

**BEFORE THE NEW MEXICO PUBLIC REGULATION COMMISSION**

IN THE MATTER OF THE APPLICATION )  
OF PACIFIC WIND DEVELOPMENT LLC )  
FOR APPROVAL OF THE LOCATION )  
OF THE LA JOYA WIND PROJECT AND )  
345 KV GEN-TIE LINE IN )  
TORRANCE COUNTY, NEW MEXICO )  
PURSUANT TO NMSA § 62-9-3; AND )  
RIGHT OF WAY WIDTH DETERMINATION )  
PURSUANT TO NMSA § 62-9-3.2 )  

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Case No. 18-00353 -UT

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**DIRECT TESTIMONY OF**

**KRISTA DEARING**

**ON BEHALF OF PACIFIC WIND DEVELOPMENT LLC**

November 19, 2018

**CASE NO. 18-\_\_\_\_\_ -UT**  
**DIRECT TESTIMONY OF KRISTA DEARING**

1 **I. WITNESS INTRODUCTION AND QUALIFICATIONS**

2 **Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

3 A. My name is Krista Dearing. My business address is 2435 East Taxidea Way, Phoenix, AZ,  
4 85048.

5 **Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?**

6 A. I am employed by Tetra Tech as Senior Geologist and Project Manager.

7 **Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND**  
8 **EXPERIENCE.**

9 A. I received a B.S. in Geology in 1991, and an M.S. in Geology in 1993, both from the  
10 University of Cincinnati. I have more than 25 years of professional experience in  
11 environmental science and regulatory compliance. I oversee a variety of environmental  
12 projects involving the National Environmental Policy Act ("NEPA"), Endangered Species  
13 Act ("ESA"), Clean Water Act ("CWA"), and National Historic Preservation Act  
14 ("NHPA"). I have prepared numerous Environmental Assessments ("EA") for federal,  
15 state, and local agencies as well as Environmental Impact Statements ("EIS") for the U.S.  
16 Department of the Interior and U.S. Department of Energy. I have extensive experience  
17 with environmental permitting regarding electricity generation power plants, including  
18 renewable energy (solar and wind), nuclear, and natural gas. A copy of my resume is  
19 included in Exhibit KD-1.

20 **Q. ON WHOSE BEHALF ARE YOU APPEARING IN THIS PROCEEDING?**

21 A. I am testifying on behalf of the applicant, Pacific Wind Development LLC ("Pacific  
22 Wind").

23 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

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1 A. My testimony supports Pacific Wind's application to the New Mexico Public Regulation  
2 Commission ("Commission") for location of the generation tie transmission line ("Gen-  
3 Tie Line"), the La Joya Substation and Torrance Switching Station (collectively, the "Gen-  
4 Tie Facilities") associated with the La Joya wind energy generation project ("Wind  
5 Project").

6 **Q. HAVE YOU TESTIFIED BEFORE ANY REGULATORY AUTHORITIES?**

7 A. I have provided testimony before the Arizona Corporation Commission's Line Site  
8 Committee, and before city and county boards in Arizona.

9 **Q. WHAT EXHIBITS DO YOU SPONSOR AS PART OF YOUR TESTIMONY?**

10 A. I sponsor Exhibit KD-1, which is my resume; and Exhibit KD-2, which is the  
11 Environmental Report regarding the proposed Gen-Tie Facilities.

12 **Q. WERE EXHIBITS KD-1 AND KD-2 PREPARED BY YOU OR UNDER YOUR**  
13 **SUPERVISION?**

14 A. Yes.

15 **Q. ARE EXHIBITS KD-1 AND KD-2 TRUE AND CORRECT COPIES OF THE**  
16 **DOCUMENTS YOU DESCRIBE IN YOUR TESTIMONY?**

17 A. Yes.

18 **II. THE ENVIRONMENTAL REPORT.**

19 **Q. WHY WAS THE ENVIRONMENTAL REPORT PREPARED?**

20 A. The Environmental Report in Exhibit KD-2 was prepared to comply with the requirement  
21 of the Commission's rule 17.9.592.10 NMAC ("Location Rule"). The Location Rule  
22 identifies the contents of applications for location approval of transmission lines (including  
23 associated facilities such as the substation and switching station). In particular, the

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1 Location Rule, 17.9.592.10.E NMAC, requires that “if preparation of a federal  
2 environmental assessment or environmental impact statement is not required under NEPA  
3 in connection with the transmission line, then a report, comparable to an environmental  
4 impact statement, in the format prescribed in 40 C.F.R. Section 1502.10” shall be included  
5 in the application. In this case, neither the La Joya Wind Project nor the Gen-Tie Facilities  
6 involve any federal actions that require the preparation of an environmental assessment or  
7 environmental impact statement. Accordingly, in compliance with the Location Rule,  
8 17.9.592.10.E NMAC, Pacific Wind prepared the Environmental Report in the same  
9 format prescribed in 40 C.F.R. Section 1502.10.

10 **Q. WHAT FORMAT IS PRESCRIBED BY 40 C.F.R. SECTION 1502.10?**

11 **A.** That federal regulation prescribes the following format:

- 12 (a) Cover sheet.
- 13 (b) Summary.
- 14 (c) Table of contents.
- 15 (d) Purpose of and need for action.
- 16 (e) Alternatives including proposed action.
- 17 (f) Affected environment.
- 18 (g) Environmental consequences.
- 19 (h) List of preparers.
- 20 (i) List of Agencies, Organizations, and persons to whom copies of the statement are sent.
- 21 (j) Index.
- 22 (k) Appendices (if any).

23 **Q. DOES THE ENVIRONMENTAL REPORT FOLLOW THAT FORMAT?**

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1 A. Yes.

2 **Q. WHAT ENVIRONMENTAL VALUES DOES THE ENVIRONMENTAL REPORT**  
3 **ADDRESS?**

4 A. The Environmental Report covers the environmental values identified in the Location  
5 Statute and Location Rule. The Location Statute, NMSA 1978, Section 62-9-3.F requires  
6 the Commission to approve the location of a transmission line unless the Commission finds  
7 the location will unduly impair important environmental values. The environmental values  
8 the Commission may consider in making this determination include:

9 “(1) existing plans of the state, local government and private entities for other  
10 developments at or in the vicinity of the proposed location;

11 (2) fish, wildlife and plant life;

12 (3) noise emission levels and interference with communication signals;

13 (4) the proposed availability of the location to the public for recreational purposes,  
14 consistent with safety considerations and regulations;

15 (5) existing scenic areas, historic, cultural or religious sites and structures or  
16 archaeological sites at or in the vicinity of the proposed location; and

17 (6) additional factors that require consideration under applicable federal and state laws  
18 pertaining to the location.”

19 The Location Rule requires an application for location approval of a transmission  
20 line to include “testimony demonstrating that the transmission line will not unduly impair  
21 important environmental values; important environmental values include, but are not  
22 limited to, preservation of air and water quality, land uses, soils, flora and fauna, and water,

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1 mineral, socioeconomic, cultural, historic, religious, visual, geologic and geographic  
2 resources.”

3 **Q. DOES THE ENVIRONMENTAL REPORT COVER ALL OF THE**  
4 **ENVIRONMENTAL VALUES IDENTIFIED IN THE LOCATION STATUTE AND**  
5 **RULE?**

6 A. Yes.

7 **Q. DOES THE ENVIRONMENTAL REPORT COVER THE GEN-TIE LINE AS**  
8 **WELL AS THE LA JOYA SUBSTATION AND TORRANCE SWITCHING**  
9 **STATION?**

10 Y. Yes. The Environmental Report covers the La Joya Substation and Torrance Switching  
11 Station as facilities that are associated with the Gen-Tie Line. For convenience, the term  
12 “Gen-Tie Facilities” includes the Gen-Tie Line, the La Joya Substation, and the Torrance  
13 Switching Station.

14 **Q. DOES THE INFORMATION CONTAINED IN THE ENVIRONMENTAL**  
15 **REPORT AND THE STUDIES UPON WHICH IT IS BASED SUPPORT THE**  
16 **CONCLUSION THAT THE GEN-TIE FACILITIES WILL NOT UNDULY**  
17 **IMPAIR IMPORTANT ENVIRONMENTAL VALUES?**

18 A. Yes.

19 **Q. DOES THE ENVIRONMENTAL REPORT ALSO CONTAIN INFORMATION**  
20 **REGARDING THE LA JOYA PROJECT OVERALL?**

21 A. Yes. Although this exceeds the requirements of the Location Statute and Rule, the  
22 Environmental Report supports the conclusion that the La Joya Wind Project overall will  
23 not unduly impair important environmental values.

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1 Q. **DOES THIS CONCLUDE YOUR TESTIMONY AT THIS TIME?**

2 A. Yes.

3

4

**Krista Dearing, RG**  
Senior Geologist / Project Manager



## **Experience Summary**

Ms. Dearing has more than 25 years of professional experience in environmental science and regulatory compliance. She oversees a variety of environmental projects involving the National Environmental Policy Act (NEPA), Endangered Species Act, Clean Water Act, and National Historic Preservation Act. She has prepared numerous Environmental Assessments (EAs) for federal, state, and local agencies as well as Environmental Impact Statements for the U.S. Department of Interior and U.S. Department of Energy. Ms. Dearing has developed professional working relationships with numerous federal, state, and local agencies in Arizona and the southwest.

Ms. Dearing provides government, industrial, and utility clients with environmental permitting services for nuclear, natural gas, and renewable (solar and wind) power generating plants, and she has extensive public participation and expert testimony experience.

## **Education**

M.S. Geology, 1993, University of Cincinnati  
B.S. Geology, 1991, University of Cincinnati

## **Registrations/Certifications**

Professional Geologist, Arizona, No. 41784

## **Energy Project Experience**

### **Project Manager**

#### **SunPower Corporation, Picacho Solar Project, Pinal County, AZ (2017 – Present)**

Ms. Dearing is the project manager for the 2,780-acre solar PV energy project near the town of Red Rock, Arizona. She manages the completion of the Project's biological, cultural, wetlands, drainage, traffic, and landscaping reports as part of requesting a Major Land Use Amendment to Pinal County's Land Use Plan. The Project was granted the Major Land Use Amendment in November, 2017, and Ms. Dearing is now working closely with the County and public via various hearings and public meetings to rezone the site to allow for green energy development. As part of permitting the Project, Ms. Dearing is preparing the Arizona Corporation Commission's (ACC) Certificate of Environmental Compatibility (CEC) for the Project's 3435-kV gen-tie line. The CEC process includes a series of hearings and testimony before the ACC's Line Siting Committee per standards codified in Title 14, Chapter 3, Article 2 (R14-3-219) of the Arizona Revised Statutes (A.R.S.) §40-360 et seq.

### **Project Manager**

#### **Soventix USA, Cholla Solar Project, Navajo County, AZ (2017 – Present)**

Ms. Dearing is the project manager for the 980-acre, 100 MW solar PV energy project near the city of Holbrook, Arizona. She is currently preparing the BLM Plan of Development and Standard Form 299, as well as the Navajo County Special Use Permit. She is coordinating with Arizona Fish and Game (AZFG) and is overseeing the biological, cultural, and Clean Water Act surveys. Additionally, Ms. Dearing will lead the public scoping process public as part of the BLM and County permitting process.

**Krista Dearing, RG**  
**Senior Geologist / Project Manager**



**Project Manager**

**Commercial Nuclear Plant Relicensing, Applicants' Environmental Report (ER), U.S. Nuclear Regulatory Commission (NRC) Operating License Renewal Stage in accordance with NRC 10 CFR Part 51 and NEPA (2006 – 2014)**

Ms. Dearing managed license renewal environmental reports for seven commercial nuclear power plants in five states. The projects involved reviewing the existing license renewal environmental report to identify potential deficiencies, collecting data, analyzing the impacts of license renewal on the environment and the local economy. Ms. Dearing was responsible for project administration, including the assignment and review of technical work products, the training of project personnel, and the tracking and reporting of project expenditures. She also prepared a methodology paper that outlined approaches that the applicants might employ in addressing contentious issues in the environmental report, and interviewed applicants' employees regarding to determine if they were aware of any "New and Significant Information" that might call into question the NRC's generic findings on impacts of nuclear power plant license renewal (NUREG-1437). In addition to her project management duties, Ms. Dearing was required to provide technical testimony before the NRC during the agency's detailed site inspection and review of the ER. Plants that Ms. Dearing managed in this capacity include:

- Perry Nuclear Generating Station, Perry, OH
- LaSalle Nuclear Generating Station, central IL
- Byron & Braidwood Generating Stations; Exelon, IL
- Callaway Unit 1 Nuclear Power Plant, Fulton, MO
- South Texas Project Nuclear Generating Station, Bay City, TX
- Palo Verde Nuclear Generating Station, Phoenix, AZ

**Project Manager**

**Western Area Power Administration, Headgate Rock-Blythe Pole Replacement Project, AZ (2016)**

Ms. Dearing managed the preparation of an Environmental Assessment (EA) for a 52-mile 230-kV line structure replacement of wood poles to steel structures. This included coordination of biological and cultural resource surveys and assistance in Section 7 consultation with U.S. Fish and Wildlife Service concerning the Mojave Desert tortoise.

**Project Manager**

**Wind Energy Farm at the Nevada Test Site, NV (2015)**

Ms. Dearing was the project manager for the preparation of an Environmental Impact Statement (EIS) for the United States Department of Energy's National Nuclear Security Administration (NNSA)-Nevada Operations Office. The project was a proposal to develop, in phases, a commercial alternative energy production facility on 10,000 acres of the Nevada Test Site (NTS) using wind turbines. The project would lead to the construction (over a 4-year period) and operation of as many as 545 wind turbines atop the Shoshone Mountain area including Dome Mountain, Pahute Mesa, and several nearby ridge tops. On July 5, 2002, the Administrator of the NNSA decided to cancel consideration of the wind farm proposal on the NTS due to potentially significant adverse impacts to national security missions of the U.S. Air Force at the Nevada Test and Training Range, which has boundaries contiguous with the NTS on three sides.

**LA JOYA 345-KV TRANSMISSION LINE GEN-TIE CORRIDOR**

**FINAL ENVIRONMENTAL REPORT**

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## EXECUTIVE SUMMARY

This report responds to the New Mexico Public Regulation Commission's ("Commission") requirement in its rule 19.9.592.10(E) New Mexico Administrative Code (NMAC) for a report, in the form provided in 40 Code of Federal Regulations Section 1502.10, for location of transmission lines that do not require an Environmental Assessment or Environmental Impact Statement pursuant to the National Environmental Policy Act. The New Mexico location statute, NMSA 1978, Section 62-9-3.F provides the Commission shall approve the location of the transmission line and associated facilities unless the Commission finds that the location will unduly impair important environmental values.

Pacific Wind Development LLC, a wholly owned subsidiary of Avangrid Renewables, LLC (Avangrid), proposes to construct the La Joya 345-kilovolt Transmission Generation Tie Line (Gen-Tie Line) together with the La Joya Substation and the Torrance Switching Station (collectively, the Gen-Tie Facilities) in Torrance County, approximately 10 miles west of Encino, New Mexico. The Gen-Tie Facilities would interconnect up to 500 megawatts of wind-generated electricity from the proposed La Joya Wind Project (Wind Project) into the electric transmission grid.

This Environmental Report (ER) addresses the affected environment (existing condition) for the environmental values provided in Commission rule 17.9.592.10 NMAC and additional resource areas. The resources addressed in this ER include: air resources; water resources; biological resources; land use (to include recreation, schools, and infrastructure); visual and scenic; cultural, historic, and archeological resources; religious resources; geology and paleontology; soils; minerals and mining; socioeconomic; roads; noise; communication signals; military activities and aviation; geographic resources; radioactive waste and radiation hazard; hazardous materials; and safety.

The discussion for each resource includes data sources used, existing regional conditions, and existing conditions within a 1,000-foot-wide corridor (Gen-Tie Corridor) within which the Gen-Tie Line would be located within an approximately 150-foot-wide right-of-way, and within which or adjacent to which the La Joya Substation and Torrance Switching Station would be located at either end of the Corridor. The environmental consequences (potential impacts) for the resources identified above were addressed to determine whether the location within the Gen-Tie Corridor of the proposed Gen-Tie Facilities (the Gen-Tie Line, the La Joya Substation and the Torrance Switching Station) would "unduly impair important environmental values," as provided in NMSA 1978, Section 62-9-3.F. Impact evaluations for each resource within the Gen-Tie Corridor are discussed below. In addition, the ER identifies protection measures to mitigate impacts.

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## ACRONYMS AND ABBREVIATIONS

ABBREVIATION	DEFINITION
AC	Alternating Current
ACSR	Aluminum Conductor Steel Reinforced
AQCR	Air Quality Control Region
Avangrid	Avangrid Renewables, LLC
BGEPA	Bald and Golden Eagle Protection Act
BISON-M	Biota Information System
BLM	Bureau of Land Management
BMP	Best Management Practice
BNSF	Burlington Northern Santa Fe
CFR	Code of Federal Regulations
Commission	New Mexico Public Regulatory Commission
CO <sub>2</sub>	Carbon Dioxide
dBA	Decibels
DoD	Department of Defense
EPA	U.S. Environmental Protection Agency
ER	Environmental Report
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FTE	Full-time Equivalent
Gen-Tie	Generation Tie Line
GLO	General Land Office
IPaC	Information, Planning, and Consultation System
JEDI	Jobs and Economic Development Impact
kV	Kilovolt
MSA	Metropolitan Statistical Area
MTR	Military Training Routes
MW	Megawatts
NAAQS	National Ambient Air Quality Standards
NESC	National Electrical Safety Code
NHD	National Hydrography Dataset
NLCD	National Land Cover Database
NMAAQs	New Mexico Ambient Air Quality Standards
NMAC	New Mexico Administrative Code

<b>ABBREVIATION</b>	<b>DEFINITION</b>
NMED-SWQB	New Mexico Environment Department- Surface Water Quality Bureau
NMCRIS	New Mexico Cultural Resources Information Service
NMDGF	New Mexico Department of Game and Fish
NMDOT	New Mexico Department of Transportation
NMED	New Mexico Environmental Department
NMSA	New Mexico Statutes Annotated
NRCS	Natural Resources Conservation Service
NREL	National Renewable Energy Laboratory
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
O&M	Operations and Maintenance
OCD	Oil Conservation Division
OPGW	Fiber Optic Ground Wire
Pacific Wind	Pacific Wind, LLC
PILOT	Payment In Lieu of Taxes
PNM	Public Service Company of New Mexico
PPA	Power Purchase Agreement
ROW	Right-of-Way
SGCN	Species of Greatest Conservation Need
SLO	State Land Office
SPCCP	Spill Prevention, Containment, and Countermeasures Plan
SRCP	State Register of Cultural Properties
SWPPP	Stormwater Pollution Prevention Plan
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VFR	Visual Flight Rule

## **1.0 PURPOSE AND NEED**

### **1.1 Introduction and Overview**

Pacific Wind Development LLC (Pacific Wind), a wholly owned subsidiary of Avangrid Renewables, LLC (Avangrid), proposes to construct the approximately 18-mile-long La Joya 345-kilovolt (kV) Transmission Generation Tie Line (Gen-Tie Line) and associated La Joya Substation and Torrance Switching Station (collectively, the Gen-Tie Facilities) in Torrance County, approximately 10 miles west of Encino, New Mexico (Appendix A: Figures 1 and 2). The Gen-Tie Facilities would interconnect up to 500 megawatts (MW) of wind-generated electricity from the proposed La Joya Wind Project (Wind Project) to Public Service Company of New Mexico's (PNM) electric transmission grid (Figure 1). The Gen-Tie Corridor and the Wind Project Area (containing the wind generation facilities) are collectively referred to as the La Joya Project. Avangrid has obtained the land rights and permits for development of the La Joya Project, which will be held by Pacific Wind Development LLC (collectively with its successors and assigns, "Pacific Wind") as the Project Company.

The New Mexico Public Regulation Commission ("Commission") must approve the location of any electric transmission line with a capacity of 230 kV or above, and associated facilities, that is associated with a power plant that itself must obtain the Commission's location approval (new generation 300 MW or greater).

This Environmental Report (ER) has been prepared to support Pacific Wind's application to the Commission, pursuant to NMSA 1978, Section 62-9-3.F, for approval to locate the Gen-Tie Line and associated La Joya Substation and Torrance Switching Station (collectively, the Gen-Tie Facilities) in Torrance County, New Mexico to connect the La Joya Wind Project to the electric transmission grid. This ER addresses resources and potential impacts within a 1,000-foot-wide corridor (the Gen-Tie Corridor) within which the Gen-Tie Line will be located in a 150-foot-wide right-of-way (ROW), and within which or adjacent to which the La Joya Substation and Torrance Switching Station will be located at either end of the corridor. The Gen-Tie Facilities will be micro-sited within the Gen-Tie Corridor to reduce impacts while finalizing routing and siting.

#### **1.1.1 Purpose and Need**

The purpose and need of the Gen-Tie Facilities is to connect the proposed Wind Project to an existing transmission line in order to deliver the generated electric power to the PNM transmission system or grid at the existing Clines Corner Switching Station.

**1.1.2 Decisions to be Made**

The New Mexico location statute, NMSA 1978, Section 62-9-3.F, provides that the Commission shall approve the location of the transmission line and associated facilities unless the Commission finds the location will unduly impair important environmental values. This report addresses the important environmental values the Commission has identified in its location rule 17.9.592 New Mexico Administrative Code (NMAC).

## **2.0 PROPOSED ACTION AND ALTERNATIVES**

### **2.1 Alternatives Considered**

Two alternative transmission line routes were analyzed to allow flexibility in Gen-Tie Facility siting. Both alternatives would start at the proposed La Joya Substation within the proposed Wind Project Area and travel north to the proposed Torrance Switching Station along routes located west of the proposed Gen-Tie Line location. These routes were eliminated from further evaluation because the increased length would result in increased impacts to environmental values; would add uncertainty to Gen-Tie engineering; would increase disruption to the participating landowners; and, would increase cost of construction. Within the proposed Gen-Tie Corridor, measures will be undertaken to reduce impacts to important environmental resources to the extent practicable. In order to provide flexibility for micro-siting to reduce impacts while finalizing transmission line routing, Pacific Wind has identified a 1,000-foot-wide corridor (Gen-Tie Corridor) within which the ROW for the Gen-Tie Line, the La Joya Substation and the Torrance Switching Station would be located, as shown on Figures 1 and 2.

### **2.2 Proposed Action**

The proposed action is to construct, operate, and maintain a new approximately 18-mile-long 345-kV Gen-Tie Line within an approximately 150-foot-wide ROW located within the 1,000-foot-wide Gen-Tie Corridor, and connecting the associated La Joya Substation and Torrance Switching Station (collectively, the Gen-Tie Facilities) (Figure 2). The La Joya Substation, located at the southern end of the Gen-Tie Line within the Wind Project, would convert lower voltage electricity generated at the Wind Project to higher voltage electricity for transmission on the 345-kV Gen-Tie Line.

The proposed Gen-Tie Line would extend north from the proposed La Joya Substation to the vicinity of the existing El Cabo transmission line, then would parallel the El Cabo line for about 14 miles, terminating at the proposed Torrance Switching Station. Transmission of electricity from the Wind Project would then proceed on the existing El Cabo transmission line from the proposed Torrance Switching Station to PNM's Clines Corners Switching Station, and then on PNM's proposed BB2 transmission line. Pacific Wind understands that PNM has applied to the Commission for location and Certificate of Convenience and Necessity approval for the BB2 line in a separate proceeding, Case No. 18-00243-UT.

#### **2.2.1 Transmission (Gen-Tie) Line**

Electricity generated by the wind turbines within the Wind Project Area (Figure 1) would be gathered via a combination of overhead and underground electrical collection system lines that will operate at 34.5 kV. The collection system circuits would be gathered at the proposed La

Joya Substation, where the voltage would be stepped up from 34.5 kV to 345 kV via power transformers. The 345-kV Gen-Tie Line from the La Joya Substation would connect to the new Torrance Switching Station, which will be constructed to allow for interconnection to the existing El Cabo transmission line. As currently designed, the La Joya Gen-Tie Line would be about 95,040 linear feet in length.

The La Joya Gen-Tie Line requires a ROW width of 150 feet, which will be located across mostly private land and some New Mexico State Land (Figure 3). The Gen-Tie Line will be approximately 18 miles long and will occupy approximately 327 acres. One-hundred percent of the land within the Gen-Tie Corridor needed to construct and operate the Gen-Tie Facilities is under lease with private landowner or easement with the New Mexico State Land Office." Needs to have red text added for accuracy. This ER considers the environmental values within the 1,000-foot wide Gen-Tie Corridor within which the 150-foot-wide Gen-Tie Line ROW, the La Joya Substation, and the Torrance Switching Station would be located (Figure 2).

### **Gen-Tie Line Structures**

The proposed transmission structure type for the 345-kV Gen-Tie Line is a steel two-pole H-frame structure (Figure 4). Most structures would be self-supporting; however, in some areas, structures may be guyed to provide additional structural support. The anticipated distance between each line structure will vary depending on structure type, conductor, configuration, terrain, and avoidance of sensitive areas and existing infrastructure. Typical transmission structure heights for the tangent (structures that hold up the line, but bear little tension), dead-end (structure that bears tension), and angle transmission structures (structure that supports change in line direction and bears tension) would be approximately 80 to 130 feet above the existing ground, depending on the terrain and span length.

Structure spans would typically be 600 to 900 feet in length but are subject to final engineering. In most cases, transmission structures would be directly embedded into the ground. Additional foundation support, such as drilled pier concrete foundations, may be used in special design cases depending on geotechnical conditions. The diameter of the transmission structure poles would be approximately 3 to 5 feet, depending on framing configuration and the angle to adjacent transmission structures.

### **Conductors and Associated Hardware**

The 345-kV Gen-Tie Line would consist of three phases, with each phase consisting of bundled conductors composed of two 1272-kcmil aluminum conductor steel reinforced (ACSR) cables or conductors of comparable capacity. An ACSR consists of seven steel wires surrounded by 54 aluminum strands. Each conductor is approximately 1.2 inches in diameter. Minimum conductor height above the ground for the 345-kV Gen-Tie Line would be 30.3 feet, at 167 degrees

Fahrenheit based on National Electrical Safety Code (NESC) standards. At road crossings, minimum clearance would typically increase to approximately 37.3 feet above ground. Similar sized aluminum conductor steel reinforced cables or conductors also could be used as an alternative to those described here.

### **Fiber Optics**

Fiber optic ground wire (OPGW) cable for substation-to-substation control would be installed on top of each transmission structure in the shield wire. The outer strands would consist of aluminum wire and the entire OPGW would be approximately 0.55 inch in diameter.

## **2.2.2 Substation and Switching Station**

### **La Joya Substation**

The La Joya Substation would be constructed at the southern end of the Gen-Tie Corridor within the La Joya Wind Project Area (Figure 2). The La Joya Substation would consist of transformers, circuit breakers, switching devices, auxiliary equipment, an enclosure containing control equipment, protection, monitoring, communications, and associated equipment and facilities. The final location would be determined upon the micro-siting and geotechnical examinations of proposed locations. The principal function of the substation is to increase and synchronize (step-up) the voltage from the generation collector system (34.5 kV) to the voltage of the Gen-Tie Line (345 kV), which would transport electricity from the Wind Project to the PNM grid via the proposed Torrance Switching Station and then the existing El Cabo gen-tie line. The La Joya Substation would be located within a fenced area of about 10 acres or less designed in accordance with industry standards to provide safety and security.

### **Torrance Switching Station**

The Torrance Switch Station would be constructed at the northern end of the Gen-Tie Corridor (Figure 2). The Torrance Switching Station would consist of transformers, circuit breakers, switching devices, auxiliary equipment, an enclosure containing equipment for proper control, protection, monitoring, communications, and associated equipment and facilities. The final location would be determined upon the micro-siting and geotechnical examinations of proposed locations. The principal function of the switching station is to connect the Gen-Tie Line to the PNM grid and then the existing El Cabo gen-tie line. The Torrance Switching Station would be located within a fenced area of about 10 acres or less designed in accordance with industry standards to provide safety and security.

### 2.2.3 Right-of-Way Acquisition

The permanent ROW width for the proposed Gen-Tie Line within the 1,000-foot-wide Gen-Tie Corridor would be 150 feet wide (75 feet on either side of the transmission line alignment). The Gen-Tie Corridor was fully assessed as part of this ER to allow for the micro-siting of the Gen-Tie Line at any location within the Gen-Tie Corridor to avoid topographical and engineering challenges and manage impacts to resources. Therefore, the Gen-Tie Line may not maintain a ROW centered within the Gen-Tie Corridor.

The 150-foot Gen-Tie Line ROW width would accommodate the anticipated structure types, span lengths, and heights for the transmission line; would comply with electrical safety codes; would provide adequate logistical space for construction, operations, and maintenance of the line; and would provide sufficient flexibility for siting structures in the ROW. Final design will determine the structure locations and characteristics.

Pacific Wind has obtained necessary rights for the Gen-Tie Corridor, temporary work areas, and temporary access roads that may be required for the Gen-Tie Line, La Joya Substation, and Torrance Switching Station. Some road upgrades may be necessary and will be negotiated with Torrance County and private landowners, as needed. Pacific Wind will coordinate with the New Mexico Department of Transportation (NMDOT) for project access from U.S Route 60 (US 60) and U.S. Route 285 (US 285) as necessary. All rights to locate proposed Gen-Tie Facilities on state and private land have been obtained.

### 2.2.4 Access Roads

Pacific Wind would use existing roads and overland travel wherever feasible for access in order to reduce new disturbance. Some temporary access/short spur roads may be required to access structure locations within the Gen-Tie Corridor. New access roads within the Gen-Tie Corridor may retain access for maintenance. Portions of existing access roads located outside of the Gen-Tie Corridor may require improvements as well as new temporary access roads. To reduce ground disturbance and/or reduce visual contrast of the landscape, the alignment of any new temporary access roads or cross-country routes would follow the landform contours in designated areas where practicable. All temporary access roads would be revegetated with native or similar grasses and forbs following construction. Where ground disturbance is substantial, surface preparation and reseeding would occur. The method of restoration would normally consist of loosening the soil surface, reseeding, installing cross-drains for erosion control, placing water bars in the former access road, and filling temporary ditches and swales.

Gates, where present or if installed, would be closed and/or locked, depending on the agreement with each landowner. Access roads on private property may be maintained with mutual consent of the landowner.

