified consultants do the delineation.

Jurisdictional Determination. In contrast to classifying wetlands by type, a jurisdictional determination is a determination of whether a wetland or pond is a Waters of the U.S. (jurisdictional) or Waters of the State (not jurisdictional), and thus whether or not it is regulated under the Clean Water Act. If it is jurisdictional, a CWA Section 404 permit is required for impacts; if it is not, no CWA permit is needed for impacts. For the most part, the type of wetland is irrelevant to jurisdiction. Although Olsson Associates routinely evaluates wetlands and other water bodies for likely jurisdictional status, we cannot make a final determination of jurisdiction; only the U.S. Army Corps of Engineers can do so.

Olsson's Expertise to Identify Wetland Type. Olsson Associates routinely classifies wetlands when conducting wetland delineations. During the last five years, we have conducted at least 500 wetland delineations in Nebraska and surrounding states, and have classified wetlands for each one. Olsson currently has an on-call contract to conduct wetland delineations for Nebraska Department of Roads, and has held these contracts continuously since NDOR started them. In our Nebraska offices, we have 10 staff members who are "Qualified Scientists" to conduct wetland delineations for NDOR. With our extensive expertise in wetland delineations, we have the expertise to correctly classify wetlands according to type.

I personally review almost all the delineations conducted by Nebraska staff. I have worked on wetlands since 1970, and have studied and researched wetlands throughout the United States,

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Central America, and the Caribbean. I have been a contractor to both the Philadelphia District and Omaha District Corps of Engineers, and have been obtaining Section 404 permits for clients since the late 1980s.

If you have any questions or concerns about this, I would be happy to explain this further. Thank you for your time.

Sincerely,

Joan Darling, Ph.D.
Technical Leader, Environmental Compliance and Remediation

OLSSON ASSOCIATES

16 June, 2016

Mr. Eric Johnson
Sandhills Wind Energy, LLC
211 N Main St. PO Box 88
Valentine, NE 69201

RE: Preconstruction Road Survey
Proposed Wind Farm, Hwy 20 West of Valentine
OA Project No. 015-0785

Eric:

After discussing the project with you, it appears that the main access point to the proposed wind farm property is adjacent north off of Hwy 20 west of Valentine. After exiting the highway on to the property, the entire proposed wind farm property is private and there are no county roads within the property boundary. All access on to the private property will be off of the Highway 20, and access throughout the property will be all private property.

Preconstruction Road Surveys are conducted on these types of projects to insure the safe transport of machinery and equipment to and from the site during the course of the project, and to insure that the roads are in the similar condition at the end of the project, as they are in the start. Typically, this is completed for county roads to insure they meet the minimum design standards for geometrics to transport the equipment.

In this case the only road of transport until arriving on private property, and the only "non private" road is Highway 20. I was able to speak with Mark Kovar, the NDOR District 8 Engineer responsible for that area, to discuss the project and the requirements for the preconstruction road survey. Mark indicated that nothing is required by NDOR, and insured that all minimum design standards are met or exceeded for Highway 20.

With this being said, it is of my professional opinion that a Preconstruction Road Survey would fall under the category of "not applicable" for the preconstruction road survey.

Respectfully Submitted,

Jess Hurlbert, PE

cc. Jeff McPeak – Olsson Associates
Mark Kovar, NDOR District 8, Ainsworth

701 4th Avenue, Suite 2C
PO Box 885
Holdrege, NE 68949-0885
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DNV·GL

Memo to:

Joel Mundorf
Zoning Administrator
365 N Main St
Valentine, NE 69201

From:	Garrad Hassan America, Inc. (hereafter, "DNV GL")
Date:	20 October 2016
Prep. by:	Aren Nercessian, Leslie Breadner
Check. by:	Daniel Schoborg, Bruce Moreira
Approved by:	M. Cookson, Matthew Rogers, PE

Certification of Kilgore Wind Project Turbine Layout Setbacks

Dear Mr. Mundorf,

DNV GL is submitting a wind turbine layout as part of the Kilgore Wind Energy Project (the "Project") on behalf of BSH Kilgore, LLC (the "BSH Kilgore"). The Project is located in Cherry County, Nebraska, and will consist of 30 wind turbine generators with a tip height of 426 feet. The coordinates of the turbines are provided in Table 1.

DNV GL has performed a review of applicable setbacks, including location of property lines, dwellings, certain rights of way, and wetlands, with information provided by BSH Kilgore. DNV GL subsequently designed a layout comprising 30 turbines in accordance with applicable zoning regulations.

DNV GL certifies that the current turbine positions are in compliance with the setbacks described above, corresponding to those listed in Section 613.03 of the Cherry County Zoning Regulations [1], considering the following assumptions and caveats:

1. In determining the "applicable building setback", the more conservative minimum setback requirements of *Niobrara River Corridor Agricultural District* were applied throughout.
2. Parcel boundaries were provided by BSH Kilgore and used to generate a project boundary.
3. It is assumed that all landowners within the provided project boundary are participants and have signed waivers regarding the property boundary setbacks applicable to their parcels.
4. It is assumed that no setbacks apply to local electrical distribution lines below 69kV.
5. A high level review of public conservation lands such as national forests and wildlife refuges was undertaken and no such lands were identified near the project boundary.
6. DNV GL reviewed the classification of wetlands provided by BSH Kilgore based on known standards and applied the corresponding setbacks set forth in [1].

Figure 1 shows a county map including the proposed Project.

Figure 2 shows the project boundary including turbine locations and applicable setbacks identified as described above.

Table 1: Wind turbine coordinates

Turbine ID	UTM Coordinates	
	Easting [m]	Northing [m]
1	336601	4748672
2	336988	4748855
3	337364	4749059
4	337798	4749630
5	338179	4750255
6	338622	4750568
7	333961	4749315
8	334421	4749305
9	334852	4749315
10	335275	4749569
11	335641	4749783
12	335999	4750034
13	336273	4750393
14	336617	4750621
15	337493	4751559
16	337867	4751803
17	338263	4751994
18	338652	4752139
19	334238	4750604
20	334578	4750832
21	334909	4751095
22	335282	4751254
23	335644	4751430
24	335990	4751654
25	336312	4751925
26	336678	4752238
27	337005	4752977
28	337379	4753488
29	337707	4753740
30	338012	4754022

Coordinates in UTM zone 14, NAD83 Datum

If you have any questions or need additional information, I can be reached at michael.cookson@dnvgl.com, or +1 510-891-0446.

Best Regards,

Michael Cookson

Senior Project Manager and Team Leader, Development and Engineering Services

Reviewed by:

Matthew Rogers, PE
Nebraska Professional Engineer E-14690
Expires 12/31/2016
For Garrad Hassan America, Inc. (DNV GL subsidiary)
Nebraska Authorized Organization CA3572, Expires 5/4/2018

REFERENCES

[1] Proposed Amendments to the Wind Energy Section of the Cherry County Zoning Regulations – Section 613 Wind Energy Conversion Facilities.

