Orion Wind Resources LLC
155 Grand Ave, Suite 706
Oakland, CA 94612
www.orionrenewables.com

Application for Torrance County Zoning Ordinance Amendment for Special Use District & Height Variance

Clines Corners Wind Farm Project

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Prepared by

Souder, Miller and Associates
2904 Rodeo Park Dr. East, Bldg. 100
Santa Fe, NM 87505
(505) 473-9111
www.soudermiller.com

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List of Exhibits

1. Introduction

The purpose of this Application is to assure that all structures, and equipment connected to such structures, used for the production of wind-generated electricity in the proposed Phase I Clines Corners Wind Farm (Project) in Torrance County are safe, effective and in compliance with the Torrance County Zoning Ordinance SPR-223/Wind Energy Facilities, March 21, 1990, including revisions to: May 11, 2016. The County's ordinance allows major power generation facilities including wind-driven energy generators as an allowable use for a Special Use District. The proposed Project will facilitate economic opportunities for local residents and promote the supply of energy production from renewable sources while adhering to required structural regulations to enhance safety. The Project site was selected based on a number of factors, including the quality of the wind resource, suitable land availability for the wind farm, and access to energy markets.

Orion Wind Resources LLC (Applicant) is seeking a Zoning Ordinance Amendment for a Special Use District and Height Variance in connection with development of the Project. The Project will be located on approximately 28,749 acres of private land in Torrance and Guadalupe counties, of which 15,704 acres is in Torrance County. As planned, the Project will likely consist of wind turbines having a rated nameplate capacity between 2 and 3.5 megawatts (MW) each and a total generation capacity of up to approximately 480 MW split between the two counties (see Exhibit A - Project Overview Map). The Applicant will determine the final number of wind turbines planned for each county following engineering analysis and micrositing.

In addition to wind turbines, there will be one or more Operations and Maintenance (O&M) buildings, underground (and if required by localized terrain, overhead) power collection lines, up to three project substations with electrical transforming capabilities (dependent on final electrical design), a 345 kilovolt (kV) power transmission line, service access roads, up to 4 permanent meteorological monitoring (MET) towers and related facilities and equipment. Project construction and start of commercial operations is planned for as early as 2020. Additional phases of the project are currently being planned and are expected to have a 2021 or later construction and commercial operations timeline.

The Applicant is planning to construct and operate a new power transmission line (gen-tie line) which will connect to a point on Public Service Company of New Mexico's (PNM) existing high voltage network (Point of Interconnection). The proposed gen-tie line will be 345 kV and would have enough capacity to accommodate all proposed phases of the project. It will originate at a project substation and head in a westerly direction across private land for approximately 12-15 miles, depending on final location. The gen-tie line will then enter the U.S. Highway 285 right-of-way and continue in a northwesterly direction to the Point of Interconnection on PNM's 345 kV network. The portion of the gen-tie line in the highway right of way is not subject to Torrance County permitting and a separate application has been filed with the New Mexico Department of Transportation (NMDOT).

The Project is designed to generate electricity for approximately 30 years, with the possibility to extend energy generation beyond this period.

The Project's construction workforce will vary depending on the proposed construction window duration, activities being performed, and weather conditions:

- Average construction jobs: approximately 275 to 350
- Peak construction jobs: approximately 460 to 500
- Approximate construction full-time equivalent employees (FTE): 230 to 260
- Operation and maintenance jobs: approximately 18 to 23

To meet the Project's workforce needs, a local hiring initiative may be coordinated with Mesalands Community College's North American Wind Research and Training Center in Tucumcari, NM.

2. Project Developer

The Project is being developed by Orion Wind Resources LLC, a joint venture between Orion Renewable Energy Group LLC (Orion) and MAP Renewable Energy. Since its founding in 1998, Orion has developed renewable energy projects totaling over 5,000 MW in generation capacity. To develop these projects, Orion has worked extensively with landowners, rural communities, and power purchasers such as electric utilities. Orion's offices are located in Oakland, California.

At a community level, utility-scale renewable energy projects yield many economic benefits, including hundreds of near-term construction jobs, many long-term operations and maintenance jobs, sales and contracting opportunities for local businesses, and increased tax revenue.

3. Applicant Contact Information

The Applicant's contact information is as follows:

Orion Wind Resources LLC
Michael Kurnik, Project Development Manager
155 Grand Ave, Suite 706
Oakland, CA 94612
Phone: (510) 379-4001
Cell: (415) 483-6078
mkurnik@orionrenewables.com
www.orionrenewables.com

4. Project Site, Legal Description

The wind turbines will be located entirely on privately owned lands, with the transmission line alignment also on private land and potentially using U.S. Highway 285 right-of-way. The Applicant currently holds lease or easement agreements with all the landowners within the Project area, as summarized in Table 1 and Table 2 below. See Exhibit A - Project Overview Map and Exhibit B - Land Agreements, and Exhibit C - Assessor's Parcel Map.

Table 1. Land Owner Information – Wind Farm

Landowner Name	Township/Range	Acreage	Property Description
L.T. Lewis Ltd. Company	T5 North, Range 15 East; T6 North, Range 15 East; T7 North, Range 15 East	7,340 (7,296.34)	T5 Section 1, 2, 4, 4, 5 (Lots 1-4) T6 Section 1, 12, 28, 32, 33, 36 T7 Section 26, 35 (Lots 1-4)
Berlier Ranch, LLC	T6 North, Range 15 East	6,359 (6,447.69)	Section 13, 14, 22, 23, 24, 25, 26, 27, 33, 34, 35
Wells Fargo Bank, Trustee of the Richard M. Krannawitter Trust	T7 North, Range 15 East	2,880 (1,968.69)	Section 1, 12, 13, 24, 25, 36

Table 2. Land Owner Information - Transmission Line

Landowner Name	Township/Range	Property Description
L.T. Lewis Ltd. Company*	T5 North, Range 14 East; T6 North, Range 14 East; T5 North, Range 15 East T5 North, Range 15 East	T5 Section 1, 2, 3, 4, 5, 29 T6 Section 25, 26, 27, 28, 29, 32, 33, 34, 35, 36 T5 Section 1, 2, 3, 4, 5, 29 T5 Section 6
Michele M. Goodson and Wesley Dwayne Goodson	T5 North, Range 14 East	Section 6, 7, 17, 20

*Applicant currently holds lease agreement, waiting on executed agreement for easement for transmission line.

According to Torrance County's Zone Map (10/13/2009), land within the Project area is designated as "A – AGRICULTURAL (40 ACRE MINIMUM)" (Torrance County Zoning Ordinance RPR-223, revised May 11, 2016), a rural land use designation for unincorporated areas of Torrance County that are not specifically designated in any other zone classifications (Exhibit D - Torrance County Zone Map). The land use within the Project area has historically been rangeland/dry agriculture; this land use would continue into the future as wind energy and ranching activities are compatible land uses.

As illustrated in Exhibit E - Land Cover Map, the primary land cover within the project area is designated as Western Great Plains Shortgrass Prairie. Southern Rocky Mountain Juniper Woodland and Savanna is the next most predominate land cover. Colorado Plateau Mixed Low Sagebrush Shrubland, North American Warm Desert Active and Stabilized Dune and Inter-Mountain Basin Semi-Desert Shrub Steppe make up the rest of the land coverage.

5. Land Entitlement

The Applicant has executed lease and easement agreements with private landowners in the Project area (Exhibit B - Land Agreements & Exhibit F - Legal Land Descriptions). The Applicant has rights to develop, construct, own, and operate a wind energy facility on the land subject to these agreements.

6. Request for Zoning Ordinance Amendment

In accordance with Torrance County Zoning Ordinance RPR-223, revised May 11, 2016, the Applicant is seeking a Zoning Ordinance Amendment for a Special Use District and a Height Variance for development of the Project as described below.

6.1 Special Use District

According to Torrance County's Zone District Map (10/13/2009), the Project land is designated as "A – AGRICULTURAL (40 ACRE MINIMUM)" (Torrance County Zoning Ordinance RPR-223, revised May 11, 2016).

A Special Use District is requested to develop the Project within the Project area. Refer to Exhibit A - Project Overview Map & Exhibit B - Land Agreements for the lands being proposed for the Special Use District.

6.2 Height Variance

The Applicant requests a height variance for the installation of wind turbines within Torrance County up to 590 ft in height and up to 4 permanent MET towers. While final heights of the wind turbines will be determined upon final selection of wind turbine make and model for the Project, the Applicant expects the wind turbines' "hub height" (height from the base of the tower to the center of the rotor hub on top of the tower) to be up to approximately 260 - 360 ft. (80 - 110 m), and the total wind turbine height (i.e., height of vertical blade-tip pointing straight up from the base of the tower) to be up to approximately 450 - 590 ft. (137 - 180 m). These heights are based on dimensions of wind turbines being considered by the Applicant for the Project and may be modified once the Applicant makes final selection of wind turbines for the Project. For reference, Exhibit G - Typical Wind Turbine Structure includes a drawing of a typical wind turbine structure and Exhibit H - Typical Wind Turbine Brochures includes typical design and performance details.

Up to 4 permanent MET towers would be installed, with an approximate height of 260 - 360 ft. (80 - 110 m). The final height of the MET tower will depend on the wind turbine hub height.

7. Project Description

7.1 Wind Energy Facility Description

As planned, the Project will likely consist of wind turbines having a rated nameplate capacity between 2 and 3.5 MW each and a total generation capacity of up to approximately 480 MW split between the two counties (see Exhibit A - Project Overview Map). The Applicant will determine the final number of wind turbines planned for each county following engineering analysis and micrositing.

In addition to wind turbines, the Project will include one or more O&M buildings (see Exhibit J - Typical Operations and Maintenance Facility), underground (and if required by localized terrain, overhead) power collection lines, up to three electric substations (dependent on final electrical design), a 345 kV gen-tie line, service access roads (see Exhibit I - Access Roads), and related facilities and equipment.

Project construction and start of commercial operation may be as early as 2020, depending on numerous development items.

The manufacturer, model, dimensions, and generating capacity of wind turbines used in the Project have not yet been determined. For reference, Exhibit G - Typical Wind Turbine Structure includes a drawing of a typical wind turbine structure and Exhibit H - Typical Wind Turbine Brochures includes typical design and performance details.

The Project will also include electric substations with transforming capabilities and a 345 kV gen-tie line. While the exact number and location of the substations will be determined after micrositing of Project facilities, they will be located within the Project area and connected to power collection lines which are located underground or, if required by localized terrain, overhead. The 345 kV gen-tie line will carry the electricity generated by the Project from the Project substations to U.S. Highway 285, before continuing in the highway right of way to the Point of Interconnection.

The Applicant requests micro-siting flexibility for all of the facilities and equipment in the Project, including but not limited to the final locations of wind turbines, power collection lines, site access roads, O&M buildings, substations, high voltage transmission lines, communications facilities, and MET towers. Final locations of Project the facilities and equipment will depend, among other things, on the number, size and locations of wind turbines, the spacing between wind turbines, site access, topography, environmental conditions, wetlands, and sub-surface conditions. Final wind turbine location coordinates will be provided to Torrance County when the Applicant submits the building permit application.

7.2 Site Suitability

In selecting the Project area for development, the Applicant performed extensive site assessments which considered the many factors discussed below. Based on these assessments, the Applicant concluded that the proposed site is ideal for wind energy development.

a) Wind Resources

Using MET towers to collect wind data and considering historical weather data, the Applicant estimated the average wind speeds at multiple locations and elevations (see Exhibit K - NM Annual Average Wind Speed) and then made energy generation projections. The wind resource is not merely a function of wind speeds, but also of wind speed stability and consistency, wind direction and directional variability, seasonal and daily variability, wind shear, and turbulence imparted by topographical features.

The process of evaluating a potential site takes years to complete. As part of Project planning, the Applicant acquired 3 MET towers at representative locations within the Project area to record wind resource data for a number of parameters. These towers were acquired from a previous developer who installed them in 2008.

The data collected by MET towers data enabled the Applicant to make energy generation projections for the Project. The optimum layout of wind turbines in the Project would maximize energy generation while maintaining adequate spacing between wind turbines to minimize detrimental wake effects on nearby wind turbines.

Based on the Applicant's analysis, the Project site has adequate wind resources for a successful Project.

b) Transmission Access

The Applicant is actively pursuing several options for delivering energy generated by the Project to the electrical grid. These include two interconnection requests filed with PNM which PNM is currently studying:

- IA-PNM-2017-16: 480 MW of wind energy
- IA-PNM-2017-17: 100 MW of battery storage

Power generated by the Project will be carried by the gen-tie line from Project substations across privately-owned land to the U.S. Highway 285 right-of-way. From there, it may continue in a northwesterly direction to the Point of Interconnection on PNM's 345 kV network.

c) Road Access

The Project site is accessible from public roads for construction equipment and heavy machinery, including cranes and special-purpose trailers which transport tower sections and other components. One such road is U.S. Highway 285. Another is the Berlier Ranch road, from which new private access roads would be constructed, thereby minimizing traffic impacts on local roads (see Exhibit I - Access Roads). The northern portion of the wind farm located in Torrance County will also be accessible from Guadalupe County roads such as Ojo Road, Mesa de Leon Road, and Highland Road.

d) Competitive Economics

Competitive economics are essential for a successful project and are achieved at sites which have the best combination of attributes such as wind resource, suitable land, and access to energy markets. Economic feasibility also depends on landowners' willingness to enter into land agreements at a reasonable cost. There are a number of fixed costs associated with development of a wind energy facility, such as baseline environmental surveys, permitting, interconnection filing fees and studies, and engineering. Accordingly, projects must be sized appropriately to bear distribute these fixed costs.

Based on a detailed analysis of these attributes and costs, the Applicant has determined that the Project has favorable economics.

e) Rural Location; Visual Impacts

In the county's Zoning Ordinance SPR-223/Wind Energy Facilities, March 21, 1990, including revisions to May 11, 2016, Torrance County's setback requirements state that "…each wind turbine shall be set back from the nearest property line a distance no less than 1.1 times its total height, unless appropriate easements are secured from adjacent property owner." The Project's wind turbines will be sited to

maintain minimum setbacks from the nearest non-participating properties pursuant to Torrance County requirements.

The proposed Project is located in a rural area on private land, with limited visual impact to surrounding properties.

In February 2019, the Applicant commissioned a viewshed analysis using a tool called the "ESRI ArcMap three-dimensional model Viewshed 2", to evaluate the visual impact of an indicative layout of the Project's wind turbines from surrounding areas. For this analysis, a ten-meter Digital Elevation Model (DEM) was used to show the local terrain. At the direction of Torrance County's Land Use Planning and Zoning Department staff, three representative "observer" points were selected in order to document the view of the Project area. For a 15-mile field of view from the observer points towards Project facilities, the Viewshed 2 tool then generated an Above Ground Level (AGL) land surface to indicate the height structures would need to be above the land surface to be visible from the observer points. Structure height values greater than the maximum height of the Project wind turbines were then excluded from the AGL. The results of this analysis are illustrated in Exhibit L - Project Visibility Map.

Based on the indicative Project layout, the AGL was then used to develop photo illustrations showing the view of the Project's wind turbines from the three observer points (Exhibit M - Project Visibility Photo Illustrations).

From the northern-most observer point along NM Highway 3 (E 455645; N 3855459 UTM z13 NAD83) looking southeast (124 degrees), the viewshed analysis indicates that only a small cluster of Project wind turbines would be visible approximately ten miles away towards the eastern horizon. It is possible that the wind turbines would be visible to the naked eye from this distance, depending on weather conditions, and the photo illustration indicates the general direction they would appear on the horizon.

From the observer point in the town of Encino, NM, (E 458087, N 3834594 UTM z13 NAD83) Looking Northeast (058 degrees) the viewshed analysis indicates that the Project wind turbines would be visible approximately five miles away towards the eastern horizon. It is possible that the wind turbines would be visible to the naked eye from this distance, depending on weather conditions, and the photo illustration indicates the general direction they would appear on the horizon.

From the southern-most observer point along NM Highway 60, (E 470527; N 3828231 UTM z13 NAD83) looking north (015 degrees), the viewshed analysis indicates no turbines are visible due to intervening terrain in the foreground.

f) Communication Interference

Wind turbines will generally be sited outside of known microwave pathways and Fresnel zones (areas surrounding a line-of-sight used to determine obstruction loss to communication signals) to minimize impacts on local communications. In November 2018, the Applicant commissioned a Communications Tower Study to identify communications towers as well as Federal Communications Commission (FCC) - licensed communications antennas that exist in the Project area (Exhibit N - Communications Study & NTIA Consultation). The study results will inform the Project wind turbine layout for the purpose of

minimizing communication service disruptions to existing tower users. Information about the locations of communications towers and antennas in the study area were derived from a variety of sources, including the FCC's Antenna Structure Registration (ASR) database, Universal Licensing System (ULS), national and regional tower owner databases, and local planning and zoning boards. The data was imported into GIS software and the structures mapped in the Project area.

The study found that one tower structure with a communication antenna is located within the Project area. While the tower structure is not registered with the FCC, the land mobile antenna is licensed. The appropriate setback distance of wind turbines from the land mobile antenna is based on FCC interference emission limits of electrical devices in the land mobile and mobile phone frequency bands.

In addition, the Applicant has consulted with the National Telecommunications and Information Administration (NTIA) to evaluate potential impacts to communications infrastructure and services within the Project area. In January 2019, the Applicant received a letter from NTIA stating that the agency does not anticipate harmful interference as a result of the Project (Exhibit N - Communications Study & NTIA Consultation).

g) Cultural Resources and Historic Places

In February 2019, the Applicant commissioned a cultural resources literature review to identify previous archaeological field studies and identified cultural resources within and near the Project area. The literature review queried online databases including the New Mexico Historic Preservation Division, Archaeological Records Management Section's New Mexico Cultural Resources Information System (NMCRIS) to determine the extent of previous cultural resource field surveys and documented sites within 1,640 feet (500 meters) of an indicative layout of the Project's wind turbines, access roads, and high-voltage transmission line in Torrance County. The NMCRIS database provides textual and geospatial information on all previously conducted cultural resource field studies in the State of New Mexico. All known pertinent cultural maps, records of previously recorded cultural resources, and reports from previous cultural resource field surveys within and near the Project area were acquired, evaluated, and archived for future referral.

As detailed in Exhibit O - Cultural Resources Literature Search, and in Table 3 below, six cultural resource surveys have been conducted within 1,640 feet (500 meters) of an indicative layout of the Project's wind turbines and access roads. Those surveys identified 32 cultural resource sites. Of those identified sites, five are located within 100 meters of an indicative layout of the Project wind turbines and access roads (Table 4).

Table 3. Previous Cultural Resource Surveys Conducted within 500m of Indicative Layout of Project Wind Turbines and Access Roads in Torrance County

NMCRIS no.	Performing Company	Acres	Identified Sites	Reference
19154	UNM OCA	1994	30	Kneebone, R. 1987
131214	US NRCS	74	0	US NRCS New Mexico State Office 2015
90493	US NRCS	597	1	Romero-Yepes 2004
127618	US NRCS	90.6	0	Dennison, L. 2013
142089	Patrick Graham	158	0	Graham, P. 2018
131860	Patrick Graham	270.9	1	Graham, P. 2015

None of the identified sites near the wind farm and access roads have been deemed eligible for the National Register: in each case either an official determination has been made as to non-eligibility, or no determination of eligibility has been recorded to date.

Table 4. Previously Recorded Cultural Resource Sites within 100m of Indicative Layout of Project Wind Turbines and Access Roads in Torrance County

Site LA. No.	Associated Activity	Site Type	NR Eligibility
60945	19154	Historic	Undetermined
60946	19154	Prehistoric	Undetermined
60957	19154	Prehistoric	Undetermined
183509	131860	Prehistoric	Not Eligible
45933	142089	Proposed Linear Historic	Undetermined

As detailed in Exhibit O - Cultural Resources Literature Search, and in Table 5, eight cultural resource surveys have been conducted within 500 meters of an indicative layout of the Project's high-voltage transmission line. All eight of the cultural resource surveys were conducted along the U.S. Highway 285 right-of way, while no cultural resource surveys were conducted within the private land portion of an indicative layout of the transmission line. Those cultural resource surveys identified 46 sites. Of those identified sites, only two are within 100 meters of an indicative layout of the transmission line (Table 6).

Table 5. Previous Cultural Resource Surveys Conducted within 500m of Indicative Layout of Project Transmission Line in Torrance County

NMCRIS no.	Performing Company	Acres	Identified Sites	Reference
7458	NM State Highway	29.50	0	Haecker, C. 1985
93071	Parson Brinkerhoff	896.00	17	Raymond et al 2006
56067	SWCA	4770.20	27	Philips, D. et al 1997
118067	Tierra ROW	25.00	0	Funkhouser, G. 2010
20690	ACA	526.40	2	Bowman, James 1988
644771	Lone Mountain	17.48	0	Travis-Suhay, C. 1990
64593	Lone Mountain	Not entered	Not entered	Travis-Suhay, C. 1999
42416	Quivera Research Center	30.72	0	Condie, C.J. 1993

No determination of eligibility has been recorded to date for one identified site in the indicative area of the transmission line, while the other identified site has been deemed eligible for the National Register.

Table 6. Previously Recorded Sites within 500m of Indicative Layout of Project Transmission Line in Torrance County

Site LA. No.	Associated Activity	Site Type	NR Eligibility
68955	20690, 56067	Prehistoric	Undetermined
125523	61944, 65356	Prehistoric	Eligible

In addition, the Applicant commissioned a search of the National Register of Historic Places in late-2018. The search determined that no Historic Places are located within or near the Project area (Exhibit P - Map of Historic Places).

h) Environmental

In late-2018, the Applicant commissioned desktop research into Threatened, Endangered, and Sensitive Species with the potential to occur in the Project area located within Guadalupe and Torrance Counties. The New Mexico Ecological Services Field Office of the United States Fish and Wildlife Service (USFWS) was consulted to generate an official list of federally-listed Threatened, Endangered, and Candidate species, including any designated listed critical habitat. The New Mexico Department of Game and Fish (NMDGF) was consulted to obtain New Mexico State-listed species that have potential to occur in the

Project area within Guadalupe and Torrance Counties. The New Mexico Rare Plant Technical Council was consulted to generate a list of rare plants that have the potential to occur in the Project area within Guadalupe and Torrance Counties (Exhibit Q - Preliminary Biological Evaluation & Agency Consultation).

Table 7 below summarizes the federal and state-listed species that have the potential to occur in the Project area in Torrance and Guadalupe Counties.

Table 7. Federal and State-Listed Species in Project Area in Torrance and Guadalupe Counties

Common Name	Scientific Name	Federal Status	NM-State Status	Habitat Association
Mammals				
New Mexico Meadow Jumping Mouse	Zapus hudsonius luteus	Endangered	--	Nests in dry soils. Utilizes moist and dense streamside riparian/ wetland vegetation. Prefers moist grasslands and thick vegetated areas around permanent water. Active only during the growing season.
Birds				
Mexican Spotted Owl	Strix occidentalis lucida	Threatened	--	Primarily mixed conifer forests dominated by Douglas fir and various pines, or fir and pine-oak forests. Steep sided forested canyons with perennial water sources. Considered year-round resident in Rio Arriba County.
Piping Plover	Charadrius melodus	Threatened	Threatened	Occurs on sandflats, bare shorelines of rivers, lakes, or coasts. In NM can occupy patches of sand, gravel, or pebbly-mud on alkali lakes.
Southwest Willow Flycatcher	Empidonax traillii extimus	Endangered	Endangered	Breeds in riparian zones along rivers, streams and wetlands. During breeding confined to riparian woodlands with thick understory.
Common Black Hawk	Buteogallus anthracinus	--	Threatened	In NM it is an uncommon summer resident that is largely restricted to well-developed riparian habitats in the San Francisco, Gila, and Mimbres drainages.
Bald Eagle	Haliaeetus leucocephalus	--	Threatened	Found near lakes and streams across NM., Mostly during winter months. Agricultural fields and

				pastures frequently used for foraging.
Peregrine Falcon	Falco peregrinus	--	Threatened	Breeding territories center on cliffs that are in wooded/forested habitats. Preferred hunting habitats include croplands, meadows, river bottoms, marshes, and lakes.
Arctic Peregrine Falcon	Falco peregrinus tundrius	--	Threatened	Breeding territories center on cliffs that are in wooded/forested habitats. Preferred hunting habitats include croplands, meadows, river bottoms, marshes, and lakes.
Least Tern	Sternula antillarum	Endangered	Endangered	Nests on the ground, typically on sandy sites relatively free of vegetation, such as sandbars in rivers, and beaches. In New Mexico alkali flats are selected as nesting areas.
Neo-tropic Cormorant	Phalacrocorax brasilianus	--	Threatened	In NM generally found on larger bodies of water such as reservoirs.
Gray Vireo	Vireo vicinior	--	Threatened	In New Mexico, most often found in arid juniper woodlands on foothills and mesas, these most often associated with oaks and usually in habitat with a well-developed grass component.
Baird's Sparrow	Ammodramus bairdii	--	Threatened	Occurring primarily in the eastern plains and southern lowlands. May winter in some locales; breeds in shortgrass prairies, nests are concealed in tallgrass and prairie.
Fish				
Suckermouth Minnow	Phenacobius mirabilis	--	Threatened	Inhabits mainly sand, gravel, and rubble-bottomed riffles in small to moderate-sized streams.
Mexican Tetra	Astyanax mexicanus	--	Threatened	Occupies variety of habitats, tends to school in pools and below swift areas in eddies.

Bigscal Logperch	Percina macrolepida	--	Threatened	Typical habitat consists of larger streams with strong, non-turbulent flows. Preferred substrate varies from silt to rubble.
Flowering Plants				
Pecos Sunflower	Helianthus paradoxus	Threatened		Saturated saline soils of desert wetlands. Usually associated with desert springs (cienegas) or the wetlands created from modifying desert springs; 3,300-6,600 ft.
Wright's Marsh Thistle	Cirsium wrightii	Candidate		Around springs near San Bernardino, on the borders of New Mexico and Sonora. It also occasionally occurs with the threatened *Helianthus paradoxus* in the Pecos River valley.
Santa Fe Milkvetch	Astragalus feensis	Species of Concern	Strategy Species	Sandy benches and gravelly hillsides in pinyon-juniper woodland or plains-mesa grassland; 5,100-6,000 ft.
Flint Mountains milkvetch	Astragalus siliceus	Species of Concern	Strategy Species	Calcareous knolls and rocky areas in rolling shortgrass prairie; 6,000-6,500 ft.
Sandia alumroot	Heuchera pulchella	Species of Concern	Strategy Species	Limestone cliffs in lower and upper montane coniferous forest; 8,000-10,700 ft.
Tall Bitterweed	Hymenoxys brachyactis	Species of Concern	Strategy Species	Dry sites with coarse soils in pinyon-juniper woodland and lower montane coniferous forest; 6,900-8,200 ft.
Plank's campion	Silene plankii	Species of Concern	Strategy Species	Igneous cliffs and rocky outcrops; 5,000-9,200 ft.

In addition, the Applicant commissioned several wildlife studies of the Project area, in accordance with USFWS Land-Based Wind Energy Guidelines (USFWS Guidelines) and Eagle Conservation Plan Guidance. The studies cover a larger area than the proposed Project area in Torrance County. In summary:

- In accordance with USFWS Guidelines, a "Tier 1" study was conducted in 2014.
- Also in accordance with USFWS Guidelines, "Tier 3" aerial raptor and eagle nest surveys were performed in February 2014, April 2015, May 2016, and February 2018. These surveys covered the Project area and a 10-mile buffer, totaling approximately 1,882 square miles.

  - Results of the 4 years of nest surveys included 19 large stick nests potentially suitable for use by golden eagles.
  - None of these surveys identified any nests which were occupied by either bald or golden eagles.

- In accordance with USFWS Guidelines, "Tier 3" eagle and avian use surveys were conducted for one full year, from June 2015 to May 2016.
  - Surveys were conducted monthly, and small bird and large bird surveys were done separately.
  - Small bird surveys generally documented species consistent with what was expected for the area. The most abundant small bird species documented were Cassin's sparrow, horned lark, and western meadowlark. No gray vireos or pinyon jays were observed.
  - Large bird/eagle surveys also resulted in a species list consistent with expectations for the area.
    - The most abundant large bird species documented were turkey vulture, Swainson's hawk, and American kestrel. No burrowing owls were observed.
    - Observed raptor use was low compared to other areas in Western states with operating wind energy facilities, for which pre-construction raptor use data is publicly available.
    - Two golden eagles were observed during these surveys, resulting in only one minute of identified "eagle risk". No bald eagles were observed.
    - Observed golden eagle use was very low compared to other areas in Western states with operating wind energy facilities, for which pre-construction eagle use data is publicly available.
- In accordance with USFWS Guidelines, a "Tier 2" Site Characterization Study of the Project area was also conducted, resulting in the March 20, 2018, draft report (Exhibit R). This draft report will be updated as new information is obtained. The study covers a larger area than the proposed project site in Torrance County.
- On April 5, 2018, Orion and its wildlife consultants, Western EcoSystems Technology, Inc., met with the USFWS and the NMDGF to discuss completed, ongoing, and planned wildlife studies of the proposed Project area and expected impacts of the proposed Project on wildlife.
- In addition, a second full year of large bird / eagle use surveys began in Nov. 2018 and will continue until Oct. 2019.

As stated in the Site Characterization Study (Exhibit R), it is unlikely that any of the four avian and one mammal federally listed as a threatened or endangered species occur within the Project area in Torrance County. Of the 12 avian and one mammal state-listed threatened or endangered species with potential to

occur in Torrance County, the Site Characterization Study determined that only the bald eagle and gray vireo (both avian species) possibly occur in the Project area.

As required by State or Federal law, the Applicant will conduct additional biological field surveys to determine if suitable or appropriate habitat exists to support listed species. The presence of any listed species will determine the need to engage in formal consultation with the USFWS or NMDGF. At this point in time, the Applicant does not anticipate that Federal and NM-State listed species issues will significantly impact Project development.

7.3 Project Development Resources

Wind energy projects are capital intensive. The Applicant has decades of experience with construction finance, term loans, and structured cash and tax equity investments. Due to Applicant's substantial experience with raising capital for many prior wind energy projects and the forecasted economic benefits of this Project, Applicant believes there are many potential opportunities for financing and ownership of the Project.

7.4 Timeline

Project construction and start of commercial operations of the Project are planned for as early as 2020. Additional phases of the project are currently being planned and are expected to have a 2021 or later construction and commercial operations timeline.

The Project is designed to generate electricity for approximately 30 years, with the possibility to extend energy generation beyond this period.

7.5 Wind Energy

7.5.1 Electricity generation

As planned, the 480 MW Project will likely consist of wind turbines having a rated nameplate capacity between 2 and 3.5 MW each and located within Guadalupe and Torrance counties, and is expected to generate approximately 2,000,000 MWh per year of clean, renewable energy. The Applicant will determine the final number and location of wind turbines later in the development process following engineering analysis and micrositing, with the Applicant providing final numbers and locations to Torrance County prior to construction.

In 2016, the average New Mexican home consumed approximately 7,280 kilowatt-hours. One 2.5 MW wind turbine produces enough electricity on average to power the equivalent of approximately 1,500 New Mexican homes.

7.5.2 Interconnection and transmission

The Applicant filed an interconnection request with PNM for the Project on November 21, 2017. PNM is currently completing the Definitive System Impact Study and the results are expected to be completed at the end of Q1 2019. Following review of the study results, the Applicant may proceed to the Facilities Study phase of the interconnection process and ultimately enter into a Large Generator Interconnection Agreement (LGIA). The LGIA would allow the Project to interconnect and deliver its full energy output to the Point of Interconnection.

The Project's proposed 345 kV gen-tie line would be an overhead transmission line. The indicative route of the gen-tie line would run in a westerly direction from the Project substation in Torrance County to U.S. Highway 285, before heading northwest for approximately 40 miles.

7.5.3 Power market

The Applicant has negotiated and executed power sales agreements for many wind energy projects across the United States. The Applicant is currently pursuing power purchase options for the Project.

7.6 Wind Energy Equipment, Siting, & Other Infrastructure

7.6.1 Wind Energy Generation Turbines

The Project will utilize industry-standard three-bladed, upwind wind turbines. The Applicant is currently considering several well-known vendors for wind turbines, such as (but not limited to) GE Renewable Energy, a subsidiary of General Electric, Vestas Wind Systems A/S, and Siemens AG. The Applicant anticipates this selection will be made by the end of 2019 or early 2020. For reference, Exhibit G - Typical Wind Turbine Structure includes a drawing of a typical wind turbine structure and Exhibit H - Typical Wind Turbine Brochures includes typical design and performance details. The wind turbines used in the Project would be new, commercially available turbines.

Each wind turbine will consist of four major components: the nacelle, the rotor, the tower, and the foundation. While final heights of the wind turbines will be determined upon final selection of wind turbine make and model for the Project, the Applicant expects the wind turbines' "hub height" (height from the base of the tower to the center of the rotor hub on top of the tower) to be up to approximately 260 - 360 ft. (80 - 110 m), and the total wind turbine height (i.e., height of vertical blade-tip pointing straight up from the base of the tower) to be up to approximately 450 - 590 ft. (137 - 180 m). These heights are based on dimensions of wind turbines being considered by the Applicant for the Project and may be modified once the Applicant makes final selection of wind turbines for the Project. Descriptions of the major wind turbine components are provided below.

a) Nacelle

At the top of the tower section is the nacelle. The exterior is typically made of fiberglass with a structural steel frame which protects the internal, main mechanical components of the wind turbine from the environment and dampens noise emissions. The housing is designed to allow for adequate ventilation to cool internal machinery. While final sizes will be determined upon final selection of wind turbine make and model for the Project, the Applicant anticipates that the housing will be, but not limited to, approximately 28 feet long, 10 feet tall, and 11 feet wide (8.5 meters long, 3 meters tall, and 3.3 meters wide). It is externally equipped with an anemometer which measures wind speed, and a wind vane which measures wind direction. This information is used by the wind turbine controller to turn the machine on and off, and to rotate or "yaw" it into the correct position in relation to the wind. The components housed within the nacelle include the generator, the main shaft, the gearbox, and an electric control unit which relays information and data received from the generator and the weather station on the roof of the nacelle to the main control cabinets at the base of the tower. The nacelle is mounted on a sliding ring that allows it to yaw into the wind to maximize energy capture.

Attached to the top of some of the nacelles, per specifications of the FAA, would be a single, medium-intensity aviation warning light. These would be red flashing lights (such as the L-864 Flashing Red Beacon) that would only be operated at night.

b) Rotor

The rotor assembly is mounted on the driveshaft and is operated upwind of the tower. Each rotor will consist of three fiberglass composite blades, with a hub or nose cone that is mounted on the end. While final sizes will be determined upon final selection of wind turbine make and model for the Project, the Applicant expects that each blade will be approximately 180 to 240 ft. (54 to 74 m) in length depending on the final model selected. The rotor attaches to the drive shaft at the front of the nacelle.

The drive shaft is connected to the gearbox and generator contained within the nacelle. All wind turbine rotors would rotate in the same direction. Electric-servo motors within the rotor hub vary the pitch of each blade according to wind conditions, which enables the wind turbine to operate efficiently at varying wind speeds. While final specifications will be determined upon final selection of wind turbine make and model for the Project, modern wind turbines generally begin generating energy at wind speeds as low as 6.7 miles per hour (mph) (3 meters per second (m/s)) and automatically shut down at sustained wind speeds above 56 mph (25 m/s). The maximum rotor speed is approximately 17.6 revolutions per minute (rpm).

Wind turbine rotors would be painted a non-reflective, unobtrusive, off-white color.

c) Tower

The towers used for the Project would be conical steel structures typically manufactured in three to five sections, each of which would be trucked separately to the site and then bolted together using internal flanges. While final specifications will be determined upon final selection of wind turbine make and model for the Project, towers generally have a base diameter of approximately 14 to 20 ft (4 to 6 meters) and a diameter at the top of approximately 8 ft. (2.4 m). Each tower would have a locked access door at the base, internal lighting, control cabinets, and an internal ladder or elevator for access to the nacelle. The towers would be painted in a non-reflective and unobtrusive off-white color. By design, the tubular steel towers cannot be climbed externally, and no appurtenances would be connected to the outside of the wind towers.

a) Foundation

The wind turbines' freestanding tubular towers would be connected by anchor bolts to a reinforced concrete foundation. Foundation type and design for the wind turbines would be based on project-specific geotechnical investigations. While final specifications will be determined upon final selection of wind turbine make and model for the Project, spread-footing type foundations are generally about 60 ft. (18 m) in diameter and 7 to 13 ft. (2 to 4 m) in depth. Only a short foundation pedestal would be above the ground. An alternate tower foundation approach would consist of a rock anchor. Regardless of foundation design, soil borings would be performed at each tower location to characterize the underlying soils. A licensed geotechnical engineer would analyze and recommend specific requirements

to ensure adequate foundational strength for each of the proposed towers. Reinforced concrete foundations would be designed by a professional engineer according to recommendations from the wind turbine manufacturer and geotechnical engineer.

7.6.2 Wind Turbine Siting

To maximize energy capture, wind turbines would typically be placed at least 3 rotor diameters apart in rows perpendicular to the prevailing winds and at least 10 rotor diameters apart between rows. This general spacing scheme is utilized to minimize detrimental wake effects on nearby wind turbines and is required to maintain the efficiency and productivity of the Project as a whole.

Final wind turbine locations in the Project will be determined based on the make and model of wind turbine selected as well as geotechnical studies, environmental studies, meteorological data, and site engineering design. The Applicant requests micro-siting flexibility to place wind turbines at optimal locations within the Project area.

Wind turbine location coordinates will be provided to Torrance County when the Applicant submits a building permit application.

7.6.3 Electrical Collection System and Substation

The electrical collection and transmission system associated with the wind turbines would consist of the following: wind turbine step-up transformers, a 34.5 kV collector line system from each wind turbine to the Project substations, and Project substations where energy would be transformed or "stepped up" from the collection system voltage of 34.5 kV to a 345 kV transmission level voltage.

Electrical power from each wind turbine would be transmitted from the wind turbine to a Project substation by buried electrical collection cables, unless localized terrain requires such cables to be above ground. Each Project substation, which would likely be approximately five to 10 acres in size, would consist of electrical switches, circuit breakers, step-up transformers, meters, and related equipment that transforms the collection system voltage from 34.5 kV to 345 kV.

7.6.4 Meteorological Tower

There is a single temporary MET tower currently operating within the Project area in Torrance County, located in Section 25, Township 6N Range 15E (34.69871, -105.34872). This tower is a 60m tall, NRG XHD guyed monopole steel tower which was erected in 2008.

The existing MET tower has seven anemometers, four wind vanes, two temperature sensors, and one Barometric pressure sensor located at varying heights.

7.7 O&M Facility

One or more O&M facility(ies) would be constructed to house operations, equipment parts, and materials associated with ongoing maintenance and operation activities of the Project. O&M facilities typically include a building 50 by 100 ft. in size with a fenced equipment storage yard/ staging area that is approximately 250 by 250 ft (Exhibit J).

Each O&M building would include a Supervisory Control and Data Acquisition (SCADA) control room to monitor wind turbine status 24 hours per day. The building would include offices and a storage room. It would be constructed in accordance with Torrance County building standards and codes. The final site plan and detail drawing would be provided to Torrance County when the Applicant submits its building permit application.

During operations, the Project as a whole would employ approximately 18 to 23 employees based in the O&M facility(ies). Potable water would be available at the O&M facilities and used water would drain into an onsite septic system. All appropriate permits required for the use of potable water and construction of a septic system would be obtained from Torrance County. Any other waste materials used for maintenance and operations would be removed from the site and disposed of in an appropriate manner consistent with County, State, and Federal requirements. These materials may include oils used in transformers, lubricating oils, and cleaning fluids. The Applicant would implement a hazardous materials management plan addressing storage, use, transportation and disposal of each oil or solvent anticipated to be used at the Project. All replaced fluids would be collected in drums and sent offsite for recycling. A Spill Prevention, Control, and Countermeasure (SPCC) Plan would be developed in order to provide guidance regarding spills of fuel and oil at the Project site.