### **2.2.5 Laydown/Material Staging Areas/Pulling & Tensioning Areas**

Temporary laydown/material staging areas would be required to store materials and equipment and to assemble structures for the duration of construction of the Gen-Tie Facilities. Each site would be up to 20 acres in size and located close to existing roads within the area. The laydown/staging areas would be used to store material and equipment prior to delivery to the structure sites, park vehicles, and possibly for locating a portable construction trailer. Staging areas within the Gen-Tie Corridor would be evaluated for environmental resources of concern, and if any are found, the staging areas would be relocated or shifted to avoid such sensitive areas. The staging areas would be revegetated and reclaimed after completion of the Gen-Tie Facilities, as necessary. About eight locations of about two acres each will also be prepared along the Gen-Tie Corridor to provide working space for conductor pulling and tensioning equipment.

### **2.2.6 Construction Activities**

The La Joya Project will be built in two or more phases. Phase I of the La Joya Project will include construction of about 166 MW of wind energy generation facilities and the Gen-Tie Facilities. Phase I is estimated to support about 362 total (direct, indirect, and induced) jobs in the state of New Mexico. Construction of Phase I is expected to begin in the third or fourth quarter of 2019 and be completed by December 2020. Subsequent phase size and timing are yet to be determined and will be based on market demand. During Phase II, project construction is estimated to support as many as 514 total jobs.

### **Gen-Tie Line Construction**

#### ***Sequence of Activities***

The construction of the Gen-Tie Facilities is expected to generally follow the sequence of: 1) new structure locations surveyed and staked; 2) access roads improved or built where necessary; 3) laydown/materials yard and work areas cleared as needed; 4) materials distributed along centerline; 5) structure holes dug and poles framed and erected; 6) conductors installed; and 7) site cleaned-up and reclaimed. The timing of construction activities may require several crews operating simultaneously at different locations.

Temporary laydown/material staging and conductor pulling and tensioning areas would be located on existing disturbed areas or other areas along the Gen-Tie Corridor with negotiated

access rights. The yards would serve as field offices, reporting locations for workers, parking space for vehicles and equipment, or sites for temporary marshalling of construction materials.

### ***Surveying***

Construction survey work for the Gen-Tie Facilities consists of ascertaining soil and geotechnical conditions for foundations and determining specific pole locations and delineation of ROW and work area boundaries, and, in some areas, roads to access work areas.

### ***Access Road Construction***

The Gen-Tie Line would be located in a remote rural location and would use primarily private roads to access the ROW boundary to the extent practicable. The construction of temporary construction access roads or overland travel may be required to allow access of construction equipment in the transmission line corridor. This may involve clearing vegetation and overland travel. In construction areas where re-contouring is not required, disturbance would be limited to overland driving, where feasible, to minimize changes in the original contours. Large rocks and vegetation may be moved within these areas to allow vehicle access.

Equipment to construct the access roads would include hand tools, bulldozers, and graders. Best management practices (BMPs) would be implemented to reduce construction impacts (e.g., roads will avoid or be built at right angles to ephemeral stream channels to the extent practicable, existing public roads will be utilized to the extent possible, and road construction will include dust-control measures during construction as required). Standard design techniques such as installing water bars and dips to control erosion would be included in areas with slopes. In addition, measures would be taken to reduce impacts such as rutting and soil compaction in specific locations and during certain periods of the year.

### ***Structure Holes***

Excavations for structure holes would be generally made with truck-mounted power auger equipment or a standard sized backhoe or large excavator. Where the soil and geotechnical conditions permit, a truck-mounted power auger would be used. Foundation excavation and installation would require equipment access to the foundation sites by a power auger or drill, a crane, and material trucks.

Structure holes left temporarily open or unguarded during construction would be covered and/or fenced where practicable to protect livestock and wildlife. Soil removed from foundation holes would be stockpiled on the work area and replaced or disposed, in consultation with landowners.

### ***Structure Framing and Assembly***

Pole sections, pole framing, and associated hardware would be shipped to each laydown/materials yard site by truck. Structures may be assembled off-site and transported to the

appropriate pole locations by truck or helicopter. Insulator strings and stringing sheaves would be installed at each ground wire and conductor position while the pole is on the ground. Stringing sheaves (pulleys) would be used to guide the conductor during the stringing process for attachment onto the insulator strings. The assembled pole would then be hoisted into place by a crane. Helicopter-assisted construction may be utilized for portions of the line.

### ***Conductor Installation***

Once structures are in place, a pilot line would be pulled (strung) from structure to structure and threaded through the stringing sheaves on each insulator. A larger-diameter pulling line would then be attached to the pilot line and strung through the structures. This process would be repeated until the ground wire and conductor is pulled through all insulator sheaves.

The conductor would be strung using powered pulling equipment at one end and powered braking or tensioning equipment at the other end. For public protection during wire installation, guard structures would be erected over roadways, transmission and distribution lines, structures, the Burlington Northern Santa Fe (BNSF) Railroad, pipelines, and other obstacles. Guard structures would consist of H-frame poles temporarily placed on either side of an obstacle. These structures would prevent ground wire, conductor, or equipment from falling on an obstacle. Equipment for erecting guard structures would include augers, line trucks, pole trailers, and cranes. Guard structures may not be required for small roads. On such occasions, other safety measures such as barriers, flagmen, or other traffic control devices would be used.

Conductor splicing would be required at the end of a conductor spool or if a conductor is damaged during stringing. The work would occur on work areas for the poles or pulling/tensioning sites.

### ***Helicopter Use***

Access is required to each transmission structure site for construction activities, and helicopters may be used to support construction activities on unique areas that limit vehicle access. Gen-Tie Line construction activities potentially facilitated by helicopters may include:

- Transport of equipment and materials to transmission structure sites,
- Transmission structure placement,
- Hardware installation, and
- Wire and conductor stringing operations.

All helicopter operations would be coordinated with and approved by the Federal Aviation Administration (FAA), as required.

### **La Joya Substation and Torrance Switching Station**

Following survey and staking of the substation and switching station sites, each of which is expected to be about 10 acres or less, erosion control measures would be installed, as necessary. A gravel driveway would be constructed for access, including installation of culverts in drainages, as needed. The substation and switching station sites would be graded and fenced. Concrete pads and footing for equipment would be installed. Aggregate would be spread throughout the fenced area. Equipment would be delivered to the site and generally stored inside the fenced area, although some materials may need to be stored on the property outside the fence due to size or safety considerations. Equipment such as circuit breakers, bus work, capacitors, and dead-ends would be assembled and installed. Transformers would be delivered to the site and installed. Substation control enclosure and supervisory control and data acquisition equipment would be installed. Upon completion of construction activities, disturbed areas outside the fence would be restored and erosion control measures removed.

### **Construction Waste Disposal**

Construction sites, laydown and material storage yards, and access roads would be kept in an orderly condition throughout the construction period. Refuse and trash would be removed from the sites and disposed in an approved manner including recycling options. Oils and fuels would be hauled to an approved site for disposal. No open burning of construction trash would occur at any time.

### **Site Reclamation**

Work sites would be reclaimed using excess materials, native or similar vegetation, and topsoil stockpiled for that purpose. The contractor would dispose of excess soil materials, rock, and other objectionable materials that cannot be used in reclamation work.

Disturbed areas, with the exception of permanent access roads, would be reclaimed, to the extent possible, to their original contour and reseeded where appropriate. Ripping or other surface scarification on construction roads or other areas may be used as necessary. Depending on the amount of soil compaction and vegetation destruction, ripping and reseeded may not be required for reclamation. This would be determined on a case-by-case basis.

### **Protection of Private Property and Resources**

Existing improvements would be repaired or replaced if they are damaged by construction activities. All existing roads would be left in a condition generally equal to or better than their condition prior to the construction of the Gen-Tie Facilities. Fences and gates would be installed or repaired and replaced, as needed, to their original conditions as required by the landowner. Temporary gates would be installed only with the permission of the landowner and would be

restored to original condition following construction, unless otherwise agreed with the landowner. Gates would be closed and locked, depending on the agreement with the private landowners.

Prior to construction, all supervisory construction personnel would be instructed on the protection of ecological and cultural resources. To assist in this effort, the construction contractor training would address: 1) federal, state, and local laws regarding wetlands, vegetation, wildlife, and cultural resources; 2) the importance of these resources and the purpose and necessity of protecting them; and 3) methods for protecting sensitive resources.

All waste products, including food garbage, from construction sites would be deposited in a waste receptacle. Garbage would be hauled to a suitable and appropriately permitted disposal facility.

Transmission poles and associated infrastructure would be sited during the engineering design process so as to avoid sensitive features such as, but not limited to, archaeological resources, and/or to allow conductors to clearly span the features, within limits of standard pole design.

### **Traffic Safety**

Minimal additional vehicular traffic would occur on public roads in the area since the Gen-Tie Facilities construction, and operation and maintenance (O&M) of the Gen-Tie Line would occur within the remote Gen-Tie Corridor. The Gen-Tie Corridor will cross US 60 along the southern portion of the line, as well as county and private roads, and the BNSF Railroad. All road crossings and use will be coordinated with the Federal Highway Administration (FHWA), NMDOT, and Torrance County, as required. Final engineering design will determine specific road crossing requirements. During construction and delivery of heavy equipment, safety measures such as barriers, flagmen, or other traffic control devices would be used.

## **2.2.7 Operation and Maintenance**

### **Operation**

After the Gen-Tie Line has been energized, land uses compatible with safety regulations and activities associated with O&M would be permitted within and adjacent to the ROW. Existing land uses such as grazing are generally permitted within the ROW. Incompatible land uses include construction of permanent dwellings and any use requiring changes in surface elevation that would affect NESC electrical clearances of existing or planned facilities.

Safety is a primary concern in the planning and design of the Gen-Tie Facilities. An alternating current (AC) transmission line would be protected with power circuit breakers and related line relay protection equipment. If a conductor failure occurs, power would be automatically removed

from the line. Lightning protection would be provided by overhead static and grounding wires along the length of the line.

Minimal additional vehicular traffic will occur on public roads in the area as a result of O&M activities for the Gen-Tie Facilities and are not anticipated to cause impacts to local traffic. As stated above, all road crossings and use will be coordinated with FHWA, NMDOT, and Torrance County, as required.

### **Maintenance**

Maintenance of the Gen-Tie Facilities would be performed as needed. When access is required for non-emergency maintenance and repairs, the same precautions taken during the construction activities would be implemented to the extent practicable.

Emergency maintenance would involve prompt movement of crews to ensure safety and repair or replace any damage. Crews would be instructed to protect vegetation, wildlife, and other environmental resources to the extent practicable. Reclamation procedures following completion of repair work would be similar to those prescribed for normal construction.

## **3.0 AFFECTED ENVIRONMENT**

### **3.1 INTRODUCTION**

The affected environment is described below for the environmental values provided in Commission rule 17.9.592 NMAC, and additional resource areas. These are: air resources; water resources; biological resources; land use (to include recreation and schools); visual and scenic; cultural, historic, and archeological resources; religious resources; geology and paleontology; soils; minerals and mining; socioeconomic; roads; noise; communication signals; military activities and aviation; geographic resources; radioactive waste and radiation hazard; hazardous materials; and safety. The discussion for each resource includes data sources used, current regional conditions, and conditions within the Gen-Tie Corridor (Figures 1 and 2).

### **3.2 AIR RESOURCES**

#### **3.2.1 Data Sources**

The following data sources were reviewed to assess the existing air quality conditions of Torrance County and the Gen-Tie Corridor:

- New Mexico Environmental Department (NMED)–Air Quality Bureau.
- U.S. Environmental Protection Agency (EPA).

#### **3.2.2 Existing Regional Conditions**

Air quality in Torrance County is generally very good. 40 CFR Part 81 designates Air Quality Control Regions (AQCRs) and lists the attainment designations for all AQCRs and counties in the United States with respect to the National Ambient Air Quality Standards (NAAQS) listed in 40 CFR Part 51. Torrance County is a part of the Northeastern Plains Intrastate AQCR, which extends from Torrance County in the southwest to the northeastern corner of the state. The AQCR and Torrance County are designated unclassifiable/attainment for all NAAQS.

Additionally, NMAC Title 20, Chapter 2, Part 3 lists the state-specific ambient air quality standards (NMAAQs), several of which are more stringent than the NAAQS. Torrance County is also in attainment of the NMAAQs. The County's attainment status is reflective of low population density and land use dominated by agriculture and rangeland.

#### **3.2.3 Gen-Tie Corridor**

No unique air quality conditions are known to occur within the Gen-Tie Corridor. Air quality conditions within the Gen-Tie Corridor, which is comprised of rangeland, would be similar to

what is described above for Torrance County based on low population density and land use in the area.

### **3.3 WATER RESOURCES**

#### **3.3.1 Data Sources**

The following data sources were reviewed to assess the existing water resources of Torrance County and the Gen-Tie Corridor:

- La Joya Project, Torrance County, New Mexico; Wetlands Desktop Analysis (Tetra Tech 2018a).
- U.S Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI).
- U.S. Geological Survey (USGS) National Hydrography Dataset (NHD).
- Natural Resources Conservation Service (NRCS) Web Soil Survey data for mapped hydric soils and drainage class.
- Federal Emergency Management Agency (FEMA) Floodplain Dataset.
- U.S. Department of Agriculture (USDA) National Aerial Imagery Program Aerial Imagery.
- USGS topographic mapping.

#### **3.3.2 Existing Regional Conditions**

The Gen-Tie Corridor is located in the Southwestern Tablelands Level III Ecoregion and the Central New Mexico Plains Level IV Ecoregion. The physiography of the Central New Mexico Plains includes rolling plains, tablelands, piedmonts, and sporadic ephemeral drainages, and typically receives 12-14 inches of precipitation annually (Tetra Tech 2018a).

The Gen-Tie Corridor lies within the Rio Grande Closed Basins hydrologic unit code (HUC) 6 watershed, which is a series of interior-draining closed basins. Within the Rio Grande Closed Basins, the Gen-Tie Corridor is further divided between the Eastern Estancia and Western Estancia HUC 8 watersheds (Figure 5), which comprise the Estancia Basin. All drainage features within both the Eastern and Western Estancia Watersheds, including those located within the Gen-Tie Corridor, either dissipate into uplands or drain internally to ephemeral salt lakes, depressional areas, including historic playas, or upland swales that may temporarily contain water from seasonal storms or are used as stock ponds for livestock watering. There are no surface connections to waters outside the interior-drainage basin (Tetra Tech 2018a).

### 3.3.3 Gen-Tie Corridor

Figure 5 depicts NHD-mapped features within the Gen-Tie Corridor. The proposed Gen-Tie Corridor crosses 11 NHD-mapped ephemeral stream channels and contains one NHD waterbody, which appears to be an impounded stock pond. These ephemeral stream channels may flow during storm events. These NHD-mapped ephemeral channels appear to all ultimately drain either to uplands or into internally draining depressional areas or ephemeral salt lakes and depressional areas outside of the Gen-Tie Corridor.

Figure 5 also depicts NWI-mapped features within the Gen-Tie Corridor. The proposed Gen-Tie Corridor includes parts of four NWI-mapped freshwater emergent wetlands, which appear to be isolated and are generally limited to diked or impounded wetland areas associated with stock ponds, or seasonal/intermittent wetlands associated with depressional areas and ephemeral swales (Tetra Tech 2018a). Hydric soils present within the Gen-Tie Corridor are also limited and appear to be associated with these NWI-mapped wetland areas (Figure 5).

FEMA floodplain maps for the Gen-Tie Corridor indicate that three depressional "Zone A" 100-year floodplain areas intersect the Gen-Tie Corridor (Figure 5). These areas appear to be associated with isolated depressional areas and associated ephemeral drainages (Tetra Tech 2018a).

All water resource features within the Gen-Tie Corridor appear to be associated with or drain into internally draining ephemeral swales and/or seasonal ponds and depressional areas within the larger isolated Estancia Basin. No perennial streams or waterbodies are present within the Gen-Tie Corridor. While there are a number of mapped surface water features present throughout the Project Area, all features appear to be ephemeral and associated with or drain into internally-draining ephemeral swales and/or seasonal ponds and depressional areas within the larger isolated Estancia Basin.

## 3.4 BIOLOGICAL RESOURCES

### 3.4.1 Data Sources

The following data sources were reviewed to assess the existing flora and fauna resources of Torrance County and the Gen-Tie Corridor:

- Comprehensive Biological Evaluation for the La Joya Project (Tetra Tech 2018b).
- 2011 National Land Cover Database (NLCD).
- USFWS Environmental Conservation Online System Species Profiles.
- USFWS Information, Planning, and Consultation System (IPaC).

- New Mexico Department of Game and Fish (NMDGF) Biota Information System (BISON-M).
- eBird, an online database of bird distribution and abundance.
- USFWS NWI.
- USGS NHD.

### 3.4.2 Existing Regional Conditions

#### Ecoregion and Habitat

Torrance County occurs within the Southwestern Tablelands Level III Ecoregion as defined by the EPA (Tetra Tech 2018b). The Southwestern Tablelands Level III Ecoregion is predominantly semiarid rangeland or sub-humid grassland, with shortgrass prairies being the dominant natural vegetation (EPA 2013). Vegetation within the region is mostly shortgrass prairie, dominated by grama grasses (*Bouteloua* spp.), New Mexico feathergrass (*Stipa neomexicana*), threeawns (*Aristida* spp.), little bluestem (*Schizachyrium scoparium*), soapweed (*Yucca glauca*), broom snakeweed (*Gutierrezia sarothrae*), and areas of scattered juniper (*Juniperus* spp.) near hills or in rougher topography. Land cover in the region is dominated by open rangeland, with some scattered residential properties (Tetra Tech 2018b).

#### Special Status Species

Special-status species for the purposes of this ER include species listed under the federal Endangered Species Act (ESA), the federal Bald and Golden Eagle Protection Act (BGEPA), and the state's Wildlife Conservation Act and Endangered Plant List established by the Energy, Minerals, and Natural Resources Department of New Mexico. Species of Greatest Conservation Need (SGCN) identified in the New Mexico Wildlife Action Plan (NMDGF 2016) are also discussed, however, these species are not provided legal protection.

Three wildlife species that are federally listed under the ESA may potentially occur within Torrance County; southwestern willow flycatcher (*Empidonax traillii extimus*; endangered), yellow-billed cuckoo-western distinct population segment (*Coccyzus americanus*; threatened), and Mexican spotted owl (*Strix occidentalis lucida*; threatened) (USFWS 2017a). No critical habitat for any federal listed species occurs within 30 miles of the Project (USFWS 2017b). The closest designated critical habitat is for Mexican spotted owl in the Manzano Mountains, located more than 30 miles from the Project. The bald eagle (*Haliaeetus leucocephalus*) and golden eagle (*Aquila chrysaetos*) are protected under the BGEPA and both have potential to occur in Torrance County.

Five state-listed endangered or threatened species have been identified as potentially occurring in Torrance County (BISON-M 2017); southwestern willow flycatcher (endangered), bald eagle (threatened), Baird's sparrow (*Ammodramus bairdii*; threatened), gray vireo (*Vireo vicinior*; threatened), and peregrine falcon (*Falco peregrinus*; and Arctic subspecies *F. p. tundrius*; threatened).

There are 39 SGCN that the NMDGF considers having potential to occur within Torrance County. SGCN are ranked by NMDGF based on rarity, the likelihood of extirpation of the species from the state, and importance to a functioning ecosystem. Designation as SGCN may indicate that a species may be at risk and may be likely to be listed in the future but does not impose any regulatory or legal requirements. There are no known federal- or state-listed plant species in Torrance County (USFWS 2017a, EMNRD 2017).

### Other Biological Resources

Passerines, raptors, waterfowl, and waterbirds likely migrate through Torrance County and the surrounding region. Grassland habitats throughout this region provide limited stopover habitat during migration or during post-breeding dispersal for passerines and raptors. Waterfowl and waterbirds (including shorebirds) would primarily be attracted to the limited, ephemeral lakes as stopover habitat during migration, although these resources comprise a small percentage of the region (Tetra Tech 2018b).

Nineteen bat species have ranges overlapping Torrance County, none of which are federal- or state-listed species (Tetra Tech 2018b). Potential bat roosting habitat within the region is found in the form of human-made structures (e.g., buildings and bridges). Some escarpments and limited karst were identified within the region that could serve as bat roosting habitat (Tetra Tech 2018b).

Spotted ground squirrels, and Gunnison's prairie dogs have been observed in Torrance County (Tetra Tech 2018b). These species may provide a source of prey for raptors. Prairie dogs are not a state threatened or endangered species in New Mexico, but black-tailed prairie dogs and Gunnison's prairie dogs are considered a SCGN Category I (immediate priority category; Table 3-1). Their colonies may be used as foraging areas for eagles and other raptors and provide habitat for other SGCN species such as burrowing owls and mountain plovers.

Other wildlife species common within Torrance County include pronghorn (*Antilocarpa americana*), coyote (*Canis latrans*), mule deer (*Odocoileus hemionus*), desert cottontail (*Sylvilagus audubonii*), and various reptiles.

Table 3-1. Wildlife Special-Status Species with the Potential to Occur in the Gen-Tie Corridor

Common Name	Scientific Name	Federal Status <sup>1</sup>	State Status <sup>2</sup>	SGCN Category <sup>3</sup>	Preferred Habitat	Available Habitat in Gen-Tie Corridor	Likelihood of Occurrence <sup>4</sup>
<b>Birds</b>							
Arctic peregrine falcon	<i>Falco peregrinus tundrius</i>	-	T	-	Migrant throughout state from subspecies' far northern breeding range; occupies wide range of habitats during migration, including urban, concentrations along coast and barrier islands; stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands.	No lake shores, coastlines, or barrier islands available for stopover areas, and no urban environments available.	Low
Baird's sparrow	<i>Ammodramus bairdii</i>	-	T	S	Shortgrass prairie with scattered low bushes and matted vegetation.	Shortgrass prairie grasslands with small shrubs are present throughout.	Moderate
Bald eagle	<i>Haliaeetus leucocephalus</i>	P	-	H	Riparian, lacustrine, freshwater wetlands, and saltwater wetlands.	No perennial rivers, only ephemeral streams present. No large tracts of riparian forests. Observed at the nearby El Cabo Wind Farm.	Low
Bendire's thrasher	<i>Toxostoma bendirei</i>	-	-	I	Desert scrub, grasslands with scattered brush or yuccas.	Grasslands present throughout. Limited brush and yucca.	Moderate

Table 3-1. Wildlife Special-Status Species with the Potential to Occur in the Gen-Tie Corridor (continued)

Common Name	Scientific Name	Federal Status <sup>1</sup>	State Status <sup>2</sup>	SGCN Category <sup>3</sup>	Preferred Habitat	Available Habitat in Gen-Tie Corridor	Likelihood of Occurrence <sup>4</sup>
Burrowing owl	<i>Athene cunicularia</i>	-	-	H	Flat, open areas such as prairies with a few scattered bushes. Often found around prairie dog towns or ground squirrel colonies.	Active prairie dog colonies on site. Observed at the Wind Project Area and at the nearby El Cabo Wind Farm.	High
Cassin's sparrow	<i>Peucaea cassinii</i>	-	-	S	Shortgrass prairies with interspersed bushes such as mesquite, yucca, and cactus.	Documented occurrences at the Wind Project Area and at the nearby El Cabo Wind Farm.	High
Eared grebe	<i>Podiceps nigricollis</i>	-	-	H	Shallow ponds and lakes with emergent reeds.	Few shallow small ponds present within Gen-Tie Corridor but nearly all associated with stock ponds.	Low
Golden eagle	<i>Aquila chrysaetos</i>	P	-	-	Desert scrub, grassland, and shrubland.	Open grasslands and shrublands present within Gen-Tie Corridor. Documented occurrences at the Wind Project Area and nearby El Cabo Wind Farm.	High

Table 3-1. Wildlife Special-Status Species with the Potential to Occur in the Gen-Tie Corridor (continued)

Common Name	Scientific Name	Federal Status <sup>1</sup>	State Status <sup>2</sup>	SGCN Category <sup>3</sup>	Preferred Habitat	Available Habitat in Gen-Tie Corridor	Likelihood of Occurrence <sup>4</sup>
Gray vireo	<i>Vireo vicinior</i>	-	T	I	Desert scrub, pinyon-juniper woodlands, oak scrub, and chaparral.	Habitat is primarily grasslands and is unlikely to be suitable for gray vireo. May occur during post-breeding dispersal or migration. Documented occurrence at the nearby El Cabo Wind Farm.	Low
Loggerhead shrike	<i>Lanius ludovicianus</i>	-	-	S	Open prairies with scattered bushes and trees.	Shortgrass prairie with small, dispersed bushes (yucca, cholla) present. Observed at the Wind Project Area and nearby El Cabo Wind Farm.	High
Long-billed curlew	<i>Numenius americanus</i>	-	-	S	Breeding habitat includes shortgrass prairies; wintering habitat includes marshes and fields.	Shortgrass prairie present, but they are outside of this species' typical breeding range. May occur during migration between breeding and wintering areas. Observed at the nearby El Cabo Wind Farm.	Moderate

Table 3-1. Wildlife Special-Status Species with the Potential to Occur in the Gen-Tie Corridor (continued)

Common Name	Scientific Name	Federal Status <sup>1</sup>	State Status <sup>2</sup>	SGCN Category <sup>3</sup>	Preferred Habitat	Available Habitat in Gen-Tie Corridor	Likelihood of Occurrence <sup>4</sup>
Mexican spotted owl	<i>Strix occidentalis lucida</i>	T	-	F	Mature, old growth forests in canyons and steep slopes.	No tracts of mature forest. Two known occurrences in Torrance County. Critical habitat within Torrance County is over 30 miles to the west in Cibola National Forest.	Low
Mountain bluebird	<i>Sialia currucoides</i>	-	-	S	Open woodlands including meadows, hedgerows, prairies, and flat grasslands, pinyon-juniper and oak-juniper woodlands, and agricultural areas.	Open grasslands and shrublands present. Documented occurrences at the nearby El Cabo Wind Farm.	High
Mountain plover	<i>Charadrius montanus</i>	-	-	S	Dry grassland, semi-desert scrub, and agricultural areas.	Documented occurrences at the nearby El Cabo Wind Farm.	Moderate

Table 3-1. Wildlife Special-Status Species with the Potential to Occur in the Gen-Tie Corridor (continued)

Common Name	Scientific Name	Federal Status <sup>1</sup>	State Status <sup>2</sup>	SGCN Category <sup>3</sup>	Preferred Habitat	Available Habitat in Gen-Tie Corridor	Likelihood of Occurrence <sup>4</sup>
Peregrine falcon	<i>Falco peregrinus</i>	-	T	H	Year-round resident in the mountains of southern New Mexico and breeder in northwest New Mexico. Nests in tall cliff eeries; also, migrant across state from more northern breeding areas in US and Canada, winters along coast and farther south; occupies wide range of habitats during migration, including urban, concentrations along coast and barrier islands; low-altitude migrant, stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands.	Outside of known breeding areas in New Mexico. Limited roosting and foraging habitat available. One individual documented at the Wind Project Area in Fall 2018.	Low
Pinyon jay	<i>Gymnorhinus cyanocephalus</i>	-	-	I	Pinyon-juniper woodlands, sagebrush, scrub oak, chaparral, and ponderosa pine forests.	Shrublands present. Documented occurrences at the nearby El Cabo Wind Farm.	High
Snowy plover	<i>Charadrius nivosus</i>	-	-	S	Sandy beaches, shallow inland lakes.	Not near main migratory stopover areas but individuals may be present when migrating from northern breeding grounds to wintering areas.	Low

Table 3-1. Wildlife Special-Status Species with the Potential to Occur in the Gen-Tie Corridor (continued)

Common Name	Scientific Name	Federal Status <sup>1</sup>	State Status <sup>2</sup>	SGCN Category <sup>3</sup>	Preferred Habitat	Available Habitat in Gen-Tie Corridor	Likelihood of Occurrence <sup>4</sup>
Sprague's pipit	<i>Anthus spragueii</i>	-	-	I	Native upland prairie and fallow fields/stubble.	Grasslands present. Individuals may stopover during migration; on the outer edge of primary migratory route.	Low
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	E	E	F	Dense riparian tree and shrub communities associated with rivers, swamps, and other wetlands including lakes and reservoirs.	Few wetlands or ponds are present and no large tracts of riparian forests. Limited predicted habitat (Hatten 2016).	Low
Vesper sparrow	<i>Pooecetes gramineus</i>	-	-	S	Sagebrush-steppe, ponderosa pine forests, prairies.	Grasslands present. Documented occurrences at the Wind Project Area and at the nearby El Cabo Wind Farm.	High
Virginia's warbler	<i>Oreothlypis virginiae</i>	-	-	I	Open woodlands with brushy undergrowth on slopes.	Few areas with wooded habitat present, primarily around homesteads. One documented occurrence in Torrance County.	Low
Western bluebird	<i>Sialia mexicana</i>	-	-	S	Wooded habitat with open areas. Winters in pinyon-juniper woodlands.	Few areas with wooded habitat present, primarily around homesteads. Documented occurrences at the Wind Project Area and at the nearby El Cabo Wind Farm.	Moderate

Table 3-1. Wildlife Special-Status Species with the Potential to Occur in the Gen-Tie Corridor (continued)

Common Name	Scientific Name	Federal Status <sup>1</sup>	State Status <sup>2</sup>	SGCN Category <sup>3</sup>	Preferred Habitat	Available Habitat in Gen-Tie Corridor	Likelihood of Occurrence <sup>4</sup>
Yellow-billed cuckoo (Western Distinct Population Segment)	<i>Coccyzus americanus</i>	T	-	F	Low to moderate elevation riparian cottonwood-willow forests.	Only ephemeral streams are present; there are no large tracts of riparian forests.	Low
<b>Mammals</b>							
Black-tailed prairie dog	<i>Cynomys ludovicianus</i>	-	-	I	Dry, flat, short grasslands with low, relatively sparse vegetation, including areas overgrazed by cattle.	Shortgrass prairie present, which is actively grazed by cattle. Active prairie dog colonies (undetermined species) observed at the Wind Project Area.	High
Gunnison's prairie dog	<i>Cynomys gunnisoni</i>	-	-	I	Grasslands and semi-desert/montane shrublands at elevations from 6,000 to 12,000 feet.	Shortgrass prairie present. Active prairie dog colonies (undetermined species) observed at the Wind Project Area and at the nearby El Cabo Wind Farm. Nine known occurrences in Torrance County.	High

Table 3-1. Wildlife Special-Status Species with the Potential to Occur in the Gen-Tie Corridor (continued)

Common Name	Scientific Name	Federal Status <sup>1</sup>	State Status <sup>2</sup>	SGCN Category <sup>3</sup>	Preferred Habitat	Available Habitat in Gen-Tie Corridor	Likelihood of Occurrence <sup>4</sup>
Pale Townsend's big-eared bat	<i>Corynorhinus townsendii pallascens</i>	-	-	S	Roosts in caves, abandoned mine tunnels, and occasionally old buildings. Associated with dry uplands with both deciduous and coniferous forests; semi-desert scrub and pinyon-juniper woodlands.	Limited forest and woodlands present. Some cliffs/crevices present that could represent suitable habitat.	Low
Reptiles							
Desert massasauga	<i>Sistrurus tergeminus edwardsii</i>	-	-	D	Desert grasslands, shortgrass prairies, shinnery oak shrublands.	Shortgrass prairie present.	Moderate

Source: Tetra Tech 2018b

<sup>1</sup> Federal Listings: E = Endangered, T = Threatened, P = Protected by Bald and Golden Eagle Protection Act.