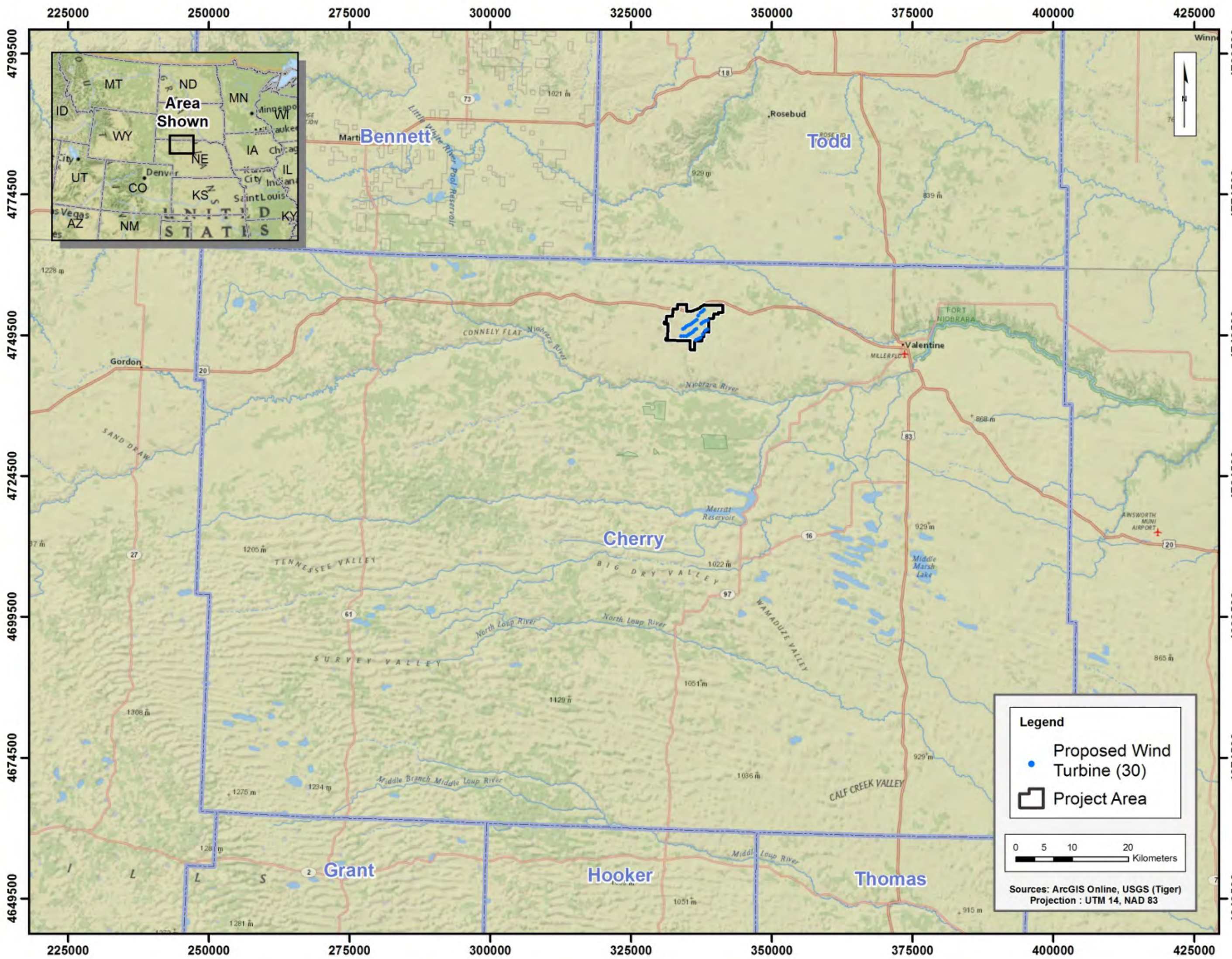

Figure 1 Project area and turbine layout (County)

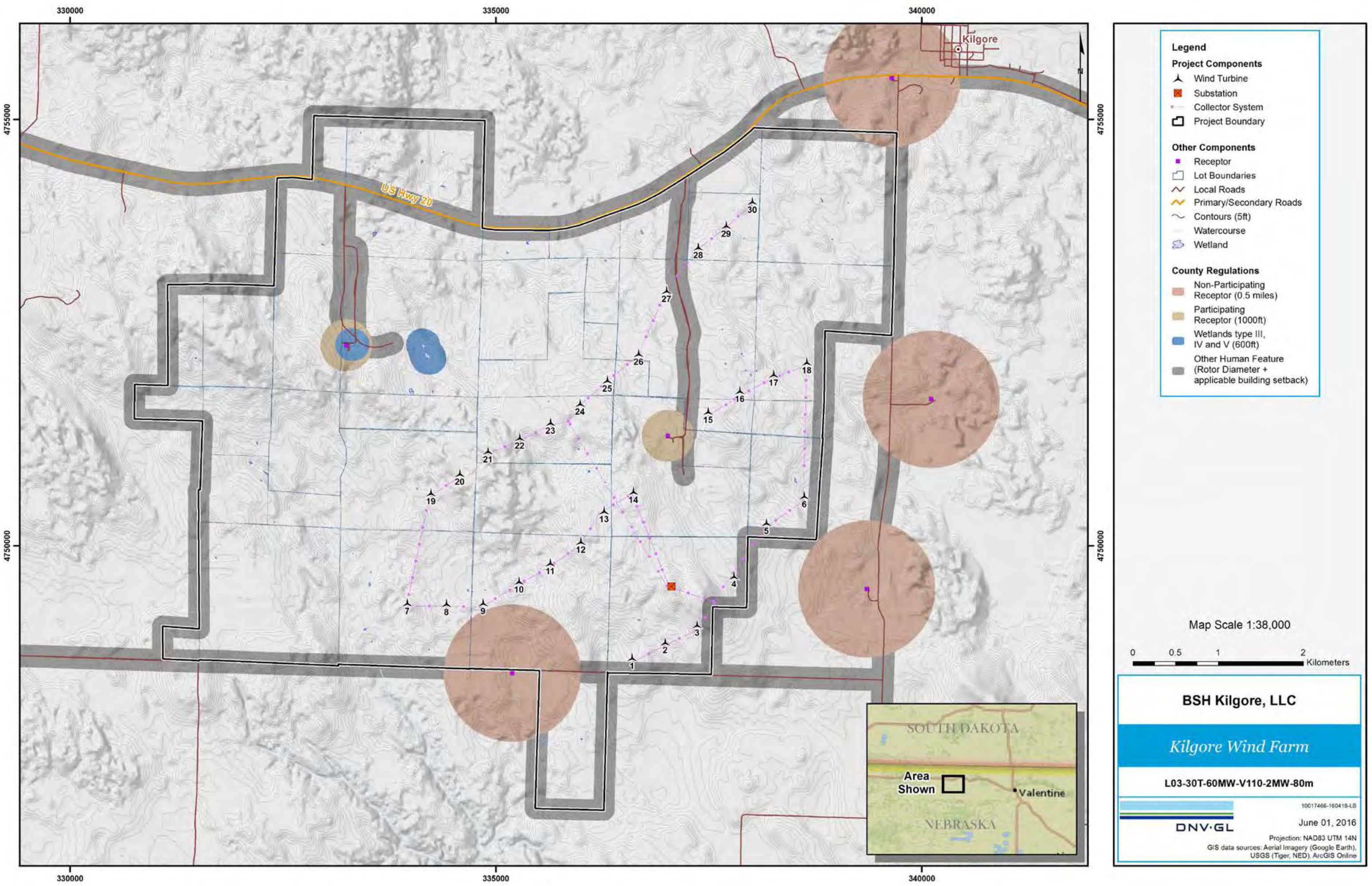

Figure 2 Turbine layout and applicable setbacks

KILGORE WIND ENERGY

Decommissioning Costs Analysis

BSH Kilgore, LLC

Document No.: 10017466-HOU-R-01
Issue: C**, Status:** FINAL
Date: 21 October 2016

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Project name:	Kilgore Wind Energy	DNV GL - Energy
Report title:	Decommissioning Costs Analysis	Renewables Advisory
Customer:	BSH Kilgore, LLC,	Garrad Hassan America, Inc.
		333 SW Fifth Ave., Suite 400,
Contact person:	Michael Knapp	Portland OR 97204 USA
Date of issue:	21 October 2016	Enterprise No.: 94-3402236
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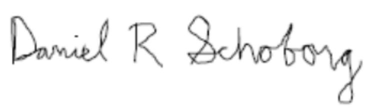
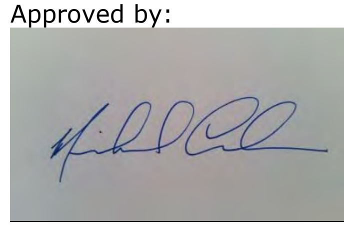
Task and objective:
Wind project decommissioning analysis

Prepared by:	Verified by:	Approved by:
		
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Issue	Date	Reason for Issue	Prepared by	Verified by	Approved by
A	20 October 2016	Initial draft for review	D. Faghani	D. Schoborg	M. Cookson
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C	21 October 2016	Issued as Final	D. Faghani	D. Schoborg	M. Cookson

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List of abbreviations

Abbreviation	**Meaning**
BOP	Balance of Plant
COD	Commercial Operation Date
DNV GL	Garrad Hassan America, Inc
GRP	Glass Reinforced Plastic
O&M	Operations and Maintenance
OPGW	Optic Ground Wires
WTG	Wind Turbine Generator

EXECUTIVE SUMMARY

At the request of BSH Kilgore, LLC ("Kilgore" or the "Sponsor"), Garrad Hassan America, Inc ("DNV GL") performed a decommissioning analysis of the proposed Kilgore Wind Energy Project (the "Project"). The study estimates the costs associated with the dismantling, removal, and salvage or disposal of the equipment; all costs in this study are given in 2016 U.S. dollars.