7.8 Project Access Roads

The Project site would be accessed from U.S. Highway 285 and the Berlier Ranch Road from which new private access site roads would be constructed, thereby minimizing traffic impacts on local roads (Exhibit I - Access Roads). The northern portion of the wind farm located in Torrance County will be accessible from Guadalupe County roads (e.g., Ojo Road, Mesa de Leon Road, and Highland Road). A Driveway Access Permit from the New Mexico Department of Transportation (NMDOT) would be obtained as required for access points from state roads. These driveway access points would be designed and constructed in accordance with NMDOT standards and guidelines. Using these existing and new access roads, the Project site will be accessible to construction equipment and heavy machinery, including cranes and special-purpose trailers, which transport tower sections, blades and other components. New access roads would align with wind turbine rows to accommodate wind farm maintenance, minimize off-road travel, and limit the amount of land taken out of production from current land use activities (Exhibit A - Project Overview).

New access roads on private land, and improvements to existing roads (if any) with the approval of applicable road authorities, would be designed under the direction of a licensed engineer. All new private access roads would be constructed and maintained in accordance with appropriate standards. Care would be taken during design and construction of access roads to minimize potential erosion and ground disturbance, and to avoid sensitive resources and unsuitable areas.

7.9 Fencing

No perimeter fencing is required for the Project and therefore, none is proposed. The Project would be located entirely on privately-owned lands. Access to wind turbines by O&M personnel would be via a reinforced and locked steel door at the base of each tower. The O&M facility and Project substation, however, would be surrounded by chain link fencing with barbed wire at the top for security purposes.

8. Construction Activities

8.1 Project Construction

Project construction will be managed by qualified internal and external personnel to minimize disruption to the local community. Using data collected for the Project site such as geotechnical information, environmental conditions, and site topography, the Applicant will develop a set of site-specific construction specifications for various components of the Project. The design specifications will comply with construction standards established by the following industry practice groups:

- American Concrete Institute
- Institute for Electrical and Electronic Engineers
- National Electric Code
- National Fire Protection Agency
- Construction Standards Institute

The Project engineering team will ensure that all aspects of the Project design specifications, as well as actual onsite construction, comply with applicable Federal, State, and County rules and regulations. The Project owner or contractor will communicate with County enforcement officers in order to assure that all aspects of Project construction are properly communicated and understood.

Barring adverse weather conditions, construction of the Project is anticipated to be completed within 12 to 18 months. Construction will involve approximately 275 to 350 temporary workers during various phases of construction. Following issuance of all necessary permits, construction is expected to begin with access roads and wind turbine site preparation. Construction activities most commonly occur during daylight hours.

Temporary construction staging areas will be established within or near the Project area. These staging areas will be used to temporarily store tower sections, wind turbine components, and infrastructure components and equipment. They will also be used as parking and storage areas for construction vehicles and construction employees' personal vehicles, and as storage areas for construction equipment. Typically, there is one staging area for each wind turbine string and approximately three to five larger central staging areas within or near the Project area.

Construction staging areas will be developed by grading and compacting the subsoil. A minimum of approximately 8 inches of gravel would then be installed to create a level working yard. Electric and communication lines would be brought in from distribution poles to allow connection with construction trailers, as necessary. Upon completion of construction, utilities and gravel would be removed from staging areas that do not overlap with the Project facilities, and the staging areas would be restored to substantially pre-construction contours and conditions.

To clear the balance of the construction areas to facilitate construction activities, vegetation will be removed along planned locations for site roads, collection lines, and around wind turbine locations. For transport roadways, clearing is typically conducted to establish an approximately 40 ft corridor centered on the road alignment. Where the collection system does not follow access roads, clearing is typically completed in an approximately 25 ft corridor to allow for trench digging and the installation of

electrical cable. For roads used by heavy cranes, an approximately 50 ft corridor is typically necessary. Clearing would be conducted by mechanical means, using heavy equipment to remove debris in the corridors. Clearing activities would prepare the areas for road construction, collection system trenching, and crane walking.

The construction of permanent foundations for wind generator towers would include soil excavation and compaction, preparation of form work, and placement of structural concrete with appropriate steel reinforcement as directed by the tower supplier and foundation designer. Areas surrounding the wind turbine locations would be cleared to allow for construction of the foundation and crane pads, and rotor assembly. This could potentially involve clearing up to approximately 20,000 square ft per wind turbine site.

The beginning of wind turbine foundation construction is expected to occur after initial portions of the access roads are completed. Foundation construction would occur in several stages including excavation, outer form setting, rebar and bolt cage assembly, casting and finishing of the concrete, backfilling, tensioning of the bolts, and finally site restoration. Excavation and foundation construction would be conducted in a manner that would minimize the size and duration of excavated areas required to install foundations.

Once the foundation concrete is sufficiently cured, the excavated area around the foundation would be carefully backfilled with the excavated on-site material. Additional offsite materials would only be brought in if necessary. The tower would be secured directly to the top of the concrete foundation and the nominal 15 - 20 ft (4.5 – 6.1 m) diameter pedestal, which typically extends 6 to 12 inches above grade. The finished grade around the foundation pedestal and base of the tower would be surfaced with a graveled area approximately 6 ft (1.8 m) width. It is anticipated that one to two reinforced concrete wind turbine foundations would be constructed per day.

Crane pads would be installed adjacent to each wind turbine foundation to provide the main crane a stable, well compacted, level base from which to accomplish heavy lifting. Crane pad dimensions are typically 40 by 60 ft (12 by 18 m). A crane pad is constructed in a manner similar to the construction of access roads. Vegetation and compressible, organic soils and topsoil may be removed as part of initial site preparation. Following the initial site preparation, the ground immediately around the tower would be surfaced with gravel and successive layers (8 to 12 inches) of well-compacted crushed aggregate would be laid for a radius of approximately 40 ft (12 m). This permanent surfacing would provide a stable surface area for maintenance vehicles and would minimize surface erosion and runoff from the pad areas. After the initial construction phase, the crane pads would only be used periodically during the operations phase for activities such as maintenance tasks and equipment replacement and post-construction environmental monitoring, which are facilitated by cleared areas around wind turbines.

Wind turbine components would then be delivered and staged at wind turbine locations, and the cranes would be used to erect the wind turbines. Wind turbine mechanics would be completed next, along with electrical engineering, followed by the construction of the electrical collection system, the Project substation, and the transmission line. Typically, the Project substation transformer is delivered during this

timeframe and the Project substation can then be energized. The last step would be to commission the wind turbines for use.

8.2 Site Restoration

All construction traffic (including vehicle, equipment, and crane) would be limited to designated roads and within construction corridors and staging areas to the extent practicable.

At the conclusion of the construction phase of the Project, areas that have been cleared and that do not contain permanent structures or facilities would be revegetated with a native seed mix. This will assist in reducing erosion and promoting a return to the site's natural condition. Restored areas would include road edges, crane paths, temporary roads, and staging areas. This process would generally involve the following sequence of activities:

- Removal of gravel or other temporary fill
- Decompaction of compacted subsoils using a deep ripper
- Reestablishing pre-construction contours to the extent practicable
- Disking and removal of stones following the spreading of topsoil (as applicable)
- Seeding with a native seed mix

At the final conclusion of construction and restoration, silt fences and temporary sediment and erosion control measures would be removed as necessary.

8.3 Stormwater, Soil Erosion, and Sediment Control

Indicative locations of known drainages and wetlands in the Project area are illustrated in Exhibit S - Map of Surface Waters, Wetlands, and Waters of the U.S. The wetlands shown in such map are those identified by the U.S. Fish & Wildlife Service, National Wetlands Inventory.

Unlike other types of electricity generation, the Project does not involve any intake or discharge of cooling water. However, the Project has the potential to generate stormwater runoff which could discharge to surface waters or wetlands, so the Project may seek coverage under the U.S. Environmental Protection Agency's (US EPA) National Pollution Discharge Elimination System (NPDES) Construction General Permit. In connection with this general permit, a Stormwater Pollution Prevention Plan (SWPPP) would be completed prior to construction and a Notice of Intent would be submitted to the US EPA. The SWPPP would identify procedures to minimize potential stormwater impacts to surface waters and wetlands.

Where appropriate, stormwater drainage systems will be designed and constructed to maintain existing drainage patterns to the maximum extent practicable. The Applicant will implement appropriate temporary and permanent erosion control measures, including construction monitoring, and restoration actions as required.

8.4 Construction Generated Wastes and Wastewater

A variety of nonhazardous, inert construction wastes may be generated during construction. Construction wastes would primarily consist of concrete waste from wind turbine pad construction, wood waste from wood forms used for concrete pad construction, and scrap metal steel from wind turbine tower construction. Some additional wastes could include erosion control materials, such as straw bales and silt

fencing, and packaging materials from associated wind turbine parts and other electrical equipment. Solid wastes related to the construction of the Project would be promptly transported offsite and recycled, or disposed of in accordance with federal, state, and local laws. Excess soil generated as a result of construction activities would be tamped around wind turbines and power poles or spread throughout the Project area. All hazardous materials related to construction, operation, and maintenance of the Project would be handled, stored, transported, and disposed of in accordance with all applicable local, state, and federal laws.

Wastewater would be generated during construction from the washdown of concrete trucks after concrete loads have been emptied. The Project's implemented SWPPP would be used in support of a NPDES Construction General Permit as discussed above. The SWPPP would also identity methods to minimize and prevent impacts from this material. The Applicant requires its contractors to follow best management practices and to minimize concrete waste wherever possible. Upon completion of the wind turbine foundations, concrete resulting from spill or washout is collected as part of the normal reclamation and restoration of the areas adjacent to the wind turbine.

9. Project Operations

9.1 Lighting

The Project will comply with applicable FAA requirements. The FAA's current wind turbine lighting guidance (DOT/FAA/AR-TN05/50 dated 11/05) requires lighting the Project as one obstruction with lights spaced approximately 3,000 ft. (914 meters) apart. At night, certain wind turbines in the Project will be lit with synchronized red flashing lights. To minimize potential visual impacts, the Applicant will likely use lights that pulse 20 times per minute and have a beam spread of 3 degrees. This approach maximizes "dark space" between flashes and per minute and minimizes ground scatter or "light noise" because less light from the beam reaches the ground. All permanent MET towers would also be lit in accordance with FAA requirements.

9.2 Sound

Wind turbine sound emissions are typically either mechanical or aerodynamic in origin. Because most mechanical components are enclosed and acoustically mitigated, aerodynamic noise from the blades rotating through the air is typically the dominant source of audible sound. Industry practice is to measure sound emissions in accordance with IEC61400-11, Wind Turbine Generator Systems-Part 11: Acoustic Noise Measurement Techniques (IEC, 2006).

Sound emitted by wind turbines generally increases with increasing wind speeds and typically reaches a maximum level when winds are approximately 18 to 20 mph. When wind speeds are high at both the wind turbine rotor and at ground level, the sound from the wind turbines may be fully or partially masked by wind-induced background noise. When winds are calm or slight at ground level and high enough at turbine rotor height for operations, an audible "swooshing" sound may be perceived at ground level as the turbine blades rotate through the air.

Sound levels perceived at ground level will depend on a number of factors, the most significant of which is the distance from wind turbines. Existing Federal, State, or County regulations do not limit noise levels

at wind energy facilities (Exhibit T - State of New Mexico Noise Related Statutes). Due to the remote location of the Project, the large distances to sound receptors and flexibility in micro-siting of wind turbines, sound impacts on residents in the area are not anticipated.

10. Conformance with Zoning Ordinance

10.1 Conformance with Ordinance

The proposed Project will operate in accordance with the requirements of the Torrance County Zoning Ordinance SPR-223/Wind Energy Facilities, March 21, 1990, including revisions to: May 11, 2016, which permits wind-driven energy generators as an allowable use in a Special Use District.

10.2 Conformance with Zoning Ordinance Goals

This project is in conformance with and enhances fulfillment of the following Zoning Ordinance Goals of Torrance County.

a) "Promote Health and the general welfare of the County"

Wind energy facilities are safe when sited, constructed and operated in accordance with all applicable County, State, and Federal requirements. The proposed Project will be operated and maintained by a highly trained operations and maintenance team. Construction will meet all applicable safety requirements. Wind creates clean energy from a non-depleting, local energy source that does not consume or discharge water, has no air emissions, and emits no odors.

b) "Protect local water resources"

The Projects would have a low impact on local water resources during operations. Water would be required during construction for dust abatement and to mix concrete for wind turbine foundations and would likely be obtained from existing wells within or near the Project area. Potable water would be used to service the O&M building.

c) "Facilitate adequate provisions for transportation"

The Project would not impose burdens on County roads beyond temporary use during construction. New access and service roads on private land would be constructed for the Project. These roads would remain private and would not require maintenance by Torrance County.

d) "Facilitate adequate provisions for schools, parks, and other community requirements"

The Project will generate property and gross receipts taxes or new revenue streams from payments in lieu of taxes, providing new county revenues to support local schools and Torrance County services.

e) "Conserve the value of property"

The Torrance County Assessor's Office values property in conformance with professional standards of the International Association of Assessing Officer and the laws of the State of New Mexico. According to the Assessor's office, because the property maintains an Agricultural use it does not decrease in value, nor does it necessarily increase in value.

f) "Compatible development of land and other natural resources"

Wind energy is a compatible land use with rangeland and other agricultural uses. Typically, less than 1-2% percent of the land within the Project area would be used for wind turbines, service roads, and other Project infrastructure following construction. Cattle would still be able to graze and wildlife would be able to use the area around the wind turbines. Wind energy development provides economic diversification for ranchers and other landowners, in many cases helping to provide an alternative to selling their land or subdividing it, thus protecting a rural way of life.

10.3 Appropriate Use for Zoning District

10.3.1 Special Use District

Major power generation facilities, including wind driven energy generators, are an allowable use for a Special Use District (Pursuant to Torrance County Zoning Ordinance SPR-223/Wind Energy Facilities, March 21, 1990, including revisions to: May 11, 2016).

The Project is located in an Agricultural District (A), a rural land use designation for unincorporated areas of Torrance County that are not specifically designated in any other zone classifications (see Exhibit N, Torrance County Zoning Map). The land use within the Project Area has historically been rangeland/dry agriculture; this land use would continue into the future as wind energy and ranching activities are compatible land uses.

10.3.2 Height Variance

While final heights will be determined upon final selection of wind turbine make and model for the Project, the Applicant expects that the wind turbine "hub height" (height from the base of the tower to the center of the rotor hub on top of the tower) to be up to approximately 260 - 360 ft. (80 - 110 m), and the total wind turbine height (i.e., height of vertical blade-tip pointing straight up from the base of the tower) to be up to approximately 450 - 590 ft. (137 - 180 m). This Height Variance, therefore, conforms to allowable uses for this zoning district.

11. Conformance with Torrance County Comprehensive Land Use Plan, 2003

The Applicant has prepared this Application using the goals identified in 2003 Torrance County Comprehensive Land Use Plan. Wind projects are well suited for the productive agricultural land in New Mexico and represent an attractive opportunity for many rural New Mexican communities as a secondary income source for landowners. The Project conforms to and helps accomplish numerous goals of the plan.

11.1 Goal A:

Balance the needs of a growing population while retaining the rural residential character and culture of the County, and ensuring a sustainable water supply. Objective 3: Control the density and distribution of development through zoning and other regulatory ordinances.

Use and enjoyment of agricultural property in the vicinity of the Project will not be harmed. Wind energy projects only occupy about 1 to 2 percent of project land area, allowing cattle ranching and other agricultural operations to continue and wildlife to run free.

Land surrounding the wind turbines will remain agricultural and the Project will not negatively affect surrounding properties. In addition, the Project is not expected to diminish property values in the surrounding area.

11.2 Goal B:

Plan and guide development in the County in a manner which encourages optimum efficiency and cost-effectiveness in the delivery of infrastructure and County services.

Road and drainage improvements will be necessary for the Project. The project will place minimal demands on County services. The Project will include the construction of new access roads to all wind turbines, the majority of which will be constructed on private land. The new infrastructure would be constructed and maintained in accordance with appropriate County standards. The Applicants will work with the Torrance County Road Department to obtain necessary approvals for use of County roads. The Applicant will also work with Torrance County emergency management services for any necessary infrastructure development.

11.3 Goal F:

Protect those areas of the County that are historically, culturally, geographically or environmentally unique and/or fragile. Objective 1: Promote the Estancia Basin as the prime location for new, but low water consumptive agriculture and agri-business. Objective 2: Preserve and protect grazing and ranching lands from development that is detrimental to existing land use.

Wind energy facilities use minimal water post-construction and generate no emissions or pollutants. They typically use water during construction for concrete and dust abatement, and during operation for periodic power-washing of wind turbines and facilities at the O&M building. The Projects consume far less water than standard agricultural uses or other power plants.

11.4 Goal J:

Ensure an adequate supply of quality water for current and future needs of the County.

Wind turbine operations typically require virtually no water to generate electricity. Minimal amount of water would be required during construction for dust abatement and mixing the concrete foundations. It is assumed that existing wells in the area will be used to provide water during construction.

11.5 Goal M:

Improve and expand County-wide infrastructure to enhance the quality of life and support economic development - Objective 3: Investigate the potential for wind and solar generated power in the County.

According to American Wind Energy Association (2017) New Mexico is ranked 16th in the country for installed wind capacity, with enough wind turbines added to produce 1,732 MW of electricity and ranked 15th for the number of wind turbines. During 2017, wind energy provided 13.5% of all in-state electricity production. This innovative source of power generation will help to support economic development in Torrance County.

11.6 Goal N:

Encourage the attraction, retention, and expansion of businesses in order to provide quality jobs for County residents.

The Project would generate significant temporary and permanent employment (direct and indirect jobs) during construction and operations. According to the developer of the El Cabo Wind Farm, Avangrid Renewables, also located in Torrance County, near the Community of Encino, at its peak, the project employed about 450 construction and other workers. These employees were part of the 3,000-4,000 wind energy labor force working in New Mexico in 2017. El Cabo now has 17 permanent employees, including three wind technicians. El Cabo's salaries for permanent positions start above $50,000 a year for a novice, and above $60,000 for experienced employees. The Applicant expects the Project will employ up to 500 temporary employees during peak construction activities and up to 23 permanent operational employees.

11.7 Goal O:

Promote the exploration and utilization of natural resources within the County.

Wind is a natural, renewable energy source. Using wind to produce energy has fewer effects on the environment than many other energy sources. Wind turbines do not release emissions that can pollute the air or water, and they do not require water for cooling. Wind turbines may also reduce the amount of electricity generation from fossil fuels, which results in lower total air pollution and carbon dioxide emissions. An individual wind turbine has a relatively small physical footprint. Wind cannot be used up, it occurs naturally, whether we harness it for electricity or not.

11.8 Goal Q:

Create and sustain an adequate revenue base to support necessary infrastructure and services to meet current and future needs of the citizens of Torrance County.

Studies have shown that wind energy provides affordable electricity, creates jobs, and generates revenue for farmers and rural communities. Revenue from wind farms has the potential of helping spur local economic development that supports roads, schools, libraries and other community developments.

12. Public Outreach and Citizen Participation

Community support for the Project is vital. The active participation of the local community in the development process is essential for a successful wind project. Appropriate levels of outreach are necessary to explain a Project, respond to questions, and engage in a conversation about wind power in general and with respect to a particular site. Preliminary discussions have taken place with the Torrance County Planning and Zoning Department and with the Estancia Valley Economic Development Association.

In addition, the Applicant has met with many landowners adjacent to Project and expects to coordinate with adjacent landowners as Project development progresses. The Applicant would be happy to accommodate Torrance County's outreach objectives and will continue to work with Torrance County on these efforts.

13. Summary

The planned Project is in accord with the objectives and purposes of Torrance County's zoning ordinance and Land Use Plan and is an appropriate land use for its location and surroundings. The Project is a minimal impact development that is complementary to and compatible with the rural environment and existing rangeland activities.

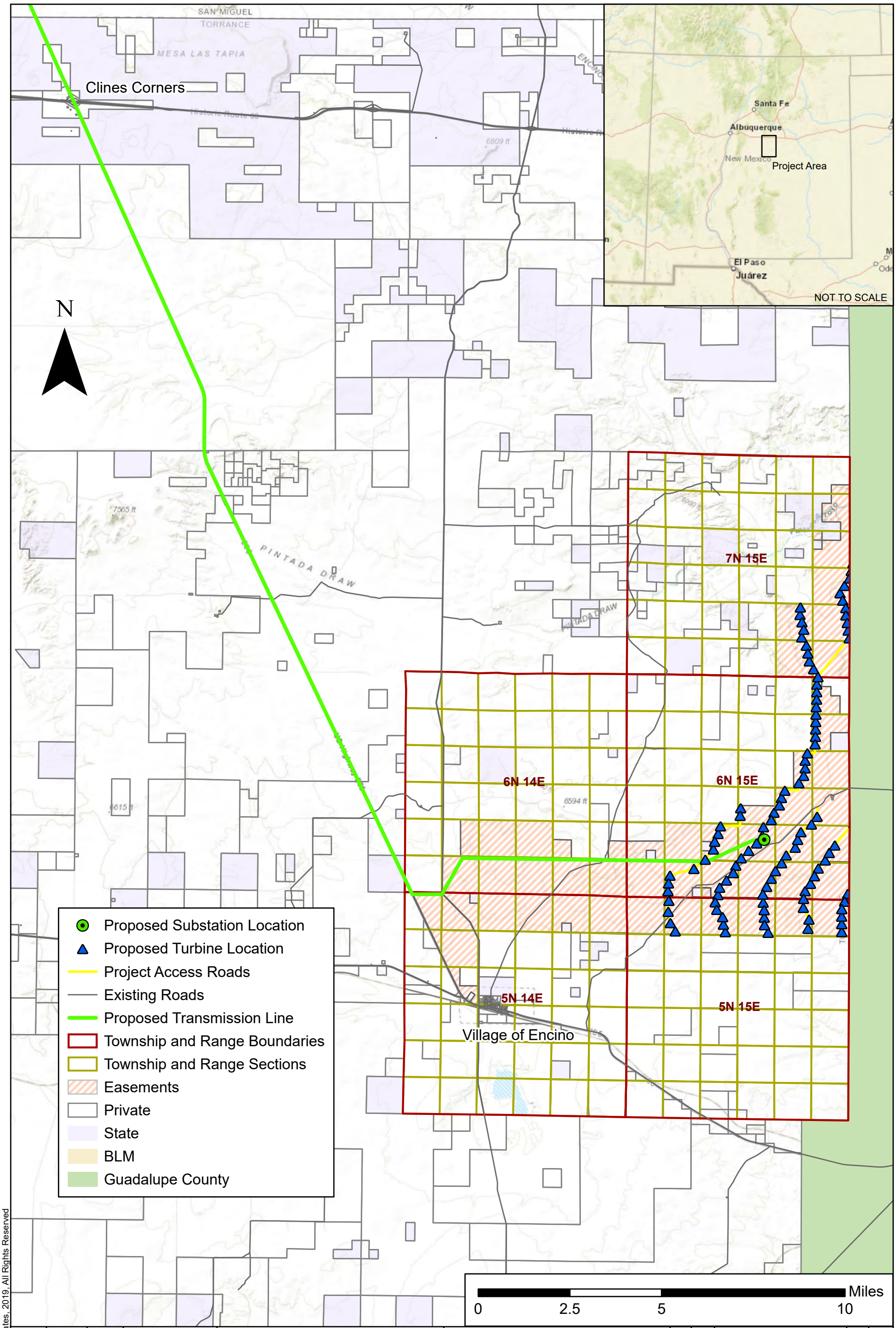
The Project would generate non-polluting, renewable energy from a local renewable resource, help to diversify New Mexico's energy infrastructure, and provide economic benefits including: 1) direct expenditures on labor, materials, and services during construction and operations; 2) payments to landowners; and 3) payments to Torrance County and the State of New Mexico.

14. Conclusion

As identified in the narrative, the request to install the Project within the Agricultural District (A) satisfies the goals and objectives for a Zoning Ordinance Amendment for a Special Use District and Height Variance. In addition, the planned Project is consistent with, and conforms to, the goals and objectives of the Torrance County Comprehensive Plan.

Orion Wind Resources, LLC would like to thank the Torrance County Commissioners, Torrance County Planning and Zoning Commission, the Torrance County Planning & Zoning Department, and all Staff for the opportunity to process this application for the planned Project in Torrance County. We look forward to working closely with Torrance County to bring this Project to fruition.

Exhibit A – Project Overview Map



Sources: ESRI, Torrance County, Souder, Miller & Associates

Designed	Drawn	Checked
	ZCT	

Date: 2-18-2019

Scale: Horiz: - 1" = 13,000' (11x17) Vert: -

Project No: 8227576

Sheet: EXHIBIT A

PRELIMINARY

NOT FOR CONSTRUCTION

THIS DRAWING IS INCOMPLETE AND NOT TO BE USED FOR CONSTRUCTION UNLESS IT IS STAMPED, SIGNED AND DATED

TORRANCE COUNTY — TORRANCE COUNTY, NEW MEXICO

CLINES CORNERS WIND FARM
TORRANCE COUNTY
PROJECT OVERVIEW MAP

SMA
Souder, Miller & Associates
Engineering • Environmental • Surveying
www.soudermiller.com
Serving the Southwest & Rocky Mountains
2904 Rodeo Park Dr E #100,
Santa Fe, NM 87505
Phone: (505) 473-9211

Rev #	Date	Description	By	Chkd

Exhibit B – Land Agreements

Recording Requested By and
When Recorded Return to:

General Counsel
Orion Wind Resources LLC
155 Grand Avenue, Suite 706
Oakland, CA 94612
(510) 267-8921

TORRANCE COUNTY SEAL CLERK STATE OF NEW MEXICO

TORRANCE COUNTY
LINDA JARAMILLO, CLERK
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Book 336 Page 1305
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BY SYLVIA

#NM-CC1-001
Torrance and Guadalupe Counties, New Mexico

GRANT OF EASEMENTS AND MEMORANDUM OF RENEWABLE ENERGY LAND AGREEMENT

THIS GRANT OF EASEMENTS AND MEMORANDUM OF RENEWABLE ENERGY LAND AGREEMENT (this "Memorandum") is made, dated and effective as of July 12, 2013, by and between **L.T. Lewis Ltd. Company, a New Mexico limited liability company** ("Owner"), and **Orion Wind Resources LLC, a Delaware limited liability company** ("Grantee").

Owner and Grantee agree as follows:

1. Real Property. Owner owns the real property consisting of approximately 10,170 acres of land and described in Exhibit A, attached hereto and incorporated herein by this reference (the "Property"). In the event of inaccuracies or insufficiencies in the foregoing legal description, Grantee may record an amendment of this Memorandum to correct the inaccuracies or insufficiencies.

2. Addresses. All notices, requests and communications in connection with this Memorandum shall be addressed as follows:

If to Owner: LT Lewis Ltd. Company
PO Box 1738
Roswell, NM 88202-1738

If to Grantee: Orion Wind Resources LLC
155 Grand Avenue, Suite 706
Oakland, CA 94612
Attention: General Counsel

GUADALUPE COUNTY-NM
PATRICK Z. MARTINEZ,CLERK
201764141
Book 139 Page 620
1 of 9
01/13/2017 10:54:40 AM
BY ADAM

3. Grant of Easement. For good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged by Owner, Owner hereby grants to Grantee,

pursuant to the provisions of that certain Renewable Energy Land Agreement dated July 12, 2013 ("Effective Date"), by and between Owner and Grantee and amended pursuant to that certain Amendment to Renewable Energy Land Agreement dated November 11, 2015 (as amended, "Agreement"), an exclusive wind easement (the "Easement") with the incidents and attributes described therein. The Easement is and shall be in, on, under, over and across the Property.

4. Solar Option. Owner hereby grants to Grantee the exclusive right and option ("Solar Option") to lease any portion of the Property, and all radiant energy emitted from the sun upon, over and across such portion of the Property ("Solar Energy"), together with any easements, rights-of-way, and other rights and benefits relating or appurtenant to such portion of the Property or Solar Energy (collectively, the "Solar Property"). Upon Grantee's exercise of the Solar Option in accordance with the terms and conditions summarized in Exhibit B attached to the Agreement, Owner shall lease the applicable portion of the Solar Property to Grantee ("Solar Lease"), including, without limitation, the Solar Energy for Solar Energy Purposes (as defined in Exhibit B), all on the terms and conditions set forth in Exhibit B, and Owner and Grantee (or Grantee's successor or assign) shall enter into a lease agreement on substantially the terms and conditions summarized in Exhibit B.

5. Purpose. The Easement is for wind energy purposes, including converting wind energy into electrical energy, collecting and transmitting electrical energy, and related activities (collectively, the "Grantee Activities"). The Grantee Activities include, without limitation: (a) determining the feasibility of wind energy conversion on the Property, including studies of wind speed, wind direction and other meteorological data, and extracting soil samples; (b) constructing, installing, using, replacing, relocating and removing from time to time, and maintaining and operating, wind turbines and their foundations, underground and overhead electrical transmission and communications lines, electric transformers, energy storage facilities, telecommunications equipment, power generation facilities to be operated in conjunction with large wind turbine installations, roads, fences and gates, meteorological towers and wind measurement equipment, control buildings, maintenance yards, and related facilities and equipment (collectively the "Windpower Facilities") on the Property; and (c) undertaking any other activities, whether accomplished by Grantee or a third party authorized by Grantee, that Grantee reasonably determines are necessary, useful or appropriate to accomplish any of the foregoing. Grantee shall have the exclusive right to convert all of the wind resources of the Property. Windpower Facilities on the Property may be operated in conjunction with Windpower Facilities installed on other nearby properties that are part of the same wind energy project (collectively, the "Project"). Owner reserves all rights to use the Property except to the extent Owner's use interferes with Grantee's use of the Property in accordance with the Agreement or violates the provisions of the Agreement.

6. Term. The Agreement shall be for a term that expires on the thirty-eighth anniversary of the Effective Date unless sooner terminated or unless extended pursuant to and in accordance with the Agreement.

7. Payments. In consideration of the rights granted under the Agreement, Grantee has agreed to pay Owner the amounts set forth in the Agreement.

8. Ownership of Windpower Facilities. Owner shall have no ownership or other interest in any Windpower Facilities installed on the Property. Grantee may remove any or all Windpower Facilities at any time and may terminate the Agreement at any time in accordance with the terms thereof.

9. Access. Owner hereby grants to Grantee the right of ingress to and egress from Windpower Facilities (whether located on the Property, on adjacent property, or elsewhere) over and across the Property by means of roads and lanes thereon if existing, or otherwise by such route or routes as Grantee may construct from time to time (the "Access Easement"). The Access Easement shall include the right to improve and maintain existing roads and lanes, shall run with the Property, and shall inure to the benefit of and be binding upon Owner and Grantee and their respective transferees, successors and assigns, and all persons claiming under them. The Access Easement shall expire upon termination or expiration of the Agreement.

10. No Interference. Grantee shall have the quiet use and enjoyment of the Property in accordance with the terms of the Agreement. Owner's activities and any grant of rights Owner makes to any person or entity, whether located on the Property or elsewhere, shall not, currently or prospectively, interfere with: the development, construction, installation, maintenance or operation of Windpower Facilities, whether located on the Property or elsewhere; access over the Property to such Windpower Facilities; any Grantee Activities; or the undertaking of any other activities permitted hereunder. If Owner has any right to select, determine, prohibit or control the location of sites for drilling, exploitation, production and/or exploration of minerals, hydrocarbons, water, gravel, or any other similar resource in, to or under the Property, then Owner shall exercise such right so as minimize interference with any of the foregoing. Without limiting the generality of the foregoing, (a) the activities of Owner shall not interfere with the wind speed or wind direction over the Property, whether by placing windmills or wind turbines, planting trees or constructing buildings or other structures (collectively, "Owner's Structures") closer than five hundred (500) feet or twenty (20) times the height of any such Owner's Structure, whichever is greater, to any wind turbine or proposed wind turbine of Grantee, whether located on the Property or elsewhere, and (b) Owner shall not engage in any other activity (other than ordinary agricultural activities), whether located on the Property or elsewhere, that might cause a decrease in the output or efficiency of the Windpower Facilities. For this purpose, the height of planted trees will be deemed to be their expected height at full maturity.

11. Transmission Facilities. Owner hereby grants to Grantee an exclusive easement ("Transmission Easement") in, on, along and under the Property for the right to erect, construct, reconstruct, replace, relocate, remove, maintain and use the following from time to time in connection with Grantee Activities, whether carried out on the Property or elsewhere: (a) a line or lines of poles or towers, together with such wires and cables as from time to time are suspended therefrom, and/or underground wires and cables, for the transmission of electrical energy and/or for communication purposes, and all necessary and proper foundations, footings, crossarms and other appliances and fixtures for use in connection with said poles, towers, wires and cables on, along and in the Property; and (b) one or more substations or interconnection or switching facilities from which Grantee or others that generate energy may interconnect to a utility transmission system or the transmission system of another purchaser of electrical energy,

together with the appropriate rights-of-way, on, along and in the Property. Said poles, towers, wires, cables, substations, facilities and rights-of-way are herein collectively called the "Transmission Facilities."

12. Financing.

(a) *Assignees*. Grantee shall have the right, without need for Owner's consent, to do any of the following, on an exclusive or nonexclusive basis, to sell, convey, lease, assign, or transfer any or all right or interest in the Easement or in the Agreement, or any or all right or interest of Grantee in the Property or any or all right or interest in the Windpower Facilities that Grantee or any other party may now or hereafter install on the Property. Grantee shall give notice of such assignment (including the name, address, and telephone number of the assignee thereof for notice purposes) to Owner, *provided* that failure to give such notice shall not constitute a default under the Agreement but rather shall only have the effect of not binding Owner with respect to such assignment until such notice shall have been given. No Assignment shall release the assignor from its obligations hereunder unless and until all liability hereunder related to the assigned rights and obligations accruing after the date of such Assignment is assumed in writing by the assignee thereof.

(b) *Lender Protection*. Grantee may, at any time and without the consent of Owner, grant to any person or entity (herein, together with that person's or entity's successors and assigns, a "Lender") one or more liens, security interests or collateral assignments in all or any part of Grantee's rights, title or interests under the Agreement (a "Mortgage"). In the event any such Mortgage is granted, the Lender thereunder shall, for so long as its Mortgage remains in effect, be entitled to the protections described in the Agreement, upon delivery to Owner of notice of its name and address.

13. Non-exclusive Grant of Rights. Owner hereby grants Grantee a non-exclusive right, privilege, license and easement for the benefit, use and enjoyment of all of the following:

(a) Any and all easements, rights-of-way, rights of entry, hereditaments, privileges and appurtenances benefiting, belonging to or inuring to the benefit of Owner and pertaining to the Property.

(b) Any and all right, title and interest of Owner in and to any land in the bed of any street, road, avenue or alley (open, proposed or closed) in front of or adjoining the Property and any and all right, title and interest of Owner, in and to any rights-of-way, rights of ingress or egress, or other interests in, on, or to any land, highway, street, road, avenue or alley (open, proposed or closed) in, on, or across, in front of, abutting, or adjoining the Property.

(c) Any and all right, title and interest of Owner in and to any strips or gores of land adjacent or contiguous to the Property, whether those lands are owned or claimed by deed, limitations, or otherwise.

14. Miscellaneous.

(a) *Successors and Assigns*. Any sale or other transfer of the Property by Owner shall be subject to the Easement, the Solar Option, the Transmission Easement, the Access Easement and the Agreement. The Agreement and all easements and rights granted therein and in this Memorandum, including the Easement, Solar Option, Transmission Easement and Access Easement, shall burden the Property and shall run with the Property. The Agreement and the Easement, Solar Option, Transmission Easement and Access Easement shall inure to the benefit of and be binding upon Owner and Grantee and their respective heirs, transferees, successors and assigns, and all persons claiming under them. References to Grantee in the Agreement and this Memorandum shall be deemed to include Lenders in possession of the Property and assignees of Grantee.

(b) *Conflicts*. In the event of any direct conflict between the terms of this Memorandum and the terms of the Agreement, the terms of the Agreement shall control. Nothing herein contained shall be deemed to amend, modify, alter or change any of the provisions contained in the Agreement.

(c) *Governing Law*. The Agreement and this Memorandum shall be governed by and interpreted in accordance with the laws of the State of New Mexico, excluding the choice of law provisions thereof.

(d) *Counterparts*. This Memorandum may be executed in multiple counterparts, no one of which need be executed by all parties hereto, each of which shall constitute an original. Counterparts thus executed shall together constitute one and the same instrument.

SIGNATURE PAGE TO FOLLOW

IN WITNESS WHEREOF, AND INTENDING TO BE LEGALLY BOUND HEREBY, Owner and Grantee have caused this Memorandum to be duly executed and delivered by their duly authorized representatives as of the Effective Date.

"OWNER"

L.T. Lewis Ltd. Company, a New Mexico Limited Liability Company

By: _____
Name: Sandra Carrica
Title: Managing Member

"GRANTEE"

Orion Wind Resources LLC, a Delaware limited liability company

By _____
Name: Reid M. Buckley
Title: Vice President

STATE OF New Mexico §

§

COUNTY OF Chaves §

This instrument was acknowledged before me on this 16 day of November 2016, by Sandra Carrica.

NOTARY PUBLIC, STATE OF New Mexico

Leslie Luginbill

Print Name Leslie Luginbill

SEAL

OFFICIAL SEAL
LESLIE LUGINBILL
NOTARY PUBLIC
STATE OF NEW MEXICO
My Commission Expires 12-16-2017

HOU03:1116299.1

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Book 139 Page 626
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v.2

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

STATE OF CALIFORNIA §
§
COUNTY OF ALAMEDA §

On December 13, 2016, before me, Analisa Garcia, a Notary Public, personally appeared Reid M. Buckley, who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

[Notary Stamp/Seal]

Notary Public in and for the State of California

ANALISA GARCIA
Commission # 2099498
Notary Public - California
Alameda County
My Comm. Expires Feb 8, 2019

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Book 336 Page 1312
8 of 9
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BY SYLVIA

EXHIBIT A

Description of Property

That certain real property of Owner located in Torrance and Guadalupe Counties, New Mexico, to wit:

Torrance County, New Mexico – 7,340 acres

Township 5 North, Range 15 East, N.M.P M.

Section 1: Lots 1, 2, 3, 4, S2N2, S2 (all)
Section 2: Lots 1, 2, 3, 4, S2N2, S2 (all)
Section 3: Lots 1, 2, 3, 4, S2N2, S2 (all)
Section 4: Lots 1, 2, 3, 4, S2N2, 82 (all)
Section 5: Lots 1, 2, 3, 4, S2N2, S2 (all)

Township 6 North, Range 15 East. N.MP.M.

Section 1: NWNW, S2NW, W2SE, SW
Section 12: N2, SW
Section 28: N2, SE, E2SW, SWSW
Section 32: N2, N2SE, SWSE, SW
Section 33: SWSW
Section 36: All

Township 7 North, Range 15 East. N.MP.M.
Section 26: Lots 1, 2, 3, 4, S2N2, S2 (all)
Section 35: Lots 1, 2, 3, 4, S2N2, S2 (all)

Guadalupe County, New Mexico – 2,830 acres

Township 6 North, Range 16 East, N.M.P.M.