<sup>2</sup> State Listings: E = Endangered, T = Threatened.

<sup>3</sup> Species of Greatest Conservation Need (SGCN) NMDGF Category: Category I (Immediate Priority), Category H (Limited Habitat), Category S (Susceptible), Category D (Conservation Data Gaps), and Category F (Federally listed) species.

<sup>4</sup> Likelihood of Occurrence: Low—species' range overlaps the Project and marginally suitable habitat is present in the vicinity; Moderate—species' range overlaps the Project and suitable habitat is present in the vicinity, or species is known to occur in habitat similar to that at the Project; High—species observed during field surveys, highly suitable habitat present, or known populations exist in the vicinity (previous surveys at nearby locations).

### 3.4.3 Gen-Tie Corridor

#### Ecoregion and Habitat

The Gen-Tie Corridor lies within the Plains-Mesa Grassland vegetation association. Plains-Mesa Grassland is a shortgrass prairie and is the western edge of the Great Plains in New Mexico. Plains-Mesa Grassland is almost completely grass dominated, although scattered shrubs and subshrubs are present, often in areas affected by heavier grazing. Over 96 percent of the Gen-Tie Corridor, based on NLCD data (Jin et al. 2013), is grassland/herbaceous, which is predominantly used for grazing cattle (Table 3-2; Figure 6). The grassland habitat found in the Gen-Tie Corridor is common throughout eastern New Mexico and the Great Plains (Tetra Tech 2018c). After grassland/herbaceous land cover, the remaining combined land cover types account for approximately 3 percent of the Gen-Tie Corridor (Table 3-2). This coverage is indicative of the lack of surface water resources present throughout the Gen-Tie Corridor.

**Table 3-2.** National Land Cover Data Summary for the Gen-Tie Corridor

NLCD Land Cover	Acres in the Gen-Tie Corridor <sup>1</sup>	Percentage of Gen-Tie Corridor
Grassland/Herbaceous	2,113.2	97
Shrub/Scrub	52.2	2.3
Developed, Open Space	9.0	0.4
Evergreen Forest	5.6	0.3
<b>Total</b>	<b>2,180</b>	<b>—</b>

#### Special Status Species

Table 3-1 lists special-status species that have potential to occur in the Gen-Tie Corridor.

No species protected under the federal ESA are likely to occur in the Gen-Tie Corridor. Habitat for the southwestern willow flycatcher, yellow-billed cuckoo (western distinct population segment), and Mexican spotted owl is absent from the Gen-Tie Corridor, therefore likelihood of occurrence of these species is low. The bald eagle has a low likelihood of occurrence based upon the lack of suitable habitat and the Gen Tie Corridor's location relative to the species' range (Tetra Tech 2018b).

The golden eagle, protected under BGEPA has a high likelihood of occurrence in the Gen-Tie Corridor (Table 3-1; Tetra Tech 2018b). Golden eagles may use the Gen-Tie Corridor for foraging due to occurrence of small mammal prey species, but are not likely to use the area for nesting due to lack of nesting habitat. Golden eagles in the western United States are most commonly associated with open and semi-open habitats such as shrublands, grasslands,

woodland-brushlands, and coniferous forests, as well as farmland and riparian habitats. Golden eagles typically nest on cliff faces or in large trees; breeding areas vary by region, but are generally associated with mountainous canyon land, rimrock terrain of open desert, grassland areas, riparian habitats, and occasionally in forested areas. No in-use bald or golden eagle nests were found in or within 10 miles of the Gen-Tie Corridor during 2018 raptor nest surveys (Figure 7). The nearest golden eagle nests to the Gen-Tie Corridor are located more than 6 miles to the northeast, and all were alternate (inactive) in 2018 (Figure 7).

The potential for state-listed species to occur in the Gen-Tie Corridor is generally low, with only a moderate likelihood for one species listed as state threatened, Baird's Sparrow (*Ammodramus bairdii*), to occur (Table 3-1; Tetra Tech 2018b). The Baird's sparrow is a migrant throughout most of New Mexico, and winters in the southernmost portions of the state. Baird's sparrows are typically found in grasslands, weedy fields, and hay fields during migration. There are expansive grasslands with small shrubs/forbs throughout the Gen-Tie Corridor that are used as rangeland for cattle. No Baird's sparrows have been observed at the Gen-Tie Corridor during surveys to date (Tetra Tech 2018b). There are few records of Baird's sparrows reported within the vicinity of the Gen-Tie Corridor.

There are 25 SGCN with the potential to occur at the La Joya Project. The assessment of potential for occurrence within the La Joya Project is based upon known species' ranges, documented occurrences, and/or the presence of suitable habitat (Table 3-1). Aquatic species such as crustaceans and fish were excluded from analysis due to the lack of perennial surface water habitat and the expected avoidance by Pacific Wind of ephemeral channels and isolated wetlands within the La Joya Project with potential to contain these species (Tetra Tech 2018b).

Information on the occurrence of SGCN within the Gen-Tie Corridor is drawn from surveys at the El Cabo Wind Farm. The El Cabo surveys were performed from point-count locations that occurred both within and outside of the Gen-Tie Corridor. The habitat sampled at the survey location is likely representative of the SGCN within the Gen-Tie Corridor. Eleven SGCN species (ten birds and one mammal) were detected during or incidental to year-round avian point count surveys conducted at the El Cabo Wind Farm: pinyon jay (*Gymnorhinus cyanocephalus*), mountain bluebird (*Sialia currucoides*), mountain plover (*Charadrius montanus*), loggerhead shrike (*Lanius ludovicianus*), long-billed curlew (*Numenius americanus*), burrowing owl (*Athene cunicularia*), Cassin's sparrow (*Peucaea cassinii*), vesper sparrow (*Pooecetes gramineus*), western bluebird (*Sialia mexicana*), bald eagle, and Gunnison's prairie dog (Tetra Tech 2018b).

### **Other Biological Resources**

The Gen-Tie Corridor does not provide suitable habitat to support avian staging areas and rookeries. No raptor roosts were identified during the desktop analysis or field surveys (Tetra

Tech 2018b). No waterbird rookeries have been documented in the Gen-Tie Corridor, and there are no large trees surrounding wetlands or water bodies within the Gen-Tie Corridor that would support rookeries, thus there is negligible potential for occurrence of rookeries.

The Gen-Tie Corridor generally does not include habitat features that may attract foraging bats relative to the vicinity, or that may support roosting or concentrate migrants. Nineteen bat species have the potential to occur in the Gen-Tie Corridor out of 29 bat species occurring in New Mexico based on evaluation of species' ranges, documented occurrences, and habitat preferences (Tetra Tech 2018b). None of these bat species are currently listed as threatened or endangered at the federal or state level (USFWS 2017a; BISON-M 2017) and only one is considered a SGCN: the pale Townsend's big-eared bat subspecies (*Plecotus townsendii pallescens*), which is ranked as SGCN Susceptible (Tetra Tech 2018b) but has a low likelihood of occurring in the Gen-Tie Corridor due to lack of suitable habitat. Although many of these species are associated with riparian areas and forested habitats that are absent in the Gen-Tie Corridor, several bat species use desert, scrub, and grassland habitats for foraging. Bat use of these habitats within the Gen-Tie Corridor for foraging is not expected to be higher compared to those in the general vicinity given the widespread nature of these habitats in the region (Tetra Tech 2018b). Based on publicly available information, no known maternity roosts, hibernacula, caves, or mines were found near the Gen-Tie Corridor (Tetra Tech 2018b); therefore, roosting by bats is likely to be limited in the Gen-Tie Corridor. Results of acoustic monitoring studies at the nearby El Cabo Wind Farm suggest that the area does not occur within a fall migration pathway (Tetra Tech 2018b).

There are no prairie-dog colonies or other concentrations of raptor prey known to occur within the Gen-Tie Corridor (Figure 7; Tetra Tech 2018b).

### 3.5 LAND USES

#### 3.5.1 Data Sources

The following data sources were reviewed to assess the existing land use resources of Torrance County and the Gen-Tie Corridor:

- 2011 National Land Cover Database (NLCD).
- USGS Historical Topographic Map Explorer.
- Torrance County Zoning Ordinance.
- Torrance County Comprehensive Land Use Plan.
- East Torrance Soil and Water Conservation District.

- Torrance County (2009, 2016, 2018a, 2018b).

### 3.5.2 Existing Regional Conditions

Torrance County comprises approximately 3,400 square miles with an overall population density of about 5 people persons per square mile. By the 1920s, thousands of homesteaders had migrated to Torrance County for ranching and agriculture. After the Depression, followed by World War II, and then a drought, most ranches and farms were abandoned.

### 3.5.3 Gen-Tie Corridor

The Gen-Tie Corridor is located in a very rural, non-populated area characterized by miles of open space with a few scattered abandoned ranches and towns (Figure 3). US 60 and the BNSF Railroad run east-west across the Gen-Tie Corridor, and several pipelines are located in the area.

The Gen-Tie Corridor area is unpopulated, and the nearest population centers are the Village of Encino (population 82), approximately 10 miles to the east; the Town of Duran (population 35), approximately 17 miles to the southeast; the Town of Estancia (population 1,584), approximately 20 miles to the northwest; the Village of Willard (population 253), approximately 22 miles to the west; and the Town of Vaughn (population 446), approximately 25 miles to the east (Tetra Tech 2018c). An abandoned town, Pedernal, is located just east of the Gen-Tie Corridor along the BNSF Railroad. Other abandoned towns, including Lucy, Negra, and Silo, are also in the vicinity but outside the La Joya Project (Figure 3).

The dominant land cover within the Gen-Tie Corridor, based on NLCD data (Table 3-2), is grassland/herbaceous rangeland currently used as grazing lands for cattle (Figure 6). The Gen-Tie Corridor is located within the Torrance County agricultural zoning district, a rural land use designation for unincorporated areas of Torrance County that are not specifically designated in any other zone classification. Torrance County has approved two Zoning Ordinance Amendments for Special Use Districts to allow for development of renewable energy generation facilities and associated infrastructure and includes the La Joya Project, including the Gen-Tie Corridor. The Special Use Districts were approved by the Torrance County Board of County Commissioners on January 23, 2011, and May 10, 2017, respectively. Therefore, the Gen-Tie Corridor lies within lands zoned as a Special Use District for renewable energy consistent with the purpose of the Torrance County Zoning Ordinance and the Comprehensive Plan for Torrance County (2003).

The Gen-Tie Corridor intersects two school districts and two fire zones (Torrance County 2018a, 2018b) (Figure 8). No schools are located in or near the Gen-Tie Corridor. The nearest fire department is approximately 20 miles northwest in Estancia.

### 3.6 VISUAL AND SCENIC RESOURCES

#### 3.6.1 Data Sources

The following data sources were reviewed to assess the existing visual and scenic resources of Torrance County and the Gen-Tie Corridor:

- EPA Ecoregions.
- Site visits and photographs (Appendix B).

#### 3.6.2 Existing Regional Conditions

The region's visual environment is characterized by its generally flat to rolling terrain and its rural nature dominated by livestock grazing, with few scattered farm buildings and residences. Vegetation within the region is mostly shortgrass prairie. Livestock grazing is the dominant land use. Common wildlife species include pronghorn, coyote, and a variety of birds and small mammals. The existing landscape includes the following development: wind energy facilities, pipelines, electric transmission lines, oil and gas wells, highways, railroads, rural residential dwellings, and ranching and farming facilities. The predominant vertical visual features include the El Cabo Wind Project, transmission lines, and antenna towers.

#### 3.6.3 Gen-Tie Corridor

The visual environment of the Gen-Tie Corridor matches the surrounding vicinity, with generally level terrain comprised of grassland used for grazing in a rural setting with few buildings and no occupied residences. (Figures 3 and 6). No prominent hydrological features occur within the Gen-Tie Corridor. Elevation ranges from 6,355 to 6,822 feet. The area is predominantly grassland with some scattered shrubs and sub-shrubs, often in areas affected by heavier grazing.

US 60 and the BNSF Railroad extend east-west through the southern portion of the Gen-Tie Corridor. U.S. Highway 285 (US 285), which extends north towards Santa Fe, NM, is located east of the Gen-Tie Corridor. The majority of the public and private roads within the Gen-Tie Corridor are caliche-covered two-tracks.

There are no inhabited structures within the Gen-Tie Corridor, with scattered rural residences and commercial structures in the vicinity (Figure 8). Travelers across the Gen-Tie Corridor would include local or regional traffic along US 60.

There are no designated federal or state scenic routes or byways in or near the Gen-Tie Corridor. The closest scenic byway is Historic Route 66 approximately 12 miles north of the Gen-Tie Corridor (Figure 9). In addition, the Salt Missions Trail Scenic Byway is located 22.5 miles west

of the Gen-Tie Corridor, traversing through Estancia and traveling west towards Cibola National Forest (Figure 9).

Additionally, there are no national parks or state parks in the vicinity of the Gen-Tie Corridor. The closest national forest is Cibola National Forest, which at its closest, is approximately 19 miles southwest of the Gen-Tie Corridor (Figure 3). The closest state park is the Manzano Mountains State Park, which is approximately 40 miles west of the Gen-Tie Corridor (Figure 3).

Photos of the Gen-Tie Corridor and vicinity are included in Appendix B.

### **3.7 CULTURAL, HISTORIC, AND ARCHAEOLOGICAL RESOURCES**

#### **3.7.1 Data Sources**

The following data sources were reviewed to assess the existing archaeological and historic resources within the Gen-Tie Corridor and a surrounding 0.5-km buffer zone in Torrance County, New Mexico.

- New Mexico Cultural Resource Information System (NMCRIS).
- Tierra Right of Way Class I Letter Report (2018a).
- Tierra Right of Way Unanticipated Discoveries Plan (2018b).
- National Register of Historic Places (NRHP) online database.
- New Mexico State Register of Cultural Properties (SRCP) online database.
- Bureau of Land Management General Land Office (BLM GLO) historic maps.
- USGS Historical Topographic Map Explorer.

#### **3.7.2 Existing Regional Conditions**

The area has long been home to Ancestral Pueblo populations. To the west and southwest of the Gen-Tie Corridor in Torrance County are the village and mission complexes that make up Salinas Pueblo Missions National Monument: Abo, Quarai, and Gran Quivira. Ancestral Pueblo people lived in all three locations as early as the 13th century A.D. During the 17th century, Spanish missionaries built churches at all three locations. Historically, and continuing to the present day, farming and ranching have been dominant ways of life in the area.

#### **3.7.3 Gen-Tie Corridor**

Seven previous cultural resources surveys intersect with the Gen-Tie Corridor (Table 3-3). These were conducted in support of pipeline, fiber optics cable, and other projects. A 2017 survey by

Tierra Right of Way Services, Ltd., for the Proposed El Cabo Wind Project covered a large portion of the Gen-Tie Corridor.

**Table 3-3. Previous Surveys within a 0.5-mile Buffer of the Gen-Tie Corridor**

NMCRIS Activity No.	Report Reference
58	Hammack, Laurens C. 1981. Cultural Resource Inventory of the Shell CO <sub>2</sub> Mainline. Complete Archaeological Service Associates, Cortez.
48969	Bradley, Ronna J., and Kenneth L. Brown. 1998. Cultural Resources along the MAPCO Four Corners Pipeline: Huerfano Station, New Mexico, to Hobbs Station, Texas. Report No. 185-547B, Volume 1. Office of Contract Archaeology, University of New Mexico, Albuquerque.
90218	Gonzales, Thomas C. 2004. Ted and Bob McLaughlin/Equip. 2004/R12E, Sec. 23, 24. Document on file at U.S. Natural Resource Conservation Service, New Mexico State Office, Albuquerque.
90493	Romero-Yepes, Andrea. 2004. Berlier/Brush/Diversions/Encino, NM. Document on file at U.S. Natural Resource Conservation Service, New Mexico State Office, Albuquerque.
97432	Doak, David P., Renee Erickson, Jenna Hamlin, and Marie-Blanche Roudaut. 2007. A Class III (Intensive) Cultural Resource Survey of 23 Segments, Totaling 1310.55 Hectares (3238.43 Acres) of a Fiber Optic Cable Corridor in Colfax, De Baca, Guadalupe, Lincoln, San Miguel, Santa Fe, Socorro, Torrance, and Union Counties, New Mexico. Archaeological Report Number 2006-57. Tierra Right of Way Services, Ltd, Tucson.
128771	Jones, Jeffrey T., and Joseph Howell. 2013. Cultural Resource Survey for the Proposed El Cabo Wind Power Project in Torrance County, New Mexico. Archaeological Report No. 2015-025. Tierra Right of Way Services, Ltd., Tucson.
131552	Sisneros, Brianne, William Whitehead, and Jim A. Railey. 2014. A Cultural Resources Investigation for the Proposed Cortez North Loop Pipeline Expansion, Torrance County, New Mexico. Report No. 14-468. SWCA, Environmental Consultants, Inc., Albuquerque.
NMCRIS = New Mexico Cultural Resources Information Service	

Three archaeological sites intersect the Gen-Tie Corridor and consist of a prehistoric artifact scatter, a historic trash scatter, and a historic rock foundation. None of these sites have been recommended to be eligible for listing on the NRHP by the archaeologist who documented them. Ten other sites are within the 0.5-km buffer around the Gen-Tie Corridor. One of these sites has been determined not eligible for listing on the NRHP by the State Historic Preservation Office; seven others have been recommended not eligible by the archaeologist who documented them. One site, a prehistoric artifact scatter with fire-cracked rock concentrations, has been determined

eligible for listing on the NRHP by the State Historic Preservation Office. One site, a prehistoric artifact scatter, has been recommended eligible by its recorders.

There are no resources listed on the NRHP or SRCP within the Gen-Tie Corridor. Review of BLM GLO original survey plats and USGS Historical Topographic Map Explorer revealed no known historic resources within the Gen-Tie Corridor.

### **3.8 RELIGIOUS**

#### **3.8.1 Data Sources**

The following data sources were reviewed to assess the existing religious resources and cemeteries of Torrance County and the Gen-Tie Corridor.

- NMCRIS.
- NRHP online database.
- SRCP online database.
- BLM GLO historic maps.
- USGS Historical Topographic Map Explorer.
- New Mexico Gazetteer Online Home Town Locator.

#### **3.8.2 Existing Regional Conditions**

There are no places of religious worship near the Gen-Tie Corridor. The nearest church to the Gen-Tie Corridor, Frontier Church, is located approximately 23 miles west of the northern terminus of the Gen-Tie Corridor near McIntosh, NM (Figure 10). The nearest cemeteries to the Gen-Tie Corridor include the historic Negra Cemetery, approximately six miles east of the southern terminus of Gen-Tie Corridor, and the historic Red Hills Cemetery, located approximately six miles east of the northern terminus of the Gen-Tie Corridor (Figure 10). Torrance County contains the small city of Moriarty, as well as several towns, villages, and unincorporated communities. The nearby communities of Encino, Willard, Duran, Vaughn, and Estancia contain active cemeteries and churches. Historic, now unused, cemeteries and churches are present at all three of the pueblos that make up Salinas Pueblo Missions National Monument, located about 35 miles southwest of the Gen-Tie Corridor (Figure 3). The Monument is an important part of New Mexico history that holds significance for both Native American and Catholic populations.

### 3.8.3 Gen-Tie Corridor

There are no known places of religious worship or cemeteries within the Gen-Tie Corridor (Figure 8).

## 3.9 GEOLOGY AND PALEONTOLOGICAL RESOURCES

### 3.9.1 Data Sources

The following data sources were reviewed to assess the existing geological resources of Torrance County and the Gen-Tie Corridor:

- Geology of the Pedernal Hills Area Torrance County, New Mexico (Fallis 1958).
- National Geologic Map Database (NMBGMR 2003).
- Geologic Map and Sections of the Torrance Station 4 NE Quadrangle (Fischer and Hackman 1964).
- United States Geological Survey Water Resources Investigations Report 93-4163 (USGS 1994).
- USGS Open-File Report 98-521 (USGS 2000)

### 3.9.2 Existing Regional Conditions

The regional geology is characterized by the Estancia Basin, which is a topographically closed basin that ranges in altitude from 6,000 feet to more than 10,000 feet above mean sea level. The Estancia Basin is bordered on the west by the Manzano and Sandia Mountains and on the east by the Pedernal Hills. The center of the basin is filled with up to 400 feet of alluvial and lake sediments underlain by limestone of the Pennsylvania- and Permian-age Madera Group (USGS 1994). The regional geology presents no unique engineering issues for the Project. The nearest quaternary fault occurrences are located in the Manzano Mountains approximately 40-miles west of the Gen-Tie Corridor (USGS 2000). No faults or landslides are known to occur in the region. The nearest landslide areas are located in adjacent counties and are of moderate susceptibility and low incidence (USGS 2000).

Paleontological resources are not known to occur in the Project vicinity. The nearest identified paleontological resources are located approximately 60 miles west from the Gen-Tie Corridor in the Manzano Mountains (NMBGMR 2018).

### 3.9.3 Gen-Tie Corridor

The geology of the Gen-Tie Corridor is characterized by Quaternary-aged alluvium (Qa), Lower Pliocene-aged Ogallala Formation (To), and Pre-Cambrian-age granitic and plutonic rocks (Figure 10). The nearest karst area is located between 2 to 6 miles east of the Gen-Tie Corridor (USGS 2018) (Figure 10). The presence of karst beneath the Gen-Tie Corridor is very unlikely due to the project's underlying geology, but the project's final engineering and geotechnical survey will provide confirmation.

The Gen-Tie Corridor is located at the eastern edge of the Estancia Basin. There are no known faults or landslides in the Gen-Tie Corridor (USGS 2000). Site-specific geotechnical evaluation will be completed prior to final engineering.

There are no known occurrences of paleontological resources within the Gen-Tie Corridor. The nearest identified paleontological resources are located approximately 60 miles west from the Gen-Tie Corridor in the Manzano Mountains (NMBGMR 2018).

## 3.10 SOILS

### 3.10.1 Data Sources

The following data sources were reviewed to assess the existing soil resources of Torrance County and the Gen-Tie Corridor:

- USDA NRCS Soil Data.
- East Torrance Soil and Water Conservation District.
- Western Regional Climate Center.

### 3.10.2 Existing Regional Conditions

The majority of Torrance County consists of rangeland and irrigated crop land. Dominant soils in the county are comprised of the Clovis, Dean, Harvey, and Tapia series (Figure 11). The Clovis series consists of very deep, well drained, moderately permeable soils that formed in medium and moderately fine textured sediments from quartzite gneiss, schist, sandstone, and limestone. The Clovis soils are on fan terraces, piedmont slopes, and plains.

The Dean series consists of very deep, well drained soils that formed in alluvium derived dominantly from limestone. Permeability is moderately slow or moderate. Dean soils are on bajadas, ridges, mesas and fan terraces. Slope ranges from zero to 20 percent.

The Harvey series consists of very deep, well drained, moderately permeable soils that formed in alluvium and windblown sediments derived dominantly from sandstone, shale, and limestone.

Harvey soils are on hills, swales, plateaus, bajadas, mesas, and fan piedmonts. Slopes are zero to 15 percent.

The Tapia series consists of very deep, well drained, moderately permeable soils that formed in alluvium and eolian material derived from mixed sources. These soils are on piedmont fans and mesas and on interfluves of undulating plains. Permeability is moderate. Slope ranges from zero to 15 percent (USDA 2018).

### **3.10.3 Gen-Tie Corridor**

The Gen-Tie Corridor is comprised of four general soil associations: 1) Clovis Loam, 2) Clovis-Dean Loam, 3) Harvey Dean Loam, and 4) Tapia Loam. The Gen-Tie Corridor is dominated by loam and sandy loam soils. Additional geotechnical evaluation will be completed during engineering design to support transmission line structure foundation design and micro-siting.

## **3.11 MINERAL AND MINING RESOURCES**

### **3.11.1 Data Sources**

The following data source was reviewed to assess the existing mineral resources of Torrance County and the Gen-Tie Corridor.

- United States Geological Survey Open -File Report 192 (USGS 1984).
- New Mexico Bureau of Geology and Mineral Resources.
- New Mexico Oil Conservation Division.

### **3.11.2 Existing Regional Conditions**

In Torrance County, Precambrian rocks are found in the Manzano Mountains, the Pedernal Hills, and several small, isolated highlands in central and eastern Torrance County. The oldest Precambrian units in the Manzano Mountains in Torrance County include a sequence of greenstones, phyllites, argillites, metavolcanic rocks, and minor talc that compose the Hell Canyon greenstone. Mineral production from Torrance County has not been substantial when compared to most counties in New Mexico. Historically Torrance County has been mined for salt in the Estancia Basin, as well as copper, silver, gold, lead, radium, and CO<sub>2</sub>. However, the most important production has been of sand, gravel, stone, and related construction materials (i.e., aggregate) (USGS 1984).

There are two known aggregate operations located within 3 miles of the Gen-Tie Corridor, the Torrance Quarry and Pedernal Quarry, both near the southern terminus of the Gen-Tie Corridor (NMMMD 2018) (Figure 12). Based on oil and gas well data from the New Mexico Oil

Conservation Division (OCD), the closest oil and gas well is located approximately 5 miles south of the Gen-Tie Corridor (OCD 2018).

### **3.11.3 Gen-Tie Corridor**

There are no oil or gas wells or active leases or mining operations within the Gen-Tie Corridor (OCD 2018). There are no known sand and gravel operations within the Gen-Tie Corridor (NMMMD 2018).

## **3.12 SOCIOECONOMICS**

### **3.12.1 Data Sources**

The following sections are taken from the La Joya Economic Impact Study (Tetra Tech 2018c).

### **3.12.2 Existing Regional Conditions**

#### **Demographic Overview of New Mexico and Torrance County**

Torrance County is located in central New Mexico. The county is approximately 3,350 square miles in size, the majority of which (about 87 percent) is agricultural land. Torrance County had a total estimated population of 15,506 in 2017, ranking 23 out of the 33 counties in New Mexico in terms of population. The county is sparsely populated with a population density of less than 5 persons per square mile. The majority (95 percent) of the population resides in the western part of the county. There are five incorporated communities in Torrance County (Encino, Estancia, Moriarty, Mountainair, and Willard), which together account for about one-third (31 percent) of the population. A growing number of Torrance County residents live in newly developed subdivisions in the western part of the county and commute daily to Albuquerque and Santa Fe for work (Tetra Tech 2018c).

Torrance County grew in the 1990s, with population increasing by almost two-thirds from 1990 to 2000. Population has since declined, dropping by about 3 percent from 2000 to 2010, and by a further 5.4 percent (877 people) from 2010 to 2017. The overall loss of people from 2010 to 2017 was the result of net out-migration (more people left than moved to the county), with the county experiencing a modest net gain (71 people) through natural increase (more births than deaths).

The state of New Mexico had a total estimated population of 2.09 million in 2017. Statewide, the population increased by about 13 percent from 2000 to 2010, and by a further 1.4 percent from 2010 to 2017. Like Torrance County, New Mexico experienced net out-migration from 2010 to 2017, but the gain from natural increase more than offset this loss.

### Employment and the Economy

The local economy in Tarrant County has been traditionally dominated by farming and ranching. Non-agricultural activities have increased in recent years, but agriculture still accounts for about 13 percent of jobs in the county compared to just 3 percent statewide. Other sectors accounting for relatively large shares of employment include retail trade and government, especially local government (Table 3-4).

**Table 3-4. Employment by Economic Sector, 2016**

Economic Sector	Tarrant County		State of New Mexico	
	Number of Jobs	Percent of Total	Number of Jobs	Percent of Total
Agriculture	675	13	29,657	3
Forestry, fishing, and related	(D)	na	5,557	1
Mining	(D)	na	31,103	3
Utilities	(D)	na	4,807	0
Construction	280	5	59,381	5
Manufacturing	144	3	33,334	3
Wholesale trade	237	4	29,365	3
Retail trade	677	13	115,080	10
Transportation and warehousing	(D)	na	26,837	2
Information	30	1	15,901	1
Finance and insurance	78	1	34,611	3
Real estate	127	2	40,855	4
Professional, scientific, and technical services	(D)	na	79,035	7
Management of Companies	25	0	6,111	1
Administrative, waste management, remediation	(D)	na	53,157	5
Arts, entertainment, and recreation	(D)	na	24,445	2
Accommodation and food services	(D)	na	92,634	8
Education	112	2	17,542	2
Health care and social assistance	427	8	134,766	12
Other services	284	5	56,161	5
Government	1,036	19	208,921	19
<b>Total Employment</b>	<b>5,320</b>	<b>100</b>	<b>1,099,260</b>	<b>100</b>
Notes:				
na – not applicable				
(D) Not shown to avoid disclosure of confidential information; estimates for this item are, however, included in the totals.				

1/ Employment estimates include self-employed individuals. Employment data are by place of work, not place of residence, and, therefore, include people who work in the area but do not live there. Employment is measured as the average annual number of jobs, both full- and part-time, with each job counted at full weight.

Torrance County is one of four counties that form the Albuquerque Metropolitan Statistical Area (MSA). MSAs represent larger communities that form regional markets for labor, products, and information and typically include an urbanized node and economically related surrounding counties. Torrance County accounts for just 2 percent of the total Albuquerque MSA population of more than 900,000. Almost half of workers in Torrance County travel to jobs in other counties, with more than a third commuting to jobs in adjacent Bernalillo County, which includes Albuquerque.

Unemployment in Torrance County peaked in 2010, with an annual unemployment rate of 11.6 percent, substantially higher than the corresponding statewide (8.1 percent) and national averages (9.6 percent). The unemployment rate in Torrance County has gradually declined since 2011 but remained substantially above the state and national averages in 2017. New Mexico also had a higher rate than the national average, with the second highest statewide rate in the country.

### 3.12.3 Gen-Tie Corridor

According to the Torrance County GeoCortex Map (GeoCortex 2018), the Gen-Tie Corridor crosses the following land type parcels: seven agricultural, three residential, two vacant lands, two state lands, and one exempt. The area is sparsely populated, and there are no occupied residences in the Gen-Tie Corridor. The Gen-Tie Corridor occupies open grassland used for grazing and crosses the El Cabo Wind Farm as it parallels the El Cabo Gen-Tie to the proposed Torrance Switching Station.

## 3.13 ROADS

### 3.13.1 Data Sources

The following data sources were reviewed to assess the existing road resources of Torrance County and the Gen-Tie Corridor:

- New Mexico Department of Transportation (NMDOT).
- Torrance County Road Department.