The Project is located in Cherry County, Nebraska approximately 37 km west of Valentine, NE. The wind project consists of 30 V100-2.0 MW wind turbine generators (WTG) with an aggregate rated output of 60 MW, and associated infrastructure. The turbines are mounted on 80 m tubular steel towers. The Project is anticipated to commence commercial operations in December 2017. Per the Sponsor's request, it is assumed that decommissioning of the Project will take place 25 years after the start of commercial operations.

DNV GL assumes that there are strong parallels between wind project construction and decommissioning programs and consequently bases the estimates for decommissioning costs on its broad experience of wind project construction programs and the associated costs of labor, plant, and materials. The complete decommissioning cost is calculated as the sum of the cost of disassembly, removal, and disposal of the turbines and balance of plant, as may be offset by gains from salvage or resale of materials and components. It is noted that crane costs are the most dominant cost item in disassembly while transportation of the large turbine components dominates the costs of removal.

Assessments of salvage opportunities are based on the bill of quantities identified in this report. The average material weights and ratios for turbine components are derived from previous DNV GL studies, Sponsor documentation, and/or turbine supplier technical specification sheets. Although DNV GL assumes certain commodity prices and disposal service rates based on present day estimates, it does not forecast such future values. The reader is free to make those adjustments. The salvage value is calculated as the difference between the sum of parts resale and scrap revenue, less the landfill cost of the remaining material. Two salvage/disposal scenarios are presented: Scenario 1 considers that all equipment is sold as scrap while Scenario 2 assumes partial resale of some of the Project's major components.

The net decommissioning value is determined from the difference of 1) the sum of the disassembly and removal cost and 2) the sum of the salvage value and resale. The net decommissioning costs of the Project assuming no resale (Scenario 1) and with partial resale of the Project's major components (Scenario 2) are presented in the table below.

	Scenario 1 **No Resale**	**Scenario 2** **Partial Resale**
Total per WTG	$86,300	$54,680
Total Project (30 WTGs)	$2,589,000	$1,640,500

As it is considered to be the more likely option, a breakdown summary of Scenario 2 is shown below.

Kilgore Wind Energy net decommissioning cost with partial resale

Item	Disassembly (A)	Removal (B)	Disposal (C)	Total Costs (D=A+B+C)	Salvage/Resale (E)	Net (D+E)
WTG	$1,830,000	$2,097,000	$300,000	$4,227,000	($3,868,500)	$358,500
Collection System	$188,000	$65,000	$6,000	$259,000	($241,000)	$18,000
High voltage substation	$138,000	$65,000	$9,000	$212,000	($401,000)	($189,000)
Transmission Line	$406,000	$25,000	$ -	$431,000	($59,000)	$372,000
Access roads & Crane Pads	$301,000	$447,000	$19,000	$767,000	($204,000)	$563,000
Met Mast	$7,000	$10,000	$100	$17,100	($1,100)	$16,000
Mobilization/Soft Costs	$502,000	$ -	$ -	$502,000	$ -	$502,000
Project Totals	*$3,372,000*	*$2,709,000*	*$334,100*	*$6,415,100*	*($4,774,600)*	*$1,640,500*
Total per WTG						**$54,680**
Total Project (30 WTGs)						**$1,640,500**

Note: Negative values in parenthesis are positive returns to the Project.

DNV GL notes that the net gains are highly sensitive to the price of scrap steel and, to a lesser degree, scrap copper. A high-level sensitivity analysis shows that Scenario 1 could lead to a net cost increases of about 14% should the price of steel/iron drop by 20% at the time of decommissioning. Scenario 2 (partial resale) shows even higher sensitivity to the price of metal. However, it is noted that this simple sensitivity analysis does not take into account combined variations of costs/prices.

It is stressed that this report is based on broad assumptions regarding the Project; the approach to the decommissioning; and the market conditions for contracting costs, scrap value and resale options. It is recommended that the net costs of decommissioning be reviewed closer to the end of the operating period (e.g., at 15-18 years of operation for a 25-year operating life). At that time it would also be prudent to take into consideration: 1) a going concern scenario in which Project profitability and turbine conditions justify continued operation beyond the initially assumed Project operating life; and 2) a "re-powering" scenario, in which case the existing turbines would be removed in the interest of constructing a more valuable project with larger, more efficient turbines. In the first scenario, decommissioning costs could be paid for by allocations of Project revenues in future Project years, while in the latter scenario, any decommissioning costs could be transferred to the capital budget of the new project.

1 INTRODUCTION

BSH Kilgore, LLC ("Kilgore" or the "Sponsor") retained Garrad Hassan America, Inc ("DNV GL") to perform a decommissioning analysis of the Kilgore Wind Energy project (the "Project"). The Project is located in Cherry County, Nebraska; and consists of 30 V100-2.0 MW wind turbine generators (WTG) with an aggregate rated output of 60 MW, and associated infrastructure.