Section 7: Lots 1, 2, 3, 4, E2SW, SE
Section 8: W2SW
Section 17: W2
Section 18: Lots 1, 2, 3, 4, E2W2, E2 (all)
Section 19: Lots 1, 2, 3, 4, E2W2, E2 (all)
Section 20: W2
Section 30: Lots 1, 2, E2NW, NE

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(In the event of inaccuracies or insufficiencies in the foregoing legal description, Grantee may record an amendment of this Memorandum to correct the inaccuracies or insufficiencies)

TORRANCE COUNTY
LINDA JARAMILLO, CLERK
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Book 336 Page 1313
9 of 9
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BY SYLVIA

Recording Requested By and
When Recorded Return to:

General Counsel
Orion Wind Resources LLC
155 Grand Avenue, Suite 706
Oakland, CA 94612
(510) 267-8921

TORRANCE COUNTY
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Book 336 Page 1314
1 of 8
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#NMCC1-002
Torrance and Guadalupe Counties, New Mexico

GRANT OF EASEMENTS, GRANT OF LEASE OPTION AND MEMORANDUM OF RENEWABLE ENERGY LAND AGREEMENT

THIS GRANT OF EASEMENTS, GRANT OF LEASE OPTION AND MEMORANDUM OF RENEWABLE ENERGY LAND AGREEMENT (this "Memorandum") is made, dated and effective as of July 19, 2013, by and between **Berlier Ranch, LLC, a New Mexico limited liability company** ("Owner"), and **Orion Wind Resources LLC, a Delaware limited liability company** ("Grantee").

Owner and Grantee agree as follows:

1. Real Property. Owner owns the real property consisting of approximately 9,164.68 acres of land and described in Exhibit A, attached hereto and incorporated herein by this reference (the "Property"). In the event of inaccuracies or insufficiencies in the foregoing legal description, Grantee may record an amendment of this Memorandum to correct the inaccuracies or insufficiencies.

2. Addresses. All notices, requests and communications in connection with this Memorandum shall be addressed as follows:

If to Owner: Berlier Ranch, LLC
PO Box 14483
Albuquerque, NM 87191

If to Grantee: Orion Wind Resources LLC
155 Grand Avenue, Suite 706
Oakland, CA 94612
Attention: General Counsel

GUADALUPE COUNTY-NM
PATRICK Z. MARTINEZ,CLERK
201764140
Book 139 Page 612
1 of 8
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BY ADAM

3. Wind Easement; Solar Lease Option. For good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged by Owner, Owner hereby grants to

Grantee, pursuant to the provisions of that certain Renewable Energy Land Agreement ("Land Agreement"), dated concurrently herewith ("Effective Date"), by and between Owner and Grantee, (a) an exclusive wind easement (the "Easement") in, on, under, over and across the Property with the incidents and attributes described therein and (b) the exclusive right and option ("Solar Option") to lease any portion of the Property, and all radiant energy emitted from the sun upon, over and across such portion of the Property ("Solar Energy"), together with any easements, rights-of-way, and other rights and benefits relating or appurtenant to such portion of the Property or Solar Energy (collectively, the "Solar Property"). Upon Grantee's exercise of the Solar Option in accordance with the provisions of the Land Agreement, Owner shall lease the applicable portion of the Solar Property to Grantee, including, without limitation, the Solar Energy, all on the terms and conditions set forth in the Land Agreement.

4. Purpose. The Easement is for wind energy purposes, including converting wind energy into electrical energy, collecting and transmitting electrical energy, and related activities (collectively, the "Grantee Activities"). The Grantee Activities include, without limitation: (a) determining the feasibility of wind energy conversion on the Property, including studies of wind speed, wind direction and other meteorological data, and extracting soil samples; (b) constructing, installing, using, replacing, relocating and removing from time to time, and maintaining and operating, wind turbines and their foundations, underground and overhead electrical transmission and communications lines, electric transformers, energy storage facilities, telecommunications equipment, power generation facilities to be operated in conjunction with large wind turbine installations, roads, fences and gates, meteorological towers and wind measurement equipment, control buildings, maintenance yards, and related facilities and equipment (collectively, the "Windpower Facilities") on the Property; and (c) undertaking any other activities, whether accomplished by Grantee or a third party authorized by Grantee, that Grantee reasonably determines are necessary, useful or appropriate to accomplish any of the foregoing. Grantee shall have the exclusive right to convert all of the wind resources of the Property. Windpower Facilities on the Property may be operated in conjunction with Windpower Facilities installed on other nearby properties that are part of the same wind energy project (collectively, the "Project"). Owner reserves all rights to use the Property except to the extent Owner's use interferes with Grantee's use of the Property in accordance with the Land Agreement or violates the provisions of the Land Agreement.

5. Term. The Land Agreement shall be for an initial term that expires on the thirty-eighth anniversary of the Effective Date (the "Initial Term") unless sooner terminated or unless extended pursuant to and in accordance with the Land Agreement. Unless earlier terminated, Grantee may elect to extend the Initial Term for one, two or three additional ten-year terms commencing on the last day of the Initial Term or the tenth or twentieth anniversary of such day, respectively.

6. Payments. In consideration of the rights granted under the Land Agreement, Grantee has agreed to pay Owner the amounts set forth in the Land Agreement.

7. Ownership of Windpower Facilities. Owner shall have no ownership or other interest in any Windpower Facilities installed on the Property. Grantee may remove any or all

Windpower Facilities at any time and may terminate the Land Agreement at any time in accordance with the terms thereof.

8. Access. Owner hereby grants to Grantee the right of ingress to and egress from Windpower Facilities (whether located on the Property, on adjacent property, or elsewhere) over and across the Property by means of roads and lanes thereon if existing, or otherwise by such route or routes as Grantee may construct from time to time (the "Access Easement"). The Access Easement shall include the right to improve and maintain existing roads and lanes. The Access Easement shall expire upon termination or expiration of the Land Agreement.

9. No Interference. Grantee shall have the quiet use and enjoyment of the Property in accordance with the terms of the Land Agreement. Owner's activities and any grant of rights Owner makes to any person or entity, whether located on the Property or elsewhere, shall not, currently or prospectively, interfere with: the development, construction, installation, maintenance or operation of Windpower Facilities, whether located on the Property or elsewhere; access over the Property to such Windpower Facilities; any Grantee Activities; or the undertaking of any other activities permitted hereunder. If Owner has any right to select, determine, prohibit or control the location of sites for drilling, exploitation, production and/or exploration of minerals, hydrocarbons, water, gravel, or any other similar resource in, to or under the Property, then Owner shall exercise such right so as minimize interference with any of the foregoing. Without limiting the generality of the foregoing, (a) the activities of Owner shall not interfere with the wind speed or wind direction over the Property, whether by placing windmills or wind turbines, planting trees or constructing buildings or other structures (collectively, "Owner's Structures") closer than 500 feet or 20 times the height of any such Owner's Structure, whichever is greater, to any wind turbine or proposed wind turbine of Grantee, whether located on the Property or elsewhere, and (b) Owner shall not engage in any other activity (other than ordinary agricultural activities), whether located on the Property or elsewhere, that might cause a decrease in the output or efficiency of the Windpower Facilities. For this purpose, the height of planted trees will be deemed to be their expected height at full maturity.

10. Transmission Facilities. Owner hereby grants to Grantee an exclusive easement ("Transmission Easement") in, on, along and under the Property for the right to erect, construct, reconstruct, replace, relocate, remove, maintain and use the following from time to time in connection with Grantee Activities, whether carried out on the Property or elsewhere: (a) a line or lines of poles or towers, together with such wires and cables as from time to time are suspended therefrom, and/or underground wires and cables, for the transmission of electrical energy and/or for communication purposes, and all necessary and proper foundations, footings, crossarms and other appliances and fixtures for use in connection with said poles, towers, wires and cables on, along and in the Property; and (b) one or more substations or interconnection or switching facilities from which Grantee or others that generate energy may interconnect to a utility transmission system or the transmission system of another purchaser of electrical energy, together with the appropriate rights-of-way, on, along and in the Property. Said poles, towers, wires, cables, substations, facilities and rights-of-way are herein collectively called the "Transmission Facilities."

11. Financing.

(a) *Assignees*. Grantee shall have the right, without need for Owner's consent, on an exclusive or nonexclusive basis, to sell, convey, lease, assign or transfer any or all right or interest in the Easement, this Memorandum or in the Land Agreement, or any or all right or interest of Grantee in the Property, or any or all right or interest in the Windpower Facilities that Grantee or any other party may now or hereafter install on the Property (in each case, an "Assignment"). Grantee shall give notice of each Assignment (including the address of the assignee thereof for notice purposes) to Owner, *provided* that failure to give such notice shall not constitute a default under the Agreement but rather shall only have the effect of not binding Owner with respect to such Assignment until such notice shall have been given. No Assignment shall release the assignor from its obligations hereunder unless and until all liability hereunder related to the assigned rights and obligations accruing after the date of such Assignment is assumed in writing by the assignee thereof.

(b) *Lender Protection*. Grantee may, at any time and without the consent of Owner, grant to any person or entity (herein, together with that person's or entity's successors and assigns, a "Lender") one or more liens, security interests or collateral assignments in all or any part of Grantee's rights, title or interests under the Land Agreement (a "Mortgage"). In the event any such Mortgage is granted, the Lender thereunder shall, for so long as its Mortgage remains in effect, be entitled to the protections described in the Land Agreement, upon delivery to Owner of notice of its name and address.

12. Non-exclusive Grant of Rights. Owner hereby grants Grantee a non-exclusive right, privilege, license and easement for the benefit, use and enjoyment of all of the following:

(a) Any and all easements, rights-of-way, rights of entry, hereditaments, privileges and appurtenances benefiting, belonging to or inuring to the benefit of Owner and pertaining to the Property.

(b) Any and all right, title and interest of Owner in and to any land in the bed of any street, road, avenue or alley (open, proposed or closed) in front of or adjoining the Property and any and all right, title and interest of Owner, in and to any rights-of-way, rights of ingress or egress, or other interests in, on, or to any land, highway, street, road, avenue or alley (open, proposed or closed) in, on, or across, in front of, abutting, or adjoining the Property.

(c) Any and all right, title and interest of Owner in and to any strips or gores of land adjacent or contiguous to the Property, whether those lands are owned or claimed by deed, limitations, or otherwise.

13. Mineral Development. Owner reserves the right to develop the minerals, if any, owned by Owner or third parties on the Property so long as such development (including, without limitation, any drilling or mining) does not interfere with Grantee's use of the Property (as provided in Section 9 above) and does not materially diminish the amount of land surface of the Property available for the Grantee Activities. Owner shall include as a term and condition to any conveyance on or after the Effective Date of any interest in the mineral estate in the Property,

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4 of 8
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including any lease thereof (but the following shall be true and binding upon such parties and their successors and assigns whether or not such term and condition are expressly so included), that any owner of any mineral interest in the Property (a) shall use the surface of the Property only in a manner that reasonably accommodates Grantee's surface use as described herein and with due regard for the rights of Grantee with respect to the surface use, (b) shall make only such use of the surface of the Property as shall avoid material impairment of Grantee's actual or anticipated surface use as described herein, and (c) shall limit any drilling, mining or other activity for extraction of minerals from the Property to occur only on those areas of the surface of the Property that are not closer to any wind turbine or proposed wind turbine of Grantee than the greater of (i) twenty (20) times the height of any well, rig, building or other structure, or (ii) five hundred (500) feet; provided, however, that Owner may install temporary, latticed drilling equipment on the Property so long as such drilling equipment is no closer than 500 feet or 300 feet plus the radius of the wind turbine rotor (whichever is greater) to the location or proposed location of any wind turbine, and the height of any such drilling equipment does not exceed 200 feet. If requested by Owner from time to time, Grantee will in good faith negotiate and execute a commercially reasonable surface use agreement and/or crossing agreement with any mineral lessee or pipeline company with whom Owner has entered or contemplates entering an agreement.

14. Miscellaneous.

(a) *Successors and Assigns*. Any sale or other transfer of the Property by Owner shall be subject to the Easement, the Solar Option, the Transmission Easement, the Access Easement and the Land Agreement. The Land Agreement and all easements and rights granted therein and in this Memorandum, including the Easement, Solar Option, Transmission Easement and Access Easement, shall burden the Property and shall run with the Property. The Land Agreement and the Easement, Solar Option Transmission Easement and Access Easement shall inure to the benefit of and be binding upon Owner and Grantee and their respective heirs, transferees, successors and assigns, and all persons claiming under them. References to Grantee in the Land Agreement and this Memorandum shall be deemed to include Lenders in possession of the Property.

(b) *Conflicts*. In the event of any direct conflict between the terms of this Memorandum and the terms of the Land Agreement, the terms of the Land Agreement shall control. Nothing herein contained shall be deemed to amend, modify, alter or change any of the provisions contained in the Land Agreement.

(c) *Governing Law*. The Land Agreement and this Memorandum shall be governed by and interpreted in accordance with the laws of the State of New Mexico.

(d) *Counterparts*. This Memorandum may be executed in multiple counterparts, no one of which need be executed by all parties hereto, each of which shall constitute an original. Counterparts thus executed shall together constitute one and the same instrument.

SIGNATURE PAGE TO FOLLOW

IN WITNESS WHEREOF, AND INTENDING TO BE LEGALLY BOUND HEREBY, Owner and Grantee have caused this Memorandum to be duly executed and delivered by their duly authorized representatives as of the Effective Date.

"OWNER"

Berlier Ranch, LLC,
a New Mexico limited liability company

Name: Jim Berlier
Title: Owner

"GRANTEE"

Orion Wind Resources LLC,
a Delaware limited liability company

By _____
Name: Reid M. Buckley
Title: Vice President

STATE OF New Mexico §
§
COUNTY OF Torrance §

This instrument was acknowledged before me on this 27 day of October 2016, by Jim Berlier.

NOTARY PUBLIC, STATE OF New Mexico

Ana M Cain

SEAL

Print Name Ana M Cain

My commission expires: 06-03-2019

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

STATE OF CALIFORNIA §
§
COUNTY OF ALAMEDA §

TORRANCE COUNTY
LINDA JARAMILLO, CLERK
002170390
Book 336 Page 1320
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BY SYLVIA

On December 12, 2016, before me, Analisa Garcia, a Notary Public, personally appeared Reed M. Buckley, who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

[Notary Stamp/Seal]

GUADALUPE COUNTY-NM
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Book 139 Page 618
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BY ADAM

Notary Public in and for the State of California

ANALISA GARCIA
Commission # 2099498
Notary Public - California
Alameda County
My Comm. Expires Feb 8, 2019

ANALISA GARCIA
Commission # 2099498
Notary Public - California
Alameda County
My Comm. Expires Feb 8, 2019

EXHIBIT A

Description of Property

That certain real property of Owner located in Torrance and Guadalupe Counties, New Mexico, to wit:

Tax Parcel No.	Section	Township	Range	Legal	Acres
1088031717932000000	13	6N	15E	ALL	640.00
	14	6N	15E	E2	320.00
	22	6N	15E	S2	320.00
	23	6N	15E	ALL	640.00
	24	6N	15E	ALL	639.00
	25	6N	15E	ALL	640.00
	26	6N	15E	ALL	640.00
	27	6N	15E	ALL	640.00
	33	6N	15E	N2, SE4, N2SW4, SE4SW4	600.00
	34	6N	15E	ALL	640.00
	35	6N	15E	ALL	640.00
Total – Torrance County					**6,359.00**

Tax Parcel No.	Section	Township	Range	Legal	Acres
1 092 032 264 396	20	6N	16E	E2	320.00
	28	6N	16E	ALL	640.00
	29	6N	16E	ALL	640.00
	33	6N	16E	ALL, EXCEPT for the East 1056 feet of the E2E2NE4	576.00
1 091 032 264 132	30	6N	16E	Lots 3,4 E2SW4, SE4	628.68
	31	6N	16E	Lots 1, 2, 3 and 4, E2NW4, NE4SW4	
Total - Guadalupe County					**2,804.68**
Total – Both Counties					**9,163.68**

(In the event of inaccuracies or insufficiencies in the foregoing legal description, Grantee may record an amendment of this Memorandum to correct the inaccuracies or insufficiencies)

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GUADALUPE COUNTY-NM
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Book 139 Page 619
8 of 8
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BY ADAM

Recording Requested By and
When Recorded Return to:

General Counsel
Orion Wind Resources LLC
155 Grand Avenue, Suite 706
Oakland, CA 94612
(510) 267-8921

TORRANCE COUNTY SEAL STATE OF NEW MEXICO CLERK

GUADALUPE COUNTY-NM
PATRICK Z. MARTINEZ,CLERK
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Book 138 Page 733
1 of 11
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BY PMARTINEZ

#NM-CC1-023
Guadalupe and Torrance Counties, New Mexico

GRANT OF EASEMENTS AND MEMORANDUM OF RENEWABLE ENERGY LAND AGREEMENT

THIS GRANT OF EASEMENTS AND MEMORANDUM OF RENEWABLE ENERGY LAND AGREEMENT (this "Memorandum") is made, dated and effective as of May 10, 2016, by and between **Wells Fargo Bank, N.A., Trustee of the Richard M. Krannawitter Trust under Trust Agreement dated November 6, 1980** ("Owner"), and **Orion Wind Resources LLC, a Delaware limited liability company** ("Grantee").

Owner and Grantee agree as follows:

1. Real Property. Owner owns the real property consisting of approximately 20,246.03 acres of land and described in Exhibit A, attached hereto and incorporated herein by this reference (the "Property"). In the event of inaccuracies or insufficiencies in the foregoing legal description, Grantee may record an amendment of this Memorandum to correct the inaccuracies or insufficiencies.

2. Addresses. All notices, requests and communications in connection with this Memorandum shall be addressed as follows:

If to Owner: Wells Fargo Bank, NA, Trustee
Richard M. Krannawitter Trust
PO Box 1968, Q2129-053
Albuquerque, NM 87103
Attn: J. Fry, AVP

If to Grantee: Orion Wind Resources LLC
155 Grand Avenue, Suite 706
Oakland, CA 94612
Attention: General Counsel

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Book 336 Page 1325
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3. Wind Easement. For good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged by Owner, Owner hereby grants to Grantee, pursuant to the provisions of that certain Renewable Energy Land Agreement ("Land Agreement"), dated concurrently herewith ("Effective Date"), by and between Owner and Grantee, an exclusive wind easement (the "Easement") in, on, under, over and across the Property with the incidents and attributes described therein.

4. Purpose. The Easement is for wind energy purposes, including converting wind energy into electrical energy, collecting and transmitting electrical energy, and related activities (collectively, the "Grantee Activities"). The Grantee Activities include, without limitation: (a) determining the feasibility of wind energy conversion on the Property, including studies of wind speed, wind direction and other meteorological data, and extracting soil samples; (b) constructing, installing, using, replacing, relocating and removing from time to time, and maintaining and operating, wind turbines and their foundations, underground and overhead electrical transmission and communications lines, electric transformers, energy storage facilities, telecommunications equipment, power generation facilities to be operated in conjunction with large wind turbine installations, roads, fences and gates, meteorological towers and wind measurement equipment, control buildings, maintenance yards, and related facilities and equipment (collectively, the "Windpower Facilities") on the Property; and (c) undertaking any other activities, whether accomplished by Grantee or a third party authorized by Grantee, that Grantee reasonably determines are necessary, useful or appropriate to accomplish any of the foregoing. Grantee shall have the exclusive right to convert all of the wind resources of the Property. Windpower Facilities on the Property may be operated in conjunction with Windpower Facilities installed on other nearby properties that are part of the same wind energy project (collectively, the "Project"). Owner reserves all rights to use the Property except to the extent Owner's use interferes with Grantee's use of the Property in accordance with the Land Agreement or violates the provisions of the Land Agreement.

5. Term. The Land Agreement shall be for an initial term that expires on the thirty-eighth anniversary of the Effective Date (the "Initial Term") unless sooner terminated or unless extended pursuant to and in accordance with the Land Agreement. Unless earlier terminated, Grantee may elect to extend the Initial Term for one or two additional ten-year terms commencing on the last day of the Initial Term or the tenth anniversary of such day, respectively.

6. Payments. In consideration of the rights granted under the Land Agreement, Grantee has agreed to pay Owner the amounts set forth in the Land Agreement.

7. Ownership of Windpower Facilities. Owner shall have no ownership or other interest in any Windpower Facilities installed on the Property. Grantee may remove any or all Windpower Facilities at any time and may terminate the Land Agreement at any time in accordance with the terms thereof.

8. Access. Owner hereby grants to Grantee the right of ingress to and egress from Windpower Facilities (whether located on the Property, on adjacent property, or elsewhere) over and across the Property by means of roads and lanes thereon if existing, or otherwise by such route or routes as Grantee may construct from time to time (the "Access Easement"). The Access

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Easement shall include the right to improve and maintain existing roads and lanes. The Access Easement shall expire upon termination or expiration of the Land Agreement.

9. No Interference. Grantee shall have the quiet use and enjoyment of the Property in accordance with the terms of the Land Agreement. Owner's activities and any grant of rights Owner makes to any person or entity, whether located on the Property or elsewhere, shall not, currently or prospectively, interfere with: the development, construction, installation, maintenance or operation of Windpower Facilities, whether located on the Property or elsewhere; access over the Property to such Windpower Facilities; any Grantee Activities; or the undertaking of any other activities permitted hereunder. If Owner has any right to select, determine, prohibit or control the location of sites for drilling, exploitation, production and/or exploration of minerals, hydrocarbons, water, gravel, or any other similar resource in, to or under the Property, then Owner shall exercise such right so as minimize interference with any of the foregoing. Without limiting the generality of the foregoing, (a) the activities of Owner shall not interfere with the wind speed or wind direction over the Property, whether by placing windmills or wind turbines, planting trees or constructing buildings or other structures (collectively, "Owner's Structures") closer than 500 feet or 20 times the height of any such Owner's Structure, whichever is greater, to any wind turbine or proposed wind turbine of Grantee, whether located on the Property or elsewhere, and (b) Owner shall not engage in any other activity (other than ordinary agricultural activities), whether located on the Property or elsewhere, that might cause a decrease in the output or efficiency of the Windpower Facilities. For this purpose, the height of planted trees will be deemed to be their expected height at full maturity.

10. Transmission Facilities. Owner hereby grants to Grantee an exclusive easement ("Transmission Easement") in, on, along and under the Property for the right to erect, construct, reconstruct, replace, relocate, remove, maintain and use the following from time to time in connection with Grantee Activities, whether carried out on the Property or elsewhere: (a) a line or lines of poles or towers, together with such wires and cables as from time to time are suspended therefrom, and/or underground wires and cables, for the transmission of electrical energy and/or for communication purposes, and all necessary and proper foundations, footings, crossarms and other appliances and fixtures for use in connection with said poles, towers, wires and cables on, along and in the Property; and (b) one or more substations or interconnection or switching facilities from which Grantee or others that generate energy may interconnect to a utility transmission system or the transmission system of another purchaser of electrical energy, together with the appropriate rights-of-way, on, along and in the Property. Said poles, towers, wires, cables, substations, facilities and rights-of-way are herein collectively called the "Transmission Facilities."

11. Financing.

(a) *Assignees*. Grantee and any Assignee (as hereinafter defined) shall have the right, without need for Owner's consent, on an exclusive or nonexclusive basis, to do any of the following, conditionally or unconditionally, with respect to all or any portion of the Property: finance Windpower Facilities; grant easements, co-easements, subeasements, leases, subleases, licenses or similar rights (however denominated) to one or more Assignees (*provided* no such grant shall exceed the rights granted to Grantee under the Land Agreement); or sell, convey, lease, assign, mortgage, encumber, or transfer to one or more Assignees any or all right or

interest in the Easement, this Memorandum or the Land Agreement, or any or all right or interest of Grantee in the Property, or any or all right or interest in any or all of the Windpower Facilities that Grantee or any other party may now or hereafter install on the Property (in each case, an "Assignment"). An "Assignee" is any of the following: (i) any one or more parties involved in the development, financing or refinancing of any Windpower Facilities, including, without limitation, any lender to or investor in, or purchaser or lessee of, Windpower Facilities; (ii) any one or more parties involved in financing or refinancing the development of the Project or any Windpower Facilities, or any purchaser or owner of Windpower Facilities; (iii) a corporation, partnership or limited liability company now existing or hereafter organized (including Grantee) in which Grantee or any of its owners, or any affiliate or partner of either, owns (directly or indirectly) a controlling interest at the time of assignment; (iv) a partnership now existing or hereafter organized, a general partner of which is such a corporation, partnership or limited liability company; or (v) a corporation, partnership, limited liability company, or other entity that acquires all or substantially all of Grantee's business, assets or capital stock, directly or indirectly, by purchase, merger, consolidation or other means. Grantee shall give notice of each Assignment (including the address of the assignee thereof for notice purposes) to Owner, *provided* that failure to give such notice shall not constitute a default under the Land Agreement but rather shall only have the effect of not binding Owner with respect to such Assignment until such notice shall have been given. No Assignment shall release the assignor from its obligations hereunder unless and until all liability hereunder related to the assigned rights and obligations accruing after the date of such Assignment is assumed in writing by the assignee thereof. In no event shall Grantee be entitled to a security interest against Owner's fee simple title in the Property.

(b) *Lender Protection*. Grantee may, at any time and without the consent of Owner, grant to any person or entity (herein, together with that person's or entity's successors and assigns, a "Lender") one or more liens, security interests or collateral assignments in all or any part of Grantee's rights, title or interests under the Land Agreement (a "Mortgage"). In the event any such Mortgage is granted, the Lender thereunder shall, for so long as its Mortgage remains in effect, be entitled to the protections described in the Land Agreement, upon delivery to Owner of notice of its name and address.

12. Non-exclusive Grant of Rights. Owner hereby grants Grantee a non-exclusive right, privilege, license and easement for the benefit, use and enjoyment of all of the following, so long as such use by Grantee shall not overburden or endanger Owner's interest therein:

(a) Any and all easements, rights-of-way, rights of entry, hereditaments, privileges and appurtenances benefiting, belonging to or inuring to the benefit of Owner and pertaining to the Property.

(b) Any and all right, title and interest of Owner in and to any land in the bed of any street, road, avenue or alley (open, proposed or closed) in front of or adjoining the Property and any and all right, title and interest of Owner, in and to any rights-of-way, rights of ingress or egress, or other interests in, on, or to any land, highway, street, road, avenue or alley (open, proposed or closed) in, on, or across, in front of, abutting, or adjoining the Property.

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(c) Any and all right, title and interest of Owner in and to any strips or gores of land adjacent or contiguous to the Property, whether those lands are owned or claimed by deed, limitations, or otherwise.

13. Miscellaneous.

(a) *Successors and Assigns*. Any sale or other transfer of the Property by Owner shall be subject to the Easement, the Transmission Easement, the Access Easement and the Land Agreement. The Land Agreement and all easements and rights granted therein and in this Memorandum, including the Easement, Transmission Easement and Access Easement, shall burden the Property and shall run with the Property. The Land Agreement and the Easement, Transmission Easement and Access Easement shall inure to the benefit of and be binding upon Owner and Grantee and their respective heirs, transferees, successors and assigns, and all persons claiming under them. References to Grantee in the Land Agreement and this Memorandum shall be deemed to include Lenders in possession of the Property.

(b) *Conflicts*. In the event of any direct conflict between the terms of this Memorandum and the terms of the Land Agreement, the terms of the Land Agreement shall control. Nothing herein contained shall be deemed to amend, modify, alter or change any of the provisions contained in the Land Agreement.

(c) *Governing Law*. The Land Agreement and this Memorandum shall be governed by and interpreted in accordance with the laws of the State of New Mexico.

(d) *Counterparts*. This Memorandum may be executed in multiple counterparts, no one of which need be executed by all parties hereto, each of which shall constitute an original. Counterparts thus executed shall together constitute one and the same instrument.

SIGNATURE PAGE TO FOLLOW

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BY SYLVIA

IN WITNESS WHEREOF, AND INTENDING TO BE LEGALLY BOUND HEREBY, Owner and Grantee have caused this Memorandum to be duly executed and delivered by their duly authorized representatives as of the Effective Date.

"OWNER"

Richard M. Krannawitter Trust, under Trust Agreement dated November 6, 1980

By: Wells Fargo Bank, N.A., Trustee

By: _____
Name: Joan Fry
Title: Asst. Vice President

"GRANTEE"

Orion Wind Resources LLC,
a Delaware limited liability company

By _____
Name: Reid M. Buckley
Title: Vice President

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IN WITNESS WHEREOF, AND INTENDING TO BE LEGALLY BOUND HEREBY, Owner and Grantee have caused this Memorandum to be duly executed and delivered by their duly authorized representatives as of the Effective Date.

"OWNER"

Richard M. Krannawitter Trust, under Trust Agreement dated November 6, 1980

By: Wells Fargo Bank, N.A., Trustee

By:_____
Name:
Title:

"GRANTEE"

Orion Wind Resources LLC,
a Delaware limited liability company

By _____
Name: Nicholas Hizon
Title: Vice President

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STATE OF_____ §

§

COUNTY OF_____ §

This instrument was acknowledged before me on this__day of _____ 201__, by_____.

NOTARY PUBLIC, STATE OF _____

_____

SEAL

Print Name_____

My commission expires: _____

STATE OF NEW MEXICO §

§

COUNTY OF BERNALILLO §

This instrument was acknowledged before me on this 9th day of May 2016, by Joan Fry, Asst. Vice President (name of person and type of authority, e.g., officer, trustee, etc.) of Wells Fargo Bank, NA, Trustee (name of party on behalf of whom instrument was executed.) of the Richard M. Krannawitter Trust

NOTARY PUBLIC, STATE OF NEW MEXICO

Janet Coburn

SEAL

Print Name Janet Coburn

My commission expires: 11/30/19

OFFICIAL SEAL
Janet Coburn
NOTARY PUBLIC
STATE OF NEW MEXICO
My Commission Expires 11/30/19

GUADALUPE COUNTY-NM
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TORRANCE COUNTY
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BY SYLVIA

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

STATE OF CALIFORNIA §
§
COUNTY OF ALAMEDA §

On May 6, 2016, before me, Analisa Garcia, a Notary Public, personally appeared Nicholas Hiza, who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

[Notary Stamp/Seal]

Notary Public in and for the State of California

ANALISA GARCIA
Commission # 2099498
Notary Public - California
Alameda County
My Comm. Expires Feb 8, 2019

GUADALUPE COUNTY-NM
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EXHIBIT A

Description of Property

That certain real property of Owner located in Guadalupe and Torrance Counties, New Mexico, to wit:

Township 7 North, Range 16 East, N.M.P.M.:		Acres
Section 1:	Lots 1, 2, 3, 4; S/2 N/2	322.68
Section 2:	Lots 1, 2, 3; S/2 NE/4	204.09
	Lot 4; S/2 NW/4; S/2	441.39
Section 3:	Lots 1. 2, 3, 4; S/2 N/2; S/2	646.60
Section 4:	Lots 1, 2, 3, 4; S/2 N/2; S/2	647.00
Section 5:	Lots 1, 2, 3, 4; S/2 N/2; S/2	645.60
Section 6:	Lots 1, 2, 3, 4, 5, 6, 7; S/2 NE/4; SE/4 NW/4; E/2 SW/4; SE/4	661.19
Section 7:	Lots 1, 2, 3, 4; E/2 W/2; E/2	660.44
Section 8:	N/2 NE/4; N/2 NW/4; SW/4 SW/4	200.00
Section 9:	NE/4; N/2 NW/4; W/2 SE/4:	320.00
	E/2 SE/4	80.00
Section 10:	All	640.00
Section 11:	All	640.00
Section 14:	All	640.00
Section 15:	All	640.00
Section 16:	All	640.00
Section 17:	N/2	320.00
Section 18:	Lots, 1, 2, 3, 4; E/2 W/2; E/2	660.28
Section 19:	Lots 1, 2, 3, 4; E/2 W/2; E/2	657.76
Section 20:	W/2	320.00
Section 21:	S/2 S/2	160.00
Section 22:	SW/4 NW/4; SW/4; SW/4 SE/4; N/2 NE/4	320.00
Section 23:	W/2 NE/4; NW/4	240.00
Section 27:	W/2 NW/4; W/2 SW/4	160.00
Section 28:	All	640.00
Section 29:	NW/4; NW/4 SW/4; SE/4 SE/4	240.00
Section 30:	Lots 1, 2, 3, 4; E/2 W/2; E/2	654.80

Township 8 North, Range 16 East, N.M.P.M.:		Acres
Section 19:	Lots 1, 2, 3, 4; E/2 W/2	338.24
Section 25:	NE/4 SW/4; S/2 SW/4; W/2 SE/4	200.00
Section 26:	E/2 SE/4	80.00
Section 27:	SW/4 SW/4	40.00
Section 29:	SW/4 SW/4	40.00
Section 30:	Lots 3, 4; E/2 W/2; E/2	568.76
Section 31:	Lots 1, 2, 3, 4; E/2 W/2; E/2	657.20
Section 32:	All	640.00

Section 33: All	640.00
Section 34: S/2 NE/4; NW/4; S/2	560.00
Section 35: NE/4; S/2 NW/4; S/2	560.00
Section 36: All	640.00
Total - Guadalupe County	**17,366.03**

Township 7 North, Range 15 East, N.M.P.M.:	Acres
Section 1: S/2 SE/4	80.00
Section 12: E/2 SE/4; NE/4; SE/4 NW/4; NW/4 SE/4; NE/4 SW/4	360.00
Section 13: S/2; S/2 NE/4; NE/4 NE/4; SE/4 NW/4; NW/4 NW/4	520.00
Section 24: All	640.00
Section 25: All	640.00
Section 36: All	640.00
Total – Torrance County	**2,880.00**
Total – Both Counties	**20,246.03**

(In the event of inaccuracies or insufficiencies in the foregoing legal description, Grantee may record an amendment of this Memorandum to correct the inaccuracies or insufficiencies)

v.1

Recording Requested By and
When Recorded Return to:

Orion Wind Resources LLC
155 Grand Avenue, Suite 706
Oakland, CA 94612
(510) 267-8921
Attn: General Counsel

TORRANCE COUNTY SEAL STATE OF NEW MEXICO CLERK

#NM-CC1-221T
Torrance County, New Mexico

GRANT OF EASEMENT AND EASEMENT AGREEMENT
FOR TRANSMISSION FACILITIES

THIS GRANT OF EASEMENT AND EASEMENT AGREEMENT FOR TRANSMISSION FACILITIES (this "Agreement") is made, dated and effective as of October 15th, 2018 (the "Effective Date"), between **Michele M. Goodson and Wesley Dwayne Goodson, husband and wife** (collectively, "Owner"), and **Orion Wind Resources LLC, a Delaware limited liability company** ("Grantee").

Owner is the sole owner of certain real property consisting of approximately 924.00 acres of land in Torrance County, New Mexico, as more particularly described in Exhibit A attached hereto and made part hereof (the "Property"), and Grantee desires to use a portion of the Property for transmission facilities in connection with a wind farm being developed by Grantee.

For good and valuable consideration, the legal sufficiency of which is hereby acknowledged by both parties, Owner and Grantee agree as follows:

1. Addresses. All notices, requests and communications in connection with this Agreement shall be addressed as follows:

If to Owner: Michele M. Goodson
133 Tyrone Ave. NW
Albuquerque, NM 87107

If to Grantee: Orion Wind Resources LLC
c/o Orion Renewable Energy Group LLC
155 Grand Avenue, Suite 706
Oakland, CA 94612
Attention: General Counsel

2. Grant of Transmission Easement. Owner grants to Grantee an exclusive easement in gross (the "Transmission Easement") in, on, over, under, along and across the Property, for the following purposes:

TORRANCE COUNTY
LINDA JARAMILLO, CLERK
002183292
Book 339 Page 5106
1 of 11
12/17/2018 11:53:10 AM
BY GENELL

(a) The development, erection, construction, reconstruction, installation, replacement, relocation, removal, maintenance, operation and use of the following from time to time within a portion of the Property 150 feet wide (such portion of the Property, the "Easement Area") located in approximately the area depicted as "Easement Area" on Exhibit A-1 attached hereto and incorporated herein: a line or lines of poles, towers or structures, together with such wires and cables as from time to time are suspended therefrom, and/or underground wires and cables, for the transmission of electrical energy and/or for communication purposes, and all necessary foundations, footings, crossarms and other appliances, fixtures and related facilities for use in connection with said poles, towers, structures, wires and cables (the foregoing enumerated items are herein collectively called the "Transmission Facilities"). The Transmission Facilities and Easement Area shall be located as close as reasonably practicable to a property line, public road, existing transmission line, or fence line.

(b) Pedestrian and vehicular ingress, egress and access over and across the Property to and from Transmission Facilities (whether located on the Property, on adjacent property, or elsewhere) by means of roads and lanes thereon if existing, or otherwise by such route or routes as Grantee may construct or improve from time to time. Such access rights include the right to improve and maintain existing roads and lanes.

3. Payment. In consideration of the rights granted hereunder, Grantee agrees to pay Owner during the Term the amounts set forth in the Fee Schedule attached hereto (the "Fee Schedule").

4. Early Termination. In the event that construction of Transmission Facilities or Grantee's planned wind farm has not commenced on or before the seventh anniversary of the Effective Date, Owner may terminate this Agreement by written notice to Grantee, and upon such termination, there shall be no further obligations of either party; *provided, however,* that upon payment of the amount set forth in the Fee Schedule, Grantee may extend such seventh anniversary date to the tenth anniversary of the Effective Date. Grantee shall notify Owner of its commencement of construction on the Property.

5. Term and Termination.

5.1. Unless earlier terminated, the Transmission Easement and this Agreement shall be for a term (the "Term") commencing on the Effective Date and continuing until the later of (a) 50 years after the first day of the calendar month following the month in which Grantee's planned wind farm begins delivering commercial quantities of electricity to the electric utility grid, or (b) 60 years after the Effective Date. Unless earlier terminated, Grantee may elect to extend the Term for one or two additional 10-year terms commencing on the last day of the Term or the tenth anniversary of such day, respectively, upon at least 30 days' notice to Owner.

5.2. An "Event of Default" shall exist under this Agreement if: (1) (A) Grantee fails to pay Owner any amount due hereunder, or (B) Grantee defaults in the performance of any other material covenant or agreement contained in this Agreement, and (2) either such default in (A) and (B) hereof continues uncured for a period of 60 days after written notice thereof from Owner to Grantee, unless such default cannot be reasonably cured within such 60-day period, in

which case no Event of Default shall exist if Grantee, within such 60-day period, commences to cure such default and thereafter prosecutes the cure of such default in good faith and with due diligence. Upon the occurrence of an Event of Default, Owner may terminate this Agreement by recording in the real property records of the county in which the Property is located (the "County Records") a declaration stating that this Agreement has terminated by reason of the occurrence of an Event of Default. Grantee may terminate this Agreement as to all or any part of the Property at any time upon notice to Owner.

5.3. Upon the expiration or earlier termination of this Agreement, Grantee shall promptly de-energize any electrical lines or facilities in, on or over the Easement Area, remove the Transmission Facilities from the surface of the Easement Area, and restore said surface to substantially the same condition as the Easement Area was in on the date construction of the Transmission Facilities commenced thereon.

6. Construction Activities. During construction or reconstruction of the Transmission Facilities, Grantee may use for such purposes an additional 50 feet of land on either or both sides of Easement Area. Upon completion of construction on the Property, Grantee will restore the soil surface on any portion of the Property disturbed by Grantee more than five feet from the edge of the Collection Easement Area and seed the disturbed area with an appropriate local seed mix.

7. Ownership of Transmission Facilities. Owner shall have no ownership or other interest in any Transmission Facilities installed on the Property. Grantee may remove any or all Transmission Facilities at any time in accordance with the terms hereof.

8. Owner's Right to Use the Property. Owner retains the right to use the Property for all purposes not inconsistent with the rights granted to Grantee by this Agreement. Grantee shall have the right to emit or cause the emission of noise and electromagnetic and frequency interference and to impact Owner's views of and from the Property.