### 3.13.2 Existing Regional Conditions

Torrance County is a rural county in central New Mexico with a sparse network of highways and state, county, and private roads. US 60, US 285, and US 54 are the main highways traversing the county, with Interstate 40 (I-40) running along the northern edge of the County (Figure 1).

### 3.13.3 Gen-Tie Corridor

US 60 crosses along the southern portion of the Gen-Tie Corridor, which also crosses and/or runs parallel to multiple county and private roads. Existing roads within the Gen-Tie Corridor are caliche-covered, with the majority of the roads being two-tracks.

## 3.14 NOISE

### 3.14.1 Data Sources

The following data source was reviewed to assess the existing noise conditions of Torrance County and the Gen-Tie Corridor.

- U.S. Department of Commerce–United States Census.
- Various Site Visits by Tetra Tech Staff.

### 3.14.2 Existing Regional Conditions

Torrance County is a rural county in central New Mexico with population density below the state and national averages (U.S. Census Bureau 2017). The acoustical setting generally has relatively low ambient noise levels due to the rural setting. Noise in the region typically ranges from very quiet with natural sounds such as birds, insects, and wind dominating to noisy in localized areas near towns, highway crossings, and in agricultural areas during cultivation activities. Various site visits by Tetra Tech confirm that the project site sounds consist of low ambient sounds related to birds, insects, cattle, wind and the sound of the El Cabo Wind Farm turbines.

### 3.14.3 Gen-Tie Corridor

The primary existing sources of noise in the Gen-Tie Corridor are traffic along US 60, local county roads, agricultural machinery, and noise associated with the existing El Cabo gen-tie line and El Cabo Wind Farm. Noise associated with the El Cabo gen-tie and the El Cabo Wind Farm are consistent with the County's land use ordinance that limits noise to less than 50 decibels (dBA) at any occupied residence, school, hospital, church or public library.

## 3.15 COMMUNICATION SIGNALS

### 3.15.1 Data Sources

The following data source was reviewed to assess the existing communication signal resources of Torrance County, and the Gen-Tie Corridor:

- FCCInfo; based on publicly available data from the Federal Communication Commission (FCC) (<http://www.fccinfo.com/disclaimer.php>).

### 3.15.2 Existing Regional Conditions

Several microwave beams paths occur in Torrance County along the western half of the county (FCCInfo 2018). Higher concentrations occur around Cibola National Forest in the southern portion of the county. One AM broadcast station is located approximately 14 miles north of the Gen-Tie Corridor. One FM station tower was identified within 2.5 miles of the Gen-Tie Corridor. Several antenna towers have been registered with the FCC in the vicinity of the Gen-Tie Corridor (Figure 13).

### 3.15.3 Gen-Tie Corridor

No microwave beam paths cross the Gen-Tie Corridor (FCCInfo 2018). Communication signal conditions within the Gen-Tie Corridor would be similar to what is described above based on existing microwave beam paths and AM and FM stations in the area. Antenna towers located within 3 miles of the Gen-Tie Corridor have been registered under El Cabo Wind LLC (Figure 13).

## 3.16 MILITARY ACTIVITIES AND AVIATION

### 3.16.1 Data Sources

The following data sources were reviewed to assess the existing military and aviation resources of Torrance County and the Gen-Tie Corridor:

- Visual Flight Rule (VFR) Map 2018, Digital Aviation LLC (<http://vfrmap.com/tos.html>).
- FAA Department of Defense (DoD) Screening Tool (FAA 2018a).

### 3.16.2 Existing Regional Conditions

The nearest aviation facility to the Gen-Tie Corridor is the Estancia Municipal Airport, located approximately 22 miles west of the Gen-Tie Corridor. Torrance County airspace does include military training routes (MTR), but does not include any military operation areas (FAA 2018b, Digital Aviation 2018) (Figure 14).

### 3.16.3 Gen-Tie Corridor

Military and Aviation resources for the Gen-Tie Corridor are similar to those described above.

### **3.17 GEOGRAPHIC RESOURCES**

#### **3.17.1 Data Sources**

The following data source was reviewed to assess the existing geographic resources of Torrance County and the Gen-Tie Corridor.

- National Park Service.

#### **3.17.2 Existing Regional Conditions**

Torrance County is located within the Basin and Range physiographic province (NPS 2018). The Southern Basin and Range is an extension of the Basin and Range Province centered in Nevada extending from southern Oregon to western Texas, and into northwest Mexico.

The Manzano Mountains State Park and Salinas Pueblo Missions National Monument are located in Torrance County, as well as the Cibola National Forest. Other national parks and monuments of the Basin and Range physiographic province in New Mexico include: White Sands, Guadalupe Mountains, Carlsbad Caverns, and Amistad. Salinas Pueblo Missions National Monument is located 35 miles southwest of the Gen-Tie Corridor. The closest state park is Manzano Mountains State Park, located approximately 40 miles west of the Gen-Tie Corridor (Figure 3).

#### **3.17.3 Gen-Tie Corridor**

Geographic resources for the Gen-Tie Corridor are similar to those described above for Torrance County. There are no national or state parks or monuments located within or near the Gen-Tie Corridor.

### **3.18 RADIOACTIVE WASTE AND RADIATION HAZARDS**

Electric transmission lines and associated infrastructure do not generate or contain radioactive waste or radiation hazards. The proposed Gen-Tie Facilities will not generate radioactive waste or radiation hazards and therefore, the topic is not addressed further in this Environmental Report.

### **3.19 HAZARDOUS MATERIALS**

The Gen-Tie Corridor does not contain any known hazardous materials. Chapter 4, Section 4.19 describes potential hazardous materials associated with construction, operation, and maintenance of a transmission line, substation, and switchyard, as well as protection measures to reduce impacts from hazardous materials.

### **3.20 SAFETY**

The Gen-Tie Corridor does not contain any known safety concerns. Chapter 4, Section 4.20 describes potential safety concerns associated with construction, operation, and maintenance of a transmission line, substation, and switchyard, as well as protection measures to reduce safety impacts.

## 4.0 ENVIRONMENTAL CONSEQUENCES

### 4.1 INTRODUCTION

This chapter addresses whether location of the proposed Gen-Tie Facilities would “unduly impair important environmental values,” as provided in NMSA 1978, Section 62-9-3.F. Potential consequences or impacts to the environment that could result from the location of the proposed Gen-Tie Facilities are described below, including construction, operation, and maintenance activities. Each of the resource areas provided in Commission rule 17.9.592.10 NMAC is addressed, as well as some additional resource known to be of concern to Commission Staff. These are: air resources; water resources; biological resources; land use (to include recreation, schools, and infrastructure including railroads and pipelines); visual and scenic; cultural, historic, and archaeological resources; religious resources; geology and paleontology; soils; minerals and mining; socioeconomic; roads; noise; communication signals; military activities and aviation; geographic resources; radioactive waste and radiation hazard; hazardous materials; and safety. Impact evaluations for each resource within the Gen-Tie Corridor are discussed below along with Protection Measures that can help manage impacts. Resources within the entire Gen-Tie Corridor are considered because Pacific Wind intends to micro-site the Gen-Tie Facilities.

Implementation of the proposed Gen-Tie Facilities could affect the existing condition of the environment. Effects can occur directly or indirectly. Direct effects are those that occur through direct or immediate interaction of the proposed Gen-Tie Facilities with environmental components. Indirect effects are those that are somewhat distant from the Gen-Tie Facilities in time, space, or both.

Short-term impacts are considered to be those impacts that occur during construction and are generally anticipated to return to a preconstruction condition at or within three to five years following construction. Environmental effects that would be anticipated to remain for the life of the Gen-Tie Facilities are considered long-term impacts. Permanent impacts are those that would be anticipated to remain for the life of the Gen-Tie Facilities and beyond.

For each resource area reviewed below, this report describes the potential ground disturbance and environmental effects that may occur due to the proposed Gen-Tie Facilities; identifies the protection measures that Pacific Wind proposes to avoid and/or minimize impacts; and summarizes the potential for the proposed Gen-Tie Facilities to result in undue impairment of important environmental values regardless of where they are micro-sited.

#### 4.1.1 Ground Disturbance

Descriptions of ground disturbance are based on typical specifications of the proposed facilities, construction techniques and equipment, extent and duration of construction, requirements for

operation of the proposed Gen-Tie Facilities, and activities associated with routine maintenance of the Gen-Tie Facilities. The majority of potential impacts that could occur would result from activities associated with construction, which include the following:

- Upgrading existing access roads or constructing new roads for access where needed;
- Preparing transmission line structure sites;
- Assembling and erecting transmission line structures;
- Stringing conductors (e.g., wire-pulling and splicing); and
- Substation and switchyard construction and upgrades.

In addition, impacts on some resources would occur following construction from the presence of the transmission line, substations, and access roads. Also, periodic maintenance could cause short-term impacts.

#### **4.1.2 Impact Assessment Method**

The amount of ground that could be disturbed as a result of the proposed Gen-Tie Facilities was estimated based on typical design characteristics of a 345-kV Gen-Tie Line and the proposed La Joya Substation and Torrance Switching Station (Chapter 2). Short-term disturbance includes structure work areas for the staging and installation of the transmission line structures as well as the conductor pulling and tensioning sites. Long-term disturbance included structure base areas and substation and switchyard locations. Qualitative and quantitative variables of resource sensitivity, resource quantity, and estimated ground disturbance were considered in predicting the extent and magnitude of impacts. What constitutes an impact level on a resource varies by resource as well as the assumptions for analysis for each resource. Protection measures were identified and include actions that can reduce potential impacts to a resource from the proposed Gen-Tie Facilities.

Protection measures would be implemented during construction, operation, and maintenance of the proposed Gen-Tie Facilities. These are items that Pacific Wind proposes to implement as part of the project development. These measures were designed to avoid and/or reduce impacts from the proposed Gen-Tie Facilities.

## **4.2 AIR RESOURCES**

### **4.2.1 Impact Assessment Methods**

Assessment of impacts to air resources from the construction, operation, and maintenance of the Gen-Tie Facilities follows the impact assessment methodology described in Section 4.1.2 above

and is discussed below. The proposed Gen-Tie Facilities were evaluated to determine whether their location within the Gen-Tie Corridor, including construction, operation and maintenance, would result in impacts that would impair air resources.

#### **4.2.2 Impacts Specific to the Gen-Tie Facilities**

Construction, operations and maintenance impacts are generally short term and temporary in nature for air resources.

The Gen-Tie Facilities themselves will not produce air emissions. Equipment used during the construction and operation of the facility will generate engine exhaust emissions and fugitive dust emissions.

##### **Construction**

The large equipment used during construction will likely be fueled with diesel or gasoline. Exhaust emissions from combusting these fuels include pollutants such as nitrogen oxides, carbon monoxide, volatile organic compounds, particulate matter, sulfur dioxide, and trace amounts of hazardous air pollutants. Construction contractors and their equipment will be required to comply with all emissions standards. If an on-site concrete batch plant is required for transmission line facility construction, the proper air quality construction permit will be obtained prior to construction.

Fugitive dust emissions arise from land clearing, grading, excavation, and vehicle traffic on unpaved roads. The amount of fugitive dust generated depends on the amount of vehicular traffic, construction activities, moisture content of the soil, and wind speed. During dry periods with high winds, unmitigated fugitive dust emissions would be more prevalent than during wet periods with low winds. Dust suppression methods will be used in construction zones as necessary to mitigate fugitive dust impacts.

As the fugitive dust emissions and vehicle exhaust emissions will be temporary (limited to the construction period), transient, and limited to the construction area, these sources are not expected to negatively impact air resources in the Gen-Tie Corridor or the surrounding area.

##### **Operations and Maintenance**

During operation of the proposed Gen-Tie Facilities, fugitive dust emissions will be generated by worker and maintenance vehicles traveling on unpaved roads. In addition, there will be exhaust emissions from the vehicles themselves. Given the infrequent nature of such vehicle travel, emissions during facility operations are not anticipated to be substantial and, therefore, only minimal impacts to air quality are anticipated.

### 4.2.3 Protection Measures

Protection measures will be implemented to reduce potential impacts to air quality from construction activities. Emissions are only anticipated to arise from ground disturbing activities, equipment movement, fuel combustion, and concrete batch plant(s) if required. These emissions will be temporary and localized. Protection measures to address construction-related impacts to air quality resources are expected to consist of:

- Air-1 – Maintaining all fossil fuel-fired construction equipment in accordance with manufacturer recommendations to minimize construction-related combustion emissions.
- Air-2 – Limiting the idling time of fossil fuel-fired construction equipment, unless idling must be maintained for proper operation (e.g., drilling, hoisting, and trenching).
- Air-3 – Limiting the speed of vehicles within construction sites and along the utility ROW during construction to help reduce the amount of fugitive dust generated.
- Air-4 – Utilizing water trucks or other dust suppression measures as necessary to help reduce fugitive dust from construction activities.

### 4.2.4 Conclusion

In consideration of the limited and transient nature of emissions resulting from construction, operation, and maintenance of the proposed Gen-Tie Facilities, as well as the protection measures detailed above, the location of the proposed Gen-Tie Facilities is not expected to unduly impair air resources.

## 4.3 WATER RESOURCES

### 4.3.1 Impact Assessment Methods

Assessment of impacts to water resources from construction, operation, and maintenance of the Gen-Tie Facilities within the Gen-Tie Corridor follows the impact assessment methodology described in Section 4.1.2 above and is discussed below. The proposed Gen-Tie Facilities were evaluated to determine whether their location within the Gen-Tie Corridor, including construction, operation and maintenance, would result in impacts that would impair water resources. Potential impacts associated with surface and ground waters were assessed.

### 4.3.2 Impacts Specific to the Gen-Tie Facilities

Construction, operations and maintenance impacts are generally avoidable, short term, and temporary in nature for water resources.

### Surface Water/Wetlands

As described in Section 3.3, surface water features within the Gen-Tie Corridor are comprised of ephemeral drainages and limited diked or impounded wetland areas associated with stock ponds, or seasonal/intermittent wetlands associated with depressional areas and ephemeral swales (Tetra Tech 2018a). These features contain surface flow only during storm events, and do not support any perennial surface water resources within the Gen-Tie Corridor. As discussed in Section 3.3.2, these water features are located within a hydrologically closed basin with no surface connections to waters outside the interior-draining Estancia Basin (Tetra Tech 2018a).

Historically, the U.S. Army Corps of Engineers (USACE) Albuquerque District has determined that these large internally draining basins are "isolated basins," and therefore the water features associated with these basins, such as those within the Gen-Tie Corridor, are not subject to Section 404 of the CWA. However, only the USACE can issue a jurisdictional determination for water resources potentially impacted by project activities (Tetra Tech 2018a).

The potential sources of surface water resource impacts from the proposed Gen-Tie Facilities include permanent and temporary soil disturbance activities from work areas, wire-pulling, tensioning and splicing sites, construction yards and temporary and permanent roads, as well as potential accidental spills of hazardous materials from these activities. Though very unlikely, short-term impacts from soil disturbances that increase erosion (or water runoff in areas with compacted soils) may result in an increase in suspended sediments within adjacent waterbodies and accidental spills of hazardous materials that could wash into and pollute surface water. Based on duration, the small ground disturbance area, and limited amount of permanent surface water features present in the Gen-Tie Corridor, low impacts to surface waters are anticipated from the proposed Gen-Tie Facilities.

In addition to soil-disturbance activities, impacts to ephemeral surface waters may include ephemeral stream crossings by proposed Gen-Tie Facilities or access roads. All crossings will be spanned by the transmission line and individual structures will be located outside the stream bank ordinary high-water mark to avoid potential impacts. Where available, existing road-stream crossings will be utilized for access; however, new stream crossings may be required in certain areas. These activities would be permitted through the applicable agencies, as required. Based on the minimal number of ephemeral surface water features in the Gen-Tie Corridor, as well as the ability to avoid impacts to surface water features resources through aerial spanning, low impacts to ephemeral streams are anticipated from the proposed Gen-Tie Facilities.

Stormwater BMPs will be used during construction to reduce potential impacts from erosion, sedimentation, and turbidity in surface waters during construction. A Stormwater Pollution Prevention Plan (SWPPP) will be developed and implemented for construction of the proposed Gen-Tie Facilities, which will meet the construction stormwater discharge permit requirements

of the New Mexico Environment Department–Surface Water Quality Bureau (NMED-SWQB). The SWPPP will include a number of measures to control runoff and to reduce erosion and sedimentation at construction sites. In addition, a Spill Prevention, Containment, and Countermeasures Plan (SPCCP), as discussed further in Section 4.19, would be implemented to prevent pollution of surface waters from accidental spills of hazardous materials.

### **Ground Water**

It is unlikely the proposed Gen-Tie Facilities would affect groundwater to any extent. Any impacts to groundwater would be of low impact for short duration and consist mainly of temporary sedimentation. It is unlikely that excavations for proposed Gen-Tie Facilities would contact shallow groundwater; if groundwater contact occurs it would be unlikely to adversely impact this resource, unless an accidental spill of fuel or petroleum from construction equipment (which is very unlikely) occurs near an open excavation or is not cleaned up in a timely manner.

No water wells would be drilled for the proposed Gen-Tie Facilities. All water used for construction (e.g., dust control or concrete production) will come from an existing offsite well that has been permitted by the New Mexico Office of the State Engineer or from other approved sources. Pacific Wind is coordinating with the New Mexico Ground Water Quality Bureau to determine the potential need and timing for submitting a Ground Water Discharge Permit Notice of Intent should one be needed for construction.

### **Floodplains**

As discussed in Section 3.3, three FEMA-mapped floodplain areas are located at least partially within the Gen-Tie Corridor, all of which appear to be associated with isolated depressional areas (Tetra Tech 2018b). It is reasonable to assume that all watercourses that convey natural flows, whether mapped by FEMA as floodplains, flood hazard areas, or not, present some level of flood hazard. Encroachment of a structure into a flood path could result in flooding of or erosion damage to the encroaching structure and diversion of flows. Proposed Gen-Tie Facilities will avoid mapped floodplains to the extent practicable to avoid impacts (such as channel alteration and flow modification) and, therefore, impacts to floodplains will be avoided or minimal.

#### **4.3.3 Protection Measures**

Protection measures that will be implemented to reduce any potential negative water impacts include:

- Water-1 – Develop and implement a SWPPP. The SWPPP may include measures such as: silt barrier fences to control runoff, sediment traps and basins, and minimizing exposed soils by using temporary and permanent seeding and mulching.

- Water-2 – Disturbed areas will be restored to its original condition to the extent practicable. Seed mix and seeding rates will be developed through consultation with the local agency, experts, or landowner preference.
- Water-3 – Equipment will be properly maintained for fluid leaks.
- Water-4 – Fuels and petroleum will be stored away from excavated areas.
- Water-5 – Spills will be cleaned up immediately.
- Water-6 – Matting and other temporary protective measures will be used on jurisdictional wetlands that cannot be avoided.
- Water-7 – Establish an appropriate buffer zone around wetlands as necessary to reduce disturbance.
- Water-8 – Span and avoid placing structures in ephemeral streams and other surface water features.

#### **4.3.4 Conclusion**

Based on the limited amount of water resources in the Gen-Tie Corridor, avoidance of water resources by proposed Gen-Tie Facilities, as well as the protection measures detailed above, it is not expected that the location of the proposed Gen-Tie Facilities would unduly impair water resources.

### **4.4 BIOLOGICAL RESOURCES**

#### **4.4.1 Impact Assessment Methods**

Assessment of impacts to biological resources from the construction, operation, and maintenance of the Gen-Tie Facilities within the Gen-Tie Corridor follows the impact assessment methodology described in Section 4.1.2 above and is discussed below. Construction, operations and maintenance impacts are generally avoidable, short term, and temporary in nature for biological resources. Potential impacts associated with collision, disturbance, electrocution, and habitat loss and fragmentation were assessed with respect to special status species and other biological resources.

#### **4.4.2 Impacts Specific to the Gen-Tie Facilities**

Construction and maintenance impacts are generally short term and temporary, and operation impacts are typically low for biological resources.

Plant and wildlife species present within the Gen-Tie Corridor as indicated from surveys are typical for this region of New Mexico and the likelihood of occurrence of special-status species is generally low. The special-status species that have moderate to high likelihood of occurrence (e.g., golden eagle, Baird's sparrow) in the Gen-Tie Corridor are not expected to experience negative impacts from the construction and operation of the Gen-Tie Line based on how these species use the Gen-Tie Corridor and its vicinity and are likely to interact with the Gen-Tie Line (see below), the absence of concentrating features such as nesting or roosting substrates or prey concentrations, and the availability of equally suitable habitat elsewhere in the region. There are no features that are likely to concentrate other bird or bat species within the Gen-Tie Corridor.

### **Collision**

Wildlife are at risk of collision with vehicles during construction and maintenance, and flying wildlife are at risk of collision with Gen-Tie Facilities. Given the generally low level of use by wildlife of the Gen-Tie Corridor and the absence of concentrating features, the impacts from collision are expected to be low. Protection measures such as posted speed limits will further reduce the low risk of collision with vehicles.

### **Disturbance**

Wildlife resources that would be sensitive to disturbance (e.g., breeding raptors and other nesting birds, bat roosts) from construction and maintenance activities are largely absent from the Gen-Tie Corridor. Furthermore, protection measures such as performing vegetation clearing outside the bird nesting season or completing clearance sweeps for ground nesting birds during the breeding season will further reduce the already low risk of disturbance.

### **Electrocution**

The electrocution risk to wildlife of the Gen-Tie Line is very low because electrified components are generally too widely spaced to enable circuit completion by an individual. Electrocution risk from the substation and switchyard components is also low and will be further minimized through the implementation of protection measures. The project intends to follow the Avian Power Line Interaction Committee (APLIC) guidance to minimize risk of electrocution to avian species.

### **Habitat Loss and Fragmentation**

A small amount of permanent habitat loss would occur due to the approximately 59-acre permanent footprint of the transmission line structures and substation and switchyard components. Disturbed ground would be restored through the use of native or similar seed mixes. The proposed Gen-Tie Corridor occurs primarily in grassland habitats used for grazing that are typical of and widely available in the region. There are a number of existing sources of

development and disturbance, including an existing transmission line. The lack of undisturbed native habitats as well as absence of wetlands and other water resources within the Gen-Tie Corridor suggests that impacts to the plants and wildlife associated with these habitats will be largely unaffected by the construction of the Gen-Tie Line.

#### **4.4.3 Protection Measures**

Protection measures that will be implemented to reduce any potential negative biological impacts would include:

- Bio-1 – Properly disposing of trash and food debris.
- Bio-2 – Allowing wildlife that has entered the work area to leave the area on their own.
- Bio-3 – Providing environmental awareness training to all construction personnel working on the project.
- Bio-4 – Checking trenches, excavations, and uncapped pipe segments for wildlife.
- Bio-5 – Complying with posted and established project speed limits.
- Bio-6 – Conducting vegetation clearing outside the nesting season where feasible to discourage birds from establishing nests in project work areas.
- Bio-7 – Conducting pre-construction nest searches prior to initiating ground-disturbing activities unless vegetation clearing is completed outside of the nesting season.
- Bio-8 – Establishing buffers around occupied raptor nests, as necessary, to minimize disturbance; buffers will be determined based on variables such as species sensitivity to human activity, topography and vegetation near the active nest in relation to construction activities, and stage of nesting/fledging, which may affect sensitivity to disturbance.
- Bio-9 – Design proposed Gen-Tie Facilities to APLIC guidance to minimize avian risk.
- Bio-10 – Micrositing will be completed during engineering design to minimize impacts to sensitive biological resources to the extent practicable.

#### **4.4.4 Conclusion**

Based on the low impacts expected to occur to special status species as well as other biological resources and the protection measures detailed above, it is not expected that the location of the proposed Gen-Tie Facilities would unduly impair biological resources.

## 4.5 LAND USES

### 4.5.1 Impact Assessment Methods

Assessment of impacts to land uses from the construction, operation, and maintenance of the Gen-Tie Facilities within the Gen-Tie Corridor follows the impact assessment methodology described in Section 4.1.2. The proposed Gen-Tie Facilities were evaluated to determine whether the following types of impacts would occur:

- Temporary and permanent land use changes.
- Restrictions on activities within the ROW.
- Inconsistency with local land use plans and zoning.
- Removal of land from future development.
- Potential use restrictions or conflicts on public lands.
- Effect on schools, fire departments, recreation, and other infrastructure.

### 4.5.2 Impacts Specific to the Gen-Tie Facilities

Impacts to land uses from the proposed Gen-Tie Facilities would be largely temporary and limited in area during construction; and the large majority (> 99 percent) of the Gen-Tie Corridor would remain in its pre-existing use as rangeland. No direct or indirect impacts to schools or fire departments, state or county recreation lands, local parks, trails, hunting access lands, or other infrastructure would occur as a result of the construction, operation, and maintenance of the Gen-Tie Facilities.

#### **Agricultural Land Use Impacts**

The lands crossed by the proposed Gen-Tie Facilities are used for agricultural purposes, specifically cattle grazing and rangeland. Long-term land use impacts to grassland and pasture primarily will be the result of structure placement, ROW maintenance, and access roads. Grazing would continue within the ROW. The only land that will be unavailable for agriculture will be the area occupied by actual Gen-Tie Line structures, the La Joya Substation and the Torrance Switching Station. Gen-Tie Line structures may be approximately 3 to 5 feet in diameter at ground level depending on the type of structure, and an estimated total of up to approximately 150 structures will be constructed. The total permanent footprint of transmission line structures will range from approximately 0.025 to 0.26 acre inside the Gen-Tie Corridor, totaling about 39 acres for all transmission structures. The total permanent footprint of the La Joya Substation and Torrance Switching Station will be about 10 acres or less each. The total combined footprint for

transmission structures, Substation and Switching Station is about 59 acres. Overall the Gen-Tie Facilities will result in minimal reduction in agricultural production or land available for agricultural activities.

Leases have been obtained from all landowners within the Gen-Tie Corridor for constructing and maintaining the Gen-Tie Facilities. The landowner will maintain ownership of the property, and continue to pay taxes on the property, but Pacific Wind has acquired rights allowing construction, operation and maintenance of the Gen-Tie Facilities in exchange for a monetary payment to the landowner.

During construction and maintenance activities, agricultural lands will be subject to temporary impacts. Depending on the time of year, access for construction may result in compaction and rutting of soil and restrictions on access in and around the ROW. Landowners will be compensated for forage loss, and damaged soils will be restored. Cattle may need to be relocated or confined away from the ROW during construction. Following completion of construction, disturbance and disruption to agricultural activities will largely cease. Periodic maintenance activities and emergency repairs will result in impacts similar to those for construction. However, these activities will be infrequent over the life of the project. Landowners will be compensated for any damage and the ROW will be restored.

In addition to the ROW for the Gen-Tie Facilities, temporary laydown areas for construction material and equipment will be necessary for the duration of construction. These laydown areas will be up to 20 acres each. Where feasible, construction laydown areas are typically located at previously-disturbed or developed locations to reduce impacts to sensitive resources. If existing yard locations are not available, preferred locations for yards will be undeveloped areas, such as grazing or cropland, that are cleared, flat, have all-weather access, and do not contain streams, wetlands, or other environmentally sensitive resources. Laydown yards will typically consist of flat or gently sloping lands where a lot of the construction material will be placed on pallets or cribbing. No topsoil will be removed and minimal if any re-grading is expected to take place at these facilities. Laydown areas generally will be returned to a pre-construction condition upon completion of the proposed Gen-Tie Facilities.

#### **Land Use Plans and Regulations**

Two Special Use Districts were approved by the Torrance County Board of County Commissioners on January 23, 2011, and May 10, 2017, respectively. Therefore, the Gen-Tie Corridor lies within lands zoned as a Special Use District for renewable energy consistent with the purpose of the Torrance County Zoning Ordinance and the Comprehensive Plan for Torrance County (2016).

**Public Lands**

The proposed Gen-Tie Facilities may cross lands administered by the New Mexico State Land Office (SLO). Pacific Wind has obtained a lease to cross these state lands from the New Mexico SLO for these portions of the Gen-Tie Corridor.

**Schools and Fire Departments**

The proposed Project would not have an adverse effect on the capability of local government to continue to provide services, nor would it exceed the capacity of service delivery systems. The closest schools are in Estancia, about 20 miles northwest of the Gen-Tie Corridor, and should not be affected by construction or maintenance activities. Based on construction experience of the El Cabo Wind Project, non-local workers would not relocate their families for such a short period of time, therefore no impacts to school services are anticipated.

The Gen-Tie Corridor is located within one fire zone (Torrance County 2018b). The closest fire station is located in Estancia, approximately 20 miles northwest of the Gen-Tie Corridor. Pacific Wind will coordinate with the local fire and police district prior to construction and work with the districts and other appropriate emergency response providers to develop fire and emergency response plans. Due to the short-term duration of the construction activities, the Gen-Tie Facilities are not expected to cause additional demand on fire or law enforcement services. Pacific Wind anticipates entering into a Payment in Lieu of Taxes (PILOT) arrangement with Torrance County that will help strengthen the local tax base and may be used to support local services and infrastructure, including schools and fire departments.

**Recreation**

The Gen-Tie Facilities are not expected to be located within or adjacent to any recreational areas, trails, or hunting access lands. The Gen-Tie Facilities will cross some state land; however, the parcels are currently on active lease to Pacific Wind for renewable energy, but are still available for hunting, fishing or trapping.

**Other Infrastructure**

Existing infrastructure within the Gen-Tie Corridor includes roads, the BNSF railroad, the existing El Cabo gen-tie line, and various buried pipelines. Impacts to this infrastructure will be avoided wherever possible. All road work performed on County roads will meet the minimum standards as specified in the 2015 Torrance County Maintained Road Policy. All applicable crossing permits and ROW entry permits will be acquired from the appropriate agencies, as needed. Therefore, no impacts are anticipated to existing infrastructure from Gen-Tie Facilities.

### 4.5.3 Protection Measures

Protection measures that will be implemented to reduce any potential negative land use impacts include:

- Land-1 – Coordinate with landowners and managers for potential measures, including routing, to reduce impacts on uses on specific properties.
- Land-2 – Plan and conduct construction activities to reduce temporary disturbance and interference with agricultural activities.
- Land-3 – Restore compacted soils as close as possible to pre-construction conditions.
- Land-4 – Compensate landowners at market value for any new land rights required for ROW easements or acquired for new temporary or permanent access roads on private lands. This should include compensation for agricultural production and market values lost during the construction period.

### 4.5.4 Conclusion

Based on the Torrance County Board of County Commissioner's Zoning Ordinance Amendments and Special Use District approval, and the low to minimal impacts on existing land uses within the Gen-Tie Corridor, the location of the proposed Gen-Tie Facilities are not expected to unduly impair land use plans or resources.