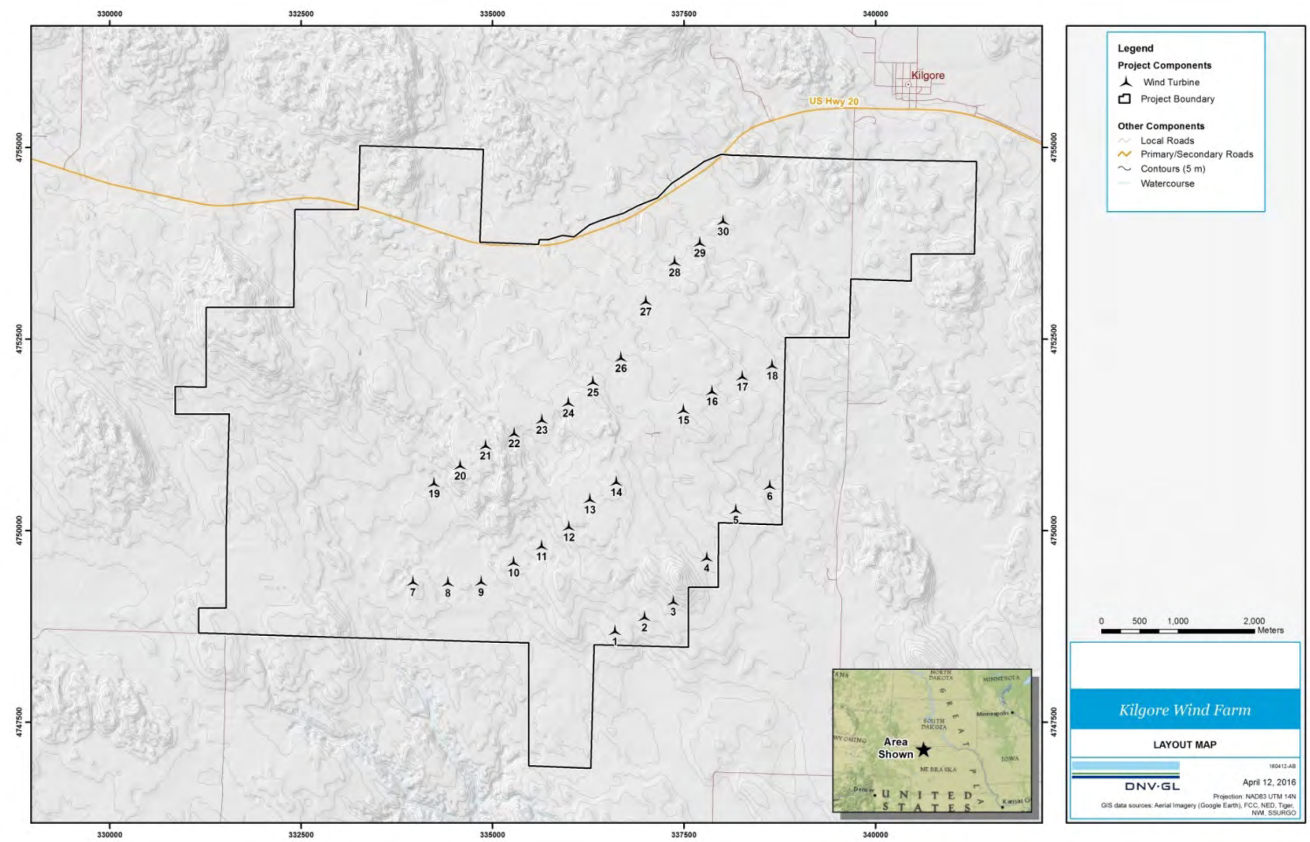


Figure 1-1 Wind turbine layout

The Sponsor has advised DNV GL that the required decommissioning includes the removal of all towers, wind turbine generators, substation, underground collection lines, ancillary equipment and other physical material owned by and pertaining exclusively to the Project and restoration of the property, including the Project roads.

In compliance with Cherry County zoning regulations [1] the following assumptions have been applied:

- Decommissioning will start soon after the end of Project operating life (assumed to be 25 years for purposes of this study), and all decommissioning work is performed in generally conducive weather conditions;
- Decommissioning includes removal of wind turbines, cabling, electrical components, roads, and any other associated facilities down to 4 feet (ft) below grade as required by zoning regulations [1]:

- The wind turbine foundations have only the pedestals and concrete transformer pads removed and the remainder of the spread footing is abandoned in place.
- The Project substation and 4 miles 115 kV transmission line will be completely decommissioned, as will the underground (approximately 12 miles) collection system cabling.
- All Project roads will be decommissioned. DNV GL considers this a conservative assumption as many land owners may find such roads a benefit to their land and request to keep them.

• Crane pads are assumed to have been reclaimed during initial construction.
• No decommissioning of the operations and maintenance (O&M) building has been estimated.

This report does not consider the time value of money; the results should therefore be adjusted to represent the inflated costs at the time of decommissioning (e.g., annual escalation). It should also be noted that commodity values are volatile and difficult to predict over the study horizon.

This report also does not consider the assessed scenarios from legal, regulatory, or commercial perspectives, which should be assessed by the Sponsor.

2 STUDY ASSUMPTIONS

DNV GL's decommissioning study methodology assumes there are strong parallels between wind project construction and decommissioning programs. DNV GL has used an internal bottom-up decommissioning model it developed from its experience in the wind industry to formulate these study results.

All costs are quoted in 2016 dollars, and it should be noted that no specific quotes were obtained in relation to this study, although the Project's location has been included in the modeling. The study is broken down into three sections: disassembly, removal, and salvage/disposal. Due to the high uncertainty with the majority of cost categories assumed and modeled, DNV GL has rounded costs to the nearest $1,000, unless otherwise noted.

2.1 General assumptions

DNV GL has assumed that, on average, one topping crane will dismantle one turbine per day (including time for crane movements from turbine to turbine, crane teardowns where necessary, and some minor weather delays). The number of cranes used determines the approximate time to complete the job. The Project layout was also analyzed for crane walking impediments to estimate crane teardown requirements. While a detailed analysis in this regard was not performed, the Project was assumed to require the number of cranes and teardowns presented in Table 2-1.

2.2 Initiation and mobilization

Before executing any decommissioning works, it is necessary to plan the work carefully, secure the appropriate permits and insurance, and manage the program of work and associated health and safety risks in order to ensure a successful project. It is assumed that mobilization and soft costs are overhead. Soft costs, for the purposes of this study, include costs not specifically accounted for in the breakdowns presented later in this Report, including environmental studies, obtaining permits, environmental protection plans, hazardous material disposal, onsite administrative infrastructure and staff, utilities, off-site project management and insurance/legal services. This study assumed an additional 5% of the totals from the hard costs contemplated herein for the soft costs needed.

The study also assumed that an additional 1% of the total hard costs contemplated herein would be needed for contractor mobilization. DNV GL separately accounted for a lay-down yard of 10,000 m^2 to house the office trailers and staff parking and facilities for mobilizations and demobilizations. Table 2-1 summarizes the crane, mobilization, and soft cost assumptions used in this report.

Table 2-1 Mobilization and soft costs assumptions

Item	Quantity
Number of main cranes needed	1
Number of main crane tear-downs needed	3
Number of base cranes needed	2
Number of base crane tear-downs needed	0
Decommissioning contractor's lay-down yard size [m2]	10,000
Additional mobilization as percent of total hard costs (1)	1%
Decommissioning soft costs as percent of total hard costs (2)	5%
Total Mobilization	**$502,000**

(1) Represents the costs of contractor's mob./demob.
(2) For soft costs, it is assumed that the decommissioning would be done for the entire project at once.

2.3 Schedule

At a minimum, it is expected that the decommissioning program would be 11 to 16 weeks. This timeline is based on the assumption that the deconstruction rate of the wind turbines is approximately one turbine per workday per crane pair and that 7 to 10 workdays of mobilization and demobilization are allowed before and after turbine deconstruction. During construction of wind projects, it is typical that the time for erection across the entire project schedule averages about one turbine per day per topping crane on a simple site. While disassembly could in theory be done with slightly less care than during assembly (as damage to turbines is not as much of a concern), safety and resale considerations will likely dictate that disassembly be accomplished in much the same fashion as erection, although in reverse order.

It is also assumed that other works across the site such as foundation removal, underground collection systems disassembly, substation disassembly and reclaiming of roads, crane pads, and other excavations will be done simultaneously and/or in concert with the turbine dismantling and crane progress.

3 DISASSEMBLY

The disassembly of the Project pertains to all work just prior to physical transportation of the infrastructure from the site. In the case of the wind turbines, it includes the dismantling and loading of the tower sections, nacelles, and blades scraps onto trucks for transport. In the case of concrete foundations or roads and crane pads, it pertains to the tear down, aggregate stripping, excavation and backfilling, and all reclaiming as necessary. Reseeding of removed roads and turbine areas, including crane pads, is included in these costs.

Although certain activities must be sequenced appropriately, based on DNV GL's knowledge of wind project construction considerations, it is assumed that many activities (e.g., turbine, collection system, and substation disassembly) may be undertaken in parallel, facilitating an efficient decommissioning process.

3.1 Turbines

Once the site is mobilized, it is assumed that the decommissioning of turbines would start immediately and sequentially. This typically entails the individual removal of the rotor assembly followed by the nacelle enclosure. The tower internals are stripped of lifts, cables, cabinets, lighting and other miscellanea and are then dismantled, section by section, down to the foundation surface.

For the Project, 30 turbines are to be removed, consisting of 2.0 MW nacelles, with three-section, 80-m steel towers as well as 90 49-m blades. It is assumed that the scope of the disassembly works includes the cost of labor, machinery, and tools required to perform the tasks and the loading of the dismantled material onto transport vehicles for removal from site. The topping crane would be required on site for approximately three weeks during the turbine dismantlement activities. Small cranes may be required for a slightly longer period in order to assist with the transport loading activities and substation dismantling.

It is also assumed that aside from the possible removal of the drive train to aid lifting, the nacelle and its contents will remain fully intact for purposes of transport. All cooling, heating, and lubrication fluids will be drained, stored, and appropriately disposed of before the nacelle is removed from site. Blades, however, will be cut into sections for easier transport to a recycling or incineration plant.