9. Costs and Maintenance. All costs and expenses incident to the erection, construction, reconstruction, relocation, replacement, removal, maintenance and use of the Transmission Facilities, including the trimming and cutting of any trees and underbrush shall be borne by Grantee. Grantee shall have the right to make all foreseen and unforeseen and ordinary and extraordinary changes and repairs which may be required to the Transmission Facilities, and to maintain and keep the Easement Area in good order, repair and condition, including but not limited to trimming, cutting and removing trees and underbrush anywhere on the Property as reasonably necessary if any limbs, branches or other parts are within the Easement Area. When Grantee performs such maintenance activities, Grantee shall remove all debris created (such as, but not limited to, tree limbs, underbrush, etc.) and dispose of such debris offsite.

10. Compliance with Laws. Grantee shall comply with all laws, regulations and rules governing the erection, construction, reconstruction, relocation, replacement, removal, maintenance and use of the Transmission Facilities.

11. Assignment. Grantee may assign this Agreement or its rights with respect to the Transmission Easement, in whole or in part, without the need for Owner's consent. This

Agreement shall run with the land. This Agreement shall inure to the benefit of, and be binding upon, Owner and Grantee and their respective transferees, heirs, successors and assigns and all persons claiming under them.

12. Indemnity.

12.1. Grantee shall, at all times, save and hold harmless and indemnify Owner, its officers, partners, agents, contractors and employees, from and against all losses, damages, expenses, claims, demands, suits and actions, including, but not limited to, all claims for personal injuries and property damage outside of the Easement Area, to the extent caused by the negligence or willful misconduct of Grantee, its officers, partners, agents, contractors and employees. The reference to property damage in the preceding sentence does not include losses of rent, business opportunities, profits and the like that may result from Owner's loss of use of the Easement Area.

12.2. Owner shall, at all times, save and hold harmless and indemnify Grantee, its officers, partners, agents, contractors and employees, from and against all losses, damages, expenses, claims, demands, suits and actions, including, but not limited to, all claims for personal injuries and property damage within the Easement Area, to the extent caused by the negligence or willful misconduct of Owner, its officers, partners, agents, contractors and employees.

13. Financing.

13.1. Grantee may collaterally assign, mortgage or otherwise encumber its interest in the Transmission Easement and this Agreement to a Financing Party (as hereinafter defined) under a Mortgage (as hereinafter defined). The term "Financing Party" means (i) any institution (including any trustee or agent of behalf of such institution) providing debt or other financing (including easement financing) to or for the benefit of Grantee or its successors or assigns, (ii) any counterparty under a power purchase agreement, renewable energy agreement or similar agreement that has been provided a Mortgage (as defined herein) by Grantee to secure obligations owing to such counterparty, and (iii) any tax equity investor in Grantee (until the "DRO Zero Date" or similar date that such tax equity investor has received a specified after-tax rate of return on its investment and has a balance in its respective capital account of at least zero). The term "Mortgage" shall mean any mortgage, deed of trust, deed to secure debt or other security instrument by which Grantee's interest in this Agreement, the Transmission Easement, the Transmission Facilities, or the Property is collaterally assigned, mortgaged, pledged, conveyed, assigned or otherwise transferred or encumbered to secure a debt or other obligation to a Financing Party. A Financing Party who provides written notice to Owner of its Mortgage (if applicable), or of its position as a Financing Party, along with its address for notices, shall be referred to as "Lender."

13.2. Owner, upon providing Grantee any notice of (i) default under this Agreement or (ii) termination of this Agreement, shall at the same time provide a copy of such notice to each Lender. Such Lender shall have the same period, after the giving of such notice, for remedying any default or causing the same to be remedied (but shall have no obligation to remedy or cause the remedy of any default), as is given Grantee after the giving of such notice to

Grantee to remedy the default specified in any such notice. Owner shall accept such performance by or at the instigation of such Lender as if the same had been done by Grantee.

13.3. Owner shall execute such (a) estoppel certificates (certifying as to such matters as Grantee may reasonably request, including, without limitation, that no default then exists under this Agreement to Owner's knowledge, if such be the case); (b) consents to assignment, (c) non-disturbance agreements, and (d) documents reasonably required by a title insurance company, in each case as Grantee or any Lender may reasonably request from time to time.

13.4. No payment made to Owner by a Lender shall constitute an agreement that such payment was, in fact, due under the terms of this Agreement; and a Lender, having made any payment to Owner pursuant to Owner's wrongful, improper or mistaken notice or demand, shall be entitled to the return of any such payment.

14. Owner Representations and Warranties. Owner represents and warrants as follows:

14.1. *Owner's Authority*. Owner is the sole owner of the Property and holds fee simple title to the surface estate of the Property. Owner has the unrestricted right and authority and has taken all necessary action to authorize Owner to execute this Agreement and to grant to Grantee the rights granted hereunder. Each person signing this Agreement on behalf of Owner is authorized to do so and all persons having any ownership interest in the Property (including spouses) are signing this Agreement.

14.2. *Litigation*. No litigation is pending, and, to the best of Owner's knowledge, no actions, claims or other legal or administrative proceedings are pending, threatened or anticipated with respect to, or which could affect, any portion of the Property.

14.3. *Hazardous Materials*. To the best of Owner's knowledge, there exists no substance, material or waste which is classified as hazardous or toxic, or which is regulated under federal, state or local laws or regulations, on or under the Property, except in such quantities as may be required in Owner's agricultural use of the Property and only if such use complies with all applicable laws.

14.4. *Condemnation*. There are no pending or, to Owner's knowledge, threatened condemnation or similar proceedings, lawsuits or other claims that may affect the Property. Owner agrees to notify Grantee promptly if any of the foregoing arise during the term of this Agreement.

14.5. *Liens and Tenants*. Except as disclosed to Grantee in writing, to Owner's knowledge, there are no liens, encumbrances, leases, mortgages, deeds of trust, mineral or oil and gas rights, options, rights of refusal, preferential rights to purchase or lease or other exceptions to Owner's fee title ownership of the Property which are not recorded in the County Records.

15. Miscellaneous.

15.1. *Notices*. All notices, requests and communications ("Notice") under this Agreement shall be given in writing, by (i) personal delivery (confirmed by the courier delivery service), (ii) facsimile and confirmed in writing by first class mail, or (iii) first class certified mail, postage prepaid, to the individuals and addresses indicated in Section 1 above. Any Notice to a Lender of an Event of Default or termination of this Agreement shall be delivered to the address indicated in Lender's notice sent to Owner under Section 13.1 hereof. Except as expressly provided herein, any Notice provided for herein shall become effective only upon and at the time of first receipt by the party to whom it is given, unless such Notice is only mailed by certified mail in which case it shall be deemed to be received five business days after the date that it is mailed. Any party may, by Notice to the other party, change the individual address to which Notices shall thereafter be sent.

15.2. *Governing Law*. This Agreement shall be governed by and interpreted in accordance with the laws of the State of New Mexico.

15.3. *Integration; Amendment*. This Agreement, when executed, approved and delivered, together with all exhibits attached hereto, shall constitute the entire agreement between the parties and there are no other representations or agreements, oral or written, except as expressly set forth herein. This Agreement may not be amended or modified except by a written agreement signed by the parties hereto.

15.4. *Recording; Easement Area; Corrections*. Owner and Grantee agree that this Agreement (without the Fee Schedule) shall be recorded in the County Records. From time to time, Grantee may send a Notice to Owner containing a map or legal description of the Easement Area and such map or legal description shall be attached to this Agreement as Exhibit B. Grantee may record such Exhibit B in the County Records without the need for Owner's consent, so long as the location of the Easement Area as shown or described in such Exhibit B is consistent with the provisions of Section 2. In the event of any inaccuracy or insufficiency in the description of the Property or Easement Area in Exhibit A or Exhibit B, respectively, or in the description of the parties in whom title to the Property is vested, Grantee may record in the County Records an amendment or correction of this Agreement or of Exhibit A or Exhibit B, respectively, to correct such inaccuracy or insufficiency.

15.5. *Taxes*. Grantee shall pay property taxes, if any, attributable to Transmission Facilities installed by Grantee.

15.6. *Counterparts*. This Agreement may be executed in multiple counterparts, no one of which need be executed by all parties hereto, and each of which shall constitute an original. Counterparts thus executed shall together constitute one and the same instrument.

[*Signatures on following page*]

IN WITNESS WHEREOF, Owner and Grantee have caused this Agreement to be executed and delivered by their duly authorized representatives as of the Effective Date.

"OWNER"

Name: **Michele M. Goodson**

Name: **Wesley Dwayne Goodson**

"GRANTEE"

Orion Wind Resources LLC,
a Delaware limited liability company

By: _____
Name: Reid M. Buckley
Title: Vice President

STATE OF New mexico §
§
COUNTY OF Bernalillo §

This instrument was acknowledged before me this 15 day of October, 2018, by _____.

Lori A Mendez
Notary Public

My Commission Expires:

January 27, 2020

OFFICIAL SEAL
Lori A. Mendez
NOTARY PUBLIC
STATE OF NEW MEXICO
My Commission Expires: 1/27/2020

STATE OF New mexico §
§
COUNTY OF Bernalillo §

This instrument was acknowledged before me this 15 day of October, 2018, by _____.

Lori A Mendez
Notary Public

My Commission Expires:

January 27, 2020

OFFICIAL SEAL
Lori A. Mendez
NOTARY PUBLIC
STATE OF NEW MEXICO
My Commission Expires: 1/27/2020

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

STATE OF CALIFORNIA §
§
COUNTY OF ALAMEDA §

On October 22, 2018, before me, Analisa Garcia, a Notary Public, personally appeared Reid M. Buckley, who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

[Notary Stamp/Seal]

ANALISA GARCIA
Commission # 2099498
Notary Public - California
Alameda County
My Comm. Expires Feb 8, 2019

Notary Public in and for the State of California

Exhibit A

Description of Property

ALL THAT CERTAIN real estate lying and being situated in Torrance County, New Mexico, being more particularly bounded and described as follows:

Real Property Tax Parcel No. R001883101

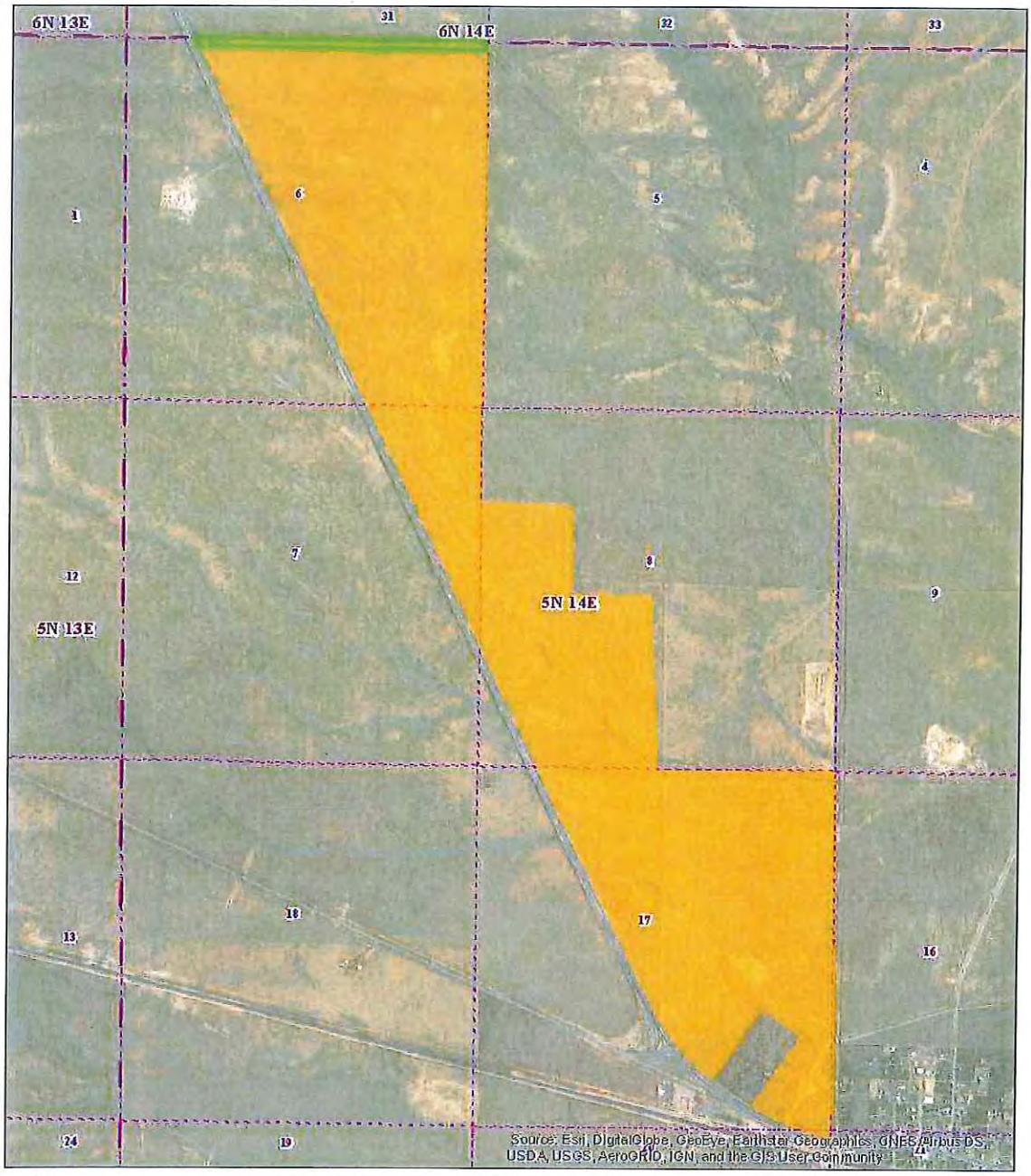
A tract of land situate in Torrance County, New Mexico 21, all lying within Township 5 N, Range 14 E, N.M.P.M., Torrance County, New Mexico, and being more particularly described as follows:

All that portion of Section 6, T5N R14E, lying east of Highway 285.
All that portion of Section 7, T5N R14E, lying east of Highway 285.
All that portion of the Southwest Quarter of the Northwest Quarter and the Southwest Quarter of Section 8, T5N R14E, lying east of Highway 285.
All that portion of Section 17, T5N R14E, lying east of Highway 285, excepting therefrom a 20 acre parcel in the Southeast Quarter of said Section 17, a map of which was recorded in Plat Book A, at Page 377, Torrance County New Mexico Records.
All that portion of the Northeast Quarter of Section 20, T5N R14E, lying north and east of Highway 285.

(In the event of any inaccuracy or insufficiency in the foregoing legal description, Grantee may record an amendment or correction of this Agreement to correct the inaccuracy or insufficiency)

Exhibit A-1

Map of Property and Proposed Easement Area



NORTH

1 inch = 1,833 feet

0 500 1,000 2,000 Feet

Exhibit A-1 Goodson; NM-CC1-221T

Easement Area (Indicative, subject to change)

Property (Approx 924.00Ac)

Section

Santa Fe Co., NM

Confidential

10/09/2018

ORION RENEWABLE ENERGY GROUP LLC

v1rev2

Exhibit C – Assessor’s Parcel Map

Map Disclaimer:
Given the remote location for this proposed windfarm, there are no existing residences, schools, churches, hospitals, or libraries within a distance of 2000 Feet. Furthermore, there are no recognized historic or heritage sites, state-identified wetlands or important bird areas as highlighted by any federal, state, county, or local GIS databases.

Proposed Turbine Location
Proposed Substation Location
Proposed Transmission Line
Project Access Roads
Torrance County Parcels
Project Area
Guadalupe County

MILPA
N
BIGBEE RANCH
PINTADA RD
STATE HIGHWAY 3
PEREZ RD
PAPALOTE
DERRAMADERO
OJO
BERLIER RANCH
US HIGHWAY 285
US HIGHWAY 60
JULIAN
RAILROAD
US HIGHWAY 60
1091039 290178
1091039 290178
1087033 239223
1090032 204398
1087033 239223
1080029 189295

0 1 2 4 6 Miles

Sources: ESRI, Torrance County, Souder, Miller & Associates

Designed	Drawn	Checked
	ZCT	

Date: 2-18-2019
Scale: Horiz: - 1"=7,000' (11X17) Vert: -
Project No: 8227576
Sheet: EXHIBIT D

PRELIMINARY
NOT FOR CONSTRUCTION
THIS DRAWING IS INCOMPLETE AND NOT TO BE USED FOR CONSTRUCTION UNLESS IT IS STAMPED, SIGNED AND DATED

TORRANCE COUNTY — TORRANCE COUNTY, NEW MEXICO

CLINES CORNER WIND FARM
TORRANCE COUNTY
PROJECT AREA AND PARCELS

SMA
Souder, Miller & Associates
Engineering • Environmental • Surveying
www.soudermiller.com
Serving the Southwest & Rocky Mountains
2904 Rodeo Park Dr E #100,
Santa Fe, NM 87505
Phone: (505) 473-9211

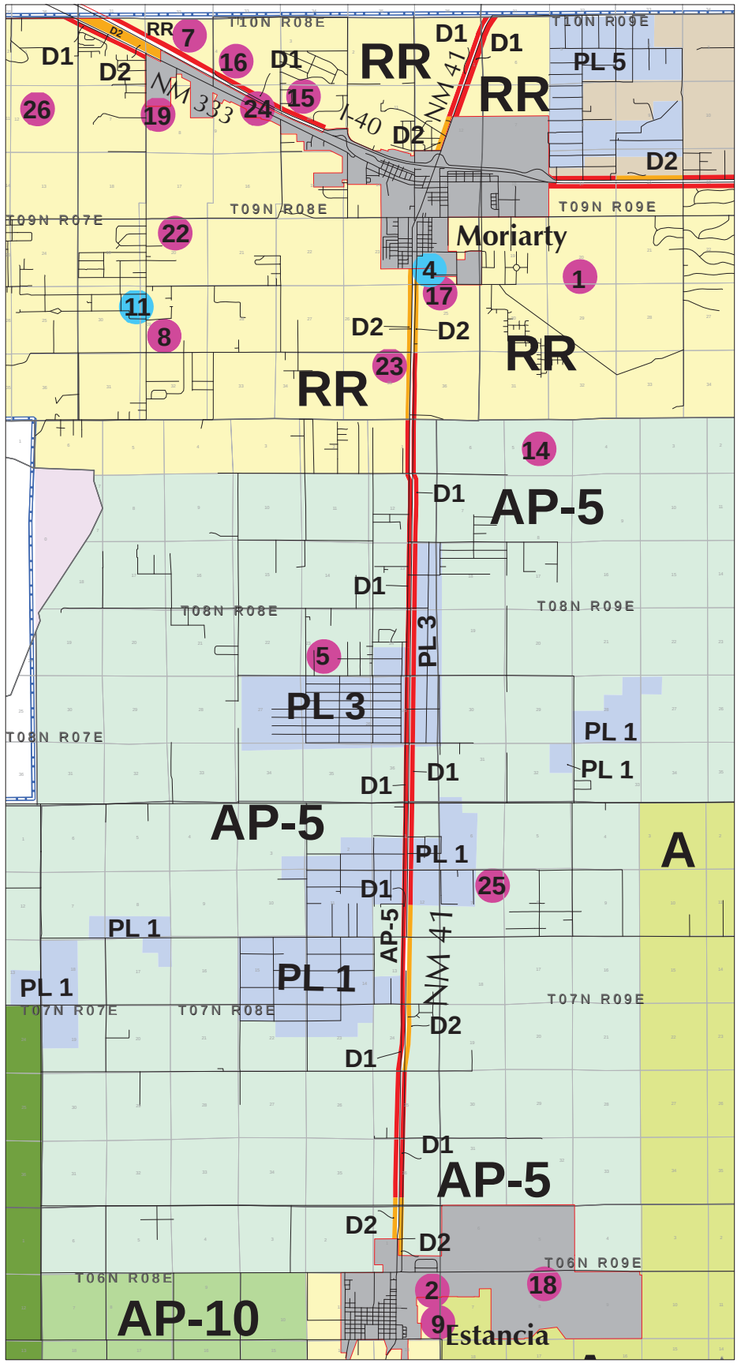
Rev #	Date	Description	By	Chkd

Exhibit D – Torrance County Zone Map

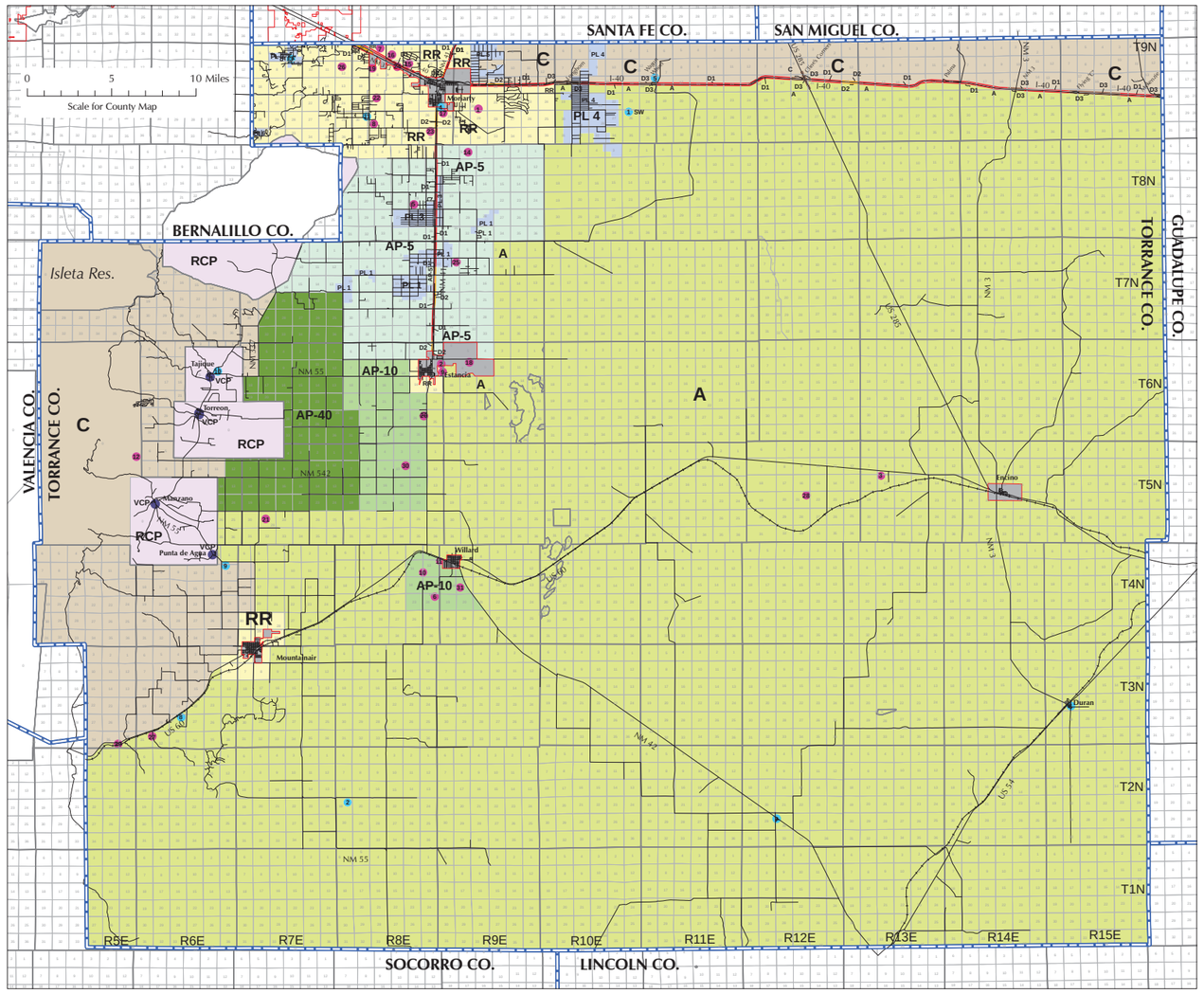
Torrance County Zone Map

Draft 10/13/2009

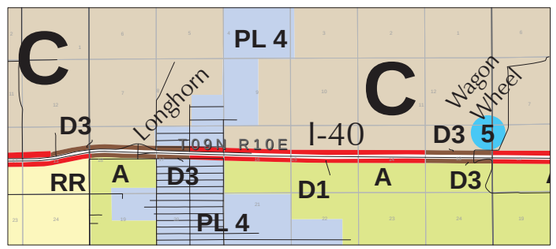
Inset for NM 41 Corridor

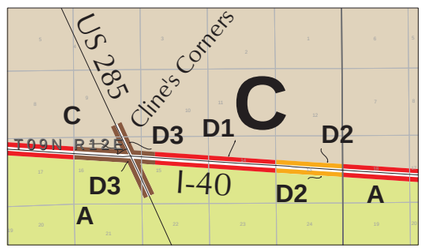


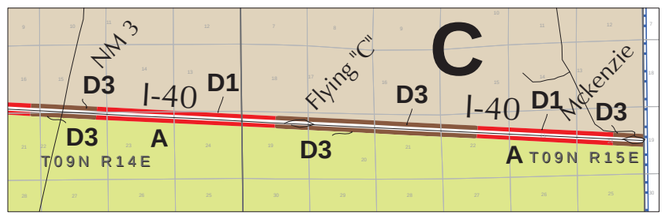
County Map



Insets for I-40 Corridor







County Zoning Districts

- D1 MINOR DEVELOPMENT
- D2 MAJOR DEVELOPMENT
- D3 MAJOR DEVELOPMENT
- RR RURAL RESIDENTIAL
- A AGRICULTURAL (40 ACRE MINIMUM)
- AP-5 AGRICULTURAL PRESERVATION (5 ACRE MINIMUM)
- AP-10 AGRICULTURAL PRESERVATION (10 ACRE MINIMUM)
- AP-40 AGRICULTURAL PRESERVATION (40 ACRE MINIMUM)
- PL PREPLATTED LANDS
- C CONSERVATION (40 ACRE MINIMUM)
- RCP RURAL COMMUNITY PRESERVATION DISTRICT
- VCP VILLAGE COMMUNITY PRESERVATION
- SU SPECIAL USE (NUMBERED)
- SOLID WASTE MANAGEMENT DISTRICT (NUMBERED)
- INCORPORATED MUNICIPALITY
- Municipal Limits
- County Boundary

Note: D1, D2, and D3 are districts with 350 foot setbacks from the highway right-of-way boundary.

0 1 2 Miles

Scale for Inset Maps

Exhibit E – Land Cover Map

N

Land Cover Classes

- Apacherian-Chihuahuan Mesquite Upland Scrub
- Apacherian-Chihuahuan Semi-Desert Grassland and Steppe
- Chihuahuan Mixed Salt Desert Scrub
- Colorado Plateau Mixed Low Sagebrush Shrubland
- Inter-Mountain Basins Semi-Desert Shrub Steppe
- Madrean Juniper Savanna
- Madrean Pinyon-Juniper Woodland
- North American Warm Desert Active and Stabilized Dune
- Rocky Mountain Lower Montane-Foothill Shrubland
- Sonoran Paloverde-Mixed Cacti Desert Scrub
- Southern Rocky Mountain Juniper Woodland and Savanna
- Southern Rocky Mountain Pinyon-Juniper Woodland
- Western Great Plains Foothill and Piedmont Grassland
- Western Great Plains Riparian Woodland and Shrubland
- Western Great Plains Shortgrass Prairie

Village of Encino

- Proposed Turbine Location
- Proposed Substation Location
- Proposed Transmission Line
- Project Access Roads
- Guadalupe County

0 1.5 3 6 Miles

Designed	Drawn	Checked
	ZCT	

Date: 2-15-2019

Scale: Horiz: - 1" = 7,000' (11x17) Vert: -

Project No: 8227576

Sheet: EXHIBIT C

PRELIMINARY

NOT FOR CONSTRUCTION

THIS DRAWING IS INCOMPLETE AND NOT TO BE USED FOR CONSTRUCTION UNLESS IT IS STAMPED, SIGNED AND DATED

TORRANCE COUNTY — TORRANCE COUNTY, NEW MEXICO

CLINES CORNERS WIND FARM
TORRANCE COUNTY
LAND COVER MAP

SMA
Souder, Miller & Associates
Engineering • Environmental • Surveying
www.soudermiller.com
Serving the Southwest & Rocky Mountains
2904 Rodeo Park Dr E #100,
Santa Fe, NM 87505
Phone: (505) 473-9211

Rev #	Date	Description	By	Chkd

Sources: ESRI, USGS GAP, Torrance County, Souder, Miller & Associates

Exhibit F – Legal Land Descriptions

Clines Corners Wind Farm Project

Legal Property Descriptions

Torrance County, NM.

Township 5 North, Range 15 East, N.M.P.M

Section 1: Lots 1, 2, 3, 4, S2N2, S2 (all)
Section 2: Lots 1, 2, 3, 4, S2N2, S2 (all)
Section 3: Lots 1, 2, 3, 4, S2N2, S2 (all)
Section 4: Lots 1, 2, 3, 4, S2N2, S2 (all)

Township 6 North, Range 15 East, N.M.P.M

Section 1: NWNW, S2NW, W2SE, SW
Section 2: N2, SW
Section 28: N2, SE, E2SW, SWSW
Section 32: N2, N2SE, SWSE, SW
Section 33: SWSW
Section 36: All

Township 7 North, Range 15 East, N.M.P.M

Section 26: Lots 1, 2, 3, 4, S2N2, S2 (all)
Section 35: Lots 1, 2, 3, 4, S2N2, S2 (all)

Township 6 North, Range 15 East, N.M.P.M

Section 13: All
Section 14: E2
Section 22: S2
Section 23: All
Section 24: All
Section 25: All
Section 26: All
Section 27: All
Section 33: N2, SE4, N2SW4, SE4SW4
Section 34: All
Section 35: All

Township 7 North, Range 16 East, N.M.P.M

Section1: Lots 1, 2, 3, 4; S2, N2
Section2: Lots 1, 2, 3; S2, NE4
Section 2: Lots 4; S2 NW4, S2
Section 3: Lots 1, 2, 3, 4; S2N2, S2

Section 4: Lots 1, 2, 3, 4; S2N2, S2
Section 5: Lots 1, 2, 3, 4; S2N2, S2
Section 6: Lots 1, 2, 3, 4, 5, 6, 7; S2NE4, SE4NW4, E2SW4, SE4
Section 7: Lots 1, 2, 3, 4; E2W2; E2
Section 8: N2NE4, N2NW4, SW4SW4
Section 9: NE4, N2NW4, W2SE4, E2SE4
Section 10: All
Section 11: All
Section 14: All
Section 15: All
Section 16: All
Section 17: N2
Section 18: Lots 1, 2, 3, 4; E2W2, E2
Section 19: Lots 1, 2, 3, 4; E2W2, E2
Section 20: W2
Section 21: S2S2
Section 22: SW4NW4, SW4, SW4SE4, N2NE4
Section 23: W2NE4, NW4
Section 27: W2NW$, W2SW4
Section 28: All
Section 29: NW4, NW4SW4, SE4SE4
Section 30: Lots 1, 2, 3, 4; E2W2, E2

Township 8 North, Range 16 East, N.M.P.M
Section 19: Lots 1, 2, 3, 4; E2W2
Section 25:

Legal Property Descriptions – Transmission Line

Torrance County, NM.

Real Property Tax Parcel No. R001868401 (ptn)

Township 6 North, Range 14 East:
Section 25: Southeast Quarter
Section 26: Southwest Quarter
Section 27: All
Section 28: All
Section 29: East Half
Section 32: All
Section 33: All
Section 34: All
Section 35: All
Section 36: All

Township 5 North, Range 14 East:

Section 1: All
Section 2: All, excepting the Southeast Quarter of the Southwest Quarter
Section 3: All
Section 4: All
Section 5: All, excepting the Northeast Quarter of the Northeast Quarter
Section 29: East Half

Township 6 North, Range 15 East:
Section 29: All
Section 30: South Half, excepting the Southwest Quarter of the Southeast Quarter
Section 31: All

Township 5 North, Range 15 East:
Section 6: All

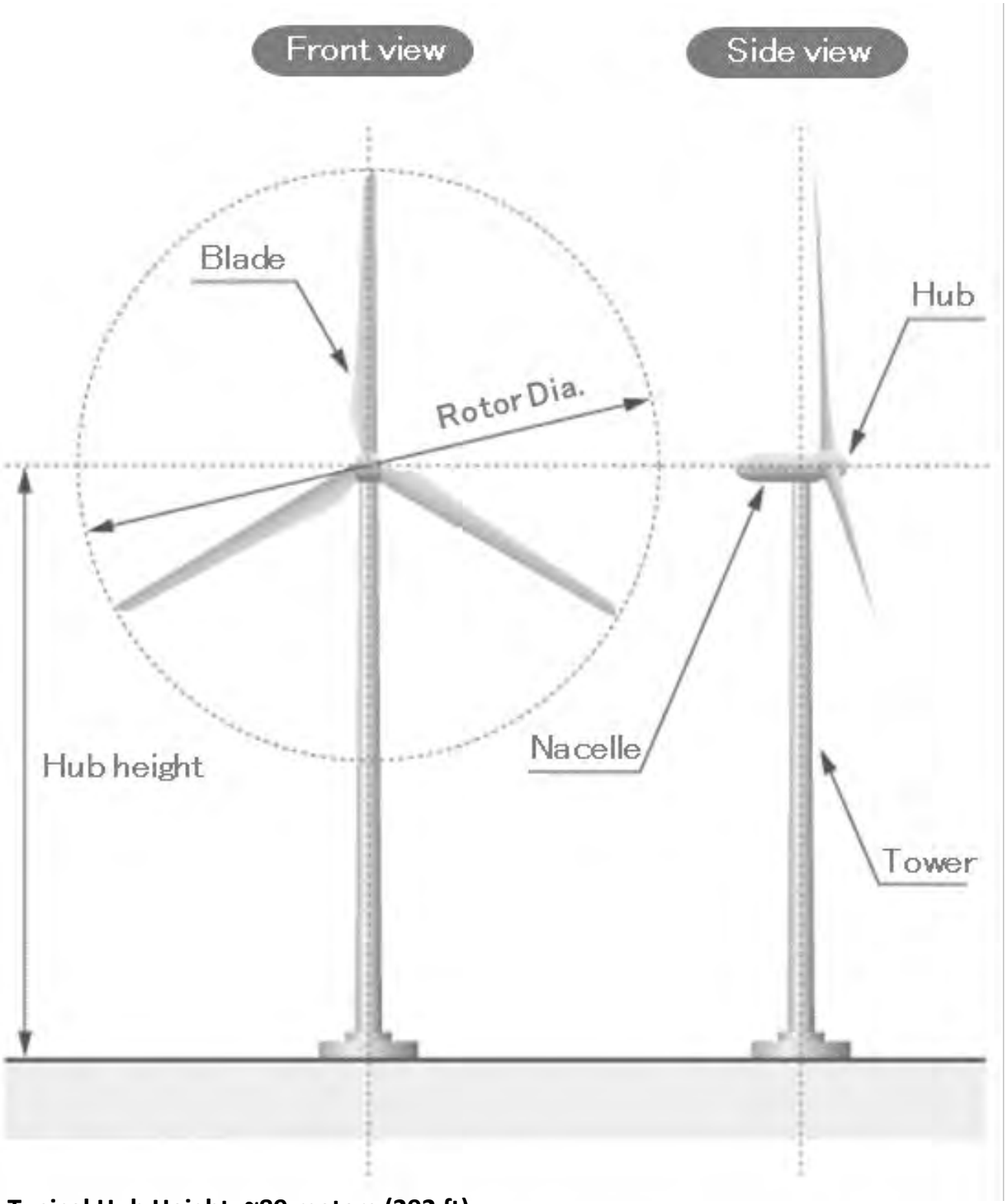
Real Property Tax Parcel No. R001883101

A tract of land situate in Torrance County, New Mexico 21, all lying within Township 5 N, Range 14, #, N.M.P.M., Torrance County New Mexico, and being more particularly described as follows:

All that portion of Section 6, T5N, R14E, lying east of Highway 285
All that portion of Section 7, T5N R14E, lying east of Highway 285
All that portion of the Southwest Quarter of the Northwest Quarter and the Southwest Quarter of Section 8, T5N R14E, lying east of Highway 285
All that portion of Section 17, T5N R14EW, lying east of Highway 285, excepting therefrom a 20 acre parcel in the Southeast Quarter of said Section 17, a map of which was recorded in Plat Book A, at Page 377, Torrance County New Mexico Records.
All that portion of the Northeast Quarter of Section 20, T5N R14E, lying north and east of Highway 285

Exhibit G – Typical Wind Turbine Structure

Typical Wind Turbine Drawing



Typical Hub Height: ~89 meters (292 ft)
Typical Height to tip of blade at 90°: ~152 meters (499 ft)
Typical Rotor Diameter: 127 meters (417 ft)
Typical Tower Base Diameter: ~4.5 – 6 meters (15 – 18ft)

Exhibit H – Typical Wind Turbine Brochures

GE Renewable Energy

GE's 2 MW Platform

PROVEN, RELIABLE WIND ENERGY SOLUTIONS YESTERDAY, TODAY, AND TOMORROW.

www.gerenewableenergy.com

GE'S **2 MW PLATFORM**

Since entering the wind industry in 2002, GE Renewable Energy has invested more than $2.5 billion in next-generation wind turbine technology to provide more value to customers—whether at the turbine, plant, or grid level. Using advanced analytics, GE Renewable Energy is redefining the future of wind power, delivering with proven performance, availability, and reliability. With the integration of big data analytics and the industrial internet, we can help customers manage the variability that comes with this resource for smooth, predictable power. Our onshore product portfolio includes wind turbines with rated capacities from 2.0 to 4.8 MW and flexible support services that range from basic operations and maintenance to farm or fleet level enhancements.

For more information visit our website:
www.gerenewableenergy.com

2 MW Platform

GE's 2 MW Platform of onshore wind turbines has more than 5.5 GW installed and operating today. Building on that success, GE offers a 127-meter rotor option for 2.2-2.5 MW rated wind turbines. Featuring the best-in-class capacity factor and a significant improvement in Annual Energy Production (AEP) within the 2 MW range, the 2 MW-127 demonstrates the next step in turbine technology and efficiency, reducing the cost of energy for customers with low and medium wind speed sites.

GE's 2.0-2.5 MW, 116-meter rotor wind turbine offers 10,660 square meters in swept area, with an Annual Energy Production (AEP) of 11,832 MWh at 8.0 m/s (at a 2.5 rating, 90m HH). GE's proprietary 56.9-meter blade is designed specifically for the 2.0-2.5 MW rating of this platform, enabling lower loads and improved performance.

GE's stringent design practices enable a platform of products engineered for exceptional performance and availability. The use of selected components from proven product platforms ensures consistent workhorse performance and reliability. The 2 MW Platform drivetrain and electrical system architecture provide improved performance along with greater wind turbine energy production. Other critical components have been scaled from the existing platforms to meet the specific technical requirements of this evolutionary turbine.

Today, GE's 2 MW Platform wind turbines come equipped and ready to utilize GE's Predix core applications, including its Asset Performance Management (APM), Cybersecurity, and Business Optimization (BO) solutions. The digital suite of apps enables improved business outcomes, including lifecycle extension of the customers' windfarms and the improvement of overall farm economics.

GE's 2 MW Platform of onshore wind turbines set the benchmark for consistent performance, reliability, farm level AEP, and efficiency.

[†] Comparative statements refer to GE technology unless otherwise stated.

Building Upon Proven GE Technology

The evolution of GE's 2 MW Platform began with the introduction of a 1.5 MW turbine (the 1.5i) with a 65-meter rotor in 1996. That product evolved to a 70.5-meter rotor turbine, called the 1.5s. A 77-meter rotor machine called the 1.5sle was introduced later in 2004. Building on the exceptional performance and reliability of the 1.5sle, GE introduced the 1.5xle, which had a 82.5-meter rotor, in 2005. Subsequent improvements led to the introduction of the 1.6-82.5 turbine in 2008—followed by the 1.6-87 in 2011, and ultimately the 1.85-82.5 and 1.85-87 in 2013. Ongoing investment in the industry workhorse resulted in 100-meter rotor machines with the introduction of GE's 1.6-100 and 1.7-100 wind turbines.