## 4.6 VISUAL AND SCENIC RESOURCES

### 4.6.1 Impact Assessment Methods

Assessment of impacts to visual and scenic resources from the transmission line facility construction, operation, and maintenance within the Gen-Tie Corridor follows the impact assessment methodology described in Section 4.1.2. The proposed Gen-Tie Facilities were evaluated to determine whether the following types of impacts would occur:

- Proximity of the transmission line and/or structures to residences and residential areas.
- Changes to the visual landscape with respect to scenic resources, such as scenic byways.
- Changes to the visual landscape within or near recreational areas such as state and national parks.

#### 4.6.2 Impacts Specific to the Gen-Tie Facilities

Construction, operation, and maintenance of the proposed Gen-Tie Facilities will introduce new features into the visual landscape of the Gen-Tie Corridor and vicinity. New transmission structures, conductors, substation and switch yard components will change the visual characteristics in the vicinity and the viewshed of the proposed Gen-Tie Facilities. There are no inhabited structures within the Gen-Tie Corridor, and few scattered rural residences and commercial structures in the vicinity. Travelers through the Gen-Tie Corridor would include local or regional traffic along US 60 and US 285. For these travelers, a new man-made feature will be present in the landscape; however, the proposed Gen-Tie Facilities should generally incur the same visual impact as the existing El Cabo gen-tie line, which the La Joya Gen-Tie Line will parallel along most of its route. Impacts will likely be low based on the low population density.

The construction and operation of the proposed La Joya Substation and Torrance Switching Station are anticipated to have visual impacts similar to the construction and operation of the proposed Gen-Tie Line. Each feature will be an added visual element in the existing landscape.

There are no designated scenic routes or byways in the vicinity of the Gen-Tie Corridor. The closest scenic byway is Historic Route 66 approximately 12 miles north of the Gen-Tie Corridor (Figure 9). The Gen-Tie Facilities are sufficiently far from this route that they will not be deemed to impact the scenic values of this route. Additionally, there are no national parks or state parks in the immediate vicinity of the proposed Gen-Tie Facilities. The closest national forest is Cibola National Forest, which is approximately 19 miles southwest of the Gen-Tie Corridor (Figure 3). The closest state park is the Manzano Mountains State Park, which is approximately 40 miles west of the Gen-Tie Corridor (Figure 3). Due to the co-location of the Gen-Tie Facilities with existing El Cabo gen-tie along the majority of the alignment and extremely rural setting, visual impacts are expected to be low.

#### 4.6.3 Protection Measures

Protection measures that will be implemented to reduce any potential negative visual impacts from construction activities include:

- Visual-1 – Collocate (where possible) transmission facilities adjacent to other transmission ROWs to help reduce the effect on visual and aesthetic resources.
- Visual 2 – Leave natural vegetation wherever possible.
- Visual-3 – Keep the ROW free of construction debris and other litter during construction to further reduce visual intrusion to the surrounding landscape.

#### 4.6.4 Conclusion

Based on low visual impacts due to low population and long distances to sensitive visual areas such as scenic byways and parks, as well as the protection measures detailed above, it is not expected that the proposed location of the proposed Gen-Tie Facilities would unduly impair visual resources.

### 4.7 CULTURAL, HISTORIC, AND ARCHAEOLOGICAL RESOURCES

#### 4.7.1 Impact Assessment Methods

Assessment of impacts to cultural, historic, and archaeological resources from proposed Gen-Tie Facilities construction, operation, and maintenance within the Gen-Tie Corridor follows the impact assessment methodology described in Section 4.1.2. The proposed Gen-Tie Facilities were evaluated to determine whether their location within the Gen-Tie Corridor, including construction, operation and maintenance, would result in impacts that would impair cultural, historic and archeological resources.

#### 4.7.2 Impacts Specific to the Gen-Tie Facilities

Construction, operations and maintenance impacts to cultural, historic, and archeological resources are expected to be low. Three archaeological resources have been documented within the Gen-Tie Corridor and consists of a prehistoric artifact scatter, a historic trash scatter, and a historic rock foundation. None of these sites have been recommended to be eligible for listing on the NRHP by the archaeologist who documented them. There are no known historic structures or other historic resources within the Gen-Tie Corridor, and there are no resources listed on the NRHP or SRCP within the Gen-Tie Corridor. Impacts to known locations of archeological resources would not occur because these resources would be avoided by the proposed Gen-Tie Facilities. Field surveys would be completed prior to construction to reduce potential impacts from the proposed Gen-Tie Facilities. Inadvertent discoveries would be managed as described in a project-specific Unanticipated Discoveries Plan.

#### 4.7.3 Protection Measures

Protection measures that will be implemented to reduce any potential negative impacts to cultural, historic, and archeological resources from construction activities include:

- Cul-1 – Avoid known NRHP eligible archaeological sites.
- Cul-2 – Complete surveys in areas with high probability for resources.
- Cul-3 – Follow a project-specific Unanticipated Discoveries Plan.

#### 4.7.4 Conclusion

Impacts to cultural, historic, and archeological resources from the Gen-Tie Facilities are expected to be low. Based on the limited amount of known cultural, historic and archeological resources in the Gen-Tie Corridor and the protection measures detailed above, it is not expected that the proposed Gen-Tie Facilities would unduly impair cultural, historic, and archeological resources.

### 4.8 RELIGIOUS

#### 4.8.1 Impact Assessment Methods

Assessment of impacts to religious resources from proposed Gen-Tie Facilities construction, operation, and maintenance within the Gen-Tie Corridor follows the impact assessment methodology described in Section 4.1.2. The proposed Gen-Tie Facilities were evaluated to determine whether their location within the Gen-Tie Corridor, including construction, operation and maintenance, would result in impacts that would impair religious resources, including places of religious worship and cemeteries.

#### 4.8.2 Impacts Specific to the Gen-Tie Facilities

Construction, operations and maintenance impacts to religious resources are not expected. There are no places of religious worship or cemeteries within or near the Gen-Tie Corridor (Figure 10). The communities of Encino, Willard, and Estancia contain active cemeteries and churches (Figure 10). Historic, now unused, cemeteries and churches are present at all three of the pueblos that make up Salinas Pueblo Missions National Monument (Figure 3). The nearest cemeteries to the Gen-Tie Corridor include the historic Negra Cemetery, approximately six miles east of the southern terminus of the Gen-Tie Corridor, and the historic Red Hills Cemetery, located approximately six miles east of the northern terminus of the Gen-Tie Corridor (Figure 8). The nearest church to the Gen-Tie Corridor, Frontier Church, is located approximately 20 miles west of the northern terminus of the Gen-Tie Corridor near McIntosh, NM (Figure 8).

An Unanticipated Discoveries Plan has been developed for the project. The plan outlines procedures to follow if human remains are discovered during construction.

#### 4.8.3 Protection Measures

Protection measures that will be implemented to reduce any potential negative impacts to religious resources from construction activities include:

- Rel-1– Follow a project-specific Unanticipated Discoveries Plan.

#### 4.8.4 Conclusion

There are no cemeteries or places of religious worship within or near the Gen-Tie Corridor. Thus, impacts to religious resources from the Gen-Tie Facilities are not expected. Based on this and the protection measures detailed above, it is not expected that location of the proposed Gen-Tie Facilities would unduly impair religious resources.

### 4.9 GEOLOGY AND PALEONTOLOGICAL RESOURCES

#### 4.9.1 Impact Assessment Methods

Assessment of impacts to geology and paleontology from the proposed Gen-Tie Facilities construction, operation, and maintenance follows the impact assessment methodology described in Section 4.1.2 above and is discussed below. The proposed Gen-Tie Facilities were evaluated to determine whether their location within the Gen-Tie Corridor, including construction, operation and maintenance, would result in impacts that would impair geology and paleontological resources,

#### 4.9.2 Impacts Specific to the Gen-Tie Facilities

Construction, operations and maintenance impacts are not anticipated for geological and paleontological resources. There are no unique geological features located within the Gen-Tie Corridor and therefore no impacts from the construction, operation, and maintenance of the proposed Gen-Tie Facilities are anticipated. There are no known faults or landslides in the Gen-Tie Corridor and therefore no impacts from the construction, operation, and maintenance of the proposed Gen-Tie Facilities are anticipated.

No paleontological resources are known to occur in or near the Gen-Tie Corridor. The nearest identified paleontological resources are located approximately 60 miles west from the Gen-Tie Corridor in the Manzano Mountains (NMBGMR 2018). Inadvertent paleontological discoveries would be managed with a project-specific Unanticipated Discoveries Plan.

#### 4.9.3 Protection Measures

Protection measures that will be implemented to reduce any potential negative impacts to paleontological resources from construction activities include:

- Geo-1 – Follow a project-specific Unanticipated Discoveries Plan.

#### **4.9.4 Conclusion**

As there are no geological features, faults, or landslides, and no known paleontological resources, it is not expected that the location of the proposed Gen-Tie Facilities would unduly impair geology or paleontological resources.

#### **4.10 SOILS**

##### **4.10.1 Impact Assessment Methods**

Assessment of impacts to soil resources from the proposed Gen-Tie Facilities from construction, operation, and maintenance within the Gen-Tie Corridor follows the impact assessment methodology described in Section 4.1.2 above and is discussed below. The proposed Gen-Tie Facilities were evaluated to determine whether their location within the Gen-Tie Corridor, including construction, operation and maintenance, would result in impacts that would impair soils.

##### **4.10.2 Impacts Specific to the Gen-Tie Facilities**

Construction, operations and maintenance impacts are generally low, short term, and temporary in nature for soil resources. A small amount of permanent soil would be lost due to the permanent footprint of the proposed Gen-Tie Facilities.

Construction activities affecting soils include permanent and temporary land-disturbance activities such as structure work areas, wire-pulling, tensioning and splicing sites, construction yards, and temporary and permanent roads. Ground disturbance during construction may increase the potential for erosion, such as removal of protective vegetation may expose soil to potential wind and water erosion. Certain soils within the Gen-Tie Corridor would be more sensitive to soil erosion impacts. The primary soil erosion factor is water erosion and wind erosion on bare soils.

Potential erosional effects from operations would consist of soil disturbances necessary to maintain the proposed Gen-Tie Facilities in working order and to conduct necessary repairs. Stormwater BMPs, including erosion and sediment control structures, as well as new culverts, might require inspection, maintenance, and/or repair throughout the operation life of the proposed Gen-Tie Facilities to reduce soil erosion or sedimentation to surface water. Temporary access, not retained for operations, would be reseeded as necessary and allowed to revegetate, thereby minimizing the surface exposed to erosive conditions.

The areas used for construction would be reclaimed as soon as possible, which may include regrading to original land contours, topsoil replacement, and revegetation. Implementation of a SWPPP, a stormwater management program from the EPA under the National Pollutant

Discharge Elimination System that would protect water and soil resources, and use of appropriate soil mitigation measures and BMPs would be used to reduce the effects of erosion.

### **Accidental Spills**

During construction, use of trucks, heavy equipment, and stored supplies could result in accidental discharge of fuel, lubricants, and automotive fluids. Although the potential exists, any spills would be accidental, occasional, and of limited extent and would be cleaned up immediately. As such, impacts would be considered minor to negligible and temporary in duration. BMPs for construction housekeeping, spill prevention, and cleanup would be used to prevent and remediate accidental spills. Therefore, accidental spills would not result in widespread or long-term effects to soils.

### **Permanent Soil Loss**

The area within the footprint of the proposed Gen-Tie Facilities would result in minor long-term loss of that acreage to other productive soil uses. The total permanent footprint of transmission line structures will range from approximately 0.025 to 0.26 acre inside the Gen-Tie Corridor. The total permanent footprint of the La Joya Substation and Torrance Switching Station will be less than about 10 acres each, equaling less than 3 percent the Gen-Tie Corridor.

#### **4.10.3 Protection Measures**

Protection measures that will be implemented to reduce any potential negative soil impacts from construction activities include:

- Soil-1 – To the extent possible, topsoil will be placed separately from sub-soils/bedrock during excavation and not comingled and will be replaced in reverse order of excavation.
- Soil-2 –Erosion will be reduced by applying and maintaining standard erosion and sediment control methods. These may include using certified weed free straw wattles and bale barriers and silt fencing. Specific erosion and sediment control measures will be specified in a SWPPP (see Water-1).

#### **4.10.4 Conclusion**

Protection measures and BMPs described in the SWPPP, and SPCCP would be implemented to minimize and stabilize disturbed soils and reduce accidental spills. Based on the minimal extent of soil disturbance and loss, and the proposed protection measures, the location of the proposed Gen-Tie Facilities would not unduly impair soil resources.

## **4.11 MINERAL AND MINING RESOURCES**

### **4.11.1 Impact Assessment Methods**

Assessment of impacts to mineral and mining resources from the proposed Gen-Tie Facilities from construction, operation, and maintenance within the Gen-Tie Corridor follows the impact assessment methodology described in Section 4.1.2 above and is discussed below. The proposed Gen-Tie Facilities were evaluated to determine whether their location within the Gen-Tie Corridor, including construction, operation and maintenance, would result in impacts that would impair mineral and mining resources,

### **4.11.2 Impacts Specific to the Gen-Tie Facilities**

Construction, operations and maintenance impacts to mining and mineral resources are generally negligible. Mineral and mining resources identified in the vicinity of the Gen-Tie Corridor consist of sand and gravel operations; however, no operations exist within the Gen-Tie Corridor. The proposed Gen-Tie Facilities will not directly or indirectly affect any oil and gas wells or sand and gravel operations. The proposed Gen-Tie Facilities will have no identifiable impact on development of mineral and mining resources.

### **4.11.3 Protection Measures**

Based on the lack of oil and gas wells and sand/gravel mining operations within the Gen-Tie Corridor, no protection measures are proposed for mineral and mining resources.

### **4.11.4 Conclusion**

Based on the lack of oil and gas wells and sand/gravel mining operations within the Gen-Tie Corridor, it is not expected that location of the proposed Gen-Tie Facilities would unduly impair mineral and mining resources.

## **4.12 SOCIOECONOMICS**

### **4.12.1 Impact Assessment Methods**

Assessment of impacts to socioeconomic resources from the proposed Gen-Tie Facilities from construction, operation, and maintenance within the Gen-Tie Corridor follows the impact assessment methodology described in Section 4.1.2 above and is discussed below. An economic impact analysis of the Project was completed using the National Renewable Energy Laboratory's (NREL's) Jobs and Economic Development Impact (JEDI) Land-based Wind Model (JEDI Wind Model) (Tetra Tech 2018c). The proposed Gen-Tie Facilities were also evaluated to

determine whether their location within the Gen-Tie Corridor, including construction, operation and maintenance, would result in impacts that would impair socioeconomic resources.

#### **4.12.2 Impacts of the La Joya Project**

##### **Economic Impacts Related to Construction**

As stated in Section 2.2.6, the La Joya Project will be built in two or more phases. Phase I of the La Joya Project will include construction of about 166 MW of wind energy generation facilities and the Gen-Tie Facilities. Phase I is estimated to support about 362 total (direct, indirect, and induced) jobs in the state of New Mexico. Construction of Phase I is expected to begin in the third or fourth quarter of 2019 and be completed by December 2020. During Phase II, project construction is estimated to support as many as 514 total jobs (Tetra Tech 2018c).

Construction of Phase I of the La Joya Project, which includes the Gen-Tie Facilities, would support temporary employment, income, and economic output in New Mexico.

- Construction of Phase I is estimated to result in on-site employment of approximately 139 jobs that will be filled by New Mexico residents, as well as an estimated 11 construction-related service jobs. These estimates include the in-state labor for the proposed Gen-Tie Facilities. Phase II construction would result in an estimated 101 full-time equivalent (FTE) jobs on site and about 22 construction-related service jobs that will be filled by New Mexico residents.
- Construction of the La Joya Project is also estimated to support employment, income, and output elsewhere in the state economy. During Phase I, construction of the Wind Project and Gen-Tie Facilities is expected to support an estimated 148 turbine and supply chain (indirect) jobs in New Mexico and about 65 induced jobs. Phase II construction is estimated to support approximately 273 turbine and supply chain jobs and about 118 induced jobs.
- Overall, construction of Phase I of the La Joya Project including the Gen-Tie Facilities is estimated to support about 362 total (direct, indirect, and induced) jobs in the state of New Mexico and approximately \$17.6 million in labor income, with total economic output of approximately \$45.0 million. During Phase II, Project construction is estimated to support approximately 514 total jobs and approximately \$24.8 million in labor income, with total economic output of approximately \$74.7 million.

### Annual Economic Impacts Related to Operation

Once the construction phase is complete, operation and maintenance of the La Joya Project will continue to contribute to the state economy over the expected 40-year operating life of the La Joya Project. These annual impacts are expected to occur each year the La Joya Project operates.

- Operation of Phase I of the La Joya Project is estimated to support approximately 28 total (direct, indirect, and induced) jobs in New Mexico and approximately \$1.5 million in labor income, with total economic output of approximately \$4.4 million. Operation of Phase II is estimated to support the approximately 49 total jobs, approximately \$2.6 million in labor income, and total economic output of approximately \$8.1 million.

Tables 4-1 and 4-2 provide an overview of the potential economic impacts estimated to occur during Phase I and Phase II of the La Joya Project, respectively.

**Table 4-1.** Overview of Estimated Economic Impacts from Phase I of the La Joya Project

Impact Type/Measure	Jobs (FTE)	Earnings (\$ million)	Output (\$ million)
<b>Construction</b>			
Project Development and On-site Labor Impacts	149	\$7.4	\$8.4
Turbine and Supply Chain Impacts	148	\$7.2	\$26.3
Induced Impacts	65	\$3.0	\$10.3
<b>Total Impacts</b>	<b>362</b>	<b>\$17.6</b>	<b>\$45.0</b>
<b>Annual Operation</b>			
On-site Labor Impacts	10	\$0.6	\$0.6
Local Revenue and Supply Chain Impacts	13	\$0.7	\$3.0
Induced Impacts	5	\$0.2	\$0.8
<b>Total Impacts</b>	<b>28</b>	<b>\$1.5</b>	<b>\$4.4</b>

Note: Numbers may not sum due to rounding.

**Table 4-2. Overview of Estimated Economic Impacts from Phase II of the La Joya Project**

<b>Impact Type/Measure</b>	<b>Jobs (FTE)</b>	<b>Earnings (\$ million)</b>	<b>Output (\$ million)</b>
<b>Construction</b>			
Project Development and On-site Labor Impacts	123	\$6.3	\$8.4
Turbine and Supply Chain Impacts	273	\$13.2	\$48.0
Induced Impacts	118	\$5.3	\$18.3
<b>Total Impacts</b>	<b>514</b>	<b>\$24.8</b>	<b>\$74.7</b>
<b>Annual Operation</b>			
On-site Labor Impacts	15	\$0.8	\$0.8
Local Revenue and Supply Chain Impacts	25	\$1.4	\$5.8
Induced Impacts	9	\$0.4	\$1.5
<b>Total Impacts</b>	<b>49</b>	<b>\$2.6</b>	<b>\$8.1</b>

### **Impacts Specific to Torrance County**

Once the La Joya Project construction phase is complete, operation and maintenance of the La Joya Project will continue to contribute to the local economy. The La Joya Project will provide direct operation-related employment and project-related operation expenditures that will generate economic benefits in the local economy. Direct operation employment includes skilled technician jobs that represent well-paid local employment opportunities for New Mexico residents. Typical local operation-related expenditures include vehicle-related expenditures, such as fuel costs, site maintenance, replacement parts and equipment, and miscellaneous supplies.

Lease payments to landowners will also generate annual benefits to the local economy over the expected 40-year operating life of the La Joya Project. These payments represent a net increase in income for the landowner. Each turbine occupies a relatively small footprint when compared to the site as a whole and landowners can usually continue farming and livestock operations on their property (the El Cabo Wind Farm includes continued ranging).

Wind energy projects enhance the assessed value of property within a county, and wind developers typically make payments based on that improved value, either as property tax payments or in accordance with a mutually agreed upon PILOT arrangement. The El Cabo Wind Farm entered into a PILOT agreement with Torrance County, and Pacific Wind anticipates that they will take a similar approach with the La Joya Project. These payments will help strengthen

the local tax base and may be used to support local services and infrastructure, including schools and fire departments.

### ***Population and Housing***

Transmission line facility construction generally requires specialized equipment, contractors, and labor. Construction of Phase I, which includes the Gen-Tie Facilities, is estimated to result in approximately 149 product development and on-site jobs that will be filled by New Mexico residents, most of whom are expected to normally reside within 100 miles of the Project, Phase II will result in an estimated 123 product development and on-site jobs that will be filled by New Mexico residents. Based on past experience with the El Cabo Wind Farm, Phase I construction is also expected to employ an estimated 120 workers from out-of-state, who would temporarily relocate to the Project area for the duration of their employment. Phase II is estimated to employ approximately 250 out-of-state workers (Tetra Tech 2018c).

Based on the short-term residency and construction experience with the El Cabo Wind Farm, few, if any non-local workers are expected to relocate with their families. Further, no non-local workers are expected to permanently relocate to the area as a result of the Project. Temporary housing for non-local workers likely will include available hotels, apartments, and other rental housing in nearby towns, with additional temporary housing resources available in Albuquerque and Santa Fe. No increase in permanent population of local communities would be expected from construction and operation of the proposed Gen-Tie Facilities.

### ***Community Services***

The proposed Gen-Tie Facilities would not have an adverse effect on the capability of local government to continue to provide services, nor would it exceed the capacity of service delivery systems. In Tarrant County, the proposed Gen-Tie Facilities would be located within two school districts (Tarrant County 2018a), but no schools are located in or near the Gen-Tie Corridor. As noted above, based on the short-term residency and construction experience with the El Cabo Wind Farm, few, if any non-local construction workers are expected to relocate with their families. Local schools would, therefore, not be unduly impacted by the Gen-Tie Facilities.

The La Joya Project is located within one fire zone, with the nearest fire station located in Estancia (Tarrant County 2018b). Pacific Wind will coordinate with the local fire and police district prior to construction and work with the districts and other appropriate emergency response providers to develop fire and emergency response plans. The proposed La Joya Project is not expected to cause additional demand on fire or law enforcement services, due to the short-term duration of the construction activities.

### ***Impacts to Residents and Land Use***

The Gen-Tie Corridor is located within Unincorporated Torrance County. No impacts to other jurisdictions are anticipated as part of the proposed Project. There are no occupied structures in the Gen-Tie Corridor and there is only one occupied structure within the La Joya Project; otherwise, the area is predominantly used for rangeland. Minimal existing rangeland land would be taken out of production by the proposed Gen-Tie Facilities, primarily the area around transmission structures and the substation and switching station facilities.

Short-term impacts to nearby residents from the proposed Gen-Tie Facilities will be limited due to the lack of residents within or near the project area. These will include increased noise from construction activities and equipment, the visual presence of construction equipment, potential traffic disruptions and congestion resulting from construction trucks and equipment accessing the ROW using local roads, and from potential short-term road closures during conductor stringing. Long-term impacts as a result of operation of the proposed Gen-Tie Facilities will include minor, infrequent disturbance during any maintenance or repair activities.

### ***Landowners***

Pacific Wind currently has ROW agreements and leases in place for the construction and maintenance of the Gen-Tie Facilities. Existing access roads will be used where possible, but additional access road and railroad easements may also need to be acquired.

#### **4.12.3 Protection Measures**

Protection measures that will be implemented to reduce any potential negative socioeconomic impacts from construction activities include:

- Socio-1 – Initiate discussions with the local fire and police districts prior to construction and work with the districts and other appropriate emergency response providers to ensure fire and emergency response procedures are in place.
- Socio-2 – Work with individual landowners to try to minimize short-term impacts on rangeland.

#### **4.12.4 Conclusion**

Based on minimal short-term and temporary impacts to lands and the positive direct and indirect financial impacts to the state, county, and landowners, as well as the protection measures detailed above, it is not expected that location of the proposed Gen-Tie Facilities would unduly impair socioeconomics.

## **4.13 ROADS**

### **4.13.1 Impact Assessment Methods**

Assessment of impacts to roads from the proposed Gen-Tie Facilities from construction, operation, and maintenance within the Gen-Tie Corridor follows the impact assessment methodology described in Section 4.1.2. The proposed Gen-Tie Facilities were evaluated to determine whether their location within the Gen-Tie Corridor, including construction, operation and maintenance, would result in impacts that would impair roads.

### **4.13.2 Impacts Specific to the Gen-Tie Facilities**

Construction, operations and maintenance impacts are generally low, short term, and temporary in nature for roads. Potential impacts for roads will be greatest during construction of the proposed Gen-Tie Facilities. Construction equipment and increased traffic has the potential to degrade existing road conditions. Pacific Wind and its contractors will employ proper construction techniques and BMPs to minimize impacts to local roads. Pacific Wind or their contractors will work with the FHWA and NMDOT to acquire the appropriate road permits and the Torrance County Road Department to determine traffic control and road access requirements prior to the start of any construction. No excavating, cross-cutting, digging, trenching or any other work on or across a county road will be completed without first obtaining the appropriate permits and approvals. All road work performed on County roads will meet the minimum standards as specified in the 2015 Torrance County Maintained Road Policy. Pacific Wind will document pre-construction road conditions and return roads used for construction access to pre-construction condition or better once construction is completed, consistent with its development of a road use agreement with Torrance County.

Increased road traffic from construction will be localized and short term based on where proposed Gen-Tie Facilities construction is occurring that day or week. Pacific Wind would mitigate traffic impacts by requesting traffic control from law enforcement during periods of high activity if necessary.

Low impacts to roads in the Gen-Tie Corridor and vicinity are anticipated based on localized, short-term impacts, and Pacific Wind's commitment to develop a road use agreement with Torrance County.

#### 4.13.3 Protection Measures

Protection measures that will be implemented to reduce any potential negative road impacts from construction activities include:

- Road-1 – Pre-construction conditions will be documented, and a road use agreement will be developed with Torrance County as necessary.
- Road-2 – Construction speed limits will be established.
- Road 3 – Proper construction techniques and BMPs will be employed to minimize impacts to local roads.

#### 4.13.4 Conclusion

Based on localized, low, short-term impacts, as well as the protection measures detailed above, it is not anticipated that location of the proposed Gen-Tie Facilities would unduly impair roads.

### 4.14 NOISE

#### 4.14.1 Impact Assessment Methods

Assessment of impacts to noise resources from the Gen-Tie Facilities construction, operation, and maintenance within Gen-Tie Corridor follows the impact assessment methodology described in Section 4.1.2 above and is discussed below. The proposed Gen-Tie Facilities were evaluated to determine whether their location within the Gen-Tie Corridor, including construction, operation and maintenance, would result in impacts that would impair the noise environment.

#### 4.14.2 Impacts Specific to the Gen-Tie Facilities

Noise impacts from construction, operations and maintenance activities are expected to be generally low, short term, and temporary.

The existing noise levels in the Gen-Tie Corridor within rural Torrance County are relatively low and are primarily associated with the existing El Cabo gen-tie line and El Cabo Wind Project. Localized noise associated with equipment operation during construction and maintenance activities would increase local noise levels in the Gen-Tie Corridor, but will be localized, short term, and temporary in nature, and will comply with applicable noise regulations.

Noise associated with operation of the Gen-Tie Facilities will not measurably increase noise levels over the current conditions. Due to the remote location and lack of residents in the Gen-Tie Corridor, noise impacts are not anticipated.

#### **4.14.3 Protection Measures**

No protection measures needed.

#### **4.14.4 Conclusion**

Based on localized, low, short-term impacts during construction and maintenance, and compliance with regulated noise limits during operation, it is not expected that location of the proposed Gen-Tie Facilities would unduly impair noise.

### **4.15 COMMUNICATION SIGNALS**

#### **4.15.1 Impact Assessment Methods**

Assessment of impacts to communication signal resources from the Gen-Tie Facilities construction, operation, and maintenance within the Gen-Tie Corridor follows the impact assessment methodology described in Section 4.1.2. The proposed Gen-Tie Facilities were evaluated to determine whether their location within the Gen-Tie Corridor, including construction, operation and maintenance, would result in impacts that would impair communication signals.

#### **4.15.2 Impacts Specific to the Gen-Tie Facilities**

The proposed Gen-Tie Facilities will avoid impacts to microwave beam paths. Siting of the proposed Gen-Tie Facilities will be completed outside of existing, known fresnel zones and will avoid inference with communication pathways. No AM or FM station towers were identified within the Gen-Tie Corridor.

#### **4.15.3 Protection Measures**

No protection measures needed.

#### **4.15.4 Conclusion**

Microwave beam path and AM and FM station towers will be avoided by the proposed Gen-Tie Facilities. Therefore, it is not anticipated that location of the proposed Gen-Tie Facilities would unduly impair communication signals.

### **4.16 MILITARY ACTIVITIES AND AVIATION**

#### **4.16.1 Impact Assessment Methods**

Assessment of impacts to military and aviation activities from the Gen-Tie Facilities construction, operation, and maintenance within the Gen-Tie Corridor follows the impact

assessment methodology described in Section 4.1.2. The proposed Gen-Tie Facilities were evaluated to determine whether their location would impair military activities and aviation.

#### **4.16.2 Impacts Specific to the Gen-Tie Facilities**

Construction, operations and maintenance are not expected to impact military activities and aviation. The nearest aviation facility is the Estancia Municipal Airport approximately 22 miles west of the Gen-Tie Corridor. The Gen-Tie Facilities will not include construction of new structures 200 feet or greater which is the threshold that triggers coordination with the FAA and DoD. If structures greater than 200 feet are built within the Gen-Tie Corridor, Pacific Wind will coordinate with the FAA.

#### **4.16.3 Protection Measures**

Protection measures that will be implemented to reduce any potential negative military or aviation impacts from construction activities include:

- Mi1-1 – Coordinate with FAA, military bases and aviation facilities as needed.

#### **4.16.4 Conclusion**

Impacts to military activities and aviation resources will be avoided by the proposed Gen-Tie Facilities. Therefore, it is not anticipated that location of the proposed Gen-Tie Facilities would unduly impair military activities and aviation resources.

### **4.17 GEOGRAPHIC RESOURCES**

#### **4.17.1 Impact Assessment Methods**

Assessment of impacts to geographic resources from the construction, operation, and maintenance of Gen-Tie Facilities within the Gen-Tie Corridor follows the impact assessment methodology described in Section 4.1.2 above and is discussed below. The Gen-Tie Corridor is in Basin and Range physiographic province (NPS 2018). Geographic resources identified in this province include state parks and national parks and monuments.

The proposed Gen-Tie Facilities were evaluated to determine whether the following types of impacts would occur:

- Diminishment of scenic resources within and from state or national parks and monuments by the addition of manmade elements to the natural landscape.
- Introduction of noise/air pollution to state or national parks and monuments.