The costs presented below include the cost of a topping crane to handle the hub/rotor, nacelle and top tower section (or top sections, depending on base crane hired). They also include the cost of a lower crane for lower tower sections as well as aid in loading the components onto transport trucks. The costs take into consideration the rental of special tools needed from the manufacturer as well as the fact that the Vestas turbines have an external pad mounted transformer.

To comply with the regulatory requirement that the site be reclaimed to 4 ft below grade, it is assumed that the concrete structures are to be cut and crushed down to 4.5 ft below grade (to allow some margin). It is assumed that about 41 m^3 of crushed concrete will be recouped when removing each turbine's foundation pedestal and pad-mount transformer foundation essentially in their entirety, thus achieving this criteria. Table 3-1 summarizes the turbine disassembly costs for Project.

Table 3-1 Summary of turbine disassembly costs

Cost item	Costs per WTG
Dismantle hub and blades (3 blades per turbine)	$ 15,000
Dismantle nacelle (drive train and generator included)	$ 15,000
Dismantle tower sections, internals included	$ 21,000
Dismantle pad-mounted transformer	$ 3,000
Remove turbine foundation (1)	$ 7,000
Total per WTG	**$ 61,000**
Total Project (30 WTGs)	**$ 1,830,000**

DNV GL notes that the disassembly costs of WTGs are highly dependent on crane costs (which include crane plus crane crew): over 80% of the total per-WTG cost is associated with crane-related costs. DNV GL estimated this cost based on experience from various projects in North America. It is noted that crane availability may greatly influence crane costs, and that it is not possible to accurately predict crane costs given the long study horizon.

3.2 Collection system

The decommissioning of the collection system has been considered, as requested by the Sponsor. DNV GL notes that on many decommissioning study requests, the underground portion of the collection system does not need to be removed, since it is often below the required grade clearance. That said, due to the relatively high value of conductors, removal and resale of the underground cables may yield a positive return to the Project. Therefore, it was assumed that all underground cabling will be removed and trenches restored.

3.2.1 Underground Collection System

According to the Sponsor [1], the Project collection system will be composed of 12 miles of three-phase buried lines along with bare copper grounding cable. Underground collection disassembly includes trenching, winding triplex with ground wire, and reclaiming. The conductors would then need to be re-reeled for transport.

It is assumed that the scope of the disassembly includes the cost of labor and the loading of the dismantled material onto transport vehicles for removal from site. It is assumed that the disconnection work at the terminals would be performed as part of turbine removal or substation removal. The results are reported in Table 3-3 below.

3.2.2 Overhead Collection System

None.

3.3 High-voltage substation

The Sponsor has advised that the Project will be equipped with one 115/34.5 kV, 70 MVA transformer. The remaining portion of the Project high-voltage (HV) substation is assumed to include typical equipment seen in North American wind project substations for projects of this size, including grounding transformers, bus bars, relay switches, circuit breakers, air disconnect switches, capacitor banks, reactor banks and a control building. It is assumed that a dead-end structure will also present.

The interconnection switchyard for the Project has not been considered in the decommissioning analysis.

It is assumed that the scope of the disassembly work includes the cost of labor and machinery required to perform the disassembly tasks, including disconnection work at the terminals, and the loading of the dismantled material onto transport vehicles for removal from site. The following table summarizes the costs to disassemble the Project's high voltage substations and interconnection switchyard.

Table 3-2 Costs to disassemble Project substation

Item	Cost
Preparation	$ 8,000
Dismantle HV equipment	$ 25,000
Dismantle and prep. main transformer for shipment (each)	$ 17,000
Remove control/O&M building	$ 4,000
Remove foundations	$ 40,000
Large machinery hire	$ 15,000
Small machinery hire	$ 13,000
Reclaim and reseed	$ 16,000
Total	**$ 138,000**

3.4 Transmission line

According to the Sponsor, the Project will use a 4 miles overhead transmission line including two optic ground wires (OPGW). Transmission line disassembly includes pole teardown and reclaiming. The conductors would then need to be re-reeled for transport.

It is assumed that the scope of the disassembly includes the cost of labor and the loading of the dismantled material onto transport vehicles for removal from site.

The results are reported in Table 3-3 below.

3.5 Site access roads and crane pads

In practice, it is probable that most of the roads will be kept after the completion of the Project, with the exception of the dead-end access roads that lead to the turbines. However, for purposes of the study, DNV GL has assumed that the entirety of the approximately 9 miles of roads will be reclaimed. Based on

Sponsor information, DNV GL has additionally assumed that 30 crane pads will be reclaimed during decommissioning. The lay-down yard reclamation is accounted for in the mobilization/demobilization costs. Decommissioning of the site access roads will typically include stripping back the surfaces of project roads connecting the turbines and the crane pads and replacing them with topsoil in keeping with the surrounding environment. In the case of the Project, this phase also includes stripping and piling geotextile material used in the road base. The costs additionally include reseeding with native grasses. A secondary reseeding may be required if the initial work proves inadequate. Per Sponsor direction, DNV GL has therefore maintained a baseline assumption of one seeding evolution.

The results are reported in Table 3-3 below. Note the cost of aggregate transport off site is captured in removal costs.

3.6 Meteorological masts

A permanent 60-m meteorological mast will be present at Project site. It is assumed that the met mast will be disassembled at an appropriate time during the decommissioning activities so as not to interfere with the other ongoing work. This typically involves the use of a base crane to dismantle the masts, section by section, down to the foundation surface. The instrumentation and booms would be either removed before the sections are laid down, or removed from the sections once on the ground.

It is assumed that the scope of the disassembly works includes the cost of labor, machinery and tools to perform the dismantling tasks, including foundation removal to appropriate below grade level, and the loading of the dismantled material onto transport vehicles for removal from site. It is also assumed that only one crane is needed for removal. Based on experience installing and removing met towers in the US, DNV GL has included an allowance for disassembly of the met mast. The results are reported in Table 3-3 below.

3.7 Disassembly conclusion

The cost of the disassembly of the Project is summarized in Table 3-3.

Table 3-3 Summary of Project disassembly costs

Cost item	Cost
WTG	$ 1,830,000
Collection system	$ 188,000
High-voltage substation (incl. O&M bldg)	$ 138,000
Transmission line	$ 406,000
Access roads & crane pads	$ 301,000
Met Mast	$ 7,000
Mobilization & soft costs	$ 502,000
Total Project Disassembly Cost	**$ 3,372,000**

4 REMOVAL FROM SITE

Removal of the Project in this study refers strictly to the transporting of the equipment from the site to the appropriate landfill, aggregate rework facility, or scrap yard. Various distances and truck sizes are applied in the DNV GL decommissioning model, depending on which Project component is being calculated. Removal costs also include the costs of unloading the material once it reaches its destination. DNV GL notes that appropriate landfills and scrap yards appear to be located in the general region of the Project.

4.1 Turbines

It is assumed that the scope of the removal of the wind turbines includes the cost of labor and vehicles required to transport the dismantled material to an appropriate disposal, salvage or rework facility. It is assumed that the transport distances for general waste would be within a radius of 125 km whereas the more complex and valuable material is assumed to be transported within a radius of 500 to 750 km—500 km for the tower internals, and 750 km for the main turbine and substation components. While most of the main turbine components are modeled to be removed much as they were initially transported to the site during construction, the turbine blades will be sectioned to limit oversize transport.

Table 4-1 summarizes the costs for the removal of each of the turbine components from the site.

Table 4-1 Turbine removal costs

Turbine component	Cost per WTG
Blades (cut up prior to loading)	$ 5,000
Hub (one on one truck)	$ 10,000
Nacelle	$ 10,000
Tower sections	$ 42,000
Internals	$ 1,000
Transformer	$ 1,000
Crushed foundation (41 m3)	$ 900
Total per WTG	**$ 69,900**
Total for Project (30 WTGs)	**$ 2,097,000**

4.2 Collection system

4.2.1 Underground collection system

It is assumed that the scope of the removal works includes the cost of labor and vehicles required to transport the dismantled material to an appropriate salvage facility. The material will mainly include the wound reels, a total of 51 reels, or 13 truckloads. The results are reported in Table 4-3 below.