Evolving from these predecessors, the GE 2 MW Platform of onshore wind turbines today provide even greater capacity factor while also increasing the AEP of GE's product offerings.

Significant component enhancements have resulted in a substantial performance increase, enabling the use of the 116 and 127-meter rotors, and a nameplate range of 2.0-2.5 MW (with applicable rotor). New aerodynamics and blade structural enhancements have enabled greater blade lengths, which, in conjunction with an upgraded electrical system, improved controls, and improved power conversion capabilities, have enabled increases in nameplate, capacity factor, and AEP.

Made for high reliability, and with more than 5.5 GW of equivalent units installed and operating today, GE's 2 MW Platform has a proven record of providing excellent availability for our customers.

Technical Description

GE's 2 MW Platform is a three-blade, upwind, horizontal axis wind turbine with a rotor diameter of either 116 or 127-meters. The turbine rotor and nacelle are mounted on top of a tubular steel tower. The 2 MW-127 is offered at an 89-meter hub height, and the 2 MW-116 is offered at 80-meter, 90-meter, and 94-meter hub heights. To keep the blades pointed into the wind, the 2 MW-116 uses a passive yaw control system, and the 2 MW-127 uses an active yaw control system. GE's 2 MW Platform operates at a variable speed and uses a doubly fed asynchronous generator with a partial power converter system.

Specifications:

- 2.0 to 2.7 MW rating with a 116-meter rotor: Engineered to IEC 61400-22 ed 3, Class IIS/IIIS
- 2.2 to 2.5 MW rating with a 127-meter rotor: Engineered to IEC 61400-22 ed 3, Class IIS/IIIS
- Standard and cold weather extreme options
- Standard tower corrosion protection: C2 internal and C3 external with internal and external C4/C5 options available
- Rotational direction: Clockwise viewed from an upwind location
- Speed regulation: Electric drive pitch control with battery backup
- Aerodynamic brake: Full feathering of blade pitch

Features and Benefits

- 2.0 to 2.7 MW with a 116-meter rotor and 2.2 – 2.5 MW with a 127-meter rotor
- Higher AEP than their GE 1.x MW predecessors by incorporating a larger gearbox scaled for GE's 2 MW Platform and longer blades (116-meter rotor with 56.9-meter blades and 127-meter rotor with 62.2-meter blades)
- GE's 2 MW Platform has a proven record of providing excellent reliability, and availability for our customers, with more than 5.5 GW installed and operating today.
- Grid-friendly options include enhanced reactive power, voltage ride through, and power factor control.
- Wind Farm Control System; WindSCADA*
- 2 MW-116 available in both 50 Hz and 60 Hz versions; 2 MW-127 available in 60 Hz
- With variable nameplate offerings, GE has the flexibility to meet a variety of customer needs in capacity factor, noise, and operating life.
- GE's 2 MW-127 enables best-in-class capacity factor and improved AEP in the 2 MW range for lower wind speeds. GE's 2 MW-116 continues to be our most competitive offering for higher wind speeds and more challenging wind conditions.
- GE's 2 MW Platform onshore wind turbines are compatible with GE's Digital Wind Farm technology, powered by the Predix* software platform, enabling the lifecycle extension of customers' wind farms and the improvement of overall wind farm economics.

Construction:

Towers: Tubular steel sections provide a hub height of 89-meters for GE 2 MW-127 onshore wind turbines and 80, 90, and 94-meters for GE 2 MW-116 onshore wind turbines.

Blades: 56.9-meter blades (116-meter rotor), 62.2-meter blades (127-meter rotor).

Drivetrain components: GE's 2 MW Platform uses an enhanced gearbox, main shaft, and generator with appropriate improvements to enable the 116-meter rotor in higher wind speeds, and the 127-meter rotor in lower wind speeds.

Enhanced Controls Technology

The 2 MW Platform wind turbine products employ enhanced control features including:

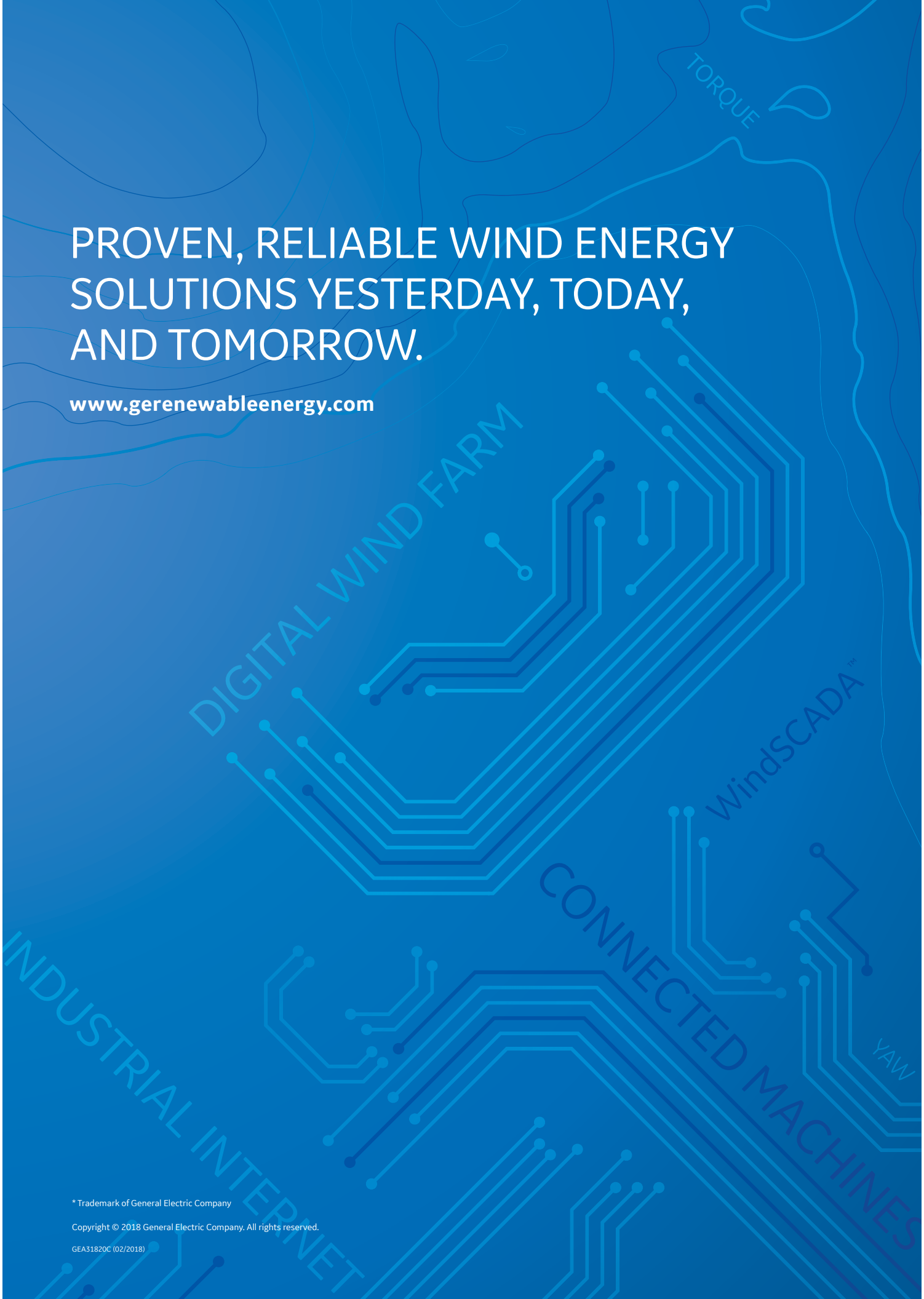
- GE's patented Advanced Loads Control reduces loads on turbine components by measuring stresses and individually adjusting blade pitch.
- Controls developed by GE Global Research reduce extreme loads, including those near rated wind speeds, to improve Annual Energy Production (AEP).

Condition Monitoring System (optional)

GE's Condition Monitoring System* (CMS) and SCADA Anomaly Detection Services, a complementary suite of advanced condition monitoring solutions, proactively detect impending drivetrain and whole-turbine issues, enabling increased availability and decreased maintenance expenses. Built upon half a century of power generation drivetrain and data anomaly monitoring experience, this service solution is available for GE's 2 MW Platform.

PROVEN, RELIABLE WIND ENERGY SOLUTIONS YESTERDAY, TODAY, AND TOMORROW.

www.gerenewableenergy.com



GEA31820C (02/2018)

SIEMENS

Siemens Wind Turbine SWT-2.3-108

The new productivity benchmark

www.siemens.com/wind

The industry standard, redefined

The Siemens 2.3-MW family has firmly established itself as the tried and tested workhorse for reliability, with a range of rotor diameters for different wind conditions. Our new SWT-2.3-108 adds a new, larger rotor to the family, setting a new standard for productivity

Greater output from lower wind speeds

Since wind turbine technology was in its infancy, Siemens has been a major driver of innovation. And with its enhanced reliability and productivity in low to moderate wind speeds, the new SWT-2.3-108 is yet another example of the commitment to customers' success.

Longer blades. More energy

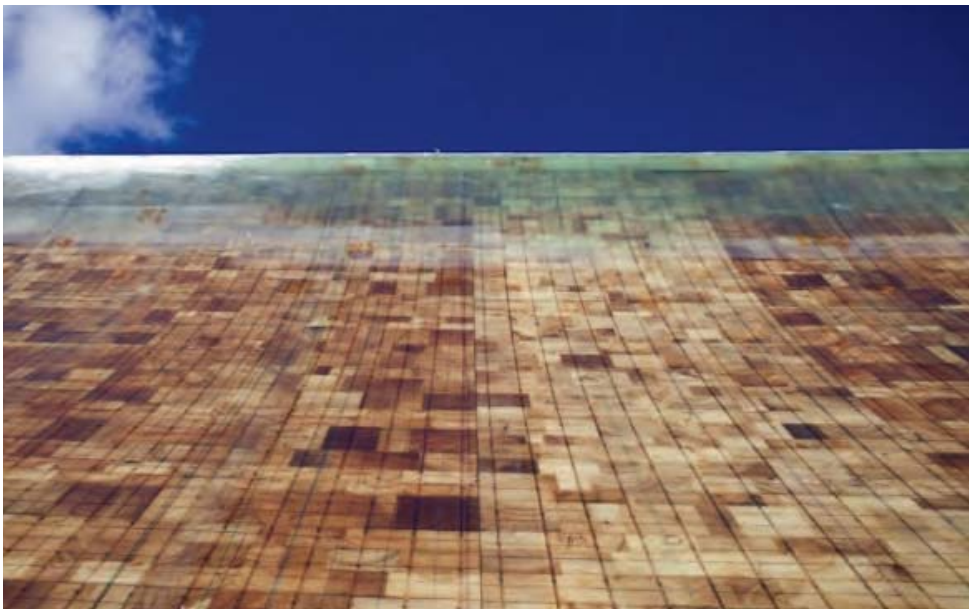
In recent years, Siemens created a product line specifically to extract more energy from moderate wind conditions. The SWT-2.3-108's innovative rotor blade design now extends productivity even further. The new 108-meter rotor with its unique blade properties is perfectly optimized for sites with low wind speeds.

Your trusted partner

With its combination of robust and reliable wind turbines, highly efficient solutions for power transmission and distribution and a deep understanding of the entire energy market, Siemens continues to be a leading supplier. Long-lasting customer relationships based on an excellent delivery record provide for a sound, sustainable and profitable investment.

With over 140 years of experience in the energy sector, a strong focus on renewables and a global network of highly skilled and trained employees, Siemens has proven itself to be a trustworthy and reliable business partner. And it will continue to be in the future.

For superior availability, reliability and a lower levelized cost of energy, look no further than the new Siemens SWT-2.3-108 turbine.



Advanced blade technology allows for longer lifecycles and contributes to lower levelized cost of energy

Superior performance provides higher yields

Optimum energy output at moderate wind conditions

The SWT-2.3-108 wind turbine is designed to increase the energy returns from sites with moderate wind conditions. The advanced blade design, with a rotor diameter of 108 meters and pitch regulation, optimize power output and increase control over energy output.

High availability

Currently, the Siemens fleet of 2.3-MW wind turbines sets the industry standard for availability. The SWT-2.3-108 will build on the reputation for reliability that the market has come to expect from a Siemens wind turbine.

High yield with minimal maintenance

Siemens optimizes the return on investment in its wind turbines through intelligent maintenance that allows high yield with low operational costs.

The rugged structural design, combined with an automatic lubrication system, internal climate control and a generator system without slip rings contributes to exceptional reliability. The innovative design of the SWT-2.3-108 allows for longer service intervals.

Superior grid compliance

The Siemens NetConverter® system is designed for maximum flexibility in the wind turbine's response to voltage and frequency variations, fault ride-through capability and output adjustment. The advanced wind farm control system provides state-of-the-art fleet management.

Proven track record

Siemens has a proven track record of providing reliable wind turbines that last. The company's first commercial turbine was installed in 1980 and still operates today. The world's first offshore wind farm in Vindeby, Denmark, was installed in 1991 and is also still fully operational. In California, Siemens installed over 1,100 units between 1983 and 1990, with 97% still in operation today.

Siemens takes its commitment to reliability seriously and prides itself on the long lifespan that its wind turbines have demonstrated.

Siemens' Turbine Condition Monitoring® system instantly detects deviations from normal operating conditions

No compromise on reliability

SWT-2.3-108: The newest member of an extremely reliable product family

Siemens wind turbines are designed to last. The robust design of the SWT-2.3-108 allows for trouble-free output throughout the complete lifecycle of the machine.

Instead of glueing the blades together from a number of spars and shells, they are cast in a single process. This not only enables both low weight and enormous strength, there are no glue joins which could potentially expose the blades to cracking and lightning damage.

Climate control within the nacelle protects vital equipment from the outside environment. The wind turbine also offers controlled-wear strategies for critical components, which results in a further reduction of maintenance costs.

Safety first

Safety is at the heart of all Siemens' operations. From production to installation, operation and service, Siemens strives to set the standard in safety.

The fail safe capabilities within a wind turbine, combined with Siemens' superior lightning protection system, are designed to enhance security for the turbine.

Advanced operations support

Given the logistical challenges associated with servicing wind farms, Siemens has equipped its turbines with a Turbine Condition Monitoring® system that reduces the need for on-site servicing.

Siemens' Turbine Condition Monitoring® system compares the vibration levels of the main nacelle components with a set of established reference spectra and instantly detects deviations from normal operating conditions. This allows Siemens to proactively plan the service and maintenance of the wind turbines, as any unusual event can be categorized and prioritized based on severity.

Using the knowledge gained from monitoring thousands of wind turbines over the years, Siemens' experts are exceptionally skilled at analyzing and predicting operational anomalies. This allows Siemens to proactively plan service and maintenance activity as each event can be categorized and prioritized based on severity. Siemens can then determine the most appropriate course of action to keep the wind turbine running at its best.

Technical Specifications

SWT-2.3-108

Rotor

Type	3-bladed, horizontal axis
Position	Upwind
Diameter	108 m
Swept area	9144 m²
Speed range	6-16 rpm
Power regulation	Pitch regulation with variable speed
Rotor tilt	6 degrees

Blade

Type	Self-supporting
Blade length	53 m
Root chord	3.4 m
Aerodynamic profile	NACA63.xxx, FFAxxx, SWPxxx
Material	GRE
Surface gloss	Semi-gloss, <30 / ISO2813
Surface colour	Light grey, RAL 7035

Aerodynamic brake

Type	Full-span pitching
Activation	Active, hydraulic

Load-Supporting Parts

Hub	Nodular cast iron
Main bearing	Spherical roller bearing
Main shaft	Alloy steel
Nacelle bed plate	Steel

Transmission system

Coupling hub - shaft	Flange
Coupling shaft - gearbox	Shrink disc
Gearbox type	3-stage planetary/helical
Gearbox ratio	1:91
Gearbox lubrication	Splash/forced lubrication
Oil volume	Approx. 400 l
Gearbox oil filtering	Inline and offline
Gearbox cooling	Separate oil cooler
Gearbox designation	PEAB 4456 (Winergy) or EH851 (Hansen)
Coupling gear - generator	Double flexible coupling

Mechanical brake

Type	Hydraulic disc brake
Position	High speed shaft
Number of callipers	2

Canopy

Type	Totally enclosed
Material	Steel
Surface gloss	Semi-gloss, 25-45, ISO2813
Colour	Light grey, RAL 7035

Generator

Type	Asynchronous
Nominal power	2,300 kW
Protection	IP 54
Cooling	Integrated heat exchanger
Insulation class	F

Grid Terminals (LV)

Nominal power	2,300 kW
Voltage	690 V
Frequency	50 Hz or 60 Hz

Yaw system

Type	Active
Yaw bearing	Externally geared slew ring
Yaw brake	Passive friction brake
Yaw drive	Eight electric gear motors with frequency converter

Controller

Type	Microprocessor
SCADA system	WPS via modem
Controller designation	KK WTC 3.0
Controller manufacturer	KK Electronic A/S

Tower

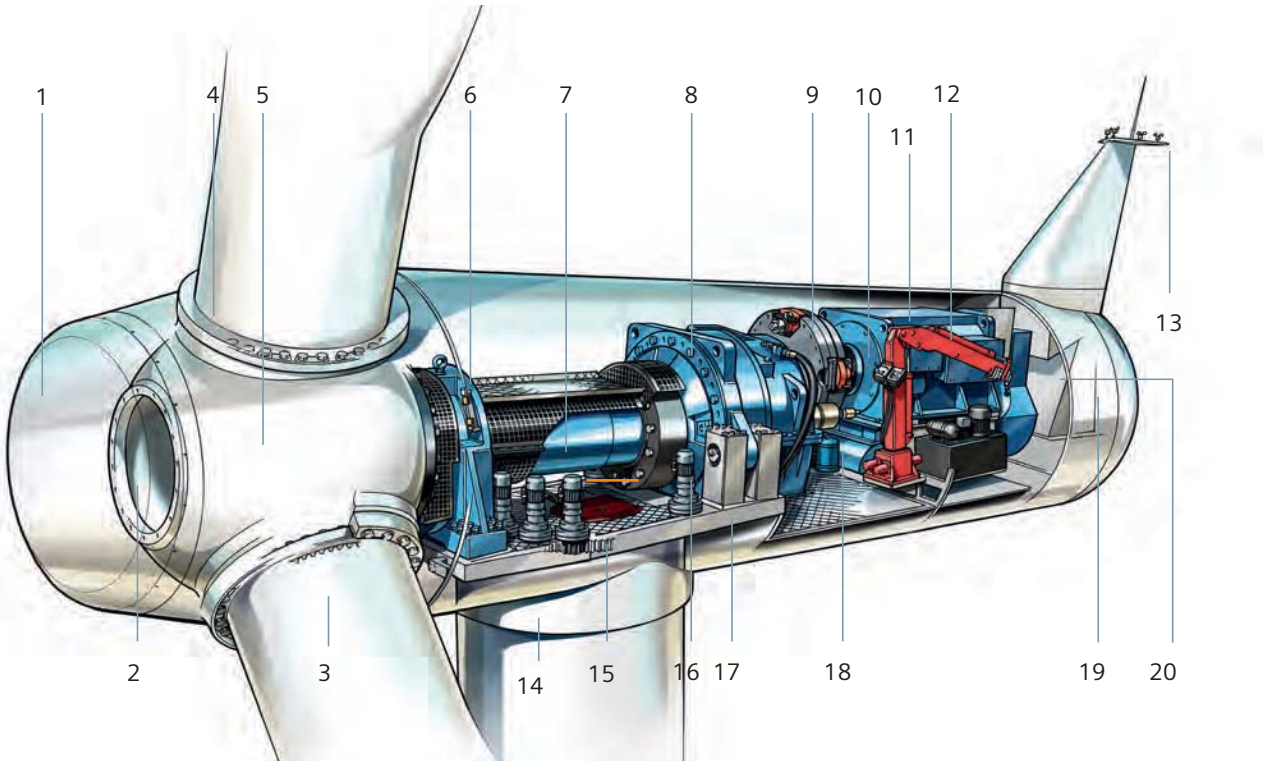
Type	Cylindrical and/or tapered tubular
Hub height	80 m or site-specific
Corrosion protection	Painted
Surface gloss	Semi-gloss, 25-45, ISO2813
Colour	Light grey, RAL 7035

Operational data

Cut-in wind speed	3-4 m/s
Rated power at	11-12 m/s
Cut-out wind speed	25 m/s
Maximum 3 s gust	59.5 m/s (IEC version)

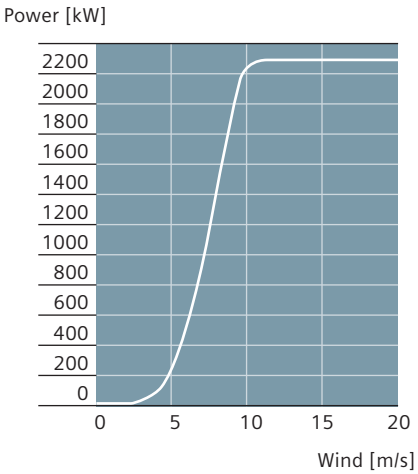
Weights (approximately)

Rotor	60,000 kg
Nacelle	82,000 kg



Sales power curve

The calculated power curve data are valid for standard conditions of 15 degrees Celsius air temperature, 1013 hPa air pressure and 1.225 kg/m³ air density, clean rotor blades and horizontal, undisturbed air flow. The calculated curve data are preliminary.



Nacelle arrangement

1. Spinner
2. Spinner bracket
3. Blade
4. Pitch bearing
5. Rotor hub
6. Main bearing
7. Main shaft
8. Gearbox
9. Brake disc
10. Coupling
11. Generator
12. Service crane
13. Meteorological sensors
14. Tower
15. Yaw ring
16. Yaw gear
17. Nacelle bedplate
18. Oil filter
19. Canopy
20. Generator fan

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Siemens AG
Energy Sector
Freyeslebenstrasse 1
91058 Erlangen, Germany

Siemens Wind Power A/S
Lindenplatz 2
20099 Hamburg, Germany
www.siemens.com/wind

For more information, please contact
our Customer Support Center.
Phone: +49 180 524 70 00
Fax: +49 180 524 24 71
(Charges depending on provider)
E-mail: support.energy@siemens.com

Wind Power Division
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Exhibit I – Access Roads

N

Proposed Turbine Location
Proposed Substation Location
Proposed Transmission Line
Project Access Roads
Existing County Roads

Easements

Berlier Ranch
Krannawitter Trust

Lt Lewis

Leased
New Leased Land
Unleased Land
Guadalupe County

Papalote

OJO

BERLIER RANCH

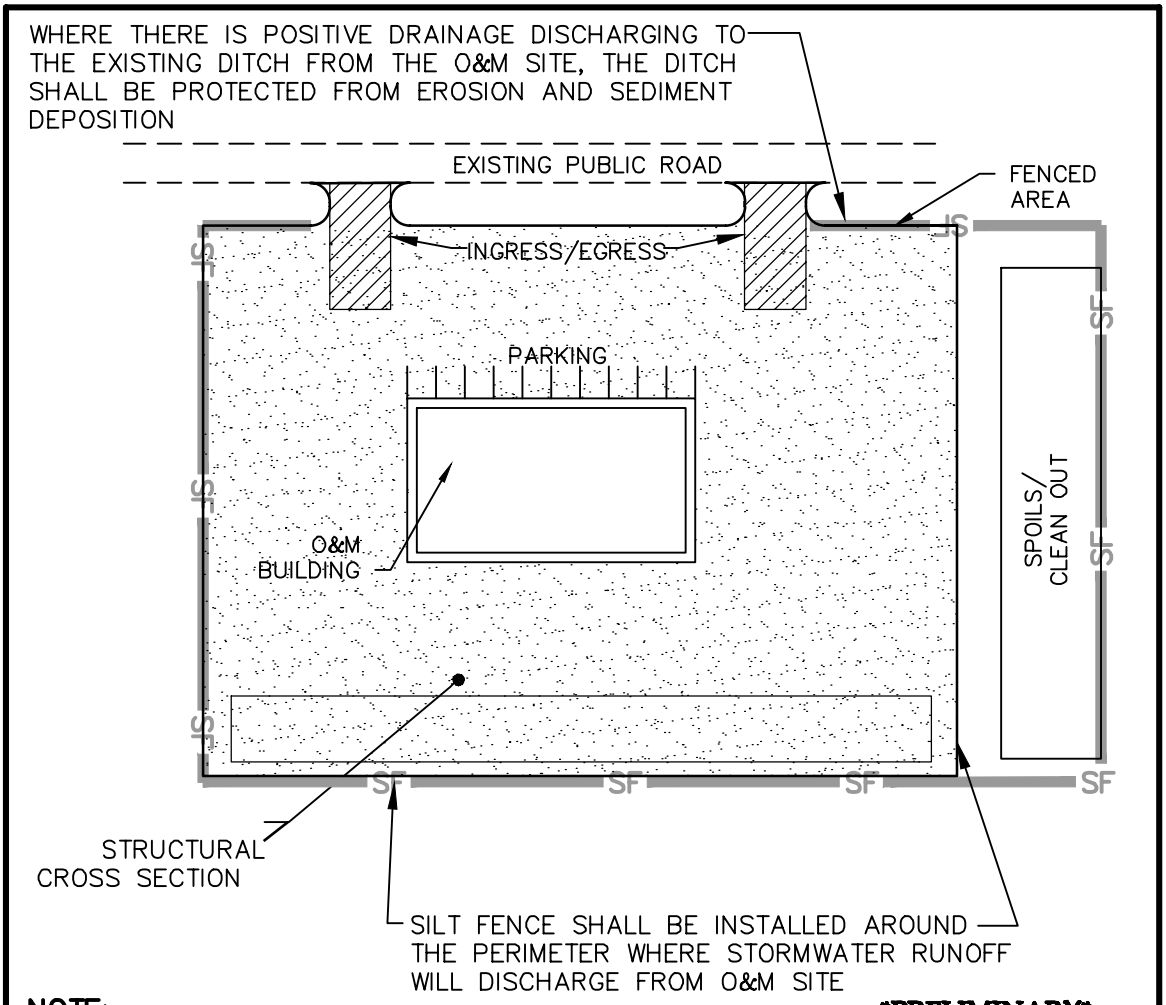
Miles
0 1 2 4

Designed	Drawn ZCT	Checked	**PRELIMINARY** NOT FOR CONSTRUCTION	TORRANCE COUNTY	TORRANCE COUNTY, NEW MEXICO	Souder, Miller & Associates Engineering • Environmental • Surveying www.soudermiller.com Serving the Southwest & Rocky Mountains	2904 Rodeo Park Dr E #100, Santa Fe, NM 87505 Phone: (505) 473-9211
Date: 2-18-2019				CLINES CORNERS WIND FARM TORRANCE COUNTY PROJECT ACCESS ROADS			
Scale: Horiz: - 1" = 4,000' (11x17) Vert: -							
Project No: 8227576							
Sheet: EXHIBIT I			THIS DRAWING IS INCOMPLETE AND NOT TO BE USED FOR CONSTRUCTION UNLESS IT IS STAMPED, SIGNED AND DATED				

Rev #	Date	Description	By	Chkd

Sources: ESRI, Souder, Miller & Associates

Exhibit J – Typical Operations & Maintenance Facility



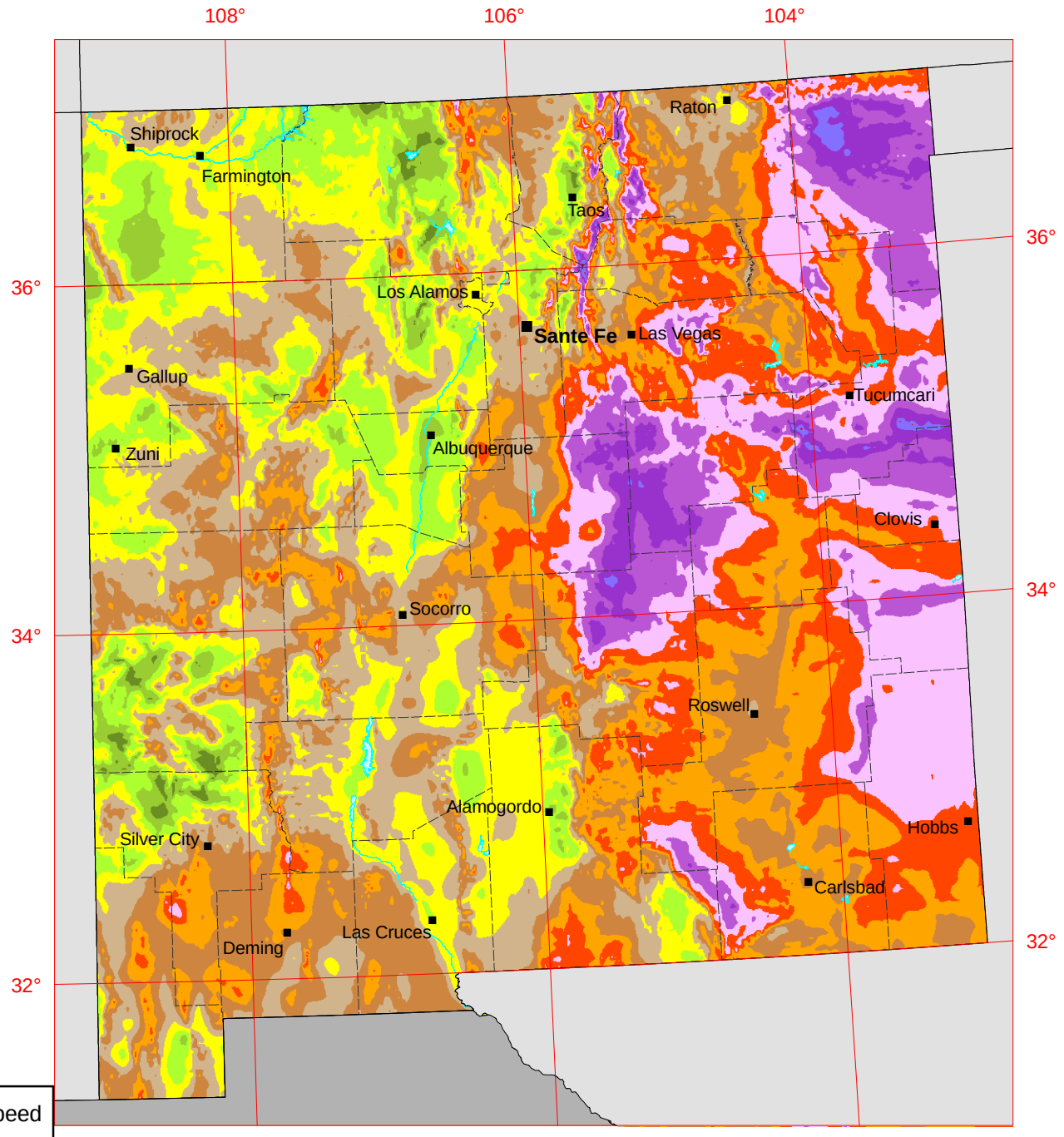
NOTE: ***PRELIMINARY***

1. REFER TO PROJECT SWPP PLAN FOR SPECIFICATIONS OF EROSION AND SEDIMENT CONTROL.

Westwood	TYPICAL O&M BUILDING AREA EROSION AND SEDIMENT CONTROL	LAST REVISED: 02/13/17
		GD32

Exhibit K – New Mexico Annual Average Wind Speed

New Mexico - Annual Average Wind Speed at 80 m



Wind Speed m/s

>10.5
10.0
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
< 4.0

50 0 50 100 150 200 Kilometers

50 0 50 100 Miles

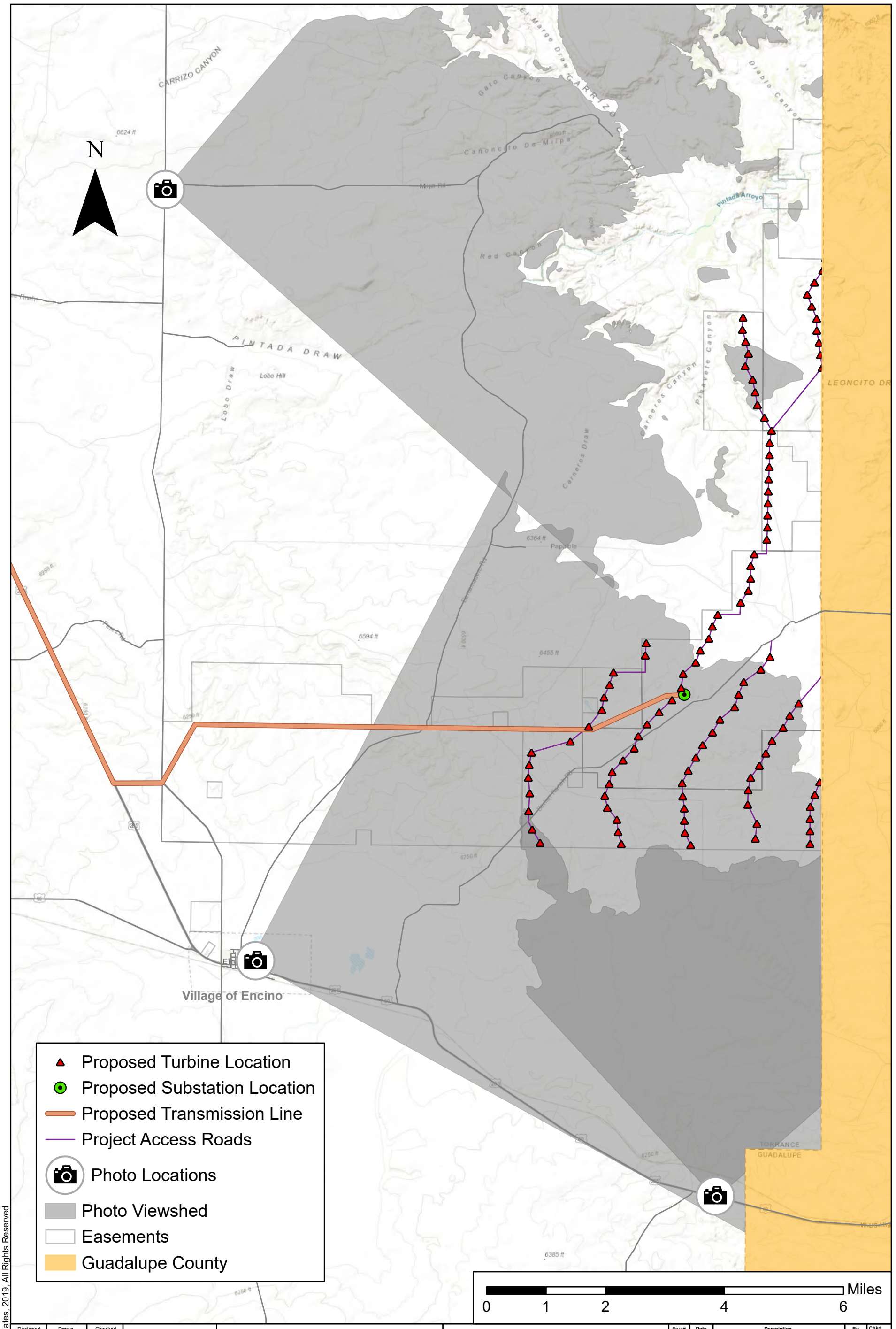
Source: Wind resource estimates developed by AWS Truepower, LLC for windNavigator®. Web: http://www.windnavigator.com | http://www.awstruepower.com. Spatial resolution of wind resource data: 2.5 km. Projection: UTM Zone 12 WGS84.

AWS Truepower™ Where science delivers performance.

NREL NATIONAL RENEWABLE ENERGY LABORATORY

24-SEP-2010 1.1.1

Exhibit L – Project Visibility Map



Designed	Drawn	Checked
	ZCT	

Date: 2-15-2019

Scale: Horiz: - 1" = 8,000" (11x17) Vert: -

Project No: 8227576

Sheet: EXHIBIT O

PRELIMINARY

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TORRANCE COUNTY — TORRANCE COUNTY, NEW MEXICO

CLINES CORNERS WIND FARM
TORRANCE COUNTY
PROJECT VISIBILITY

SMA
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Santa Fe, NM 87505
Phone: (505) 473-9211

Rev #	Date	Description	By	Chkd

Sources: ESRI, Torrance County, Souder, Miller & Associates

Exhibit M – Project Visibility Photo Illustrations

Encino Viewpoint (E 458087, N 3834594 UTM z13 NAD83)

Looking Northeast (058 degrees)

Nearest Turbine about 5 miles

NM Highway 60 Viewpoint (E 470527; N 3828231 UTM z13 NAD83)

Looking North (015 degrees)

Nearest Turbine about 6 miles (None are visible due to intervening terrain in the foreground)

NM Highway 3 Viewpoint (E 455645; N 3855459 UTM z13 NAD83)

Looking Southeast (124 degrees)

Nearest Visible Turbine about 10 miles

Exhibit N – Communications Study & NTIA Consultation

Wind Power GeoPlanner™

Communication Tower Study

Clines Corners Wind Farm

Prepared on Behalf of
Orion Wind Resource LLC

November 27, 2018

COMSEARCH®
A CommScope Company

Table of Contents

1. Introduction

This Communication Tower Study was performed for the Clines Corners Wind Farm Project in Torrance and Guadalupe Counties, New Mexico to identify the tower structures as well as FCC-licensed communication antennas that exist in the project area. This information is useful in the planning stages of the wind energy facilities to identify turbine setbacks and to prevent disruption to the services provided by the tenants on the towers. This data can be used in support of the wind energy facilities communications needs in addition to avoiding any potential impact to the current communications services provided in the region.

2. Summary of Results

The communication towers and antennas in the study area were derived from a variety of sources including the FCC's Antenna Structure Registration (ASR) database, Universal Licensing System (ULS), national and regional tower owner databases, and the local planning and zoning boards. The data[1] was imported into GIS software and the structures mapped in the wind energy area of interest. Each tower location is identified with a unique ID number associated with detailed structure and contact information provided in a spreadsheet attachment.

One tower structure and one communication antenna was identified within the Clines Corners Wind Farm Project area using the data sources described in our methodology above. The structure found is not registered with the FCC and contains one licensed land mobile antenna.

Detailed information about the tower structure and communication antenna is provided in Table 1 and Table 2 including location coordinates, structure height above ground level, and owner-operator name[2].

A discussion of turbine setback distances is provided in section three.

[1] Comsearch makes no warranty as to the accuracy of the data included in this report beyond the date of the report. The data provided in this report is governed by Comsearch's data license notification and agreement located at http://www.comsearch.com/files/data_license.pdf.

[2] Please note that this report analyzes all known operators on the towers from data sources available to Comsearch. Unidentified operators may exist on the towers due to unlicensed or federal government systems, mobile phone operators with proprietary locations, erroneous data on the FCC license, and other factors beyond our control.