#### **4.17.2 Impacts Specific to the Gen-Tie Facilities**

As discussed in Section 4.12, the closest national monument to the Gen-Tie Corridor is the Salinas Pueblo Missions National Monument, located 35 miles southwest from of the Gen-Tie Corridor. The closest state park is Manzano Mountains State Park, located approximately 40 miles from west of the Gen-Tie Corridor (Figure 3). At these distances, the proposed Gen-Tie Facilities would not be seen. As discussed in Section 4.2, the proposed Gen-Tie Facilities would result in minor emissions from construction vehicles and activities but would not impact the overall air quality in the region, including the national and state parks or monuments. As discussed in Section 4.16, noise impacts (such as from construction activities) would be highly localized and would not impact noise level at the national or state parks or monuments. No historic sites within the Gen-Tie Corridor have been recorded. For these reasons, the proposed Gen-Tie Facilities will have no identifiable impacts on geographic resources.

#### **4.17.3 Protection Measures**

Due to no anticipated impacts to geographic resources, no protection measures are needed or proposed.

#### **4.17.4 Conclusion**

The proposed Gen-Tie Facilities would not affect or be visible from any important geographic resource; therefore, it is not expected that location of the proposed Gen-Tie Facilities would unduly impair geographic resources.

### **4.18 RADIOACTIVE WASTE AND RADIATION HAZARDS**

Electric transmission line and substation infrastructure do not generate or contain radioactive waste or radiation hazards. The proposed Gen-Tie Facilities will not generate radioactive waste or radiation hazards and, therefore, is not addressed further in this ER.

### **4.19 HAZARDOUS MATERIALS**

#### **4.19.1 Impact Assessment Methods**

Assessment of impacts from hazardous materials from the Gen-Tie Facilities construction, operation, and maintenance, within the Gen-Tie Corridor follows the impact assessment methodology described in Section 4.1.2 and is described in more detail below. The proposed Gen-Tie Facilities were evaluated to determine whether their location within the Gen-Tie Corridor, including construction, operation and maintenance, would result in impacts due to hazardous materials.

#### 4.19.2 Impacts Specific to the Gen-Tie Facilities

Hazardous chemicals that may be used during construction and operation are those found in diesel fuel, gasoline, coolant (ethylene glycol), and lubricants in machinery. An SPCCP will be prepared and will contain information regarding training, equipment inspections maintenance and repair, spill prevention kits, and refueling operations for construction vehicles, with an emphasis on preventing spills. Fueling vehicles would be equipped with spill kits and fire extinguishers and personnel would be properly trained in spill prevention, control, and countermeasures.

Hazardous materials would not be drained onto the ground or into streams or drainage areas. Construction activities would be performed by methods that minimize the potential for accidental spillage of contaminants, debris, and other pollutants and wastes

Enclosed containment would be provided for trash disposal. Pacific Wind and its contractors would provide and maintain sanitary accommodations for the use of their employees during construction of the Gen-Tie Facilities in a manner that would comply with the requirements and regulations of health departments and of other governmental bodies. These accommodations, including trash dumpsters and portable waste facilities (toilets), may be located in several locations along the construction route. Construction waste would be stockpiled in the construction staging areas and would be removed from the construction sites during the construction process. Construction and operation and maintenance activities would follow BMPs for the management of wastes to avoid and minimize impacts from potential spills or other releases to the environment. All construction waste, including trash, other solid waste, petroleum products, and other potentially hazardous materials would be removed to a disposal facility authorized to accept such materials.

#### 4.19.3 Protection Measures

Protection measures that will be implemented to reduce any potential negative hazardous materials impacts include:

- Haz-1 – Prepare an SPCCP.
- Haz-2 – Hazardous materials will not be drained onto the ground or into streams or drainage areas.
- Haz-3 – Construction waste including trash, other solid waste, petroleum products and other potentially hazardous materials will be removed to a disposal facility authorized to accept such materials.

#### **4.19.4 Conclusion**

Impacts from hazardous materials will be avoided through the implementation of BMPs as well as the protection measures detailed above; therefore, it is not anticipated that location of the proposed Gen-Tie Facilities would unduly impair environmental resources from hazardous materials.

### **4.20 SAFETY**

#### **4.20.1 Impact Assessment Methods**

Assessment of impacts to safety, from the Gen-Tie Facilities construction, operation, and maintenance, within the Gen-Tie Corridor follows the impact assessment methodology described in Section 4.1.2 above and is described in more detail below. The proposed Gen-Tie Facilities were evaluated to determine whether their location within the Gen-Tie Corridor, including construction, operation and maintenance, would result in impacts that would impair safety.

#### **4.20.2 Impacts Specific to the Gen-Tie Facilities**

A safety plan will be developed prior to construction to manage and reduce safety risk. Proper construction techniques and BMPs will be followed to reduce injury to personnel and damage to property. In the unforeseen event safety issue arise, the safety plan will have procedures in place to address common safety situations.

Without proper safety measures, construction of the proposed Gen-Tie Facilities could cause wildfire ignition. Without proper safety measures, operation and maintenance activities (e.g., welding, vehicle ignition), and the presence of the energized proposed Gen-Tie Facilities (e.g., arc ignition) could also cause wildfire ignition. Pacific Wind and/or its contractors will coordinate with the applicable fire district and will notify agencies of any fires and comply with all rules and regulations administered by management agencies concerning the use, prevention, and suppression of fires including any fire prevention orders that may be in effect at the time of the construction, operation, or maintenance activity.

#### **4.20.3 Protection Measures**

Protection measures that will be implemented to reduce any potential safety impacts include:

- Safe-1 – Pacific Wind and its contractors, as appropriate, will initiate discussions with local fire districts and regional fire prevention staff prior to construction to discuss emergency procedures and to provide transmission line safety training, including safety procedures for conducting fire suppression activities near a power line.

- Safe-2 – As appropriate, vehicles will be equipped with fire suppression tools and equipment. Fire suppression equipment may include, but will not be limited to, shovels, buckets, and fire extinguishers.
- Safe-3 – Smoking and equipment parking will be restricted to approved areas.
- Safe-4 – Pacific Wind and/or its contractors will fuel all highway-authorized vehicles off-site or in approved areas to minimize the risk of fire. Fueling of construction equipment that is transported to the site and is not highway authorized will be done in accordance with regulated construction practices and applicable federal, state, and local laws.
- Safe-5 –A safety plan will be developed prior to construction. The plan will include items such as location of nearest medical emergency facilities, agency contacts and procedures, and inclement weather procedures.

#### **4.20.4 Conclusion**

Impacts from unsafe events will be reduced through the implementation of proper construction techniques and BMPs, as well as the protection measures detailed above; therefore, it is not anticipated that location of the proposed Gen-Tie Facilities would unduly impair safety.

## 5.0 LIST OF PREPARERS AND CONTRIBUTING DOCUMENTATION

The following individuals and materials have contributed to the preparation of this Environmental Report.

### Tetra Tech

- Alicia Oller, Vice President, Environment and Energy Programs.
- Krista Dearing, Project Manager.
- Amy Sherman, Deputy Project Manager.
- Mark Martell, Senior Biologist.
- Deborah Huntley, Senior Archeologist.
- Jeff Harrington, Senior Air Quality Specialist.
- Manuela Elizondo, Planner.
- Jennifer Chester, Senior GIS Specialist.

### Pacific Wind

- Leif Bang, Ld. Sr. Permit Manager.
- Mark Stacy, Director, Business Development.

### Technical Reports Contributing to the Environmental Report

- La Joya Project, Torrance County, New Mexico; Wetlands Desktop Analysis (Tetra Tech 2018a).
- Comprehensive Biological Evaluation for the La Joya Project (Tetra Tech 2018b).
- Economic Impact Study of the La Joya Project, Torrance County, New Mexico (Tetra Tech 2018c).
- Class I Records Search for the La Joya Wind Project, Torrance County, New Mexico (Tierra Right of Way 2018a).

## **6.0 LIST OF AGENCIES, ORGANIZATIONS, AND PERSONS TO WHOM COPIES OF THE ENVIRONMENTAL REPORT ARE SENT**

The following agencies, organizations and persons will be notified of this Environmental Report through Pacific Wind's filing with the New Mexico Public Regulation Commission:

- Torrance County Board of County Commissioners.
- Torrance County Manager.
- Torrance County Road Superintendent.
- Mayor, City of Estancia.
- Estancia Public Library.
- Mayor, City of Willard.
- Mayor, Town of Vaughn.
- Mayor, Town of Encino.
- Mayor, Town of Moriarty.
- Mayor, Town of Mountainair.
- New Mexico Environment Department.
- New Mexico State Engineer.
- New Mexico Attorney General.
- New Mexico State Land Office.
- New Mexico Public Regulation Commission.

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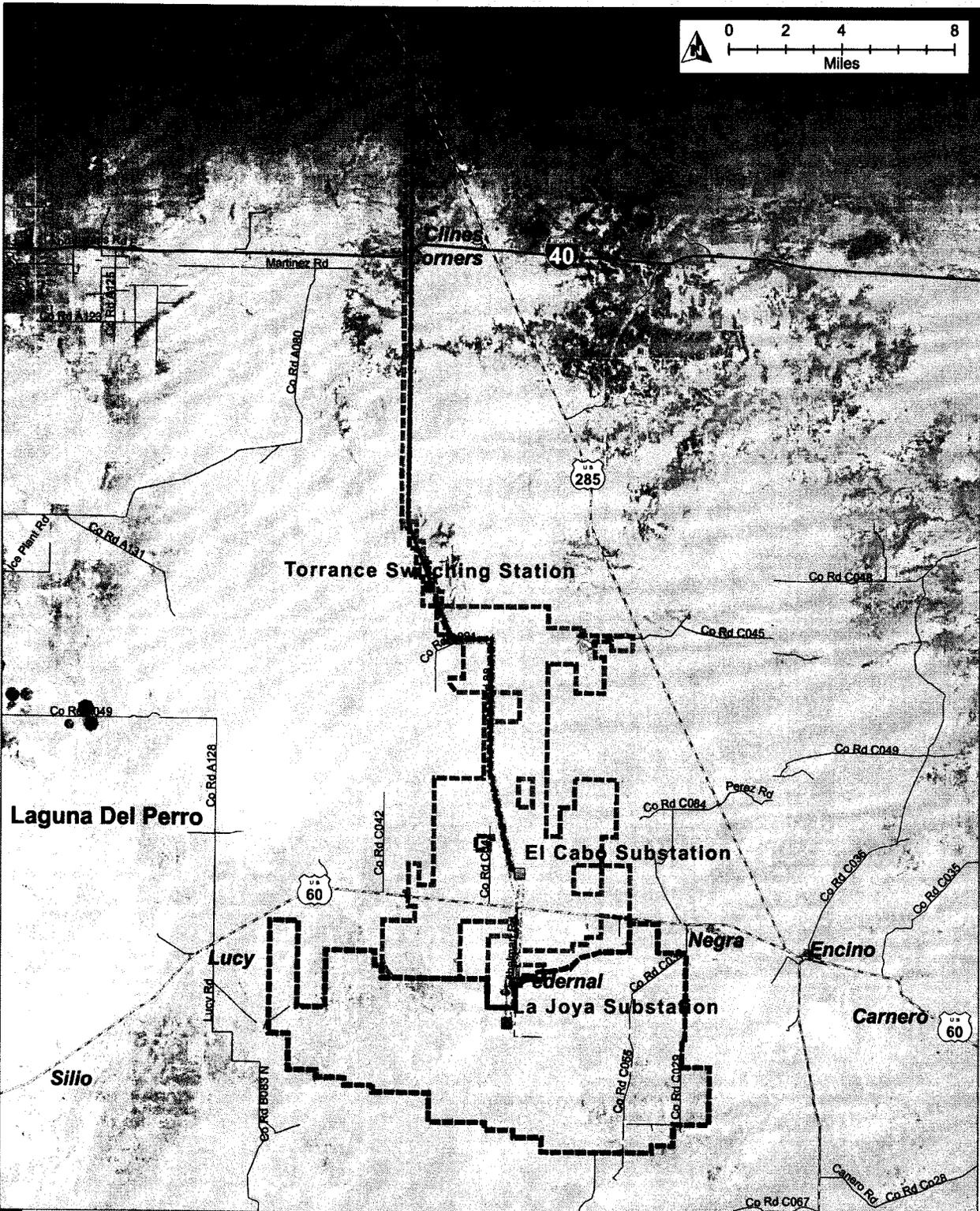
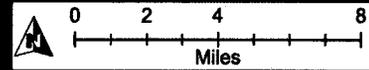
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## **APPENDIX A**

### **FIGURES**

- Figure 1: Project Location
- Figure 2: Proposed Gen-Tie Corridor
- Figure 3: Regional Map
- Figure 4: Proposed Gen-Tie Structure Type
- Figure 5: Water Resources
- Figure 6: Land Cover
- Figure 7: Raptor Nests and Prairie Dog Colonies
- Figure 8: Community Facilities and Occupied Residences
- Figure 9: Scenic Byways
- Figure 10: Geology
- Figure 11: Soils
- Figure 12: Mining Operations
- Figure 13: FCC-Registered Antennae Towers
- Figure 14: Military Training Routes: leave

# LA JOYA WIND PROJECT AND GENERATION TIE LINE



**Project Features**

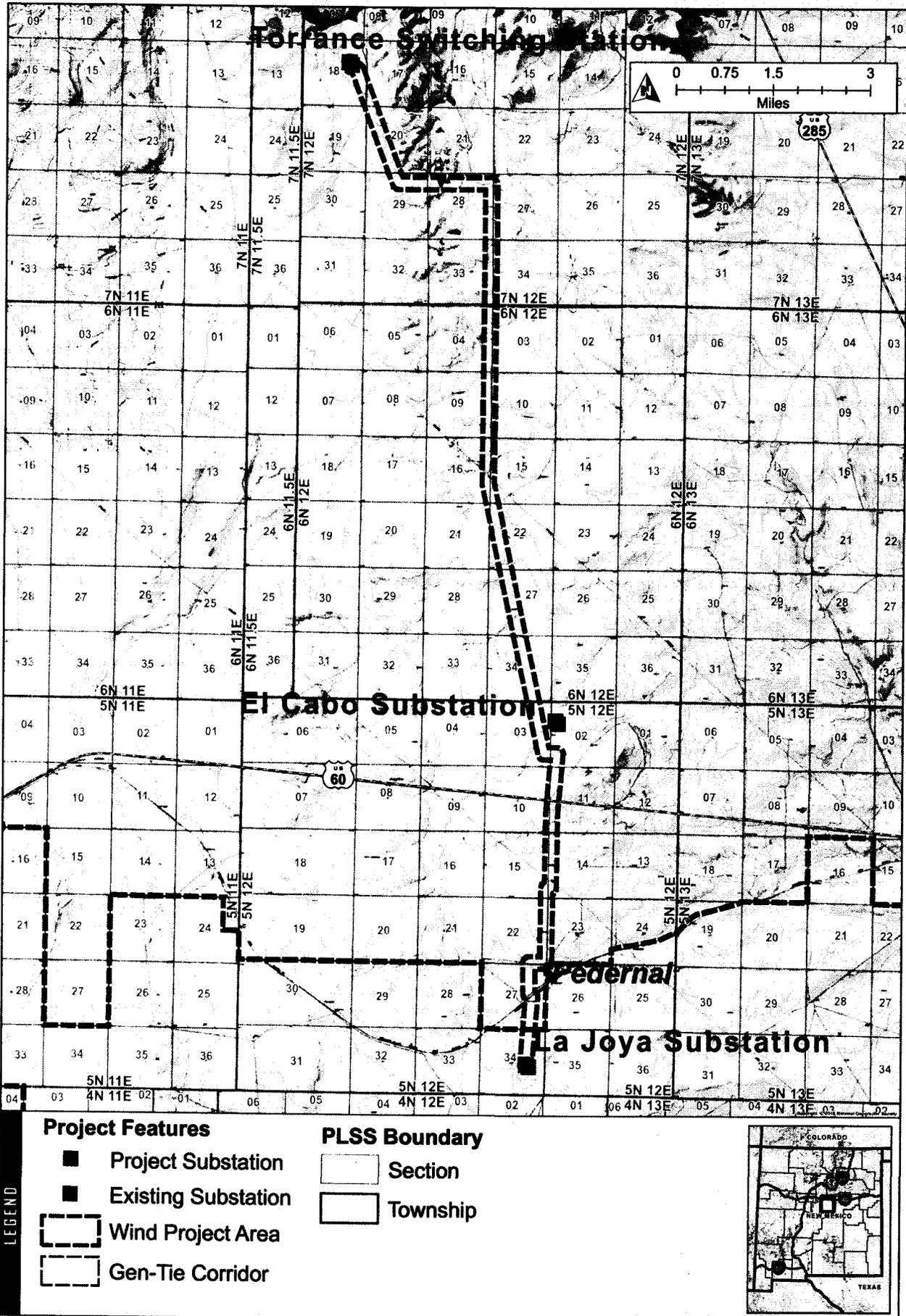
- Project Substation
- Existing Substation
- ▭ Wind Project Area
- ▭ Gen-Tie Corridor
- ▭ Preliminary and Conceptual Turbine Location
- ▬ El Cabo Gen-Tie Line
- ▭ El Cabo Wind Project Area

**LEGEND**

Figure 1: Project Location

# LA JOYA WIND PROJECT AND GENERATION TIE LINE

EXHIBIT KD-2  
AVANGRID  
RENEWABLES



# LA JOYA WIND PROJECT AND GENERATION TIE LINE

EXHIBIT KD-2  
AVANGRID  
RENEWABLES

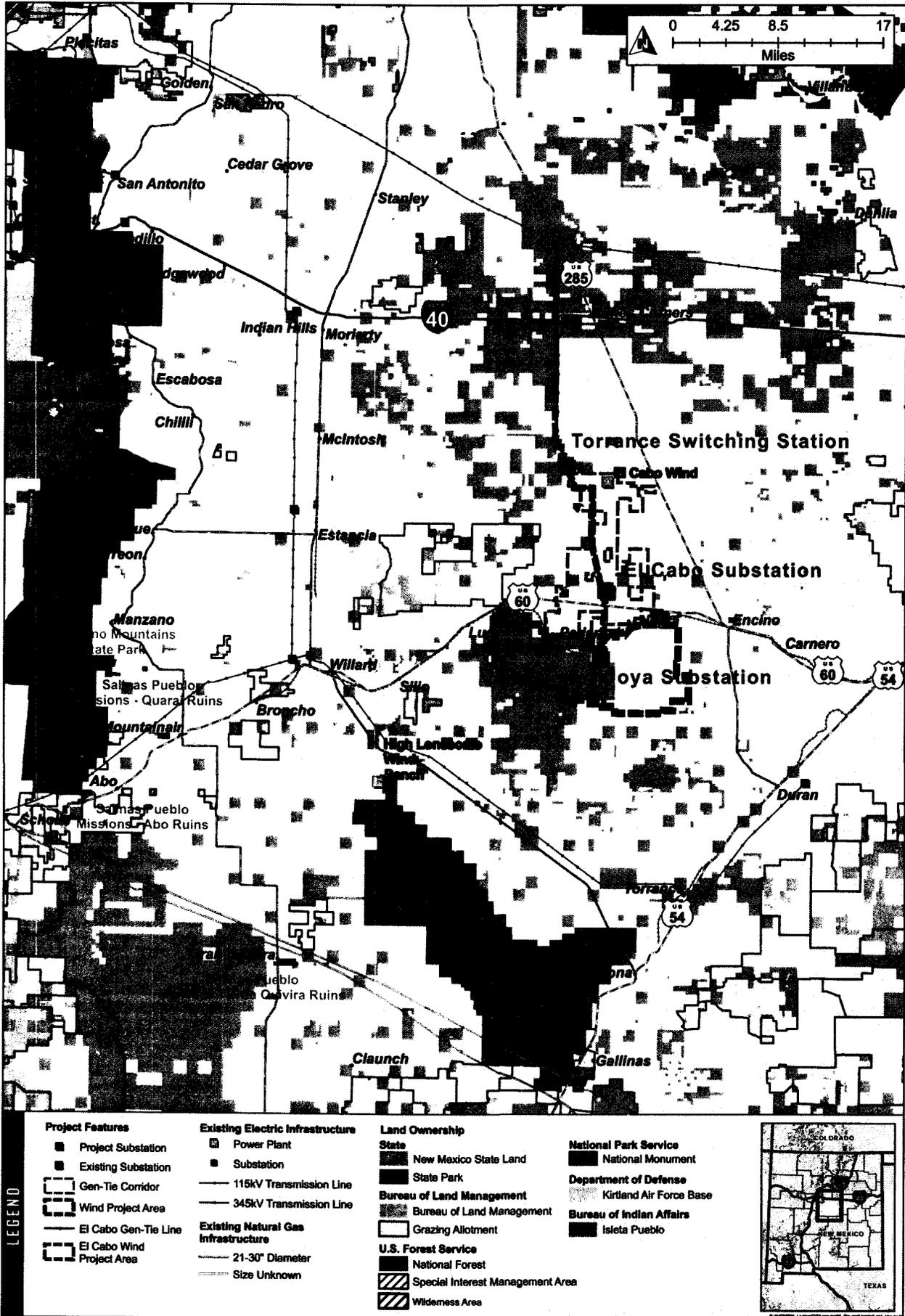
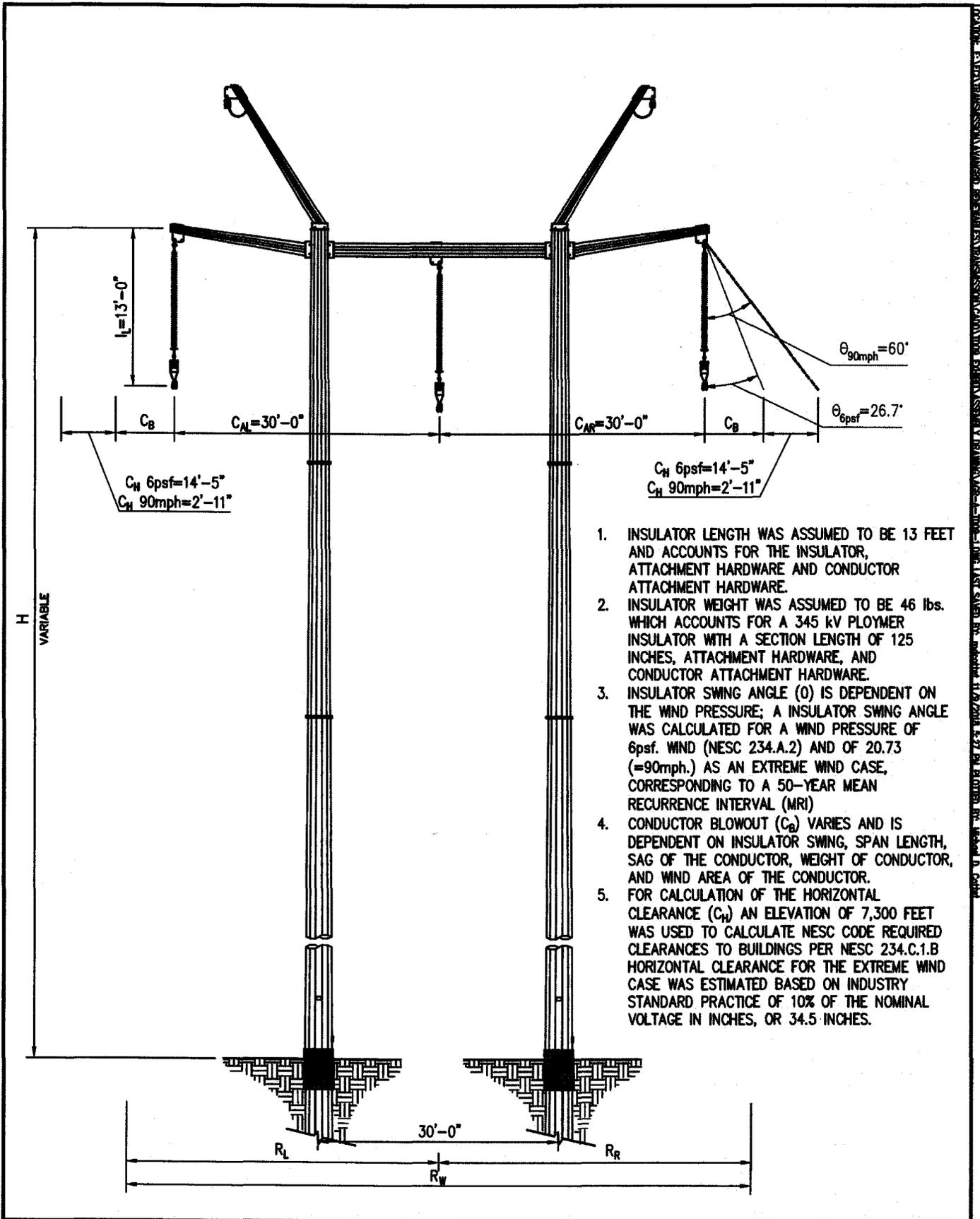


Figure 3: Regional Map



1. INSULATOR LENGTH WAS ASSUMED TO BE 13 FEET AND ACCOUNTS FOR THE INSULATOR, ATTACHMENT HARDWARE AND CONDUCTOR ATTACHMENT HARDWARE.
2. INSULATOR WEIGHT WAS ASSUMED TO BE 46 lbs. WHICH ACCOUNTS FOR A 345 kV PLOYMER INSULATOR WITH A SECTION LENGTH OF 125 INCHES, ATTACHMENT HARDWARE, AND CONDUCTOR ATTACHMENT HARDWARE.
3. INSULATOR SWING ANGLE (θ) IS DEPENDENT ON THE WIND PRESSURE; A INSULATOR SWING ANGLE WAS CALCULATED FOR A WIND PRESSURE OF 6psf. WIND (NESC 234.A.2) AND OF 20.73 (=90mph.) AS AN EXTREME WIND CASE, CORRESPONDING TO A 50-YEAR MEAN RECURRENCE INTERVAL (MRI)
4. CONDUCTOR BLOWOUT (C<sub>B</sub>) VARIES AND IS DEPENDENT ON INSULATOR SWING, SPAN LENGTH, SAG OF THE CONDUCTOR, WEIGHT OF CONDUCTOR, AND WIND AREA OF THE CONDUCTOR.
5. FOR CALCULATION OF THE HORIZONTAL CLEARANCE (C<sub>H</sub>) AN ELEVATION OF 7,300 FEET WAS USED TO CALCULATE NESC CODE REQUIRED CLEARANCES TO BUILDINGS PER NESC 234.C.1.B HORIZONTAL CLEARANCE FOR THE EXTREME WIND CASE WAS ESTIMATED BASED ON INDUSTRY STANDARD PRACTICE OF 10% OF THE NOMINAL VOLTAGE IN INCHES, OR 34.5 INCHES.