4.2.2 Overhead collection system

None.

4.3 High-voltage substations

It is assumed that the transport distances for foundation rubble and general waste would be within a radius of 125 km, whereas the more complex and valuable material is assumed to be transported within a radius of 500 to 750 km. It is assumed that local dump truck loads are 10 yd^3 in capacity.

The following table summarizes removal costs for the Project substation. As previously mentioned, the interconnection switchyards have not been considered in the present study.

Table 4-2 Project substation removal costs

Substation component	Cost
HV equipment	$ 10,000
Main transformer(s)	$ 10,000
Control/O&M building(s)	$ 4,000
Dead-end structures	$ 10,000
Crushed foundations (local transport)	$ 24,000
Yard gravel (local transport)	$ 7,000
Total removal costs for HV substation(s)	**$ 65,000**

4.4 Transmission line

It is assumed that the scope of the removal works includes the cost of labor and vehicles required to transport the dismantled material to an appropriate salvage or rework facility. The material will include the wound reels (16 total reels, or 4 truckloads assumed) as well as the dismantled poles (20 wooden T lines assumed). The results are reported in Table 4-3 below.

4.5 Site access roads and crane pads

For the purpose of removal calculations, the Project's 9 miles of roads to be removed were assumed to be 16ft wide and about 1 ft deep and underlain by geotextile in line with Project drawings. While this width attempts to capture any shoulder material as well, the assumption that all roads to be removed are 16' wide is likely conservative with respect to the Project design and is expected to therefore cover the cost of decompaction and reclamation of any additional width required due to crane walking. Dump truck capacity is assumed to be 10 yd^3 and all load trips are assumed to be local. The results are reported in Table 4-3.

4.6 Meteorological masts

It is assumed that the scope of the removal works includes the cost of labor and vehicles required to transport the dismantled material to an appropriate disposal, salvage or rework facility. The results are reported in Table 4-3 below.

4.7 Project removal conclusions

Table 4-3 summarizes the total anticipated costs for removing the turbines, collection system, substations, roadways, and met mast from the Project.

Table 4-3 Project removal conclusions

Item	Cost
WTG	$ 2,097,000
Collection system	$ 65,000
HV substation (incl. O&M bldg)	$ 65,000
Transmission line	$ 25,000
Access roads & crane pads	$ 447,000
Met Mast	$ 10,000
Total Project removal cost	**$ 2,709,000**

5 SALVAGE – DISPOSAL

While it is impossible to predict the exact evolution of an industry 25 years into the future, it is not unreasonable to assume that there may exist by that time consolidated centers that will fully recycle a wind turbine given that many project "decommissionings" or "repowerings" will have been undertaken prior to that time. For example, DNV GL notes that significant attention is being placed by industry and academia alike into possible uses or methods for recycling the wind turbine blades. DNV GL notes that in this section only, gains are shown as positive and costs to the Project are shown as negative.

While it may become easier to recycle wind turbines in the future, DNV GL performed this study assuming only the application of present day means. Following the disassembly and removal of all materials from the Project site, four potential destinations for the reclaimed material are typically envisaged by DNV GL when performing decommissioning studies. These scenarios may add extra cost to the decommissioning budget or offer an opportunity to reclaim some value from the wind project components to offset against the cost of decommissioning.

1. Low-grade material such as contaminated aggregate, concrete rubble, wood, non-recyclable materials and other mixed general waste will in all likelihood be sent to landfill or incineration at cost to the Project. DNV GL notes that there is a relatively large volume of waste associated with the glass reinforced plastic (GRP) which composes most turbine blades today. It is possible that in 25 years recycling blade GRP into cement fill, roofing shingles or other useful industrial raw materials may be a net positive for the Project, or at least an offset to the cost, but no such projections have been made in the present study: blade GRP has been considered waste.
2. Medium-grade materials such as small- and medium-gauge cabling, small motors, cabinets of mixed electronics, and lighting may be sent to salvage centers to be stripped for parts and sold for re-use or re-processing. This may be done at a nominal, neutral, or negative cost (positive return) to the Project. However, this material may also be sent to landfill if an appropriate third party cannot be found. DNV GL notes that it is difficult to predict future returns of salvage due to the unpredictability of commodity prices.
3. High-grade materials such as large steel components (tower sections, bedplates, hub castings, gearboxes, and steel cables), large-gauge copper and aluminum cabling, aluminum flooring and ladders will be sent to reprocessing centers at a net neutral cost or positive return to the Project. DNV GL notes that it is difficult to predict future returns of reprocessing due to the unpredictability of commodity prices.
4. Reusable components that are deemed to be undamaged, functional and have not fulfilled their design life could be sold back to the manufacturer or its supply chain for a modest second-hand price for refurbishment. Some electrical infrastructure equipment as well as recently replaced turbine components could fall into this category.

Applying a conservative approach, DNV GL only considered items 1, 3, and 4. No resale gains were assumed for item 2—only scrap/disposal value. Furthermore, item 4 was limited only to certain main components within a conservative age range.

5.1 Pricing assumptions

The following assessment is based on DNV GL's decommissioning model which estimates bill of quantities, typical material weights, and ratios for turbine components acquired from the manufacturer's technical specifications or from DNV GL experience when such is not available. The model uses commodity prices and disposal service rates as inputs.

For the Project decommissioning, the following scrap commodity prices are assumed:

- Steel and cast iron: $300/ton
- Aluminum: $1,400/ton
- Copper: $5,000/ton

Weights are in metric tons. It should be noted that the commodity price of metals is volatile and 25-year values are impossible to predict with any degree of certainty.

Because landfill costs are expected to keep rising, DNV GL used a different cost variable for the incineration, recycling or disposal of GRP. Although it is possible that in 25 years technology will be available to extract the fibers from the epoxy laminate for high-grade industrial reuse at a net benefit, DNV GL assumed a net cost to incinerate or low-grade recycle the GRP as a separate cost to landfill. The following landfill costs are assumed:

- GRP disposal (incineration or recycling): $100/$m^3$
- Class 2 landfill, Industrial/toxic waste : $75/$m^3$
- Class 3 landfill, General waste: $35/$m^3$

5.2 Turbines

5.2.1 Salvage and disposal

There should be considerable opportunity to reclaim scrap value from the turbines from the copper in the low voltage cabling, transformer and generator; steel from the tower, hub, drive train and bedplate; and aluminum from the tower internals. The blades and nacelle housing are made from GRP and would have to be disposed.

The following table summarizes the salvage and disposal costs per each turbine. Component weights have been estimated by DNV GL, and/or obtained directly from manufacturer's documentation.

Table 5-1 Turbine salvage values

Component	Net Scrap Value
Blades	$ (4,500)
Hub + blade steel	$ 5,500
Nacelle/hub GRP	$ (3,500)
Nacelle bedplate	$ 500
Main shaft	$ 3,000
Gearbox	$ 5,000
Generator	$ 16,500
Tower steel sections	$ 42,000
Internals	$ 21,500
Transformer	$ 7,000
Crushed foundation	$ (1,500)
Total per WTG	**$ 92,000**
Total for Project (30 WTGs)	**$ 2,760,000**

5.2.2 Partial resale of major components

DNV GL considers that at the end of the Project's 25-year operating life, many of the components of the V100 turbines will still be serviceable and have positive value in the secondary parts market. DNV GL considers that the towers and nacelle shells would still be sold as scrap as well as the rest of the major components that were not resold.

While wind turbines are structurally designed to meet a fatigue life of 20 years plus some margin, DNV GL expects a significant number of failures during the Project operating life involving the major components such as the blades, gearboxes, and generators. These components that fail will typically be replaced or refurbished throughout the operating life. DNV GL continually tracks and models the various failure rates for each of the main components across all major wind turbine model types, and has, for purposes of this study, modeled failure rate assumptions for the Project for the 25-year life. DNV GL considers that a number of other considerations apply to the actual potential for the turbines to economically operate past their 20-year design life, but notes that such discussion is outside the scope of this Report.