Tower ID	ASR Number	Owner	Structure Height AGL (m)	Latitude (NAD83)	Longitude (NAD83)
Tower001	none	unknown	>40	34.64811111	-105.3413889

Table 1: Summary of Tower Structures

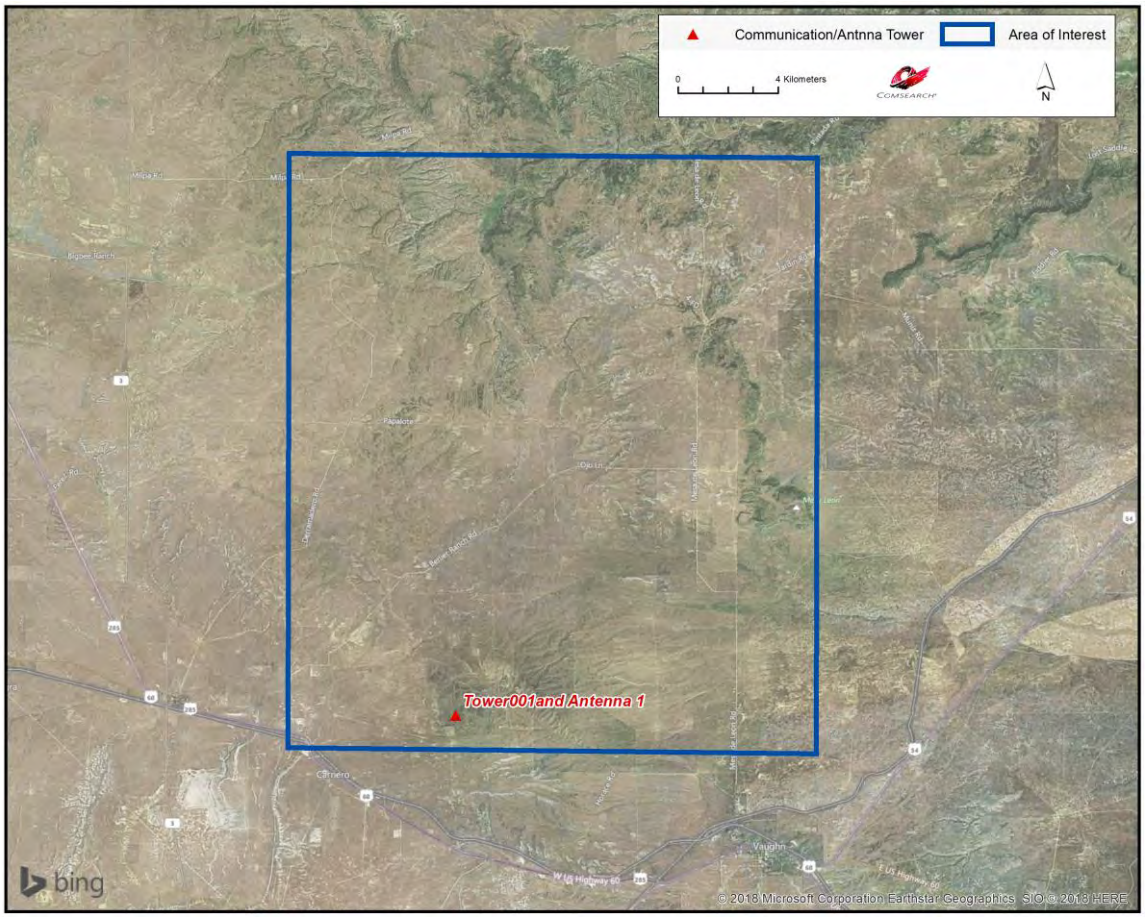

Figure 1: Tower/Antenna within the Area of Interest

ID	Tower ID	Callsign	Service Type	Licensee	Antenna Height AGL (m)	Latitude (NAD83)	Longitude (NAD83)
1	Tower001	KAI387	Land Mobile	BNSF Railway Co.	40	34.64811111	-105.3413889

Table 2: Summary of Communication Antenna

3. Discussion of Separation Distances

In planning the wind energy turbine locations, a conservative approach would dictate not locating any turbines in close proximity to existing tower structures to avoid any possible impact to the communications services provided by the structures. Reasonable distance between communication towers and wind turbine towers is a function of two things: (1) the physical turning radius of the wind turbine blades and (2) the characteristics of the communication systems on the communication tower.

Since wind turbine blades can rotate 360º, the first consideration of separation distance to other structures is clearance of the blades. If the blade radius is 50 meters, then a separation distance greater than 50 meters is necessary. From a practical standpoint, a setback distance greater than the maximum height of the turbine is necessary to insure a "fall" safety zone in the unlikely event of a turbine tower failure. Setback requirements for "fall" safety are typically specified by the local zoning ordinances.

The required separation distance based on the characteristics of the communication systems will vary depending on the type of communication antennas that are installed on the tower. For example, AM broadcast antennas should be separated by distances that allow for normal coverage which can extend up to 3 kilometers. For land mobile and mobile phone systems, setback distances are based on FCC interference emission limits from electrical devices in the land mobile and mobile phone frequency bands.

Finally, the tower structures identified could be a potential benefit in support of communications network needs for the wind energy facility. An example would be the implementation of a Supervisory Control and Data Acquisition (SCADA) system that monitors and provides communications access to the wind energy facility.

4. Conclusions

Our study identified one tower structure with one communication antenna within the project area. It is used for land mobile services in the area.

5. Contact Us

For questions or information regarding the Communication Tower Study, please contact:

Contact person: David Meyer
Title: Senior Manager
Company: Comsearch
Address: 19700 Janelia Farm Blvd., Ashburn, VA 20147
Telephone: 703-726-5656
Fax: 703-726-5595
Email: dmeyer@comsearch.com
Web site: www.comsearch.com

Kornel Rozsavolgyi

From: Henry, Joyce <JHenry@ntia.doc.gov>
Sent: Tuesday, December 11, 2018 9:48 AM
To: Kornel Rozsavolgyi
Cc: faslist
Subject: **Turbine Response Letter** Clines Corners Project: Torrance & Guadalupe Counties, NM
Attachments: Digital Final_Clines Corners Project_R_ORION RENEWABLES_no concerns.pdf

Dear Kornel:

Please see attached the ***digitally signed*** NTIA Response Letter for the Clines Corners Wind Farm, located in Torrance and Guadalupe Counties, New Mexico.

After a 45+ day period of review, we received responses from **CG (Coast Guard), DOA (Agriculture), DOC (Commerce), DOE (Energy), DOJ (Justice), and DON (Navy),** stating **No Harmful Interference Anticipated (NHIA).**

In the event that an agency has expressed concerns, ***we encourage you to work with the agency representatives directly to resolve all issues***. If issues cannot be resolved, you may contact our office via phone or e-mail for resolution.

Joyce C. Henry
DOC/NTIA/OSM HQ
Admin
202-482-2215
jhenry@ntia.doc.gov

"He who hesitates is lost"

#ALLCAPS #LORDSTANLEYLIVESHERE

Exhibit O – Cultural Resources Literature Search

BRIC
Subsidiary of Diné Development Corporation

Curtis Patillo
Souder Miller and Associates

Re: Records Review and Analysis Conducted for Proposed Orion wind turbines and transmission line in Torrance Count, New Mexico

Paula Pflepsen, PI for BRIC (formerly EMI) conducted a review of NMCRIS ARMS and other available online resources to determine the extent of previous surveys and documented sites within a 500 m radius of the proposed wind turbines and access roads in Torrance County, New Mexico.

The purpose of the review is to aid in determining best practices and potential flaws in proposed design plans prior to construction. This serves as a preliminary review and in no way substitutes for a full and detailed pre-field inventory.

The proposed turbines are located on private lands in Torrance County. Most of the proposed area has not been subjected to cultural resources inventory. Only 6 inventories are identified, and those surveys have identified 32 sites (Table 2). Of those identified sites 5 are located within 100m of the proposed project area.

Table 1*:* Previous Surveys Conducted within the Proposed Turbines and Access APE in Torrance County

NMCRIS no.	Performing Company	Acres	No. of sites discovered	Reference
19154	UNM OCA	1994	30	Kneebone, R., 1987
131214	US NRCS	74.00	0	US NRCS New Mexico State Office, 2015
90493	US NRCS	597	1	Romero-Yepes, 2004
127618	US NRCS	90.60	0	Dennison, L., 2013
142089	Patrick Graham	158.00	0	Graham, P., 2018
131860	Patrick Graham	270.90	1	Graham, P., 2015

Table 2. Previously Recorded Sites Associated with Proposed Turbines and Access Roads in Torrance County

Site LA. No.	Associated Activity	Site Type	NR Eligibility
60945	19154	Historic	Undetermined
60946	19154	Prehistoric	Undetermined
60957	19154	Prehistoric	Undetermined
183509	131860	Prehistoric	Not Eligible
45933	142089	Proposed Linear Historic	Undetermined

The proposed transmission line parallels US Highway 285 in Torrance County from just north of Clines Corners south along the highway ROW approximately 26 miles to a point approximately 2 miles north of the intersection with US 60 near Encino, NM. At this point the proposed line commences east approximately 6 miles thorough private lands to the proposed turbine locations. The entire highway ROW has been surveyed by a number of investigations (Table 3). These investigations identified 46 sites; however only two of these are within the proposed project APE (Table 4) and require update. No previous survey has been conducted along the section of proposed transmission line in the ~ 6 miles of private land.

BRIC
Subsidiary of Diné Development Corporation

Table 3*:* Previous Surveys Conducted within the Proposed Transmission Line APE in Torrance County

NMCRIS no.	Performing Company	Acres	No. of sites discovered	Reference
7458	NM State Highway	29.50	0	Haecker, C., 1985
93071	Parson Brinkerhoff	896.00	17	Raymond et al., 2006
56067	SWCA	4770.20	27	Philips, D. et al., 1997
118067	Tierra ROW	25.00	0	Funkhouser, G., 2010
20690	ACA	526.40	2	Bowman, J., 1988
64477	Lone Mountain	17.48	0	Travis-Suhay, C., 1999
64593	Lone Mountain	Not entered	Not entered	Travis-Suhay, C., 1999
42416	Quivera Research Center	30.72	0	Condie, C.J., 1993

Table 4: Previously Recorded Sites Associated with Proposed Transmission Line in Torrance County

Site LA. No.	Associated Activity	Site Type	NR Eligibility
68955	20690,56067	Prehistoric	Undetermined
125523	61944,65356	Prehistoric	Eligible

Identified sites within the APE include both historic and prehistoric resources. The National Register of Historic Places (NRHP) eligibility is mostly undetermined, with no record of recommendation in the site documents. One site, LA183509, has been determined not eligible for NRHP, and one site (LA125523 has been determine NRHP Eligible. These sites require revisiting and updates during any pedestrian survey conducted in the APE.

BRIC recommends Class III inventory be conducted in all areas of the proposed project not subjected to previous investigation. Any deviation from existing disturbance will result in additional survey. Based on the results of this preliminary review, both prehistoric and historic sites are anticipated to occur within the project area.

Please let me know if you have any questions. This was a very quick review and provides only an overview. I can provide more in-depth information given a longer time period.

Sincerely

Paula M. Samuelson Pflepsen

Cultural Resources Program Manager

Dine Development Corporation-BRIC

5001 Indian School Road, Ste 200

Albuquerque NM 87110

505 563-4703

http://bric-dine.com

Exhibit P – Map of Historic Places

N

Proposed Turbine Location
Proposed Substation Location
Proposed Transmission Line
Project Access Roads
Historic Place Boundary
Easements
Guadalupe County

0 1 2 4 6 Miles

Designed	Drawn	Checked
	ZCT	

Date: 2-18-2019

Scale: Horiz: - 1" = 7,000" (11x17)
Vert: -

Project No: 8227576

Sheet: EXHIBIT P

PRELIMINARY

NOT FOR CONSTRUCTION

THIS DRAWING IS INCOMPLETE AND NOT TO BE USED FOR CONSTRUCTION UNLESS IT IS STAMPED, SIGNED AND DATED

TORRANCE COUNTY — TORRANCE COUNTY, NEW MEXICO

CLINES CORNERS WIND FARM
TORRANCE COUNTY
HISTORIC PLACES

SMA
Souder, Miller & Associates
Engineering • Environmental • Surveying
www.soudermiller.com
Serving the Southwest & Rocky Mountains

2904 Rodeo Park Dr E #100,
Santa Fe, NM 87505
Phone: (505) 473-9211

Rev #	Date	Description	By	Chkd

Sources: ESRI, Torrance County, USNRIS, Souder, Miller & Associates

Exhibit Q – Preliminary Biological Evaluation & Agency Consultation

Souder, Miller & Associates ♦ 2904 Rodeo Park Drive East, Bldg. 100 ♦ Santa Fe, NM 87505
(505) 473-9211 ♦ (800) 460-5366 ♦ fax (505) 471-6675

December 10, 2018 #8227576

Michael Kurnik
Orion Renewable Energy Group
155 Grand Ave, Suite 706
Oakland, CA 94612

RE: ***Preliminary Biological Investigations within the Orion Renewables Phase I Wind Turbine Project located in Guadalupe and Torrance County, New Mexico***

Dear Mr. Kurnik:

Souder, Miller & Associates (SMA) is pleased to provide Orion Renewable Energy Group (Orion) with a preliminary findings letter for the Orion Phase I Biological Investigations in support of county special use permit requirements for the proposed Renewable Wind Generation Project. The project is located in rural, central New Mexico, within Guadalupe and Torrance Counties.

Introduction

This letter summarizes findings from recent desktop research into Threatened, Endangered, and Sensitive Species with the potential to occur in the project area located within Guadalupe and Torrance Counties, New Mexico. The New Mexico Ecological Services Field Office of the United States Fish and Wildlife Service (USFWS) was utilized to generate an official list of federally-listed Threatened, Endangered, and Candidate species, including any designated listed critical habitat. The online portal for the query is at: https://ecos.fws.gov/ipac/. The New Mexico Department of Game and Fish) was utilized to obtain NM-State listed species that have potential to occur in the project area within Guadalupe and Torrance Counties. The online portal for the query is at: http://www.bison-m.org/. The New Mexico Rare Plant Technical Council was utilized to generate a list of rare plants that have the potential to occur in the project area within Guadalupe and Torrance Counties. The online portal for the query is at: http://nmrareplants.unm.edu/. Table 1.0 below presents the species and their current agency status.

Results

Table 1.0 Federal and NM-State listed species in Guadalupe and Torrance Counties, New Mexico.

Common Name	Scientific Name	Federal Status	NM-State Status	Habitat Association
Mammals				
New Mexico Meadow Jumping Mouse	*Zapus hudsonius luteus*	Endangered	--	Nests in dry soils. Utilizes moist and dense streamside riparian/ wetland vegetation. Prefers moist grasslands and thick vegetated areas around permanent water. Active only during the growing season.
Birds				
Mexican Spotted Owl	*Strix occidentalis lucida*	Threatened	--	Primarily mixed conifer forests dominated by Douglas fir and various pines, or fir and pine-oak forests. Steep sided forested canyons with perennial water sources. Considered year-round resident in Rio Arriba County.
Piping Plover	*Charadrius melodus*	Threatened	Threatened	Occurs on sandflats, bare shorelines of rivers, lakes, or coasts. In NM can occupy patches of sand, gravel, or pebbly-mud on alkali lakes.
Southwest Willow Flycatcher	*Empidonax traillii extimus*	Endangered	Endangered	Breeds in riparian zones along rivers, streams and wetlands. During breeding confined to riparian woodlands with thick understory.
Common Black Hawk	*Buteogallus anthracinus*	--	Threatened	In NM it is an uncommon summer resident that is largely restricted to well-developed riparian habitats in the San Francisco, Gila, and Mimbres drainages.
Bald Eagle	*Haliaeetus leucocephalus*	--	Threatened	Found near lakes and streams across NM., Mostly during winter months. Agricultural fields and pastures frequently used for foraging.
Peregrine Falcon	*Falco peregrinus*	--	Threatened	Breeding territories center on cliffs that are in wooded/forested habitats. Preferred hunting habitats include croplands, meadows, river bottoms, marshes, and lakes.
Arctic Peregrine Falcon	*Falco peregrinus tundrius*	--	Threatened	Breeding territories center on cliffs that are in wooded/forested habitats. Preferred hunting habitats include croplands, meadows, river bottoms, marshes, and lakes.
Least Tern	*Sternula antillarum*	Endangered	Endangered	Nests on the ground, typically on sandy sites relatively free of vegetation, such as sandbars in rivers, and beaches. In New Mexico alkali flats are selected as nesting areas.
Neo-tropic Cormorant	*Phalacrocorax brasilianus*	--	Threatened	In NM generally found on larger bodies of water such as reservoirs.
Gray Vireo	*Vireo vicinior*	--	Threatened	In New Mexico, most often found in arid juniper woodlands on foothills and mesas, these most often associated with oaks and usually in habitat with a well-developed grass component.
Baird's Sparrow	*Ammodramus bairdii*	--	Threatened	Occurring primarily in the eastern plains and southern lowlands. May winter in some locales;

				breeds in shortgrass prairies, nests are concealed in tallgrass and prairie.
Fish				
Suckermouth Minnow	*Phenacobius mirabilis*	--	Threatened	Inhabits mainly sand, gravel, and rubble-bottomed riffles in small to moderate-sized streams.
Mexican Tetra	*Astyanax mexicanus*	--	Threatened	Occupies variety of habitats, tends to school in pools and below swift areas in eddies.
Bigscal Logperch	*Percina macrolepida*	--	Threatened	Typical habitat consists of larger streams with strong, non-turbulent flows. Preferred substrate varies from silt to rubble.
Flowering Plants				
Pecos Sunflower	*Helianthus paradoxus*	Threatened		Saturated saline soils of desert wetlands. Usually associated with desert springs (cienegas) or the wetlands created from modifying desert springs; 3,300-6,600 ft.
Wright's Marsh Thistle	*Cirsium wrightii*	Candidate		Around springs near San Bernardino, on the borders of New Mexico and Sonora. It also occasionally occurs with the threatened *Helianthus paradoxus* in the Pecos River valley.
Santa Fe Milkvetch	*Astragalus feensis*	Species of Concern	Strategy Species	Sandy benches and gravelly hillsides in pinyon-juniper woodland or plains-mesa grassland; 5,100-6,000 ft.
Flint Mountains milkvetch	*Astragalus siliceus*	Species of Concern	Strategy Species	Calcareous knolls and rocky areas in rolling shortgrass prairie; 6,000-6,500 ft.
Sandia alumroot	*Heuchera pulchella*	Species of Concern	Strategy Species	Limestone cliffs in lower and upper montane coniferous forest; 8,000-10,700 ft.
Tall Bitterweed	*Hymenoxys brachyactis*	Species of Concern	Strategy Species	Dry sites with coarse soils in pinyon-juniper woodland and lower montane coniferous forest; 6,900-8,200 ft.
Plank's campion	*Silene plankii*	Species of Concern	Strategy Species	Igneous cliffs and rocky outcrops; 5,000-9,200 ft.

The above table represents Federal and NM-State listed species that have the potential to occur in Guadalupe and Torrance Counties, New Mexico. Biological field survey efforts within the project area will determine if suitable or appropriate habitat exists within the project area to support each listed species. The presence or absence of each listed species will determine the need to engage in formal consultation with the U.S. Fish and Wildlife Service or the New Mexico Department of Game and Fish.

Sincerely,

MILLER ENGINEERS, INC. D/B/A
SOUDER, MILLER & ASSOCIATES

Curtis Pattillo
Project Scientist II
Curtis.pattillo@soudermiller.com

Enc: *Project Figures 1 & 2*

XC: *Dale Lyons, Souder, Miller & Associates,*
Dale.lyons@soudermiller.com

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New Mexico Ecological Services Field Office
2105 Osuna Road Ne
Albuquerque, NM 87113-1001
Phone: (505) 346-2525 Fax: (505) 346-2542
http://www.fws.gov/southwest/es/NewMexico/
http://www.fws.gov/southwest/es/ES_Lists_Main2.html

In Reply Refer To: November 19, 2018
Consultation Code: 02ENNM00-2019-SLI-0217
Event Code: 02ENNM00-2019-E-00452
Project Name: Orion Renewable Energy Wind Farm Project

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

Thank you for your recent request for information on federally listed species and important wildlife habitats that may occur in your project area. The U.S. Fish and Wildlife Service (Service) has responsibility for certain species of New Mexico wildlife under the Endangered Species Act (ESA) of 1973 as amended (16 USC 1531 et seq.), the Migratory Bird Treaty Act (MBTA) as amended (16 USC 701-715), and the Bald and Golden Eagle Protection Act (BGEPA) as amended (16 USC 668-668c). We are providing the following guidance to assist you in determining which federally imperiled species may or may not occur within your project area and to recommend some conservation measures that can be included in your project design.

FEDERALLY-LISTED SPECIES AND DESIGNATED CRITICAL HABITAT

Attached is a list of endangered, threatened, and proposed species that may occur in your project area. Your project area may not necessarily include all or any of these species. Under the ESA, it is the responsibility of the Federal action agency or its designated representative to determine if a proposed action "may affect" endangered, threatened, or proposed species, or designated critical habitat, and if so, to consult with the Service further. Similarly, it is the responsibility of the Federal action agency or project proponent, not the Service, to make "no effect" determinations. If you determine that your proposed action will have "no effect" on threatened or endangered species or their respective critical habitat, you do not need to seek concurrence with the Service. Nevertheless, it is a violation of Federal law to harm or harass any federally-listed threatened or endangered fish or wildlife species without the appropriate permit.

If you determine that your proposed action may affect federally-listed species, consultation with the Service will be necessary. Through the consultation process, we will analyze information contained in a biological assessment that you provide. If your proposed action is associated with Federal funding or permitting, consultation will occur with the Federal agency under section 7(a)(2) of the ESA. Otherwise, an incidental take permit pursuant to section 10(a)(1)(B) of the ESA (also known as a habitat conservation plan) is necessary to harm or harass federally listed threatened or endangered fish or wildlife species. In either case, there is no mechanism for authorizing incidental take "after-the-fact." For more information regarding formal consultation and HCPs, please see the Service's Consultation Handbook and Habitat Conservation Plans at www.fws.gov/endangered/esa-library/index.html#consultations.

The scope of federally listed species compliance not only includes direct effects, but also any interrelated or interdependent project activities (e.g., equipment staging areas, offsite borrow material areas, or utility relocations) and any indirect or cumulative effects that may occur in the action area. The action area includes all areas to be affected, not merely the immediate area involved in the action. Large projects may have effects outside the immediate area to species not listed here that should be addressed. If your action area has suitable habitat for any of the attached species, we recommend that species-specific surveys be conducted during the flowering season for plants and at the appropriate time for wildlife to evaluate any possible project-related impacts.

Candidate Species and Other Sensitive Species

A list of candidate and other sensitive species in your area is also attached. Candidate species and other sensitive species are species that have no legal protection under the ESA, although we recommend that candidate and other sensitive species be included in your surveys and considered for planning purposes. The Service monitors the status of these species. If significant declines occur, these species could potentially be listed. Therefore, actions that may contribute to their decline should be avoided.

Lists of sensitive species including State-listed endangered and threatened species are compiled by New Mexico state agencies. These lists, along with species information, can be found at the following websites:

Biota Information System of New Mexico (BISON-M): www.bison-m.org

New Mexico State Forestry. The New Mexico Endangered Plant Program: www.emnrd.state.nm.us/SFD/ForestMgt/Endangered.html

New Mexico Rare Plant Technical Council, New Mexico Rare Plants: nmrareplants.unm.edu

Natural Heritage New Mexico, online species database: nhnm.unm.edu

WETLANDS AND FLOODPLAINS

Under Executive Orders 11988 and 11990, Federal agencies are required to minimize the destruction, loss, or degradation of wetlands and floodplains, and preserve and enhance their natural and beneficial values. These habitats should be conserved through avoidance, or mitigated to ensure that there would be no net loss of wetlands function and value.

We encourage you to use the National Wetland Inventory (NWI) maps in conjunction with ground-truthing to identify wetlands occurring in your project area. The Service's NWI program website, www.fws.gov/wetlands/Data/Mapper.html integrates digital map data with other resource information. We also recommend you contact the U.S. Army Corps of Engineers for permitting requirements under section 404 of the Clean Water Act if your proposed action could impact floodplains or wetlands.

MIGRATORY BIRDS

The MBTA prohibits the taking of migratory birds, nests, and eggs, except as permitted by the Service's Migratory Bird Office. To minimize the likelihood of adverse impacts to migratory birds, we recommend construction activities occur outside the general bird nesting season from March through August, or that areas proposed for construction during the nesting season be surveyed, and when occupied, avoided until the young have fledged.

We recommend review of Birds of Conservation Concern at website www.fws.gov/migratorybirds/CurrentBirdIssues/Management/BCC.html to fully evaluate the effects to the birds at your site. This list identifies birds that are potentially threatened by disturbance and construction.

BALD AND GOLDEN EAGLES

The bald eagle (*Haliaeetus leucocephalus*) was delisted under the ESA on August 9, 2007. Both the bald eagle and golden eagle (*Aquila chrysaetos*) are still protected under the MBTA and BGEPA. The BGEPA affords both eagles protection in addition to that provided by the MBTA, in particular, by making it unlawful to "disturb" eagles. Under the BGEPA, the Service may issue limited permits to incidentally "take" eagles (e.g., injury, interfering with normal breeding, feeding, or sheltering behavior nest abandonment). For information on bald and golden eagle management guidelines, we recommend you review information provided at www.fws.gov/midwest/eagle/guidelines/bgepa.html.

On our web site www.fws.gov/southwest/es/NewMexico/SBC_intro.cfm, we have included conservation measures that can minimize impacts to federally listed and other sensitive species. These include measures for communication towers, power line safety for raptors, road and highway improvements, spring developments and livestock watering facilities, wastewater facilities, and trenching operations.

We also suggest you contact the New Mexico Department of Game and Fish, and the New Mexico Energy, Minerals, and Natural Resources Department, Forestry Division for information regarding State fish, wildlife, and plants.

Thank you for your concern for endangered and threatened species and New Mexico's wildlife habitats. We appreciate your efforts to identify and avoid impacts to listed and sensitive species in your project area. For further consultation on your proposed activity, please call 505-346-2525 or email nmesfo@fws.gov and reference your Service Consultation Tracking Number.

Attachment(s):

- Official Species List
- Migratory Birds

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New Mexico Ecological Services Field Office
2105 Osuna Road Ne
Albuquerque, NM 87113-1001
(505) 346-2525

Project Summary

Consultation Code: 02ENNM00-2019-SLI-0217

Event Code: 02ENNM00-2019-E-00452

Project Name: Orion Renewable Energy Wind Farm Project

Project Type: SPECIAL USE PERMIT

Project Description: Phase I, 480 Megawatt wind farm on private property in Torrance and Guadalupe counties. Transmission Line across Sandoval, Santa Fe, San Miguel, Torrance and Guadalupe counties.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/34.74042159088049N105.27955123873465W

Counties: Guadalupe, NM | Torrance, NM

Endangered Species Act Species

There is a total of 6 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Note that 1 of these species should be considered only under certain conditions.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
New Mexico Meadow Jumping Mouse *Zapus hudsonius luteus* There is **final** critical habitat for this species. Your location is outside the critical habitat. This species only needs to be considered under the following conditions: ▪ If project affects dense herbaceous riparian vegetation along waterways (stream, seep, canal/ditch). Species profile: https://ecos.fws.gov/ecp/species/7965	Endangered

Birds

NAME	STATUS
Mexican Spotted Owl *Strix occidentalis lucida* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8196	Threatened
Piping Plover *Charadrius melodus* Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered. There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6039	Threatened
Southwestern Willow Flycatcher *Empidonax traillii extimus* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6749	Endangered

Flowering Plants

NAME	STATUS
Pecos (=puzzle, =paradox) Sunflower *Helianthus paradoxus* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7211	Threatened
Wright's Marsh Thistle *Cirsium wrightii* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8963	Candidate

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

---

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

THERE ARE NO FWS MIGRATORY BIRDS OF CONCERN WITHIN THE VICINITY OF YOUR PROJECT AREA.

Migratory Birds FAQ

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.
Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?
The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the E-bird Explore Data Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?
The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?
To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?
Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?
If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report
The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Exhibit R – Site Characterization Study

Tier 2 Site Characterization Study

Clines Corners Wind Resource Area

Guadalupe, San Miguel, and Torrance Counties, New Mexico

Draft Report

Prepared for:

Orion Renewable Energy Group LLC
155 Grand Avenue, Suite 706
Oakland, California 94612

Prepared by:

Brian Moser and Joel Thompson

Western EcoSystems Technology, Inc.
2725 Northwest Walnut Boulevard
Corvallis, Oregon 97330

March 20, 2018

EXECUTIVE SUMMARY

Orion Renewable Energy Group, LLC (Orion) is considering the development of a wind energy facility in the Clines Corners area of central New Mexico. Orion contracted Western EcoSystems Technology, Inc. to complete a Tier 2 Site Characterization Study (SCS) for the Clines Corners Wind Resource Area (CCWRA) as recommended by the US Fish and Wildlife Service (USFWS) Land-based Wind Energy Guidelines.

This Tier 2 SCS is based on a desktop review of publicly available information gathered from a variety of data sources, including USFWS websites, New Mexico Department of Game and Fish websites, US Geological Survey Gap Analysis datasets, and various field guides, maps, aerial imagery, and non-governmental organization websites (e.g., The Nature Conservancy, Audubon Society). No field visit was made to the CCWRA specific to this Tier 2 evaluation, although the authors are familiar with the general area from other field studies conducted in the region, including portions of the CCWRA.

The 158,694 acre CCWRA is located in the Southwestern Tablelands Ecoregion of central New Mexico. Elevations within the CCWRA vary from approximately 1,640 to 2,075 feet (500 to 632 meters) above sea level. Topography within the CCWRA is generally slightly rolling and is broken by seasonal/intermittent drainages, which generally drain the CCWRA to the east. Landcover/vegetation types within the CCWRA are primarily a mix of herbaceous/grasslands and shrub/scrub.

There are approximately 1,354.8 acres of wetlands and surface waters within the CCWRA that comprise 0.85% of the CCWRA. With the exception of the seasonal riverine systems, most of the wetlands are small man-made stock ponds and/or natural seeps/springs, all of which are likely to be non-connected systems and not considered waters of the US.

Two special-status plant species have the potential to occur in the CCWRA. These plants grow near wetlands, which should be provided adequate protection through best management practices relative to avoidance and protection of wetland habitats.

No protected wildlife refuges, wildlife areas, or other conservation areas were found within, adjacent to, or within 10 miles of the CCWRA. Aside from potential water sources (e.g., ponds), no other obvious areas of potential wildlife congregation occur (e.g., caves, extensive cliff systems). The pinyon-juniper woodland habitats in and around the CCWRA have some potential to harbor some species of tree-roosting bats, relative to non-forested areas, and can attract large wintering flocks of migratory birds (e.g., pinyon jays).

Five wildlife species listed as threatened, endangered, or candidates under the federal Endangered Species Act have the potential to, or are known to occur in Guadalupe, San Miguel, and/or Torrance counties. None of these species are likely to occur in the CCWRA. Ten additional terrestrial wildlife species listed by the state of New Mexico as threatened or

endangered potentially occur in Guadalupe, San Miguel, and/or Torrance counties, including two mammal and eight bird species. Among the 10 additional state-listed species, three birds have geographic ranges and suitable habitat in the CCWRA. These species include the Baird's sparrow, gray vireo, and peregrine falcon.

Thirteen diurnal raptors, seven owl, and one vulture species potentially occur in the CCWRA. In addition, 14 bat species have the potential to occur in the CCWRA, and fatalities have been reported for six of these species at wind projects in North America. The bald eagle may occur and the golden eagle is known to occur in the CCWRA; however, neither is known to nest in the CCWRA.

An additional 22 USFWS migratory Birds of Conservation Concern have the potential to occur in the CCWRA. Furthermore, 35 species of birds have been documented during the most recent Breeding Bird Survey on the Pastura Route nine miles from the CCWRA. No special-status species were identified from the list.

Fourteen species of bat potentially occur in the CCWRA. None of these are special-status species. The bat species most at risk include the big brown bat, hoary bat, silver-haired bat, Mexican free-tailed bat, big free-tailed bat, and canyon bat. Bats may use ponds while foraging, but roosting habitat in the CCWRA is limited primarily to pinyon-juniper woodlands and man-made structures. Migratory species such as the hoary bat, silver-haired bat, and Mexican free-tailed bat are likely to pass through the area.

Based on this Tier 2 SCS, no significant impacts to wildlife or habitats were identified that would preclude the construction of a wind energy facility in this location. We recommend pre-construction Tier 3 studies be conducted to identify wildlife species actually using the CCWRA (Table E-1).

Table E-1. Site characterization summary.

Resource	CCWRA Considerations	Potential Future Studies	Timing of Potential Studies
Vegetation			
Wetlands and Waters of the US	Wetlands and waters of the US occupy less than 1% of the CCWRA. Site away from higher wetland concentration areas to minimize wildlife and plant impacts.	Additional desktop review of wetlands and potential waters of the US may help inform future permitting requirements.	Flexible pending project schedule
Federal and State Plant Species of Concern	Potential habitat for federal and state species of concern.	Possible, pending final layout; however, readily avoidable due to habitat associations.	Spring/summer
Plant Communities of Concern	Not plant communities of concern identified in the CCWRA. Native plant communities are present and may support special-status wildlife species.	Use of currently available information likely sufficient. Presence of special status wildlife species to be determined from other Tier 3 studies recommended below.	
Wildlife			
Threatened and Endangered Species/Species of Interest	Both federal- and state-listed species may occur in the CCWRA.	Survey for eagle use as part of fixed-point bird use surveys noted below.	Species dependent
Nesting Raptors	Power poles, trees, and grasslands provide nesting habitat for raptors.	Survey suitable habitats for nests.	Early spring
Migratory Birds	Migrating birds likely pass over the CCWRA and could stop and/or overwinter in the area.	Two years of large-bird fixed-point bird use surveys and one year of fixed-point small bird use surveys.	All seasons

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APPENDICES

1 INTRODUCTION

Orion Renewable Energy Group, LLC (Orion) is considering the development of a wind energy facility in the Clines Corners area of central New Mexico. The Clines Corners Wind Resource Area (CCWRA) lies within the boundaries of Guadalupe, San Miguel, and Torrance, counties, (Figure 1.1). Orion contracted Western EcoSystems Technology, Inc. (WEST) to complete a Tier 2 Site Characterization Study (SCS) for the CCWRA as recommended by the US Fish and Wildlife Service (USFWS) Land-based Wind Energy Guidelines (WEG; USFWS 2012c).

2 STUDY AREA

The 158,694 acre CCWRA is located east of Clines Corners and north of the towns of Encino and Vaughn, New Mexico, in the Southwestern Tablelands Ecoregion of central New Mexico (US Environmental Protection Agency 2012; Figure 1.1). Elevations within the CCWRA vary from approximately 1,640 to 2,075 feet (ft; 500 to 632 meters [m]) above sea level (Figure 2.1). Topography within the CCWRA is generally slightly rolling and is broken by seasonal/intermittent drainages, which generally drain the CCWRA to the east (Figure 2.1). The CCWRA contains a mix of private and state owned lands (Figure 2.2) and is primarily used for grazing and dispersed recreation.

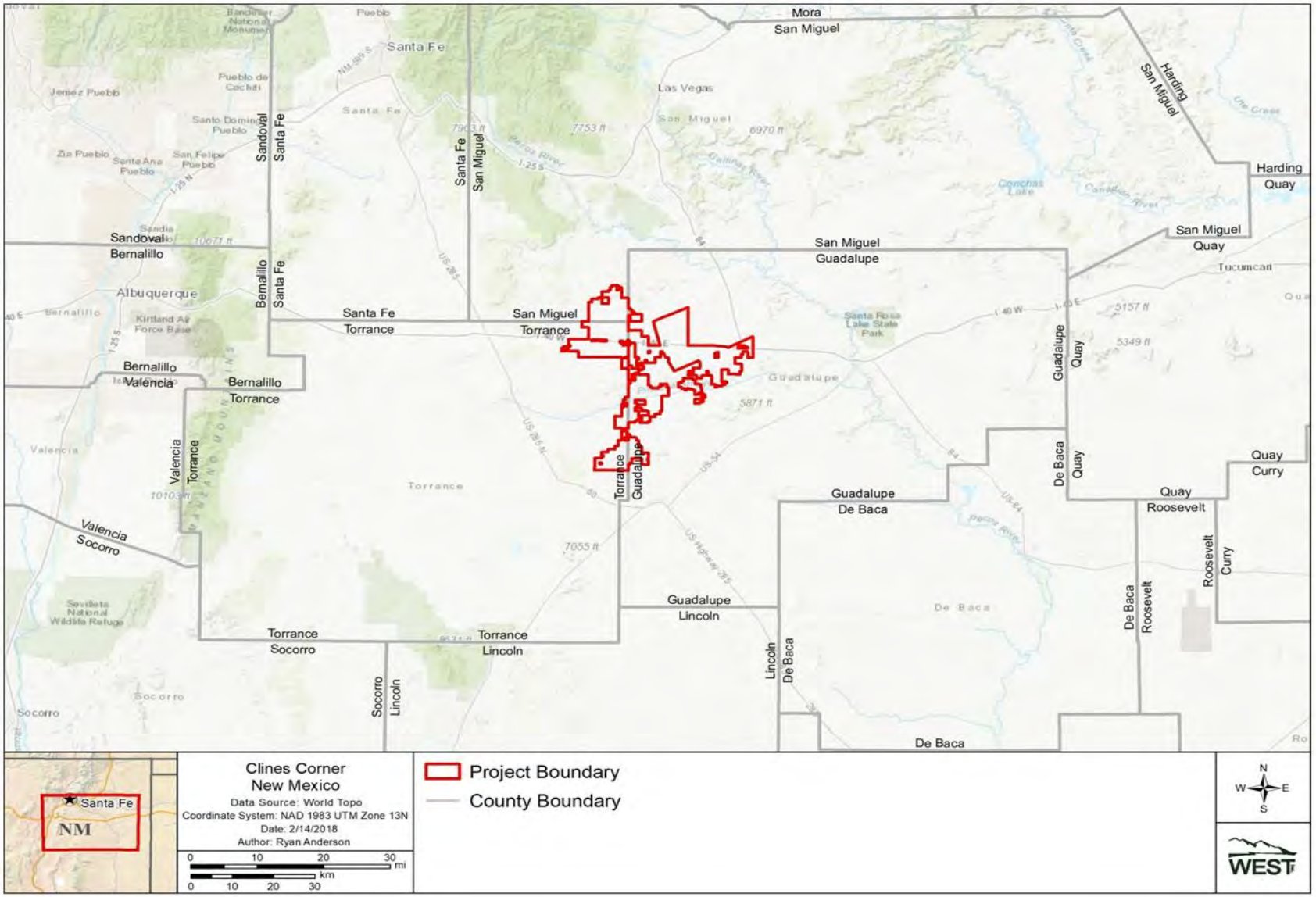

Figure 1.1. Location of the Clines Corners Wind Resource Area in Guadalupe, San Miguel, and Torrance counties, New Mexico.