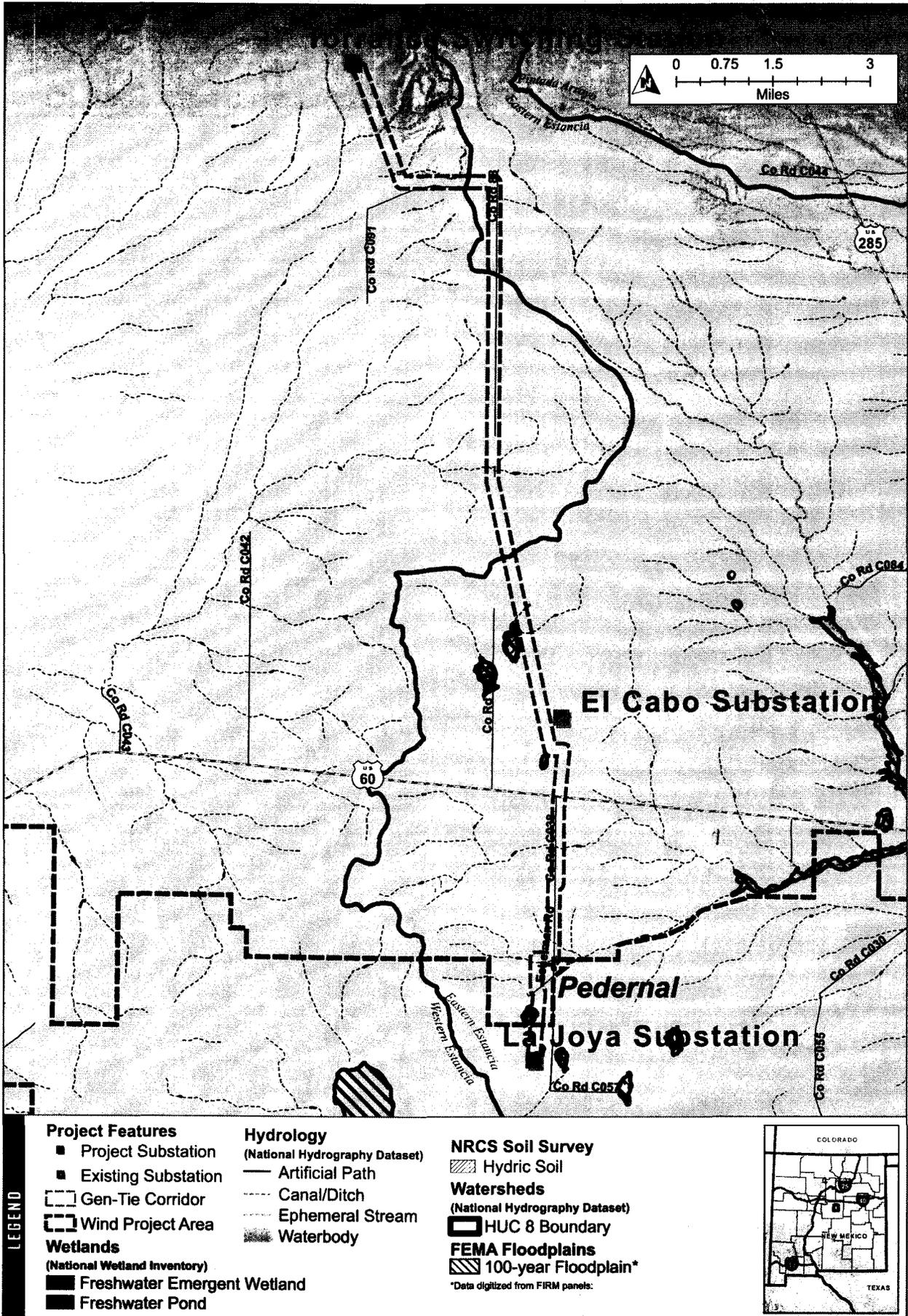
LOCATION: E. 10TH BRASSASSONIA AVENUE, BEAUFORT, NC 28516  
 PROJECT: 345 KV TRANSMISSION LINE  
 DRAWING: TH-345S  
 DATE: 11/09/18  
 DRAWN BY: M. COFFEY  
 CHECKED BY: A. WHITE  
 APPROVED BY: [Signature]  
 SCALE: AS SHOWN  
 SHEET NO: 1

		ENGINEERING RECORD DRAWN: M. COFFEY CHECKED: A. WHITE APPROVED: [Signature]	DATE: 11/09/18 11/09/18	AVANGRID RENEWABLES 345 KV TRANSMISSION LINE SINGLE CIRCUIT STEEL H-FRAME STRUCTURE TH-345S
		SHEET NO: 1	SHEET NO: 1	

Figure 4: Proposed Gen-Tie Structure Type

# LA JOYA WIND PROJECT AND GENERATION TIE LINE

EXHIBIT KD-2  
AVANGRID  
RENEWABLES



LEGEND

**Project Features**

- Project Substation
- Existing Substation
- ▭ Gen-Tie Corridor
- ▭ Wind Project Area

**Wetlands**

- (National Wetland Inventory)
- Freshwater Emergent Wetland
  - Freshwater Pond

**Hydrology**

- (National Hydrography Dataset)
- Artificial Path
  - Canal/Ditch
  - Ephemeral Stream
  - Waterbody

**NRCS Soil Survey**

- ▨ Hydric Soil

**Watersheds**

- (National Hydrography Dataset)
- ▭ HUC 8 Boundary
  - ▨ FEMA Floodplains
  - ▨ 100-year Floodplain\*

\*Data digitized from FIRM panels:

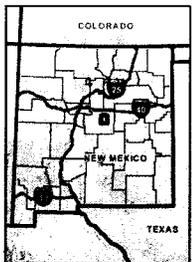


Figure 5: Water Resources

# LA JOYA WIND PROJECT AND GENERATION TIE LINE

EXHIBIT KD-2  
AVANGRID  
RENEWABLES

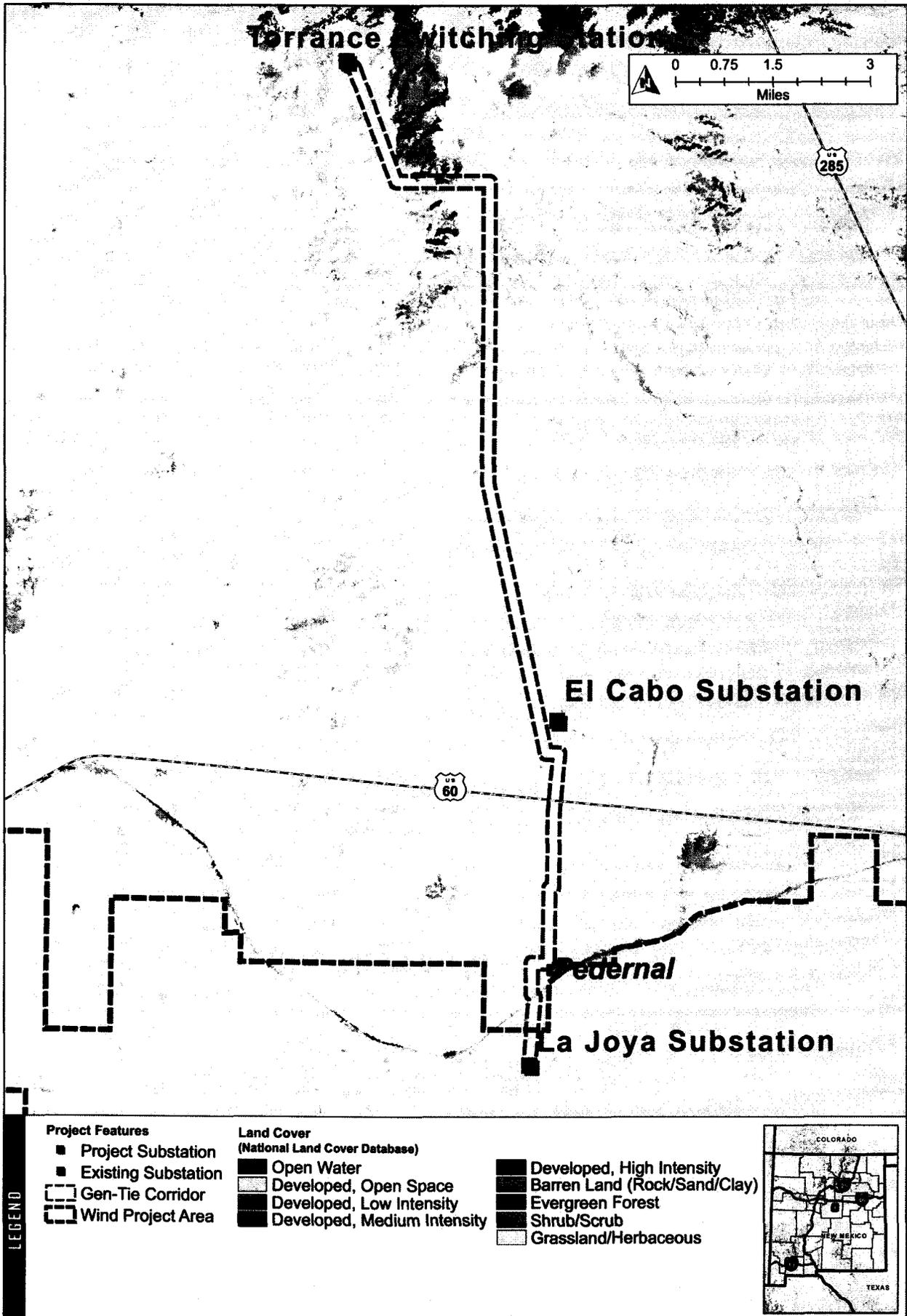
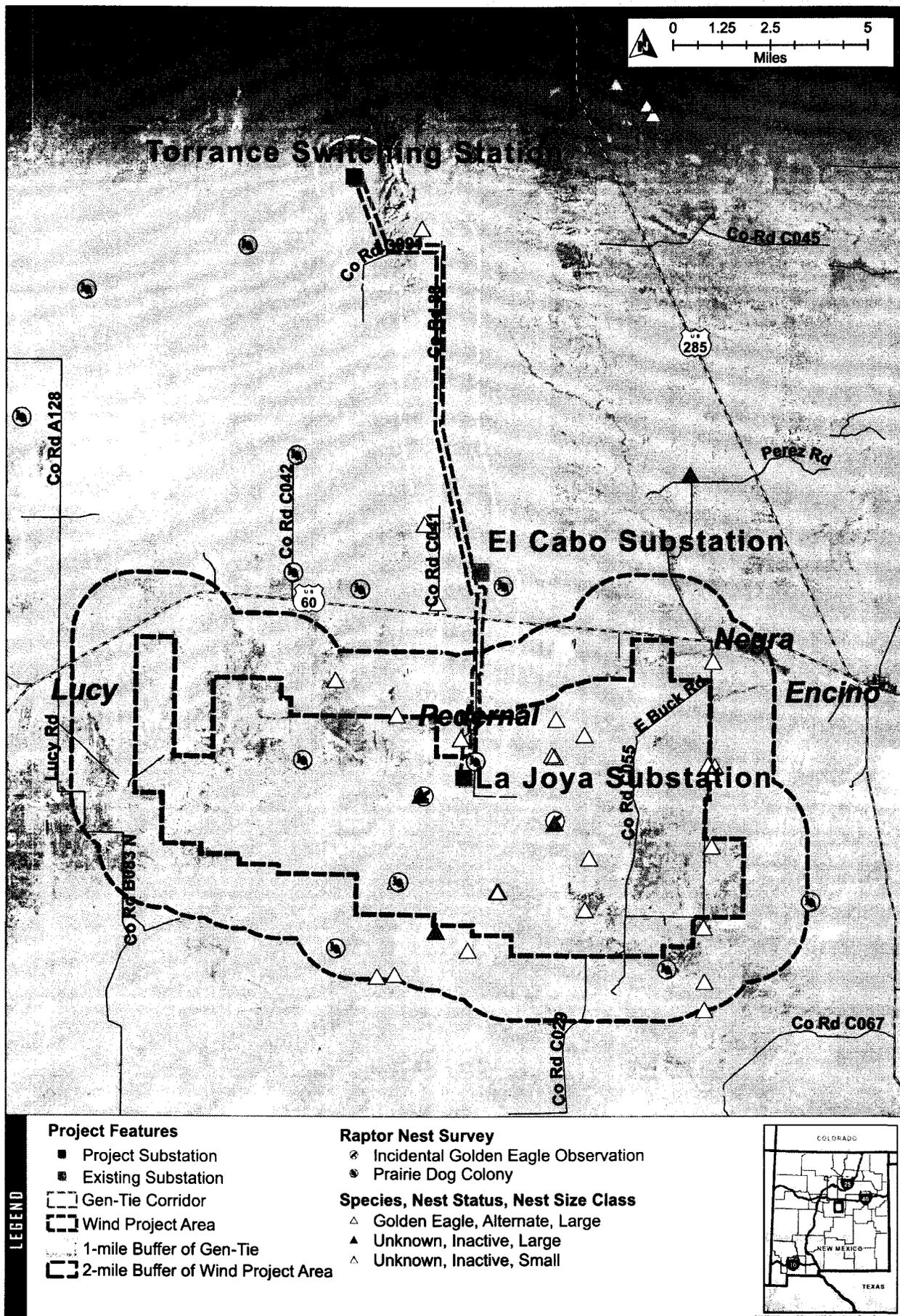


Figure 6: Land Cover



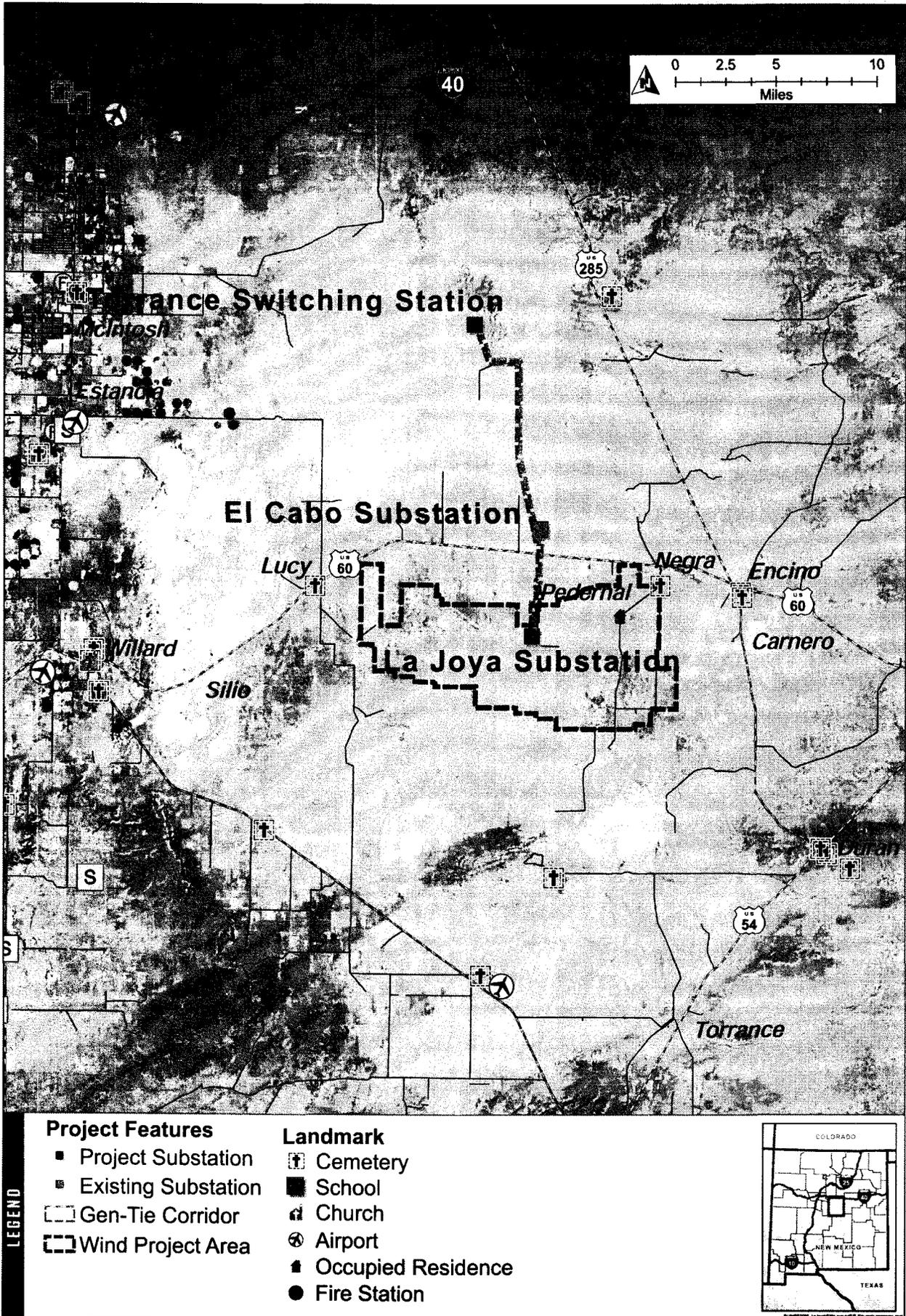
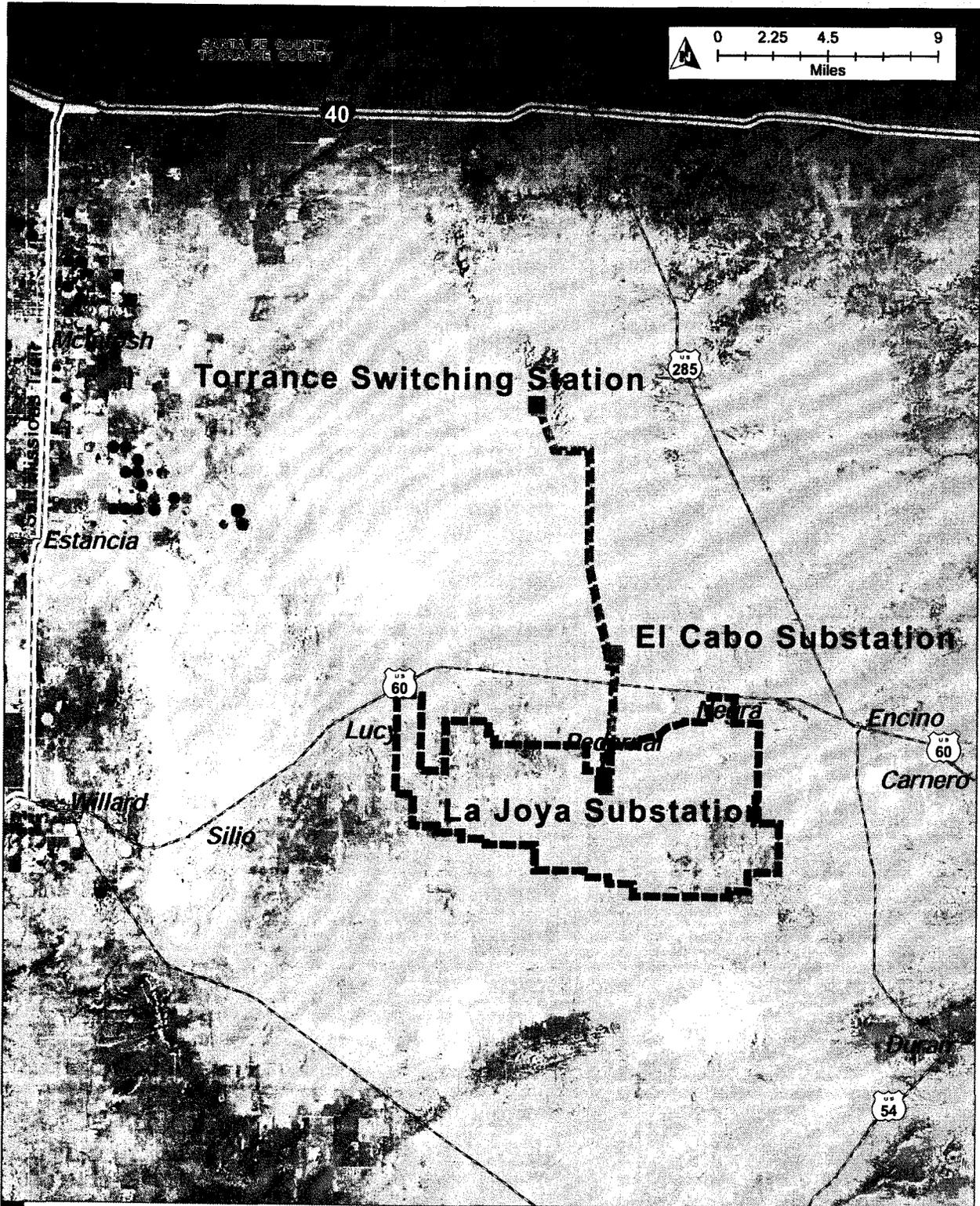


Figure 8: Community Facilities and Occupied Residences

# LA JOYA WIND PROJECT AND GENERATION TIE LINE

EXHIBIT KD-2  
 ANGRID  
 RENEWABLES



<b>LEGEND</b>	<b>Project Features</b>	<b>Scenic Byway</b>
	■ Project Substation	Scenic Byway
	■ Existing Substation	
	□ Gen-Tie Corridor	
	□ Wind Project Area	

Figure 9: Scenic Byways

# LA JOYA WIND PROJECT AND GENERATION TIE LINE

EXHIBIT KD-2  
AVANGRID  
RENEWABLES

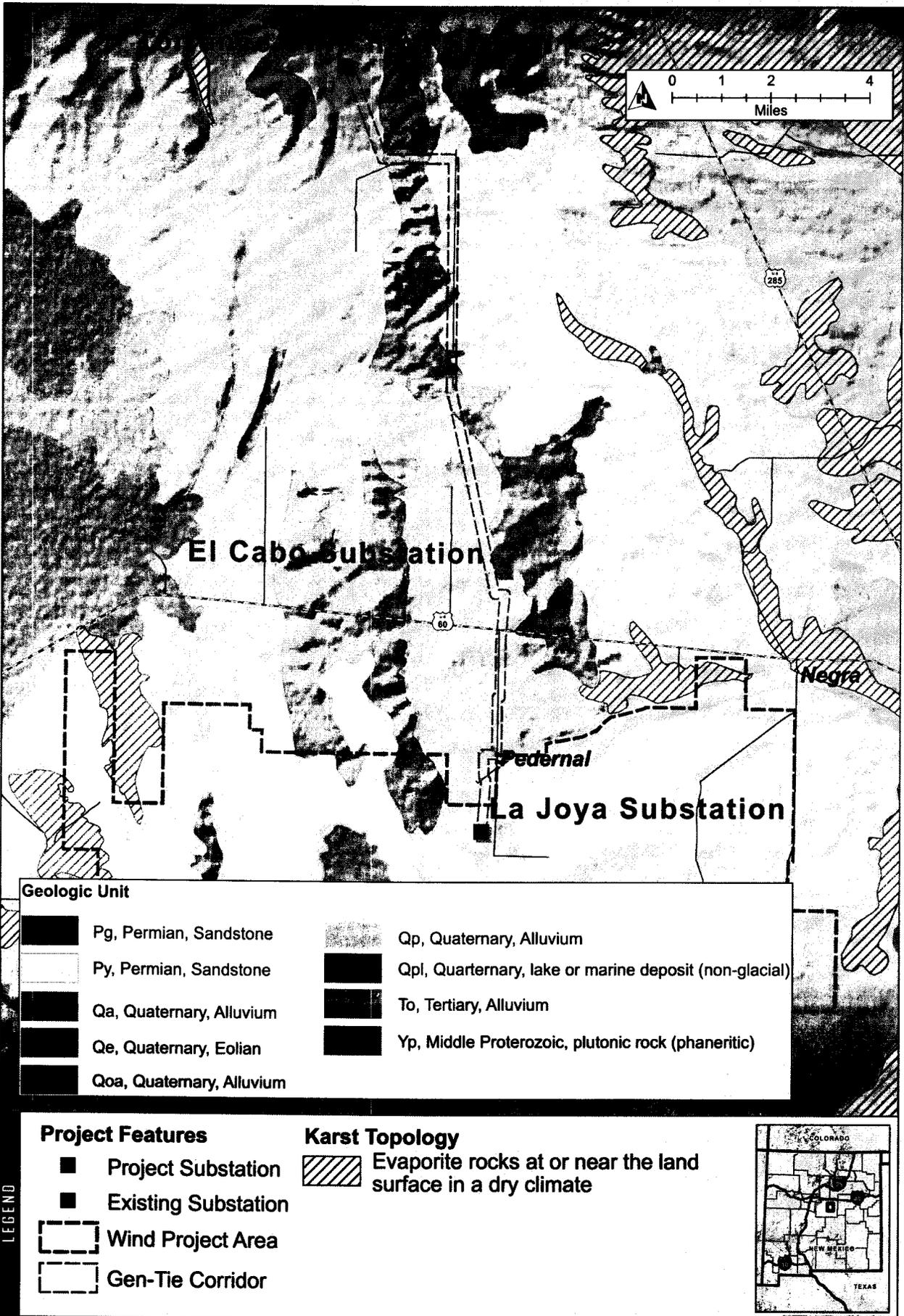
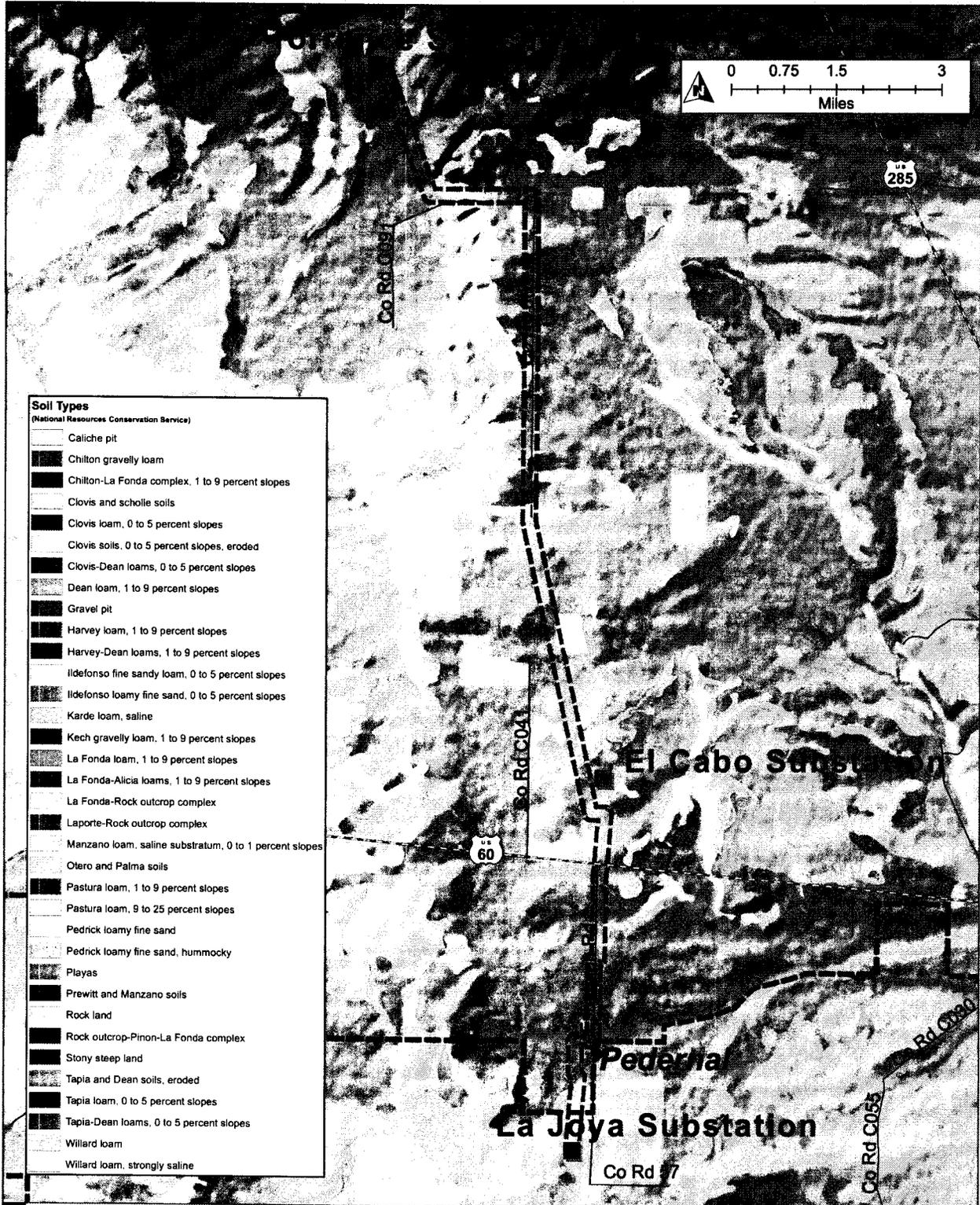


Figure 10: Geology

# LA JOYA WIND PROJECT AND GENERATION TIE LINE

EXHIBIT KD-2  
AVANGRID  
RENEWABLES



**Soil Types**  
(National Resources Conservation Service)

Caliche pit
Chilton gravelly loam
Chilton-La Fonda complex, 1 to 9 percent slopes
Clovis and scholle soils
Clovis loam, 0 to 5 percent slopes
Clovis soils, 0 to 5 percent slopes, eroded
Clovis-Dean loams, 0 to 5 percent slopes
Dean loam, 1 to 9 percent slopes
Gravel pit
Harvey loam, 1 to 9 percent slopes
Harvey-Dean loams, 1 to 9 percent slopes
Ildefonso fine sandy loam, 0 to 5 percent slopes
Ildefonso loamy fine sand, 0 to 5 percent slopes
Karde loam, saline
Kech gravelly loam, 1 to 9 percent slopes
La Fonda loam, 1 to 9 percent slopes
La Fonda-Alicia loams, 1 to 9 percent slopes
La Fonda-Rock outcrop complex
Laporte-Rock outcrop complex
Manzano loam, saline substratum, 0 to 1 percent slopes
Otero and Palma soils
Pastura loam, 1 to 9 percent slopes
Pastura loam, 9 to 25 percent slopes
Pedrick loamy fine sand
Pedrick loamy fine sand, hummocky
Playas
Prewitt and Manzano soils
Rock land
Rock outcrop-Pinon-La Fonda complex
Stony steep land
Tapia and Dean soils, eroded
Tapia loam, 0 to 5 percent slopes
Tapia-Dean loams, 0 to 5 percent slopes
Willard loam
Willard loam, strongly saline

**Project Features**

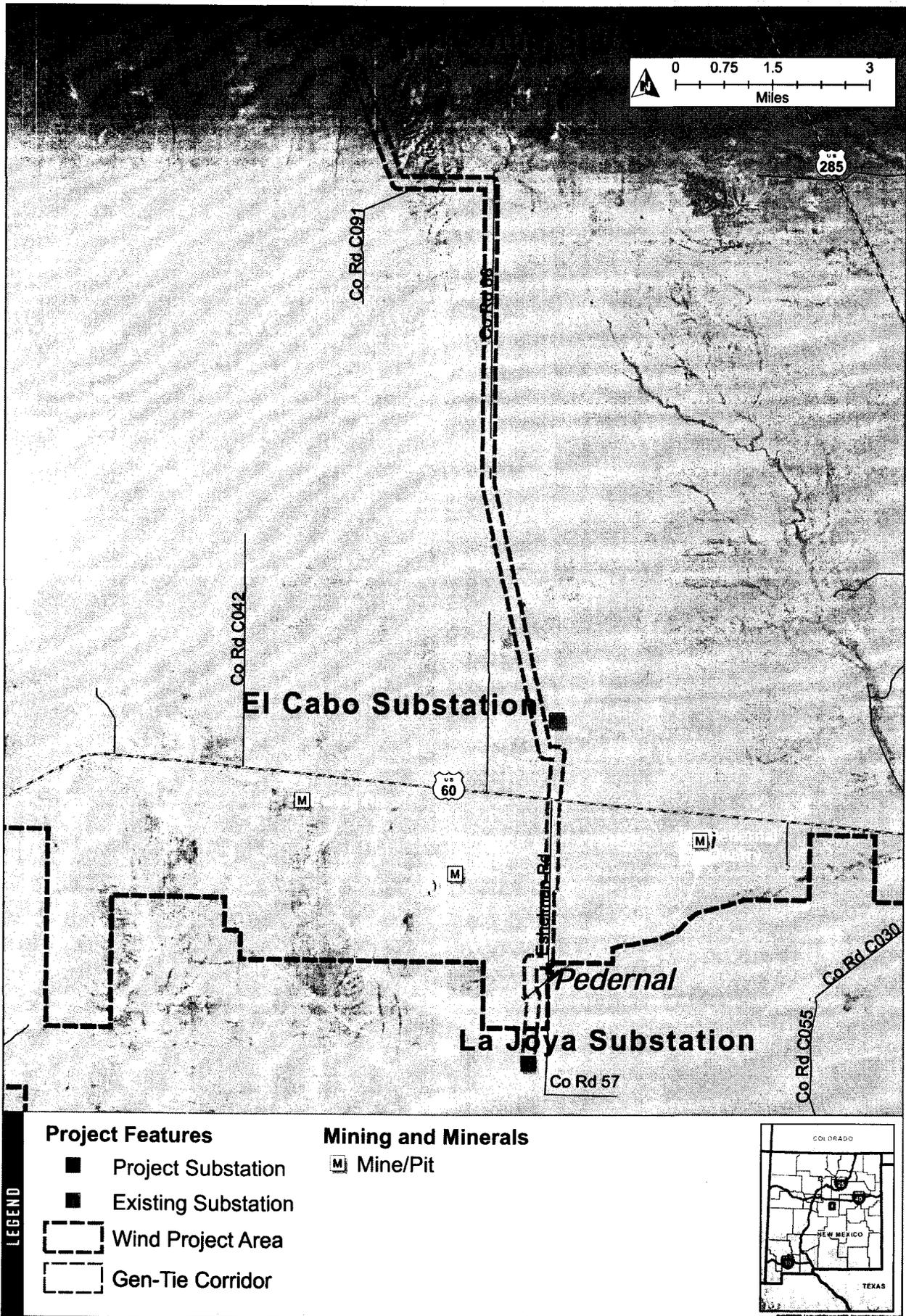
- Project Substation
- Existing Substation
- Gen-Tie Corridor
- ▤ Wind Project Area