It is assumed that other North American wind projects with Vestas wind turbines (either owned by the Sponsor or not) will be arriving or will have arrived at their 20-year design life at the time of decommissioning of the Project, and some will have chosen to operate beyond it. Therefore, a secondary parts market may be assumed to exist that would demand some of the major components being decommissioned from the Project. Using a conservative approach and with the exception of the transformer, only the major components that are five years or younger (i.e., replaced or refurbished during Project years 21 through 25) are considered candidates for resale. Only the gearbox, generator, blades, pitch system, main yaw system, hydraulic unit, power converter, main bearing, and transformer are considered. The transformer is assumed to have a higher design life and so half are considered candidates for resale.

Table 5-2 summarizes the turbine partial resale valuations performed by DNV GL for the Project's decommissioning scenario. The calculations account for the lost scrap opportunities that will be subtracted from Table 5-2 and presented in Section 6.

Table 5-2 WTG component resale valuations

Component	New Part Cost [$]	Estimated qty. Aged ≤ 5 years (1)	Qty. to Resale (2)	Value at 20% of New	Scrap Loss [$] (3)
Gearbox	$ 250,000	7	7	$ 350,000	$ 35,000
Generator	$ 113,000	14	14	$ 316,000	$ 231,000
Blades	$ 330,000	3	3	$ 198,000	$ (13,500)
Pitch system	$ 24,000	13	13	$ 62,000	$ -
Main Yaw	$ 51,000	2	2	$ 20,000	$ -
Hydraulic unit	$ 8,000	9	9	$ 14,000	$ -
Power converter	$ 20,000	11	11	$ 44,000	$ -
Main Bearing	$ 38,000	4	4	$ 30,000	$ -
Transformer	$ 44,000	1	15	$ 132,000	$ 105,000
Gross Resale Total				**$ 1,166,000**	
Minus Loss of Scrap					**$ (357,500)**
Net Resale Total					**$ 808,500**

(1) Component replaced within the last 5 years of operation according to DNV GL model.
(2) Component assumed effectively resold based on DNV GL engineering judgment.
(3) Partial resale of turbine components means scrap opportunities need to be subtracted from previous calculations; this is taken into account in this column, and therefore the net resale value of turbine components includes this loss of scrap.

5.3 Collection system

5.3.1 Underground collection system

The underground three-phase conductor and ground cabling reels from the Project will be sold for scrap. Based on Project information, DNV GL has estimated at total of approximately 36 km of total conductor (3 phases) along with 12 miles of bare copper ground wire. The results are reported in Table 5-3 below.

5.3.2 Overhead collection system

None.

5.4 High-voltage substation

There should be opportunity to reclaim metal scrap value from electrical equipment. Yard equipment such as bus work, circuit breakers, grounding transformers, and main transformers contain a significant amount of conductive material such as copper and aluminum. Dead-end and other steel structures contain a significant amount of steel. The substation yard also contains aggregate fill that would be sold. Rubble from the foundation demolition and all other materials would be sent to landfill at cost. The scrap value of the substation is presented in Table 5-3 below.

DNV GL considers that there is a resale market for substation transformers. Therefore, the transformer could be sold as operational second-hand equipment instead of being scrapped. This scenario has been taken into account in Section 6.

5.5 Transmission line

The three-phase conductor cable can be sold for scrap and the wood poles from the overhead collection could potentially be resold to an electric utility as second hand parts. Based on Project drawings and specifications, DNV GL has estimated at total of 20 wooden transmission T lines and approximately 17 miles of total conductor (3 phases). The results of this valuation are presented in Table 5-3 below.

5.6 Site access roads and crane pads

For the purpose of removal calculations, the Project's 9 miles of roads to be removed were assumed to be 16' wide and 1' deep and underlain by geotextile. It is assumed that a portion of the reclaimed crane pad aggregate will be used to back-fill the volume of the excavated turbine foundations, with the remainder resold as engineering backfill at $10/m^3. Assuming that the Sponsor's intention is to reclaim the crane pads utilized for construction, it is assumed that only temporary crane pads (compacted area with crane mats) will be utilized for decommissioning, with no residual value.

The results of this valuation are presented in Table 5-3 below.

5.7 Meteorological mast

Although it is possible that the met mast could be dismantled, resold and reused at a different location, a 25-year old mast may have limited reinstallation value (although it could very well be a candidate to remain for a repowering scenario). For the purpose of conservatism in this study, DNV GL assumes a dismantling and removal with the intent of scrapping the material.

The results of this valuation are presented in Table 5-3 below.

5.8 Salvage – disposal conclusions

The following table summarizes the opportunities from the salvage / disposal analysis. Please note that this table does not incorporate the resale scenarios of Table 5-2. These will be included in Section 6.

Table 5-3 Salvage/Disposal value (without resale of turbine components)

Item	Disposal	Salvage
WTG	$ (300,000)	$ 3,060,000
Collection System	$ (6,000)	$ 241,000
HV Substation	$ (9,000)	$ 261,000
Transmission Line	$ -	$ 59,000
Access Roads & Crane Pads	$ (19,000)	$ 204,000
Met Mast	$ (100)	$ 1,100
Total Project Salvage/Disposal Return	**$ (334,100)**	**$ 3,826,100**

Notes:
The values presented do not include the resale returns of turbine components.
Negative values in parenthesis are costs (negative return) to the Project.

6 NET DECOMMISSIONING COST

The net decommissioning cost for the Project is calculated by subtracting the salvage value from the total of the disassembly and removal costs. This report presents two net decommissioning cost breakdowns: Scenario 1 assumes no resale of Project components, and Scenario 2 takes the more likely scenario for the possibility of partial resale of some of the components mentioned in Section 5.2.2.

6.1 Net decommissioning cost – no resale

Table 6-1 summarizes the Project's net decommissioning costs assuming no resale of any Project components other than for scrap value (Scenario 1).

Table 6-1 Project Net decommissioning cost – no resale

Item	Disassembly (A)	Removal (B)	Disposal (C)	Total Costs (D=A+B+C)	Salvage (E)	Net (D+E)
WTG	$1,830,000	$2,097,000	$300,000	$4,227,000	($3,060,000)	$1,167,000
Collection System	$188,000	$65,000	$6,000	$259,000	($241,000)	$18,000
HV Substation	$138,000	$65,000	$9,000	$212,000	($261,000)	($49,000)
Transmission Line	$406,000	$25,000	$ -	$431,000	($59,000)	$372,000
Access Roads & Crane Pads	$301,000	$447,000	$19,000	$767,000	($204,000)	$563,000
Met Mast	$7,000	$10,000	$100	$17,100	($1,100)	$16,000
Mobilization/Soft Costs	$502,000	$ -	$ -	$502,000	$ -	$502,000
Project Totals	*$3,372,000*	*$2,709,000*	*$334,100*	*$6,415,100*	*($3,826,100)*	*$2,589,000*
Total per WTG						**$86,300**
Total Project (30 WTGs)						**$2,589,000**

6.2 Net Decommissioning Cost – Partial Resale of Selected Components

Table **6**-**2** summarizes the Project's net decommissioning costs for Scenario 2 which includes some plausible and conservative resale assumptions.