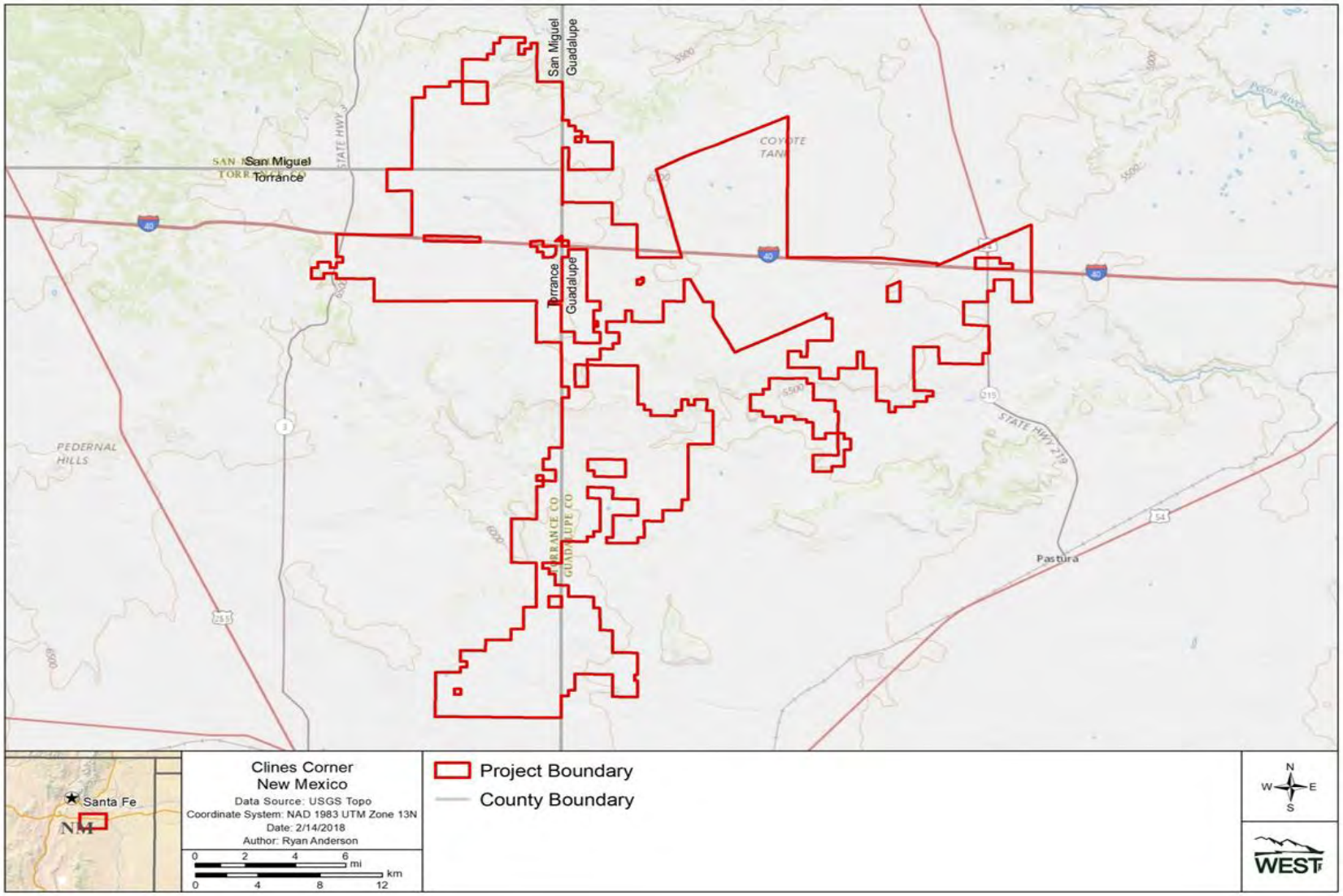

Figure 2.1. Topography within and around the Clines Corners Wind Resource Area in Guadalupe, San Miguel, and Torrance counties, New Mexico.

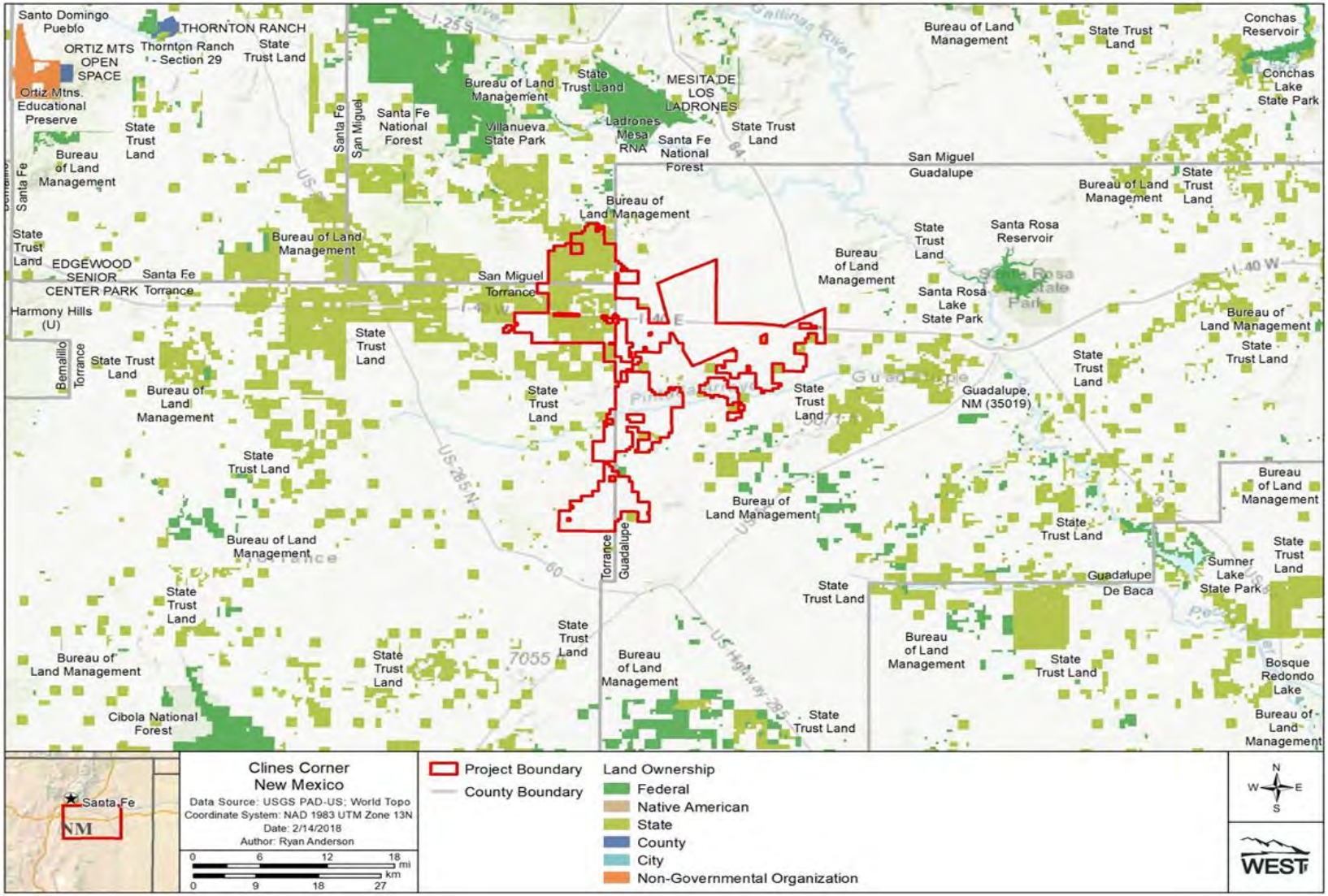

Figure 2.2. Land ownership within and around Clines Corners Wind Resource area in Guadalupe, San Miguel, and Torrance counties, New Mexico.

3 METHODS

The following report includes information gathered in response to the seven key questions posed for a Tier 2 SCS in the USFWS WEG. This report is based on a desktop review of publicly available information gathered from a variety of data sources, including USFWS websites, New Mexico Department of Game and Fish (NMDGF) websites, US Geological Survey (USGS) Gap Analysis datasets, and various field guides, maps, aerial imagery, and non-governmental organization websites (e.g., The Nature Conservancy, Audubon Society). No site visits were made to the CCWRA as a part of this evaluation, although the authors are familiar with the general area from other field studies conducted in the region, and have included relevant data from preliminary field studies conducted within portions of the CCWRA.

Data was obtained from the EPA (2013) and the USGS National Land Cover Database (NLCD; USGS NLCD 2011; Homer et al. 2015) in order to describe the ownership, physiography, land use, and vegetation cover types in the CCWRA. Data was obtained from the USFWS National Wetland Inventory (NWI; USFWS NWI 2016) to characterize the wetlands and surface waters within the CCWRA. The federal and state agency websites and literature were reviewed to identify protected areas in and near the CCWRA.

The USFWS Environmental Conservation Online System (ECOS; 2018) and Biota Information System of New Mexico (BISON-M; 2018) were used to populate lists of endangered, threatened, candidate species, and/or critical habitats for the three counties surrounding the CCWRA and that may occur within the CCWRA. Data regarding species with potential to occur due to overlapping geographic ranges or because suitable habitat was present within the CCWRA area or surrounding counties is provided in this report. The USFWS ECOS system also was used to generate a list of migratory birds, which fall under USFWS Birds of Conservation Concern (BCC), and BISON-M was used to compile a list of at risk raptors and bats likely to use the CCWRA.

WEST determined the likelihood a special-status animal or plant species may occur within the CCWRA by considering the species' range, habitat suitability within the CCWRA, species' mobility, population size, and records of occurrence within or adjacent to the CCWRA. Based on these factors, the likelihood of occurrence was defined for each special-status species using the following categories:

1. None – CCWRA outside the species known range, no suitable habitat within the CCWRA, restricted mobility and small population size;
2. Unlikely – CCWRA outside the species known range and suitable habitat appears absent within the CCWRA; however, due to the species mobility and population size, species may occur within the CCWRA during migration or other times of the year;
3. Possible – CCWRA is located within the range of the species but contains marginal suitable habitat; species highly mobile and may occur year-round;

4. Likely – CCWRA is located within the range of the species and contains suitable habitat; records of species occurrence in the surrounding area but no records from the CCWRA; and
5. Occurs – Records of species occurrence within the CCWRA based on USFWS/WDFW data or other survey data.

Brief species accounts were written for special-status and other protected species whose likelihood of occurrence was either possible, likely, or occurs.

4 LANDCOVER

Ownership within the CCWRA is a mix of private and state lands (Figure 2.2). According to the USGS NLCD, the CCWRA is primarily herbaceous (i.e., steppe) and shrub/scrub (i.e., shrub-steppe) cover. The CCWRA consists of approximately 81.5% herbaceous cover, 16.7% shrub/scrub, and less than 1% of all other categories (Table 4.1; Figure 4.1). Nearby lands outside of the CCWRA appear to be similar in composition based on aerial imagery (Figure 4.2).

Table 4.1. Land use/cover types present within Clines Corners Wind Resource Area in Guadalupe, San Miguel, and Torrance counties, New Mexico.

Land Use/Cover	Project Acres	% Total
Herbaceous	129,341.8	81.50
Shrub/Scrub	26,518.1	16.71
Evergreen Forest	1,409.1	0.89
Developed, Open Space	997.7	0.63
Developed, Low Intensity	172.4	0.11
Barren Land	159.9	0.10
Deciduous Forest	34.0	0.02
Open Water	24.2	0.02
Cultivated Crops	22.9	0.01
Developed, Medium Intensity	9.3	0.01
Emergent Herbaceous Wetlands	3.8	< 0.01
Developed, High Intensity	0.4	< 0.01
Total	**158,693.6**	**100**

Source: US Geological Survey National Land Cover Database 2011, Homer et al. 2015

4.1 Special-Status Plant Species

Three federal special-status plant species are known to occur in Guadalupe, San Miguel, and/or Torrance counties. Two of these species have the potential to occur within the CCWRA. Pecos sunflower (*Helianthus paradoxus*) is federally threatened and Wright's marsh thistle (*Cirsium wrightii*) is a federal candidate species. Potential habitat for both the Pecos sunflower and Wright's marsh thistle is generally restricted to wet, alkaline soils in spring seeps and marshy edges of streams and ponds at elevations of 1,130-2,600 m (3,450-8,500 ft). No critical habitat has been designated in the CCWRA. However, critical habitat for the pecos sunflower is located near the eastern edge of the CCWRA in Guadalupe County.

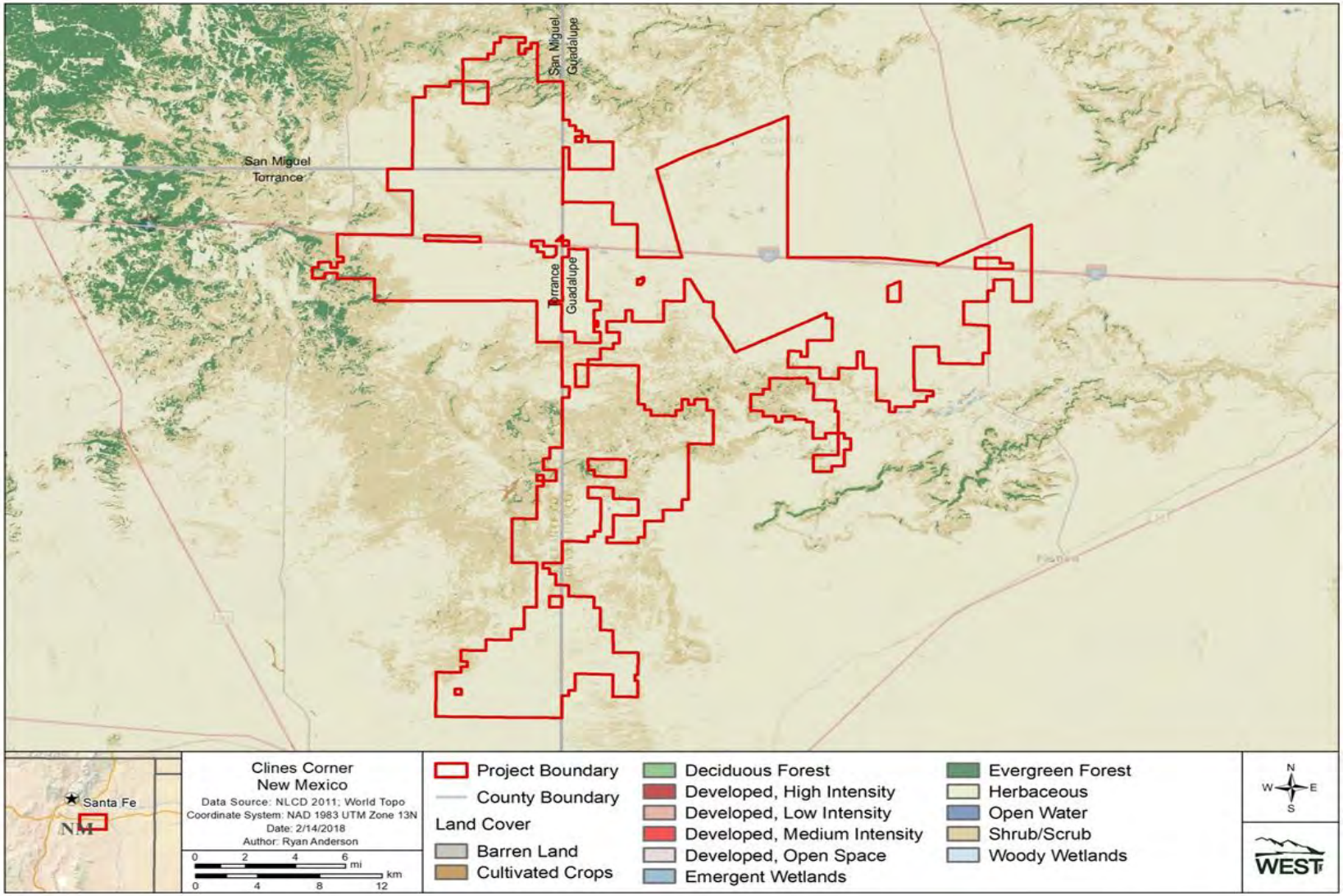

Figure 4.1. Land use/cover types within and around Clines Corner Wind Resource Area in Guadalupe, San Miguel, and Torrance counties, New Mexico.

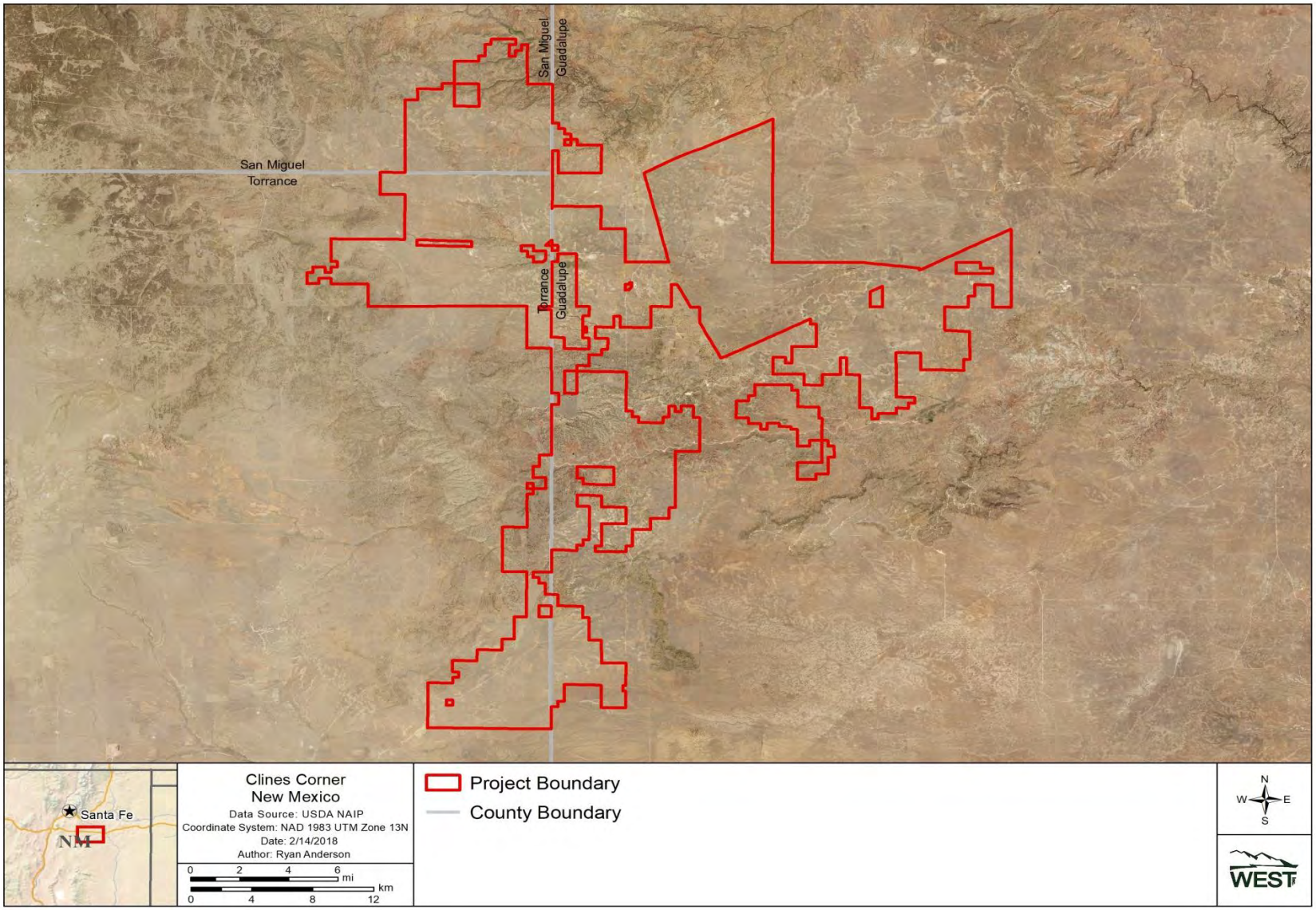

Figure 4.2. Aerial photograph of Clines Corner Wind Resource Area in Guadalupe, San Miguel, and Torrance counties, New Mexico.

4.2 Sensitive Habitats

The presence of wind turbines may alter the landscape so that wildlife habitat use patterns are altered, possibly displacing some wildlife from portions of the CCWRA. The greatest concern with displacement impacts are for wind energy facilities placed in native grasslands. Nearly 82% of the CCWRA is categorized as grassland/herbaceous (Table 4.1). However, the "grassland/herbaceous" category does not differentiate between planted and native grass. Based on knowledge of the CCRWA and surrounding areas, it is assumed that grasslands within the CCWRA are native and not planted. Therefore, it is possible that some grassland dependent bird species could be displaced (see the Breeding Bird section for more discussion on displacement).

4.3 Wetlands and Riparian Areas

Based on the USFWS NWI (USFWS 2016), there are approximately 1,354.8 acres of wetlands and surface waters within the CCWRA that comprise 0.85% of the CCWRA (Table 4.2). The majority of NWI wetlands within the CCWRA are of the riverine type (Figure 4.3), none of which provide permanent surface water, but are rather seasonal in nature or flow only following heavy rain events. Named streams in the CCWRA include Potrillo Creek and Pintada Arroyo. There are 18 named ponds in the CCWRA. Most of these ponds are man-made stock ponds and/or natural seeps/springs, all of which are likely to be non-connected systems and not considered waters of the US. However, many of these stock ponds provide the primary perennial water source for wildlife.

Table 4.2. Wetlands and surface waters present within the Clines Corners Wind Resource Area in Guadalupe, San Miguel, and Torrance counties, New Mexico.

Wetland Type	Acres	% of CCWRA
Riverine	903.9	0.57
Freshwater Pond	298.4	0.19
Freshwater Emergent Wetland	98.1	0.06
Lake	54.4	0.03
Total	**1354.8**	**0.85**

Data: US Fish and Wildlife Service National Wetland Inventory (2016)

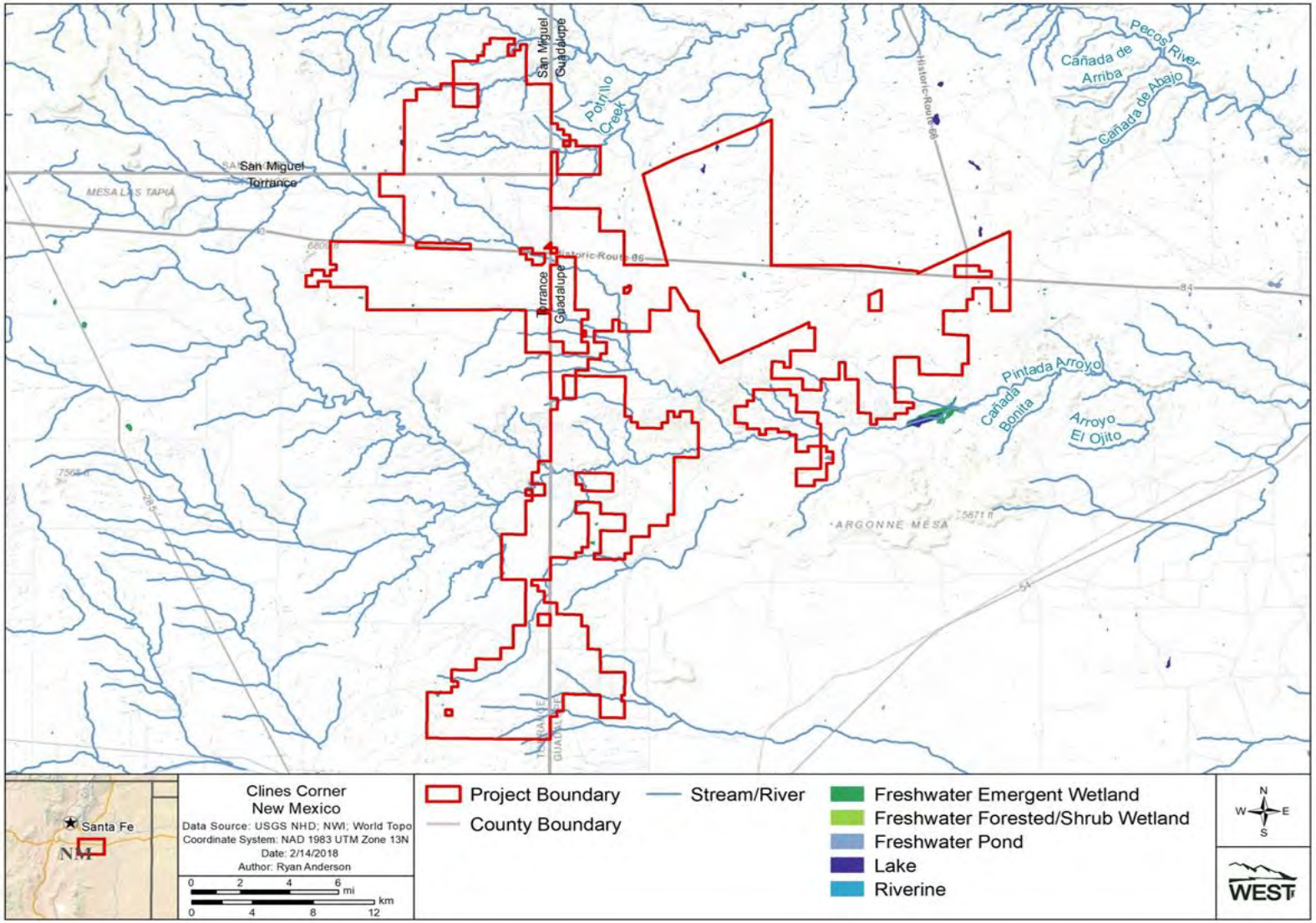

Figure 4.3. Wetlands within and around Clines Corners Wind Resource Area in Guadalupe, San Miguel, and Torrance counties, New Mexico.

4.4 Protected Areas and Areas of Critical Wildlife Congregation

No protected wildlife refuges, wildlife areas, or other conservation areas were found within, adjacent to, or within 10 miles of the CCWRA. The CCWRA lies between two large Audubon Important Bird Areas (IBA; Audubon 2018). The 335,269 acre Estancia Valley IBA lies approximately 30 miles to the west of the CCWRA, and the 955,224 acre Clovis Playas IBA lies approximately 45 miles to the east of the CCWRA (Figure 4.4). Santa Rosa Lake State Park is approximately 15 miles east of the CCWRA, and the Las Vegas National Wildlife Refuge lies approximately 30 miles north of the CCWRA (Figure 4.4). Aside from potential water sources (e.g., ponds), no other obvious areas of potential wildlife congregation occur in the CCWRA (e.g., caves, extensive cliff systems). The pinyon-juniper woodlands in and around the CCWRA have some potential to harbor some species of tree-roosting bats, relative to non-forested areas. Additionally, pinyon-juniper woodlands can attract large wintering flocks of migratory birds, such as pinyon jays (*Gymnorhinus cyanocephalus*).

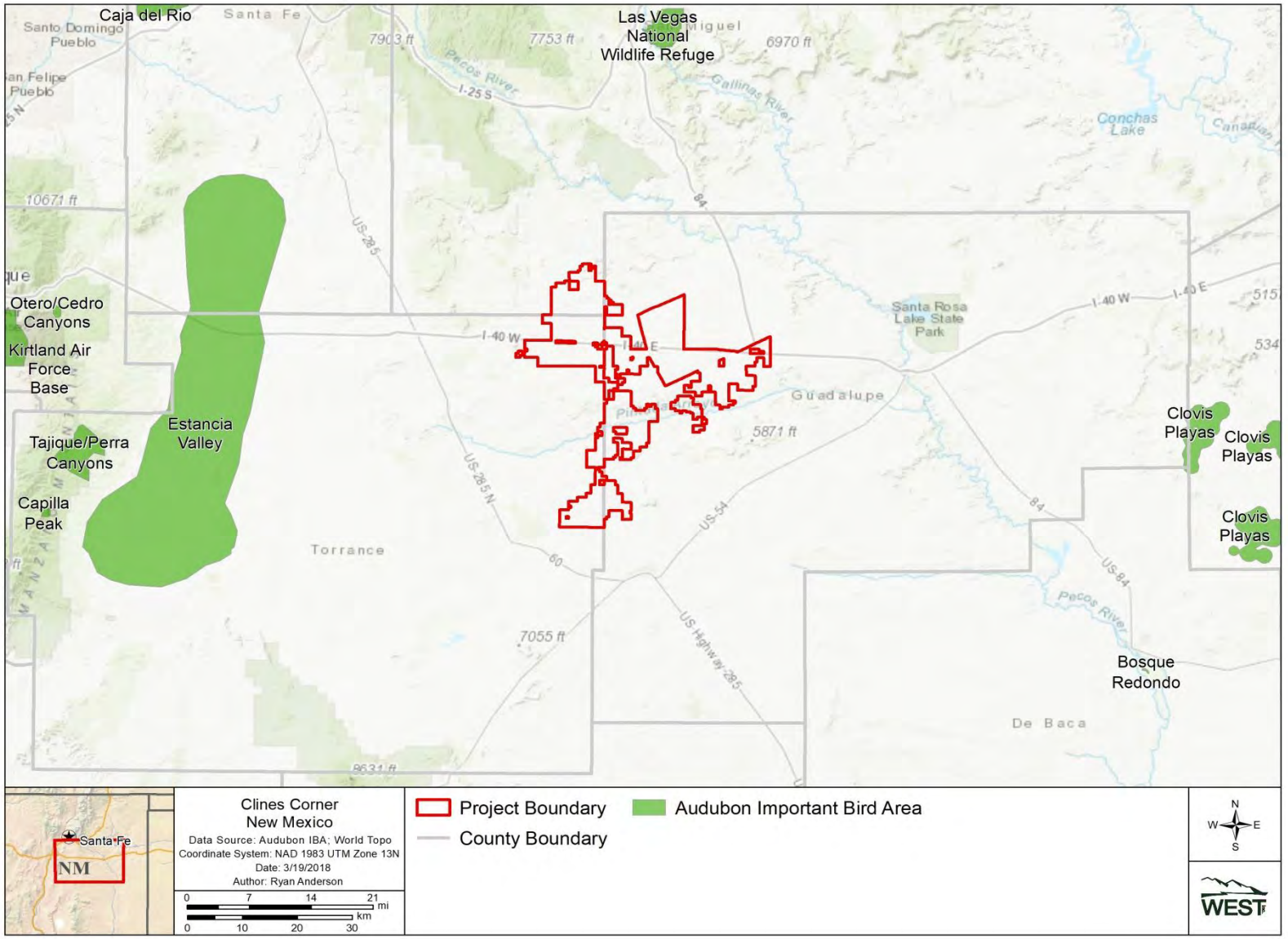

Figure 4.4. Audubon Important Bird Areas located outside Clines Corners Wind Resource Area in Guadalupe, San Miguel, and Torrance counties, New Mexico.

5 WILDLIFE

5.1 Federally-Listed Species

Five wildlife species listed as threatened, endangered, or candidate under the federal Endangered Species Act (USFWS ESA 1973) have the potential to, or are known to occur in Guadalupe, San Miguel, and/or Torrance counties based on USFWS ECOS data (USFWS 2018). This includes four species of birds and one mammal species (Table 5.1). Of these, none are predicted to occur in the CCWRA based on known geographic range and predicted habitat.

Table 5.1. Federal special-status species with potential to occur in Guadalupe, San Miguel, and Torrance Counties, New Mexico.

Common Name	Scientific Name	Category	Federal Status*	Likelihood of Occurrence
Least tern	*Sternula antillarum*	Bird	E	Unlikely
Mexican spotted owl	*Strix occidentalis lucida*	Bird	T	None
Piping plover	*Charadrius melodus*	Bird	T	Unlikely
Southwestern willow flycatcher	*Empidonax traillii extimus*	Bird	E	Unlikely
New Mexico jumping mouse	*Zapus hudsonius luteus*	Mammal	E	None

Source: US Fish and Wildlife Service Environmental Conservation Online System (2018);

*E=federal endangered, T=federal threatened

5.2 State-listed Species

Thirteen additional terrestrial wildlife species listed by the state of New Mexico as threatened or endangered occur in Guadalupe, San Miguel, and/or Torrance counties, including 12 bird species and one mammal species (NMDGF 2013). Among the 13 additional state-listed species, four birds have geographic ranges and suitable habitat that overlap the CCWRA (USGS 2013; Table 5.2).

Table 5.2. State special-status species with potential to occur in Guadalupe, San Miguel, and Torrance Counties, New Mexico.

Common Name	Scientific Name	Category	State Status*	Likelihood of Occurrence
Baird's sparrow	*Ammodramus bairdii*	Bird	T	Likely
Bald eagle	*Haliaeetus leucocephalus*	Bird	T	Possible
Boreal Owl	*Aegolius funereus*	Bird	T	None
Broad-billed hummingbird	*Cynanthus latirostris*	Bird	T	Unlikely
Brown pelican	*Pelecanus occidentalis*	Bird	E	Unlikely
Common black hawk	*Buteogallus anthracinus*	Bird	T	None
Gray vireo	*Vireo vicinior*	Bird	T	Possible
Least tern	*Sternula antillarum*	Bird	E	Unlikely
Neotropic Cormorant	*Cphalacrocorax brasilianus*	Bird	T	Unlikely
Peregrine falcon	*Falco peregrinus anatum*	Bird	T	Likely
Southwestern willow flycatcher	*Empidonax traillii extimus*	Bird	E	Unlikely
White-eared hummingbird	*Hylocharis leucotis*	Bird	T	Unlikely
Marten	*Martes americana*	Mammal	T	None

Source: Biological Information System of New Mexico (2018)

*E=state endangered, T=state threatened

5.2.1 Baird's Sparrow

The Baird's sparrow (*Ammodramus bairdii*) is a state-threatened grassland bird species that breeds in the tall grasses of the northern Great Plains and winters in northern Mexico and the southern-most areas of Arizona and New Mexico. While the CCWRA is outside of the breeding range of the species, it does fall within the migratory pathway of Baird's sparrow and there is at least some potential for the species to occur within the CCWRA area during migration.

5.2.2 Bald Eagle

The bald eagle (*Haliaeetus leucocephalus*) is a state-threatened species in New Mexico. Bald eagles typically nest in forested areas or mature trees adjacent (usually within 1.2 mi [1.9 km]) to waterbodies large enough to provide foraging opportunities (Buehler 2000). There is no suitable nesting or key foraging habitat for bald eagles within the CCWRA. Bald eagle movements through the CCWRA are possible during migration and during winter but not likely during the breeding season.

5.2.3 Gray Vireo

The gray vireo (*Vireo vicinior*) is a state-threatened species in New Mexico, and is known to nest in the western and central portion of the state. In New Mexico, gray vireos occupy desert scrub, mixed juniper or pinyon pine and oak scrub associations, and chaparral, in hot, arid mountains and high plains scrubland (NMDGF 2007). They winter on the southern half of the Baja Peninsula as well as the northwestern edge of Mexico. Gray Vireos are short-distance migrants, withdrawing completely from most of their breeding range by early autumn and returning in early spring (NMDGF 2007). Suitable habitat is present, occurring primarily within the central and northern portions of the CCWRA; therefore there is potential for this species to be present during the nesting season.

5.2.4 Peregrine Falcon

The peregrine falcon (*Falco peregrinus*), a state-threatened species, is one of the largest falcons in North America. Peregrine falcons are associated with habitats from sea level to 13,000 ft (4,000 m), including plains, grasslands, shrublands, forests, and deserts (Cade 1982). Peregrine falcons show little preference for specific ecological communities, but their hunting behavior makes them most adapted to open or partially wooded habitats (Ratcliffe 1988). In New Mexico, the species may nest in cliffs and hunt in a variety of woodland, grassland, and shrub/scrub habitats. The CCWRA appears to contain suitable foraging habitat and cliffs within the surrounding area provide potential nesting habitat. There is potential for peregrine falcons to occur within the CCWRA any time of year.

6 RAPTORS

6.1 Eagles

Potential impacts to bald and golden eagles are a primary concern for most land-based wind projects in the US, as both species may spend significant amounts of time flying at the rotor swept heights of commercial wind turbine rotors, where they may be exposed to collision risk

(Strickland et al. 2011). Both species are protected by the Bald and Golden Eagle Protection Act (BGEPA 1940) and the Migratory Bird Treaty Act (MBTA 1918). Bald eagles' susceptibility to wind turbine collision appears to be much lower than that of golden eagle, and conservation concerns are generally lower due to the size and health of the bald eagle population. In this section, we review publicly available distributional and ecological information for each species of eagle in order to provide an assessment of the likelihood and seasonality of potential eagle use in the CCWRA.

6.1.1 Bald Eagle

Bald eagle collisions with wind turbines are relatively rare, with fewer than 10 known incidents (Allison 2012, Pagel et al. 2013) of bald eagles colliding with wind turbines reported over the species' range as of 2010, despite a large and increasing population, and widespread distribution across North America (Buehler 2000, Allison 2012). Although reasons for this low incidence of collision are poorly understood, this pattern provides a strong indication that the susceptibility of bald eagles to collisions with wind turbines is low in general.

Bald eagle use of the CCWRA is expected to be low with any use primarily occurring during the winter or spring/fall migration. The potential for bald eagles to nest within the CCWRA is very low, as the area does not contain, nor is it located in close proximity to, any major bodies of open water, the primary habitat for this species in all seasons (Buehler 2000). While bald eagles are most commonly known to forage near large, open lakes, reservoirs, and rivers, the species may also forage over the woodlands, open grasslands, and livestock ponds in the CCWRA where it may take advantage of secondary food sources, such as carrion, waterfowl, or other small to medium-sized animals (Buehler 2000).

6.1.2 Golden Eagle

For reasons not well-understood, golden eagles are known to have a higher susceptibility to collisions with wind turbine rotors than are bald eagles (Allison 2012). While some wind projects located in high quality golden eagle habitats have resulted in high eagle fatality rates, most wind energy facilities that have been constructed within the golden eagle's geographic range have resulted in very small numbers of total recorded fatalities (zero to three total per project; Allison 2012).

Use of the CCWRA by golden eagles is expected to be relatively low, with use primarily occurring in fall and winter, with lower potential for use at other times of the year. While no golden eagle nests are known in the CCWRA, golden eagles may breed within the region as territories have been historically documented in every county in New Mexico except Lea County in the southeast (Stahlecker et al. 2010). Aerial nest surveys in 2015, 2016, and 2018 have documented a number of nests considered suitable for supporting golden eagles within 10 miles of the CCWRA. However, none of the nests have been in use by eagles (WEST 2015, 2016, WEST unpublished data). Golden eagles are also known to winter and migrate through New Mexico (Stahlecker et al. 2010) and have been documented by WEST during preliminary field surveys conducted in portions of the CCRWA.

6.1.3 Other Raptors and Vultures

Based on a search of BISON-M, as well as published range maps, 13 diurnal raptor species may occur in the CCWRA and eight of these may breed in the area, using trees, cliffs, rock outcrops, and human-made structures (e.g., power poles) as nesting sites (Table 6.1; Sibley 2014, BISON-M 2017a). Additionally, seven species of owls have the potential to occur within the CCWRA area during all or part of the year (Table 6.1) and turkey vultures (*Cathartes aura*) are likely to occur within the CCWRA during summer and migration periods.

Table 6.1 Diurnal raptor, vulture, and owl species with the potential to occur in the Clines Corners Wind Resource Area.

Common Name	Scientific Name	Likelihood of Occurrence
Diurnal Raptors		
Bald eagle	*Haliaeetus leucocephalus*	Possible
Golden eagle[1]	*Aquila chrysaetos*	Occurs
Northern harrier	*Circus cyaneus*	Likely
Cooper's hawk[1]	*Accipiter cooperii*	Possible
Ferruginous hawk[1]	*Buteo regalis*	Likely
Red-tailed hawk[1]	*Buteo jamaicensis*	Likely
Rough-legged hawk	*Buteo lagopus*	Possible
Sharp-shinned hawk[1]	*Accipiter striatus*	Possible
Swainson's hawk[1]	*Buteo swainsoni*	Likely
Peregrine falcon[1]	*Falco peregrinus*	Likely
Prairie falcon[1]	*Falco mexicanus*	Likely
American kestrel[1]	*Falco sparverius*	Likely
Merlin[1]	*Falco columbarius*	Likely
Vultures		
Turkey vulture[1]	*Cathartes aura*	Likely
Owls		
Barn owl[1]	*Tyto alba*	Possible
Burrowing owl[1]	*Athene cunicularia*	Likely
Great-horned owl[1]	*Bubo virginianus*	Likely
Long-eared owl[1]	*Asio otus*	Possible
Northern pygmy owl	*Glaucidium gnoma*	Unlikely
Northern saw-whet owl[1]	*Aegolius acadicus*	Possible
Short-eared owl[1]	*Asio flammeus*	Possible

[1]Species with potential to breed within the CCWRA or surrounding area

Diurnal raptors occur in most areas with the potential for wind energy development and have shown susceptibility to the potentially adverse impacts of such development (National Research Council [NRC] 2007). Like eagles, other species of diurnal raptors spend large portions of time flying at heights where they may be exposed to risk of collision with commercial wind turbine blades (Strickland et al. 2011). Raptors are expected to be present in the CCWRA year-round, with species varying by season. The hilly topography in some portions of the CCWRA may create localized updrafts that raptors can use to soar while hunting or moving through the area. Raptors prey on small mammals, other birds, and reptiles that occur in the grassland and shrub/scrub vegetation communities in the region. The CCWRA is not expected to receive concentrated raptor migration activity because it is not located near any coastlines or mountain ridgelines, which are two land forms known to concentrate migrating raptors (Liguori 2005, Strickland et al. 2011).