Table 6-2 **Project Net decommissioning cost – partial resale of selected components**

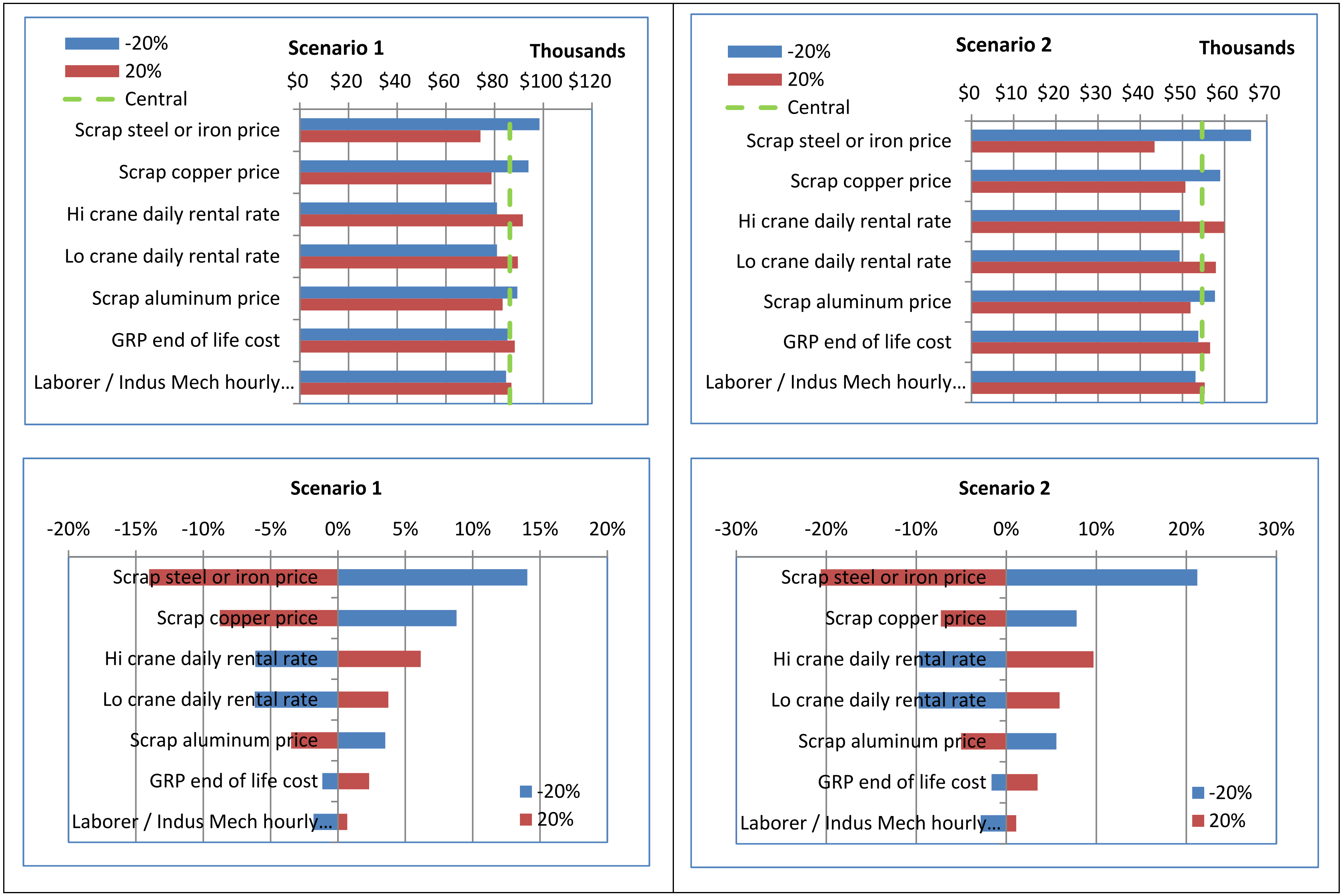
Item	Disassembly (A)	Removal (B)	Disposal (C)	Total Costs (D=A+B+C)	Salvage/Resale (E)	Net (D+E)
WTG	$1,830,000	$2,097,000	$300,000	$4,227,000	($3,868,500)	$358,500
Collection System	$188,000	$65,000	$6,000	$259,000	($241,000)	$18,000
High voltage substation	$138,000	$65,000	$9,000	$212,000	($401,000)	($189,000)
Transmission Line	$406,000	$25,000	$ -	$431,000	($59,000)	$372,000
Access roads & Crane Pads	$301,000	$447,000	$19,000	$767,000	($204,000)	$563,000
Met Mast	$7,000	$10,000	$100	$17,100	($1,100)	$16,000
Mobilization/Soft Costs	$502,000	$ -	$ -	$502,000	$ -	$502,000
Project Totals	*$3,372,000*	*$2,709,000*	*$334,100*	*$6,415,100*	*($4,774,600)*	*$1,640,500*
Total per WTG						**$54,680**
Total Project (30 WTGs)						**$1,640,500**

Note: Negative values in parenthesis are positive returns to the Project.

6.3 High-level sensitivity analysis

DNV GL notes that net decommissioning cost estimates are highly dependent on the price of metal, equipment and labor. Figure 6-1 presents a high-level sensitivity analysis of net decommissioning costs per wind turbine where the main input costs/price assumptions were varied by +20% (red bars) and -20% (blue bars). Top graphs show costs in $/WTG while bottom bars present relative changes as percentage points. Scrap steel/iron is the most sensitive cost driver and is explained by the large amount of these in V100 machines towers and nacelles. The sensitivity analysis shows that in Scenario 1 (no partial resale) a 20% drop in the assumed price of steel/iron could increase the net costs by about 14%. Scenario 2 (partial resale) shows an even higher sensitivity to the price of steel/iron. However, it is noted that this simple sensitivity analysis does not take into account combined variation of multiple costs/prices.

Figure 6-1 Sensitivity Analysis – Variation of decommissioning costs per WTG.



6.4 Other scenarios

It is stressed that this report is based on broad assumptions regarding the Project; the approach to the decommissioning; the market conditions for contracting costs; and scrap value and resale options. DNV GL recommends that the net costs of decommissioning be reviewed closer to the end of the operating period (e.g., 2 to 4 years prior to the end of operations) when better visibility on these factors would be possible. The value of decommissioning after 25 years of operation could be reviewed at this time as well as the value of decommissioning at another point in the future, taking into consideration potential extended operational revenue as well as Project operations beyond the design life. The going concern scenario would be easier to evaluate then and if, design and safety conditions warrant, it would be a viable alternative as long as future revenues outpace future expenditures.

Finally, it would be prudent also to take into consideration a "re-powering" scenario, in which case the existing turbines would be removed in the interest of constructing a more valuable project with larger, more efficient turbines. Any cost to remove the old turbines would be incurred as construction costs of the new wind project.

7 REFERENCES

[1] Wind Energy Conversion Facilities, Cherry County Addition to Current Zoning, Section 613.03, Requirement #12. *Proposed Amendments to the Wind Energy Section of the Cherry County Zoning Regulations, March 29, 2016.*

APPENDIX A – MAIN ASSUMPTIONS

1000	**Special requirements**	
1001	Decommissioning requirements applicable to the Project	Cherry County Addition to Current Zoning
1100	**Project Basics**	
1101	Wind project Name	Kilgore
1102	Construction Status	Development
1103	Location	Cheery County, NE
1104	No. Wind Turbines	30
1105	Make and Model of Wind Turbine	V-100-2 MW
1105a	*Turbine main component weights (blades, nacelle, hub, tower sections)*	80 metric tons
1106	Project Capacity [MW]	60 MW
1107	Project Design Life (civil, turbine, electrical and financial) [yr]	20
1108	Decommissioning to Occur After Which Project Year	25
1109	No. of Substations to Remove	1
1110	No. of main project transformers	1
1111	No. of O&M buildings to Remove	0
1112	Length of Underground Collection System to Remove	12 miles
1113	Length of Overhead Collection System to Remove	0
1114	Length of Transmission Line to Remove	4 miles
1115	Length of Project Access Roads to Reclaim	9 miles
1116	No. of Meteorological Towers to Remove	1
1118	Average Height of Met Towers [m]	60
1119	Met tower type	Guyed
1200	**Additional Information**	
1201	COD date	31/12/2017
1202	Warranty term [yr]	5
1203	Estimated Annual P50 Production Capacity Factor	N/A
1204	Main transformer step up rating [kV/kV]	115/34.5 kV
1205	Main transformer capacity [MVA]	70
1206	No. of Transmission Line Steel Poles	0
1207	No. of Transmission Line Wood Poles	20
1209	Project Layout	L03
1210	Breakdown of the number of tower sections per Wind Turbine	All 3 sections
1212	Construction schedule	N/A
1213	As built or issued for construction (IFC) drawings (civil & electrical)	N/A

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