7 BREEDING BIRDS

7.1 USFWS Birds of Conservation Concern

Although not listed under the ESA, many species of bird have been identified by the USFWS as Birds of Conservation Concern (BCC; USFWS 2008). These are "species, subspecies, and populations of migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act of 1973" (USFWS 2008). These species are protected under the Migratory Bird Treaty Act (MBTA 1918), but do not receive any greater protection than other migratory birds unless they are also listed by the USFWS under the ESA (1973) or BGEPA (1940). Twenty-two migratory birds not listed under the ESA, but considered BCC have the potential to occur within Guadalupe, San Miguel, and/or Torrance counties (Appendix A) and include bald and golden eagles, which are protected under the BGEPA (1940). The potential exists for some of these species to breed within native habitats in the CCWRA, including burrowing owl (USFWS 2018). None of the diurnal raptors listed as BCC are likely to nest within the CCWRA, although all three (golden eagle, bald eagle, and prairie falcon) may occasionally use the area for foraging, primarily during the winter. The remaining BCC species are a mix of shorebirds, woodpeckers, and passerines; all of which likely have lower potential for impacts from wind energy development than the raptor species previously discussed.

7.2 USGS Breeding Bird Survey

The USGS Breeding Bird Survey (BBS) route closest to the CCWRA is the Pastura Route (USGS 2014; Figure 7.1). The CCWRA lies approximately nine miles west of the Pastura Route. Data from the most recent BBS in 2014 shows 716 individuals of 35 species identified on the route. The three most common species were Cassin's sparrow (*Peucaea cassinii*), western meadowlark (*Sturnella neglecta*), and northern mockingbird (*Mimus polyglottos*). No federal or state special-status species were documented. Three raptor species were identified on the route (burrowing owl, ferruginous hawk, and Swainson's hawk).

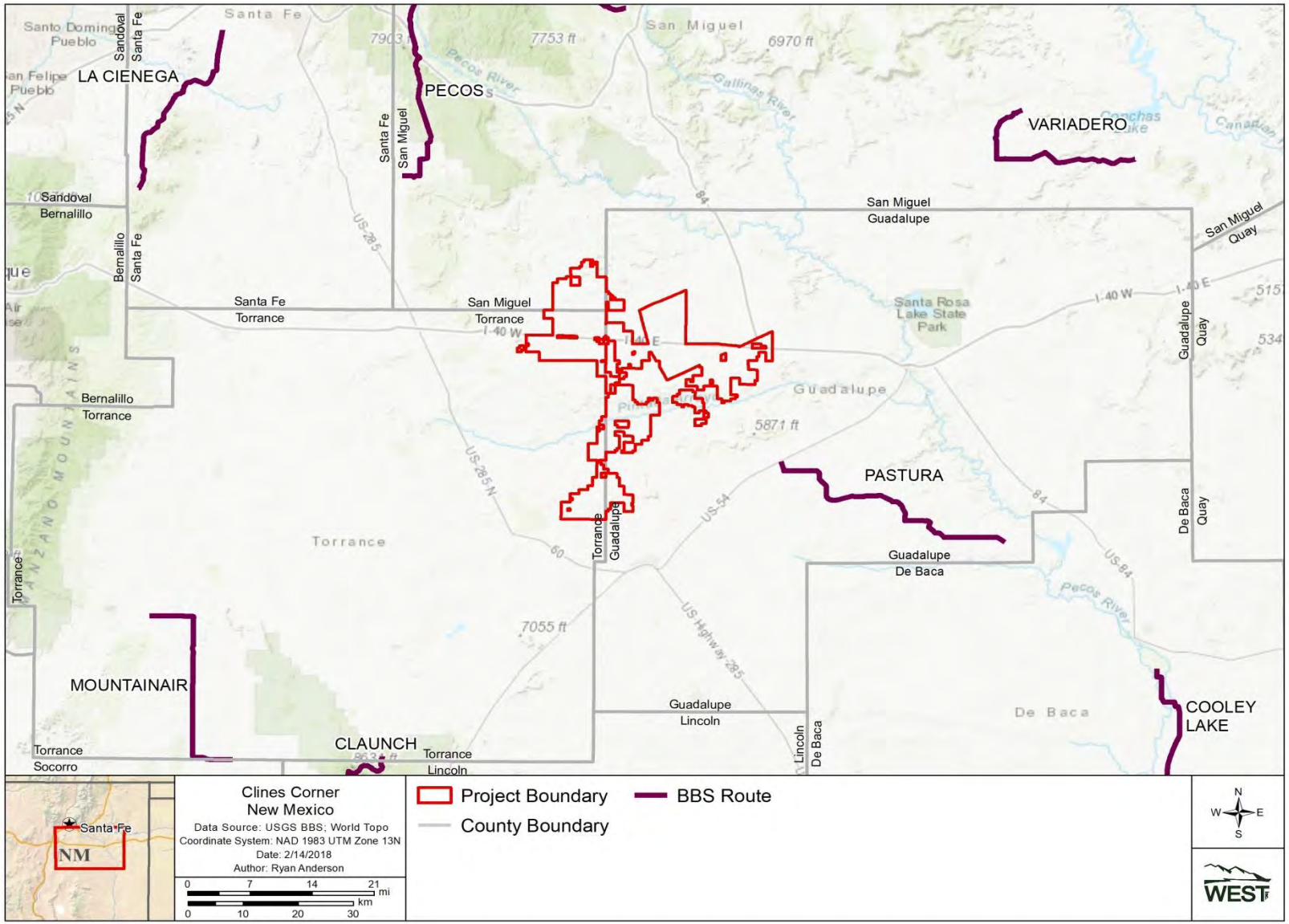

Figure 7.1. US Geological Service Breeding Bird Routes near the Clines Corners Wind Resource Area, Guadalupe, San Miguel, and Torrance counties, New Mexico.

Displacement of grassland nesting birds is often one of the primary concerns wildlife agencies raise regarding the placement of wind facilities in and near native grasslands. Research has been conducted on the potential displacement of grassland passerines at wind energy facilities, yet some uncertainty remains over the effects of wind energy facilities on the breeding success of these birds. In Minnesota, researchers found that breeding passerine density on Conservation Reserve Program (CRP) grasslands was reduced in the immediate vicinity of turbines (Leddy et al. 1999), but changes in density at broader scales was not detected (Johnson et al. 2000a). Erickson et al. (Erickson et al. 2004) documented a decrease in density of some native grassland passerines, such as grasshopper sparrow, near turbines in Washington; however, they could not determine if a decrease in post-construction density was the result of behavioral disturbance or a loss of habitat. Piorkowski (2006) conducted a displacement study at a wind energy facility in Oklahoma where, of the grassland species present in the wind resource area, only the western meadowlark showed significantly lower densities near turbines. Piorkowski (2006) suggested that habitat characteristics were more important to determining passerine breeding densities than the presence of wind turbines. Shaffer and Johnson (2007) documented some avoidance by grasshopper sparrows out to 492 ft (150 m) at a wind energy facility in northern South Dakota. The proposed CCWRA is dominated by grassland habitats and available data suggests some grassland nesting species considered potentially sensitive to displacement may be present.

7.2.1 Collision Impacts

Birds are known to experience direct impacts (mortality or injury) by colliding with wind turbines. The most recent, comprehensive, and robust studies of overall bird fatality rates at US wind facilities have produced fatality rate estimates ranging from 2.96-4.11 birds/MW/year (NAS 2007, Strickland et al. 2011, Loss et al. 2013, Erickson et al. 2014). The majority of this mortality occurs in migrating birds whose flight heights expose them to elevated risk of colliding with wind turbines, compared with non-migrating birds which tend to fly below the height of commercial wind turbine rotors much or all of the time (NAS 2007). This phenomenon is evidenced by the spring and fall peaks in bird mortality rates at most wind energy facilities in in the US (NAS 2007).

A wide variety of migrating birds likely will fly over or through the CCWRA. Most migrating birds in North America tend to migrate in a “broad front” pattern (Greenberg and Marra 2005) and specific landforms such as major rivers, mountain ridgelines, or coastlines that are known to concentrate migratory bird activity (Greenberg and Marra 2005) are not present in the CCWRA. However, while no concentrated migration routes are anticipated to be present within the CCWRA, woodlands, shrublands, grasslands, and areas with water may be used as migratory stopover sites by some species.

8 BATS

Of the 14 bat species whose ranges overlap the CCWRA, six have been found as fatalities at wind energy facilities (Bat Conservation International 2015; Tables 8.1 and 8.2). The six species are big brown bat (*Eptesicus fuscus*), hoary bat (*Lasiurus cinereus*), silver-haired bat

(*Lasionycteris noctivagans*), Mexican free-tailed bat (*Tadarida brasiliensis*), big free-tailed bat (*Nyctinomops macrotus*), and canyon bat (*Parastellus hesperus*: BCI 2015). None of these species are listed as threatened, endangered, or a candidate for listing by the USFWS or NMDGF.

Potential roosting habitat within the CCWRA is found primarily in the form of trees and man-made structures; however, these habitats are limited in the CCWRA. No known bat colonies were identified as occurring in the CCWRA.

Bats generally forage over water and other open spaces, such as agricultural fields, grasslands, streams, and wetlands/ponds. Insects often concentrate over wet areas associated with wetlands and streams, which may in turn concentrate foraging bats. Within the CCWRA, bat use is likely to be greater in areas around ponds and other water sources within the CCWRA when these areas have some available water, as bats would likely concentrate around these features to forage and drink. Although bats may also forage throughout the drier grasslands and shrublands within the CCWRA, they are likely to do so at much lower densities.

Bat casualties have been reported from most wind energy facilities where post-construction fatality data are publicly available. Reported estimates of bat mortality at wind energy facilities have ranged from 0.01 – 47.5 fatalities per turbine per year (0.9 – 43.2 bats per megawatt [MW] per year) in the US, with an average of 4.6 per MW (NWCC 2004). The majority of the bat casualties at wind energy facilities to date are migratory species which conduct long migrations between summer roosts and winter areas. The species most commonly found as fatalities at wind energy facilities include hoary bats, silver-haired bats, and eastern red bats (Johnson 2005). The highest numbers of bat fatalities found at wind energy facilities to date have occurred in eastern North America on ridge tops dominated by deciduous forest (NWCC 2004). However, Gruver et al. (2009), BHE Environmental (2010, 2011), Barclay et al. (2007), Good et al. (2011, 2012), and Jain (2005) have reported relatively high fatality rates from facilities in Wisconsin, Canada, Indiana, and Iowa. Unlike the eastern US facilities that reported higher bat fatality rates, the Wisconsin, Alberta, Indiana, and Iowa facilities are in open grasslands and crop fields. Additionally, studies from the Southern Plains and Southwest (Piorkowski and O'Connell 2010, Thompson and Bay 2012), provide some evidence for a steady rate of collision mortality of Mexican free-tailed bats at wind farms within this species' range.

Hein et al. (2013) synthesized data from pre-construction bat activity and post-construction bat mortality data to assess the potential for predicting mortality based on pre-construction acoustic surveys. Based on 12 sites with paired data, a positive but non-significant relationship was found, with only a small portion of the variation in fatalities explained by activity (adj. R^2= 21.8%; Hein et al. 2013). Based on the 95% prediction intervals for the relationship, Hein et al. (2013) indicated that, given the current available data as of their study date, acoustic data gathered prior to construction could not accurately predict bat mortality. While acoustic surveys can provide data useful for understanding the timing and conditions under which bats are more or less active at a site, their utility in predicting mortality rates at a proposed site based on pre-construction acoustic surveys remains tenuous.

Construction of a wind energy facility within the CCWRA will likely result in the mortality of some bats; however, the magnitude of these fatalities and the degree to which bat species will be affected is difficult to determine. Based on data from other wind energy facilities in the region, the most likely species to be impacted are hoary bat, silver-haired bat, and Mexican free-tailed bat, with other migratory species also having some potential for lower impacts. Given the general vegetation and landscape characteristics of the CCWRA and lack of high quality bat habitat (e.g., caves or other significant roost sites and open surface waters/wetland foraging sites), overall bat impacts are expected to be relatively low and within the average range of bat mortality found at other facilities throughout the region.

Table 8.1. Summary of bat fatalities (by species) from wind energy facilities in North America.

Common Name	Scientific Name	# Fatalities[1]	% Composition
Hoary bat[2]	*Lasiurus cinereus*	5,498	36.6
Eastern red bat	*Lasiurus borealis*	3,711	24.7
Silver-haired bat[2]	*Lasionycteris noctivagans*	2,594	17.3
Little brown bat	*Myotis lucifugus*	1,038	6.9
Tricolored bat	*Perimyotis subflavus*	644	4.3
Big brown bat[2]	*Eptesicus fuscus*	582	3.9
Mexican free-tailed bat[2]	*Tadarida brasiliensis*	517	3.4
Unidentified bat		326	2.2
Unidentified *Myotis*	*Myotis* spp.	39	0.3
Northern long-eared bat	*Myotis septentrionalis*	30	0.2
Seminole bat	*Lasiurus seminolus*	14	0.1
Western red bat[2]	*Lasiurus blossevillii*	13	0.1
Evening bat	*Nycticeius humeralis*	7	<0.1
Big free-tailed bat[2]	*Nyctinomops macrotis*	6	<0.1
Unidentified free-tailed bat		3	<0.1
Western yellow bat	*Lasiurus xanthinus*	3	<0.1
Eastern small-footed bat	*Myotis leibii*	2	<0.1
Indiana bat	*Myotis sodalis*	2	<0.1
Pocketed free-tailed bat	*Nyctinomops femorosacca*	2	<0.1
Unidentified Lasiurus bat	*Lasiurus* spp.	2	<0.1
Canyon bat[2]	*Pipistrellus hesperus*	1	<0.1
Cave bat	*Myotis velifer*	1	<0.1
Long-legged bat[2]	*Myotis volans*	1	<0.1
Total	**19 species**	**15,036**	**100**

[1] These are raw data and are not corrected for searcher efficiency or scavenging.

[2] Potential resident or migrant in the CCWRA (Harvey et al. 1999, Bat Conservation International [BCI] 2017).

Cumulative fatalities and species from data compiled by Western EcoSystems Technology, Inc. from publicly available fatality documents (see Appendix A).

Additional notes on bat species and numbers:

Indiana bat fatalities in this table are also reported by USFWS (2010, 2011a). Five additional Indiana bat fatalities have been reported (USFWS 2011b, 2012a, 2012b; Pruitt and Okajima 2014), but as little additional data is available, they are not included in this summary of bats found as fatalities.

One long-eared bat was an incidental fatality recorded at Tehachapi, California (Anderson et al. 2004), but was not part of a formal search and is not included above.

An additional 677 bat fatalities (evening bat, eastern red bat, hoary bat, tricolored bat, Mexican free-tailed bat, and unidentified bat) have been found in Texas (Hale and Karsten 2010), but the number of fatalities by species is not reported.

Canyon bat formerly known as western pipistrelle (*Pipistrellus hesperus*), and tricolored bat formerly known as eastern pipistrelle (*Pipistrellus subflavus*; BCI 2015a, 2015b).

Table 8.2. Bat species with geographic ranges overlapping the Clines Corners Wind Resource Area in Guadalupe, San Miguel, and Torrance counties, New Mexico.

Species	Scientific Name	Habitat
Pallid bat	*Antrozous pallidus*	Roosts in rock crevices and man-made structures; feeds on insects caught on the ground (e.g., beetles, crickets, grasshoppers, scorpions).
Townsend's big-eared bat	*Corynorhinus townsendii*	Occurs in arid scrub and pine forested areas; maternity colonies formed in mines, caves, or buildings; winter hibernation in caves and mines.
Big brown bat	*Eptesicus fuscus*	Common in most habitats and abundant in deciduous forests and suburban areas with agriculture; maternity colonies form beneath bark, and in tree cavities, buildings, and barns, and under bridges.
Silver-haired bat	*Lasionycteris noctivagans*	Common bat in forested areas (particularly old growth), with maternity colonies in tree cavities or hollows; hibernates in forests or cliff faces.
Hoary bat	*Lasiurus cinereus*	Usually not found in man-made structures, and typically roosts in trees; population is very wide-spread.
Southwestern bat	*Myotis auriculus*	In New Mexico, commonly found in yellow pine and variety of other vegetation communities including riparian woodlands, oak savanna, oak woodlands, piñon-juniper, chaparral, desert, and conifer forest. Roosts in manmade structures, caves and mines.
California myotis	*Myotis californicus*	One of must abundant bats of desert scrub habitats; roosts beneath loose bark and in crevices of old snags, and in tree crevices; forms small maternity colonies in cliff crevices, buildings, and bridges..
Small-footed myotis	*Myotis ciliolabrum*	Typically found in conifer forests and other habitats that receive moderate moisture; hibernate from about November until April in caves and abandoned mines.
Fringed bat	*Myotis thysanodes*	Commonly found in oak and piñon woodlands, and can also be found in desert-scrub and conifer woodlands; roosts include caves, mines and manmade structures.
Long-legged bat	*Myotis volans*	Generally found in forest areas. Roosts in trees, rock crevices, exposed fissures, and manmade structures. Forms large nursey colonies, in the hundreds of individuals, in trees.
Yuma myotis	*Myotis yumanensis*	Inhabits open forests and woodlands; foraging closely tied to water sources; roosts in caves, buildings, mines, and under bridges.
Big free-tailed bat	*Nyctinomops macrotis*	Found in rocky areas in both lowlands and highlands. Roost primarily in rock crevices, but also found in caves, manmade structures and occasionally in trees cavities.
Canyon bat	*Parastrellus hesperus*	Inhabits a range of environments from rocky canyons and cliff to creosote flats. Roosts in rock crevices, under rock ledges, mines, manmade structures, and burrows of other animals, often close to water.
Mexican free-tailed bat	*Tadarida brasiliensis*	Found in deserts, woodlands, and forests. Forms large maternity colonies in limestone caves, mines, buildings, and under bridges.

Source: Biotic Information System of New Mexico (2018), Bat Conservation International 2015

9 CONCLUSIONS

Based on the publicly-available data gathered during this Tier 2 SCS, no significant environmental issues were identified that would preclude development of a wind energy facility in the CCWRA. A summary of the potential for wildlife and habitat conflicts in the proposed CCWRA is presented in Table 9.1.

Table 9.1. A summary of the potential (VH=Very High, H=High, M=Medium, and L=Low) for wildlife and habitat conflicts at the Clines Corners Wind Resource Area.

Issue	VH	H	M	L	Notes
Potential for raptor nest sites			✓		Shrubs, trees, and power poles provide suitable nest sites.
Concentrated raptor flight potential			✓		Few structures to attract raptors. Prairie dog and ground squirrel colonies likely present.
Potential for migratory pathway				✓	No obvious migratory pathways.
Potential for raptor prey species			✓		Suitable habitat for small mammals exists, but prey concentrations (e.g., prairie dog colonies) are likely to be limited.
Potential for protected species to occur				✓	Protected species may occur in low numbers.
Potential for State issues				✓	Protection of native grasslands where they occur; potential for New Mexico special-status species, but low numbers expected.
Uniqueness of habitat at wind energy facility				✓	Habitat similar to surrounding region.
Potential for rare plants to occur				✓	Playas/ponds may have potential for presence of some rare plants, however, avoidance of such areas should result in low risk of impacts.
Potential for use by bats			✓		Limited roosting habitat available. No hibernacula or other concentration areas known to occur nearby. Playas/ponds likely to be used by foraging bats when water is present.

The USFWS WEG (USFWS 2012c) pose seven primary questions to be addressed during a Tier 2 SCS. The seven questions and brief answers, based on this study, are presented below.

1. *Are known species of concern present on the proposed site, or is habitat (including designated critical habitat) present for these species?*

   Summary of what is sufficiently addressed by existing data:

   The federal USFWS ECOS data indicate three special-status plant species and five special-status wildlife species have the potential for occurring in the CCWRA (Table 5.1). Furthermore, the state BISON-M data indicate an additional 13 special-status wildlife species have the potential for occurring in the CCWRA (Table 5.2). Habitat is present for some special-status species (e.g., Pecos sunflower, Wright's marsh thistle, Baird's sparrow, gray vireo, bald eagle, and golden eagle). Actual presence of special-status species within the CCWRA is possible based on range maps, and has been confirmed for some species (e.g., golden eagle) based on previously conducted field studies, but are unknown for others based on publicly-available data.

   Summary of what existing data did not sufficiently address:

   Although some species of concern have the potential to occur in Guadalupe, San Miguel, and Torrance counties, actual occurrence within the CCWRA cannot be determined based solely on desktop review. Potentially suitable habitats are present for some of the species listed in Tables 5.1 and 5.2, and although occurrence of most species within the CCWRA is likely rare if they do occur, the presence and/or frequency of many of these species within the CCWRA remains unknown based on the Tier 2 investigation. Site-specific field data gathered through Tier 3 studies would be necessary to fully address this question.

2. *Does the landscape contain areas where development is precluded by law or designated as sensitive according to scientifically credible information?*

   Summary of what is sufficiently addressed by existing data:

   No protected or sensitive wildlife areas were noted within the CCWRA. No Critical Habitat has been designated within the CCWRA for any federally listed species. The lands within the CCWRA are a mix of state lands (managed by New Mexico State Lands Office) and private lands. No restrictions were found that would preclude potential development on state lands within the CCWRA (USGS 2011). No tribal lands were identified within the AOI, nor were any Department of Defense (DOD) or Department of Energy (DOE) lands (USGS 2011).

   Summary of what existing data did not sufficiently address:

   No data gaps remain for this question.

3. *Are there plant communities of concern present or likely to be present at the site?*

   Summary of what is sufficiently addressed by existing data:

   No plant communities of concern are known to be present on the CCWRA; however, there is potential for one federal threatened (Pecos sunflower) and one federal candidate species (Wright's marsh thistle) to be present within the CCWRA. These plants grow around wetlands and would be protected by other regulations prohibiting development of wetlands. As the project becomes more defined in terms of layout and proposed ground disturbance, further investigation into habitat and plant species may be warranted. However, though some potential exists for occurrence of listed plants, if listed plants do occur, they are likely to be restricted spatially and could likely be avoided through project design.

   Summary of what existing data did not sufficiently address:

   Additional information on the availability of wetland habitats suitable for supporting the listed species and a final project layout identifying the potential for disturbance would be necessary to determine the likelihood of impacts.

4. *Are there known critical areas of congregation of species of concern, including, but not limited to: maternity roosts, hibernacula, staging areas, winter ranges, nesting sites, migration stopovers or corridors, leks, or other areas of seasonal importance?*

   Summary of what is sufficiently addressed by existing data:

   No known localized areas of critical wildlife congregation were identified within the CCWRA. Pinyon-juniper woodlands may attract wintering flocks of some species (e.g., pinyon jays).

   Summary of what existing data did not sufficiently address:

   Although not noted during prior nest an bird survey efforts within portions of the CCWRA, some potential remains for the presence of concentrations of raptor prey species (e.g., prairie dogs). Locations of concentrated species of concern cannot be fully addressed from the available data. Seasonal concentrations of some avian species of concern (e.g., pinyon jay) also cannot be determined from desktop analysis. Site-specific field data gathered through Tier 3 studies would be necessary to fully address this question.

5. *Using best available scientific information has the developer or relevant federal, state, tribal, and/or local agency identified the potential presence of a population of a species of habitat fragmentation concern?*

   Summary of what is sufficiently addressed by existing data:

   Habitats within the CCWRA are already fragmented and disturbed (e.g., roads, fences, and powerlines). WEST has not identified a population of any special-status or BCC species of habitat fragmentation concern in the CCWRA.

Summary of what existing data did not sufficiently address:

Site-specific survey data addressing the presence of species of habitat fragmentation concern are lacking; however, given the fragmented landscape that exists within the CCWRA, species of habitat fragmentation concern are not expected to occur.

6. *Which species of birds and bats, especially those known to be at risk by wind energy facilities, are likely to use the proposed site based on an assessment of site attributes?*

Summary of what is sufficiently addressed by existing data:

In addition to the special-status birds previously discussed, an additional 22 migratory BCC may occur in Guadalupe, San Miguel, and Torrance counties. Data from the closest BBS route indicate another 35 species of birds that could potentially occur in the region. Some of these birds may use the CCWRA for breeding, foraging, and/or migration.

Thirteen diurnal raptor species may occur in the CCWRA and eight of these may breed in the area, using trees, cliffs, rock outcrops, and human-made structures (e.g., power poles) as nesting sites. Additionally, seven species of owls have the potential to occur within the CCWRA area during all or part of the year, and turkey vultures are likely to occur within the CCWRA during summer and migration periods. Golden eagles are known to use the CCWRA and are at risk by wind energy facilities.

Of the fourteen species of bats that have the potential to occur in the CCWRA, six are known to be at risk by wind energy facilities. The bat species most at risk include the big brown bat, hoary bat, silver-haired bat, Mexican free-tailed bat, big free-tailed bat, and canyon bat. Bats may use ponds while foraging, but roosting habitat in the CCWRA is limited primarily to pinyon-juniper woodlands and man-made structures. Migratory species such as the hoary bat, silver-haired bat, and Mexican free-tailed bat are likely to pass through the area during fall migration, which is the period of greatest risk based on available data from other regional facilities.

Summary of what existing data did not sufficiently address:

Temporal and spatial patterns of bird and bat use of the CCWRA are not described by the existing data. Additional site-specific data confirming species presence and abundance, as well as spatial and temporal patterns, will be necessary to provide for a better assessment of risk to individual species.

7. *Is there a potential for significant adverse impacts to species of concern based on the answers to the questions above, and considering the design of the proposed project?*

Summary of what is sufficiently addressed by existing data:

The answers to the Tier 2 questions above indicate that the CCWRA is not a site with high-risk characteristics for species of concern; however, given the potential for the CCWRA to support some species of concern, additional site-specific data would be useful in confirming this conclusion. Similar to other wind energy facilities in the region, there is some potential for impacts to individuals of certain species, particularly during the spring and fall migration seasons, but there is likely low potential for significant adverse population-level impacts to species of concern.

Summary of what existing data did not sufficiently address:

Given the CCWRA's location and availability of native habitats, the area is likely used by some sensitive species. The CCWRA will likely receive use by both nesting and migrating raptors, while native grasslands and pinyon-juniper woodlands may provide nesting and/or wintering habitat for other sensitive species (e.g., gray vireo and pinyon jay). Fixed-point avian use surveys to characterize bird species composition, distribution, and rates of use of the CCWRA by sensitive species and raptors may provide data that could aid in designing the project to avoid or minimize potential impacts to species of concern.

No bat hibernacula are known to occur within or near the CCWRA and roost sites for most bat species appear very limited within the CCWRA. Several non-listed bat species potentially occurring within the CCWRA are known to be at risk for collision with wind turbines (e.g., hoary bat, Mexican free-tailed bat, and silver-haired bat; Arnett et al. 2008). Given the lack of nearby bat concentration areas (e.g., maternity roosts or hibernacula), it is assumed that bat activity, and the associated risk of bat fatalities, will be generally consistent with that of other regional facilities and greatest during the during fall migration. The extent of bat activity during fall migration is not known based on the information available. Tier 3 bat acoustic surveys would provide baseline information on bat activity in the project area, but the data would primarily address temporal issues related to impacts (i.e., season of greatest risk), as a quantitative relationship between acoustic bat activity and bat fatality rates has not been well established. Although acoustic bat surveys are generally recommended by the NMDGF, such surveys are not recommended here for the following reasons:

- The CCWRA is not located near any large, known bat colonies or other features that are likely to attract large numbers of bats. As well, the CCWRA does not contain topographic features that may funnel migrating bats and is lacking large tracts of forest cover or wetlands used for roosting and foraging.
- No federally-listed threatened or endangered bat species are expected to occur in the CCWRA.

- The relationship between bat activity and fatality rates has not been empirically established; therefore, measured use could not be readily used to predict fatality rates.
- Based on available information, bat fatalities at the CCWRA are expected to be comparable to other regional wind energy projects with similar habitats, with fatality rates likely to peak during the later summer/fall migration period. Data from post-construction fatality monitoring would be necessary to determine the extent of such impacts.

10 RECOMMENDATIONS

If a proposed wind energy project in the CCWRA moves forward, Tier 3 surveys are warranted. The results of Tier 3 site-specific surveys can be used to identify areas of higher wildlife use and sensitive habitats that can assist with turbine siting, and to compare with any post-construction data collected. The following site-specific Tier 3 surveys are recommended based on the information provided in this Tier 2 SCS:

- Two full years (i.e., all seasons) of fixed-point large bird/ eagle use surveys should be conducted prior to design and construction of the project, sampling an appropriate amount of the final project area (e.g., minimum of 30% of project area or another proportion agreed upon by the agencies). Fixed-point large bird/ eagle use surveys will allow for a more quantitative assessment of the potential for the wind energy facility to impact large bird species of concern, and eagles in particular
- One full year (i.e., all seasons) of fixed-point small bird use surveys should be conducted prior to design and construction of the project. Fixed-point large bird/ eagle use surveys will allow for a more quantitative assessment of the potential for the wind energy facility to impact species of concern. Surveys should be sufficient to document avian use both spatially and temporally throughout the year.
- Surveys for nesting raptors should be conducted to determine all raptor nest locations within the CCWRA and surrounding 1-mile buffer and within a 10-mile buffer for eagles specifically. Surveys should utilize appropriate methods (aerial or ground-based), depending on availability of potential nesting substrates and accessibility. These surveys should be conducted before during the appropriate time of year, consistent with agency recommendations/guidance.
- Surveys for prairie dogs and other colonial prey species that could attract eagles and other raptors within suitable habitats in the CCWRA. Colonies, if documented, should be mapped using global positioning system GPS units when possible such that they can be used in project siting.
- Rare plant surveys should be conducted prior to construction if any of the wind energy facilities or construction activities will disturb moist soils where Pecos sunflower and Wright's marsh thistle may occur.

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Appendix A. US Fish and Wildlife Service Migratory Birds of Conservation Concern Potentially Occurring in Clines Corners Wind Resource Area

Appendix A. US Fish and Wildlife Service Migratory Birds of Conservation Concern potentially occurring in the Clines Corners Wind Resource Area Guadalupe, San Miguel, and Torrance counties, New Mexico.

Common Name	Scientific Name
Bendire's thrasher	*Toxostoma bendirei*
Black rosy-finch	*Leucosticte atrata*
Black-chinned sparrow	*Spizella atrogularis*
Brewer's sparrow	*Spizella breweri*
Brown-capped rosy-finch	*Leucosticte australis*
Burrowing owl	*Athene cunicularia*
Chestnut-collared longspur	*Calcarius ornatus*
Clark's grebe	*Aechmophorus clarkii*
Grace's warbler	*Dendroica graciae*
Gray vireo	*Vireo vicinior*
Lesser yellowlegs	*Tringa flavipes*
Lewis's woodpecker	*Melanerpes lewis*
Long-billed curlew	*Numenius americanus*
Long-eared owl	*Asio otus*
Marbled godwit	*Limosa fedoa*
Mountain plover	*Charadrius montanus*
Olive-sided flycatcher	*Contopus cooperi*
Pinyon jay	*Gymnorhinus cyanocephalus*
Rufous hummingbird	*Selasphorus rufus*
Virginia's warbler	*Vermivora virginiae*
Willet	*Tringa semipalmata*
Willow flycatcher	*Empidonax traillii*

Exhibit S – Map of Surface Waters, Wetlands, and Water of the U.S.

N

- Proposed Turbine Location
- Proposed Substation Location
- Proposed Transmission Line
- Project Access Roads
- Wetland Areas
- Drainages
- Easements
- Guadalupe County

0 1 2 4 6 Miles

Designed	Drawn	Checked
	ZCT	

Date: 2-18-2019

Scale: Horiz: - 1" = 7,000" (11x17) Vert: -

Project No: 8227576

Sheet: EXHIBIT S

PRELIMINARY

NOT FOR CONSTRUCTION

THIS DRAWING IS INCOMPLETE AND NOT TO BE USED FOR CONSTRUCTION UNLESS IT IS STAMPED, SIGNED AND DATED

TORRANCE COUNTY — TORRANCE COUNTY, NEW MEXICO

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Rev #	Date	Description	By	Chkd

Sources: ESRI, Torrance County, USFWS, Souder, Miller & Associates

Exhibit T – State Noise Regulations

New Mexico
Noise Related Statutes

3-18-17. Nuisances and offenses; regulation or prohibition.

A municipality, including a home rule municipality that has adopted a charter pursuant to Article 10, Section 6 of the constitution of New Mexico, may by ordinance:
A. define a nuisance, abate a nuisance and impose penalties upon a person who creates or allows a nuisance to exist; provided that:
C. prohibit and suppress:
……
(5) riots, **noises,** disturbances or disorderly assemblies in any public or private place.

SHOOTING RANGES

17-8-1 Purpose of Act

The purpose of the Sport Shooting Range Act [17-8-1_NMSA 1978] is to protect the normal operation and use of sport shooting ranges by establishing when a person who owns, operates or uses a sport shooting range is liable for civil penalties.

17-8-3 Definition

As used in the Sport Shooting Range Act [17-8-1_NMSA 1978], a "sport shooting range" is an area designed and operated for the use of rifles, shotguns or pistols as a means of silhouette, skeet, trap, black powder or other sport shooting or firearms training

17-8-4. Immunity from nuisance actions based on noise or noise pollution

A. The use or operation of a sport shooting range shall not be enjoined as a nuisance on the basis of noise or noise pollution:

(1) if the sport shooting range is in compliance with noise control statutes, rules or ordinances that apply to the range and its operation at the time that the initial operation of the range commenced;

(2) due to changes made to noise control statutes, rules or ordinances that apply to the sport shooting range and its operation, if the changes take effect after the initial operation of the range commenced; or

(3) if **noise** control statutes, rules or ordinances were not in effect at the time that the original operation of the sport shooting range commenced.

B. The use or operation of a sport shooting range may not be enjoined as a nuisance on the basis of noise or noise pollution by a person who acquires an interest in real property adversely affected by the normal operation and use of a sport shooting range that commenced operation prior to the time the person acquired the interest in real property.

17-8-5 Local Government Authority

The provisions of the Sport Shooting Range Act [17-8-1 NMSA 1978] shall not prohibit a local government from regulating the location and construction of sport shooting ranges

17-8-6. Exemptions.

The provisions of the Sport Shooting Range Act [17-8-1 NMSA 1978] do not apply:

(1) to recovery for an act or omission relating to recklessness, negligence, wanton misconduct

or willful misconduct in the operation or use of a sport shooting range;

(2) to a nuisance action on the basis of trespass involving the operation or use of a sport shooting range;

C. to the operation or use of a sport shooting range that substantially and adversely affects public health or public safety; or

D. if there has been a substantial change in the primary use of a sport shooting range.

30-20B-3. Prohibited acts.

A person shall not, with knowledge of the existence of a funeral or funeral site:

A. engage in any loud singing, playing of music, chanting, whistling, yelling or noisemaking with or without **noise** amplification, including bullhorns, auto horns and microphones within five hundred feet of any ingress or egress of that funeral site, when the volume of such singing, music, chanting, whistling, yelling or noisemaking is audible at and disturbing to the peace and good order of a funeral at that funeral site;

B. direct abusive epithets or make any threatening gesture that the person knows or reasonably should know is likely to provoke a violent reaction by another person;

C. display within five hundred feet of any ingress or egress of that funeral site any visual images that convey fighting words or actual threats against another person;

D. knowingly obstruct, hinder, impede or block another person's access to or egress from that funeral site or a facility containing that funeral site, except that the owner or occupant of property may take lawful actions to exclude others from that property;

E. knowingly obstruct, hinder, impede or block the progress of a vehicle participating in a procession to or from a funeral site; or

F knowingly engage in targeted residential picketing at the home or domicile of any surviving member of the deceased person's family or household on the date of the funeral.

HORNS

66-3-843. Horns and warning devices.

A. Every motor vehicle when operated upon a highway shall be equipped with a **horn** in good working order and capable of emitting **sound** audible under normal conditions from a distance of not less than two hundred feet, but no horn or other warning device shall be used which does not produce a harmonious sound. The driver of a motor vehicle shall when reasonably necessary to

ensure safe operation give audible warning with his horn but shall not otherwise use such horn when upon a highway.

B. No vehicle shall be equipped with nor shall any person use upon a vehicle any **siren, whistle or bell** except as otherwise permitted in this section.

C. It is permissible, but not required, that any commercial vehicle be equipped with a theft-**alarm signal** device which is so arranged that it cannot be used by the driver as an ordinary warning signal.

D. Any authorized emergency vehicle may be equipped with **a siren, whistle or bell,** capable of emitting sound audible under normal conditions from a distance of not less than five hundred feet and of a type approved by the division, but such siren shall not be used except when such vehicle is operated in response to an emergency call or in the immediate pursuit of an actual or suspected violator of the law, in which said latter events the driver of such vehicle shall sound said siren when reasonably necessary to warn pedestrians and other drivers of the approach thereof.

66-3-844. Mufflers; prevention of noise; emission control devices.

A. Every motor vehicle shall at all times be equipped with a muffler in good working order and in constant operation to prevent excessive or unusual **noise,** and no person shall use a muffler cutout, bypass or similar device upon a motor vehicle on a highway.

B. The **muffler,** emission control equipment or device, engine and power mechanism of every motor vehicle shall be so equipped and adjusted as to prevent the escape of excessive fumes or smoke.

C. Every registered gasoline-fueled motor vehicle manufactured or assembled, commencing with the 1968 models, shall at all times be equipped and maintained in good working order with the factory-installed devices and equipment or their replacements designed to prevent, reduce or control exhaust emissions or air pollution.

66-3-1018. Department; powers and duties.

A. The department shall cooperate with appropriate federal agencies, public and private organizations and corporations and local government units to implement the provisions of the Off-Highway Motor Vehicle Act.

B. The department:

……..

(14) may implement **noise** enforcement by the testing of sound levels of off-highway motor vehicles at the time of registration and equip law enforcement officers with sound meters for field testing of sound levels;

66-3-1010.3. Operation and equipment; safety requirements.

……

(11) that produces **noise** that exceeds ninety-six decibels when measured using test procedures established by the society of automotive engineers pursuant to standard J-1287; or

66-12-7. Equipment.

A. Every vessel shall have aboard:

…….

No privately owned vessel shall carry a **siren** unless specifically authorized in writing by the director of the division.

66-12-10. Muffling devices.

The exhaust of every internal combustion engine used on any motorboat shall be effectively muffled by equipment so constructed and used as to muffle the **noise** of the exhaust in a reasonable manner. This may include but is not limited to such devices as mufflers, exhaust restricters and water-injected exhaust headers. The use of cut-outs or non-muffled headers is prohibited except for motorboats competing in a regatta or boat race approved as provided in Section 66-2-15 NMSA 1978 and for such motorboats while on trial runs during a period not to exceed forty-eight hours immediately preceding the regatta or race and for such motorboats while competing in official trials for speed records during a period not to exceed forty-eight hours immediately following the regatta or race.

73-25-2. Purpose.

The purpose of the Regional Transit District Act [73-25-1 NMSA 1978] is to:

……..

A. reduce **noise** and air pollution produced by motor vehicles;

NOISE POLICIES

Table 1
Noise Abatement Criteria
(Hourly A-Weighted Noise Level in Decibels [dBA])

Activity Category	Leq(h)	Description of Activity Category
A	57 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	72 (Exterior)	Developed lands, properties, or activities not included in Category A or B above.
D	--	Undeveloped Lands
E	52 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

In addition to the noise abatement criteria, Federal and state procedures also require that noise abatement be considered when the implementation of a roadway project results in a substantial

increase over existing noise levels. According to NMDOT's noise policy, an increase of 10 decibels or more is considered a substantial increase over existing noise levels.