Figure 11: Soils

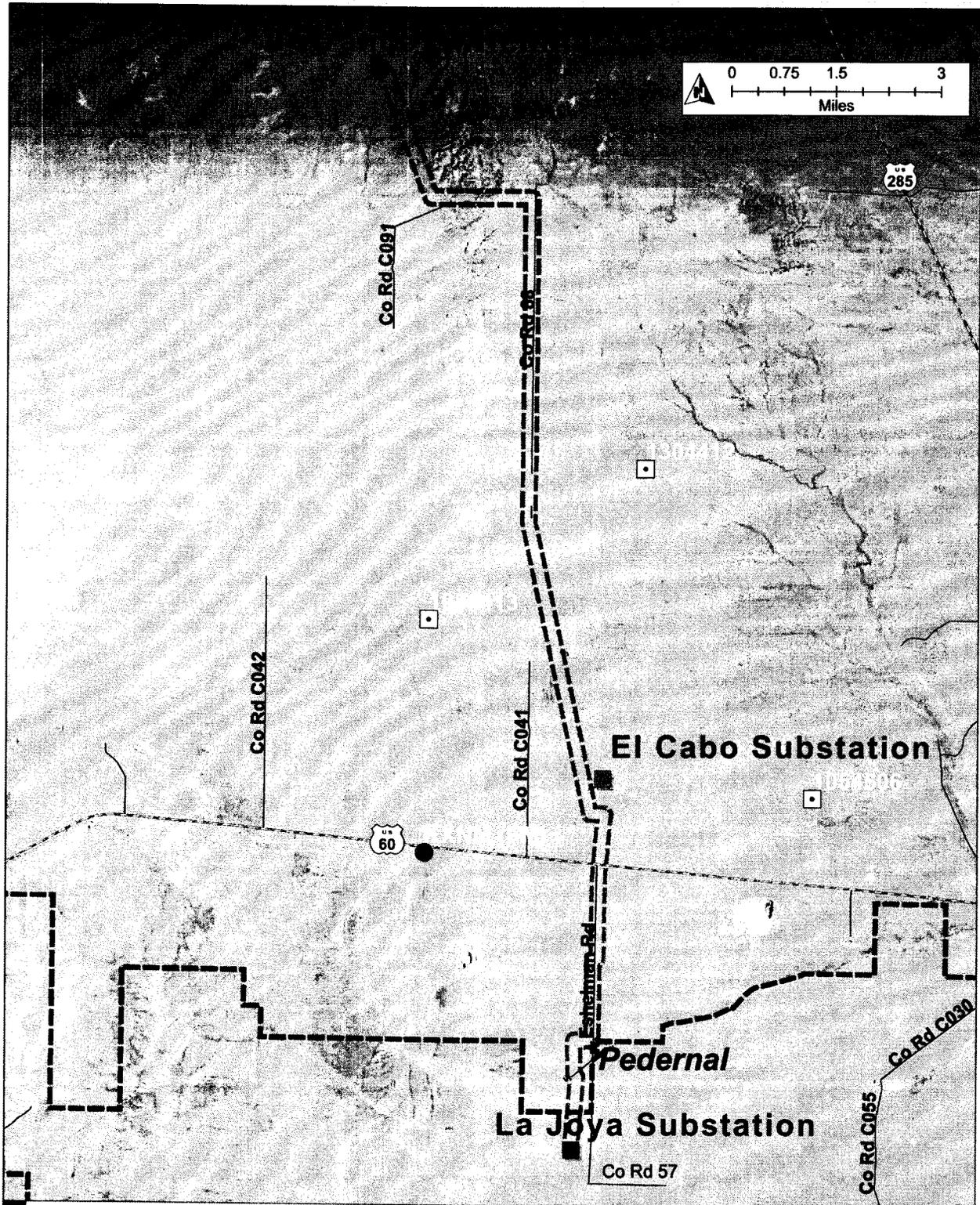
# LA JOYA WIND PROJECT AND GENERATION TIE LINE

EXHIBIT KD-2  
AVANGRID  
RENEWABLES



# LA JOYA WIND PROJECT AND GENERATION TIE LINE

EXHIBIT KD-2  
AVANGRID  
RENEWABLES

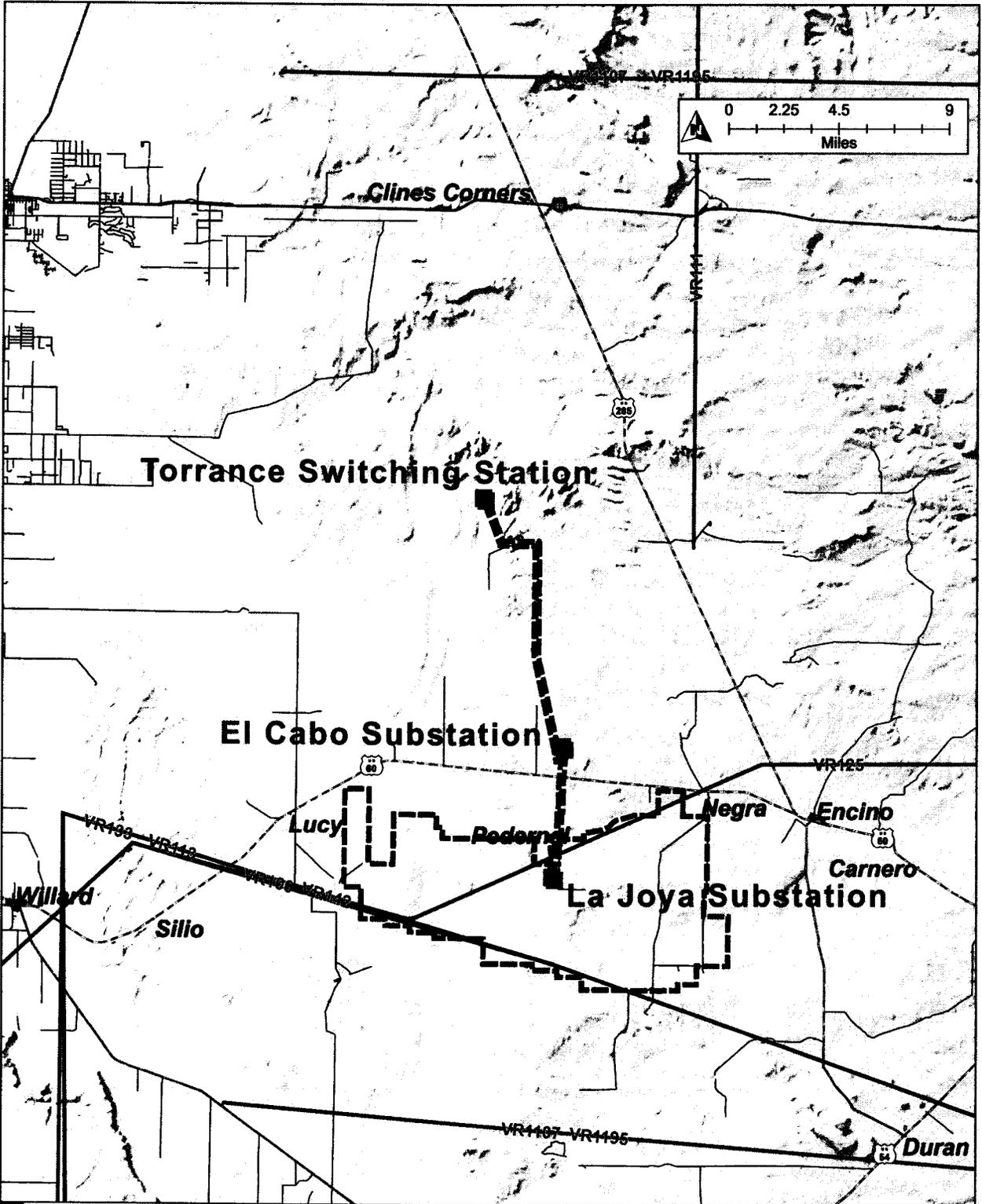


<b>LEGEND</b>	<b>Project Features</b>	<b>Communication Structures</b>	
	■ Project Substation	□ ASR Tower	
	■ Existing Substation	● FM Tower	
	--- Gen-Tie Corridor		
	--- Wind Project Area		

Figure 13: FCC-Registered Antenna Towers

# LA JOYA WIND PROJECT AND GENERATION TIE LINE

EXHIBIT KD-2  
AVANGRID  
RENEWABLES



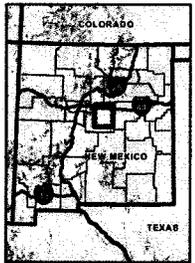
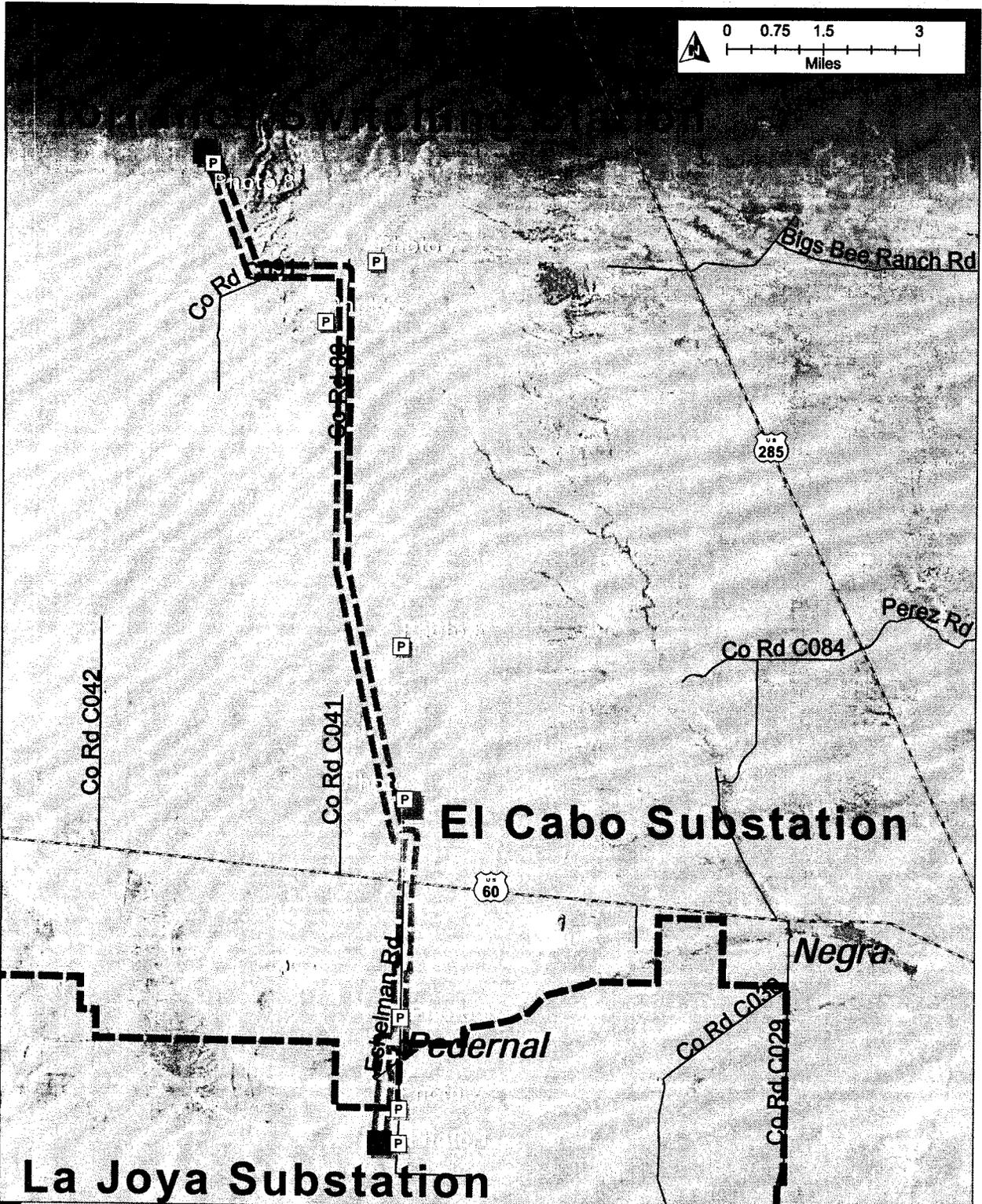
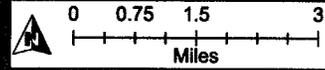
<b>LEGEND</b>	<b>Project Features</b>	<b>Military Training Routes</b>	
	■ Project Substation	— Training Route	
	■ Existing Substation		
	--- Gen-Tie Corridor		
	▨ Wind Project Area		

Figure 14: Military Training Routes

**APPENDIX B**

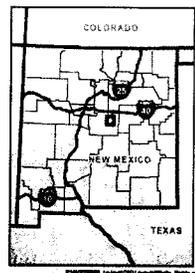
**PHOTO LOG**

# LA JOYA WIND PROJECT AND GENERATION TIE LINE



**Project Features**

- Project Substation
- Existing Substation
- ▭ Wind Project Area
- ▭ Gen-Tie Corridor
- P Photo Point



LEGEND

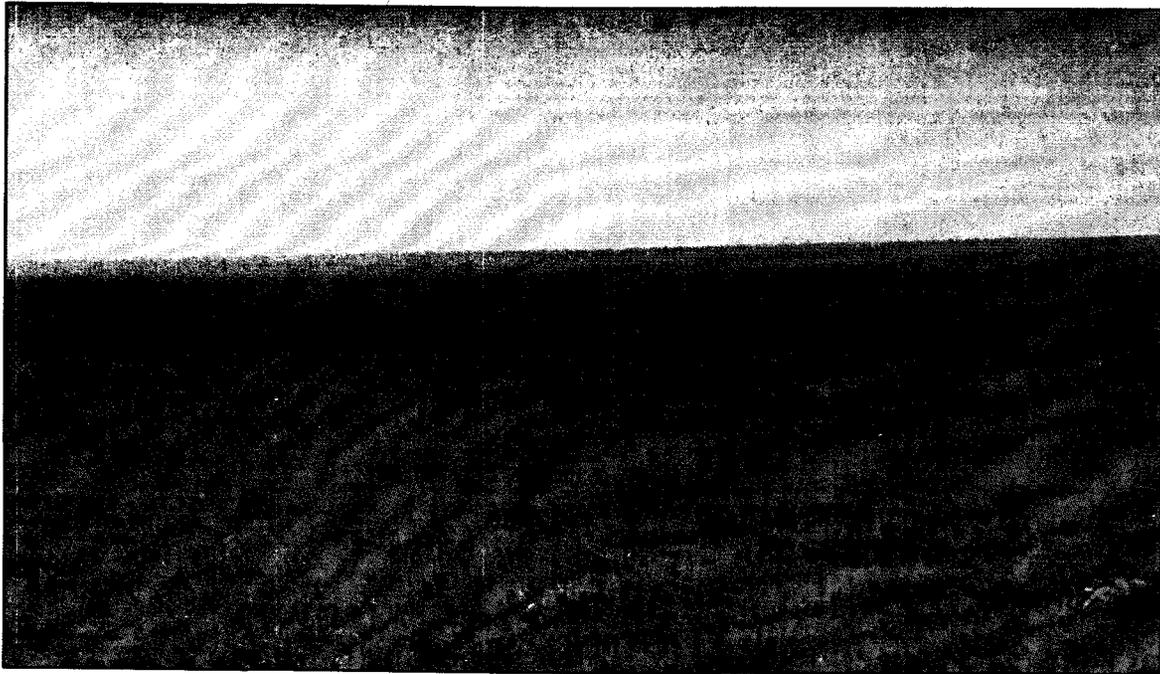


Photo 1: Small depression near southern terminus of Gen-Tie Corridor and proposed La Joya Substation (looking southeast).

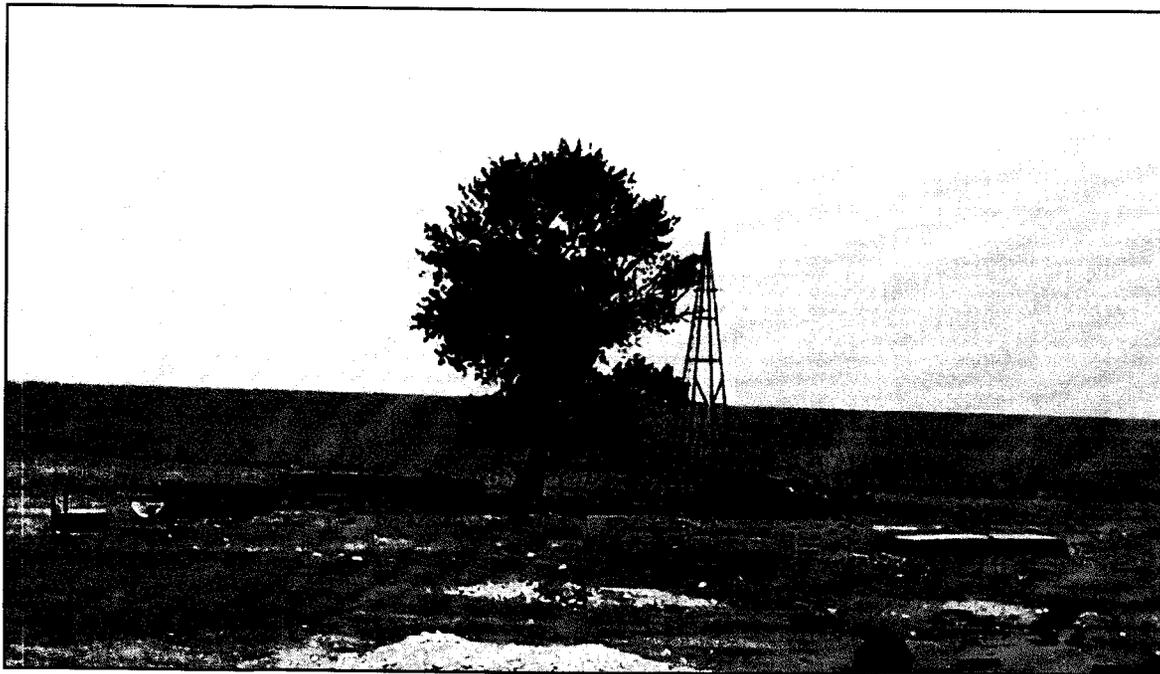


Photo 2: Stock tank located near southern terminus of Gen-Tie Corridor (looking east).

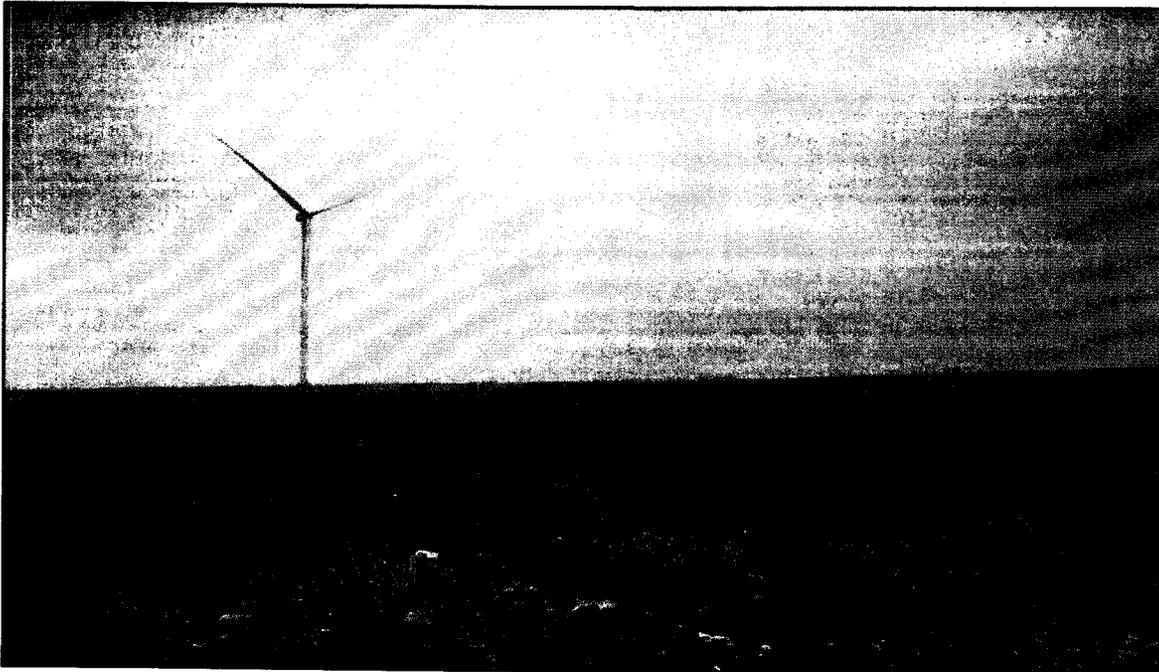


Photo 3: El Cabo Wind Farm visible from southern extent of Gen-Tie Corridor (looking west).

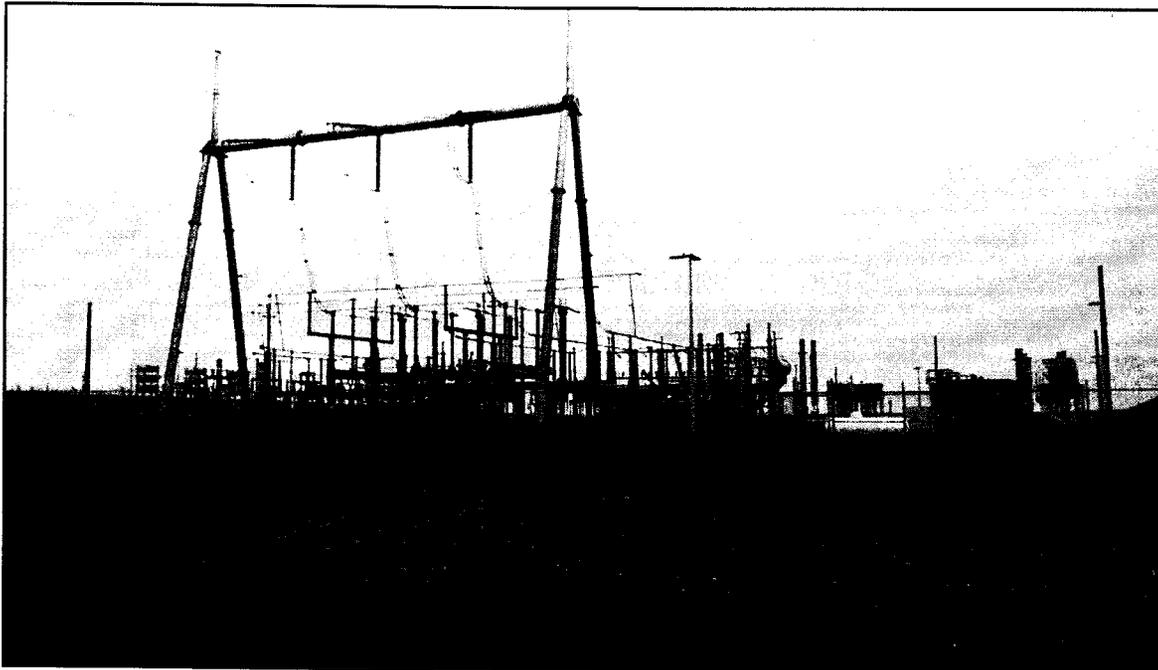


Photo 4: El Cabo Substation (looking east).

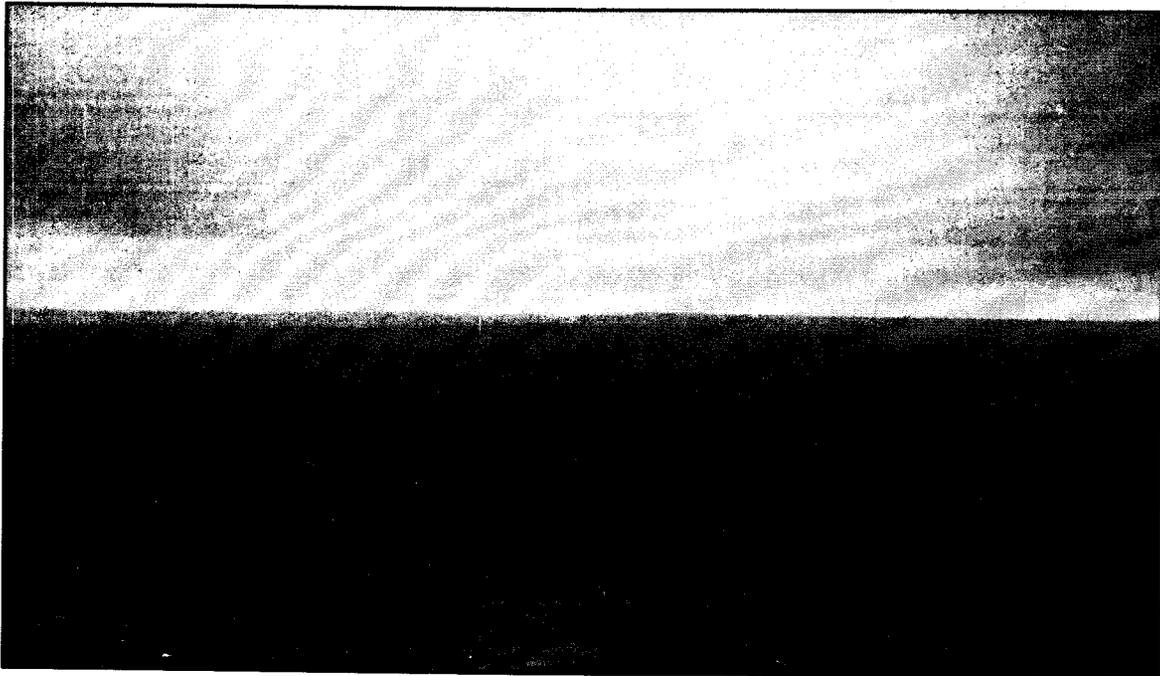


Photo 5: Gen-Tie Corridor visible from El Cabo Wind Farm access road (looking west).

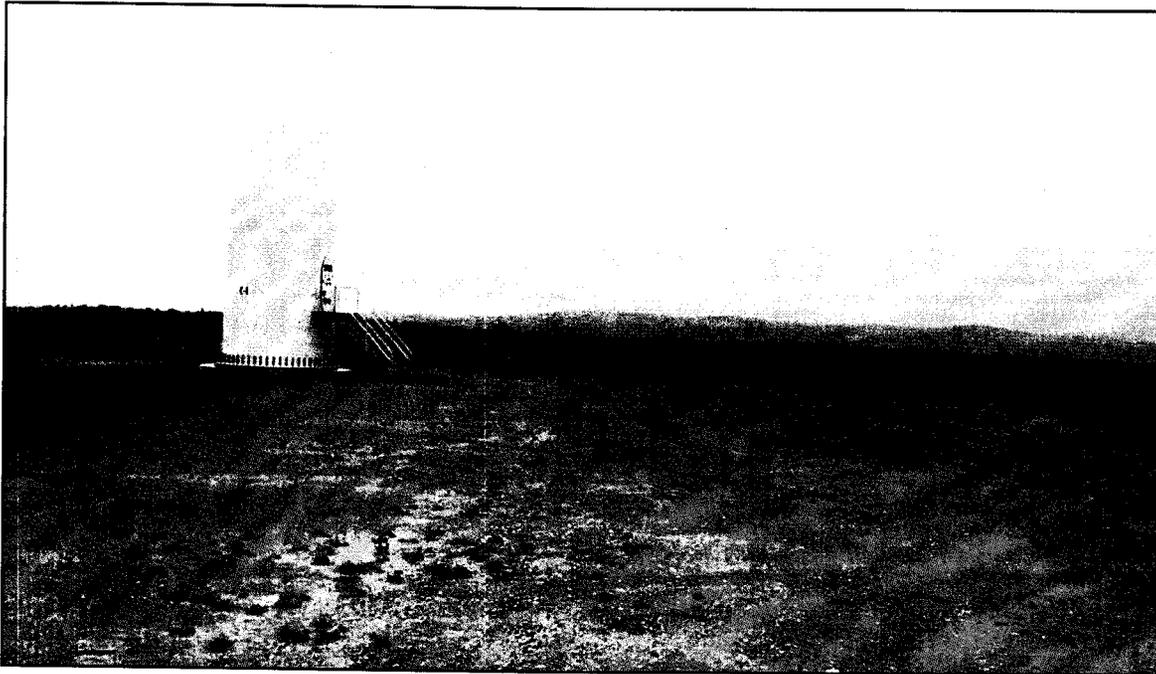


Photo 6: Northern portion of Gen-Tie Corridor where line turns west following existing El Cabo Transmission line, as viewed from El Cabo Wind Farm C string (looking north).

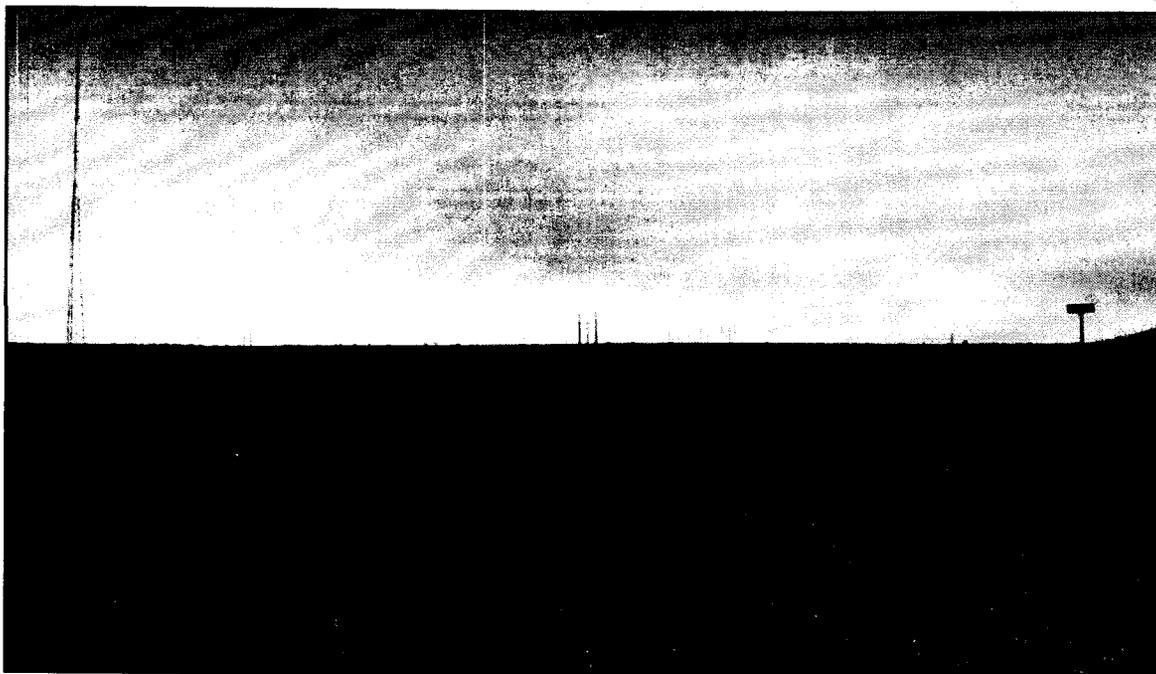


Photo 7: Northern portion of Gen-Tie Corridor where line turns west following existing El Cabo Transmission line, visible from El Cabo Wind Farm access road (looking west).

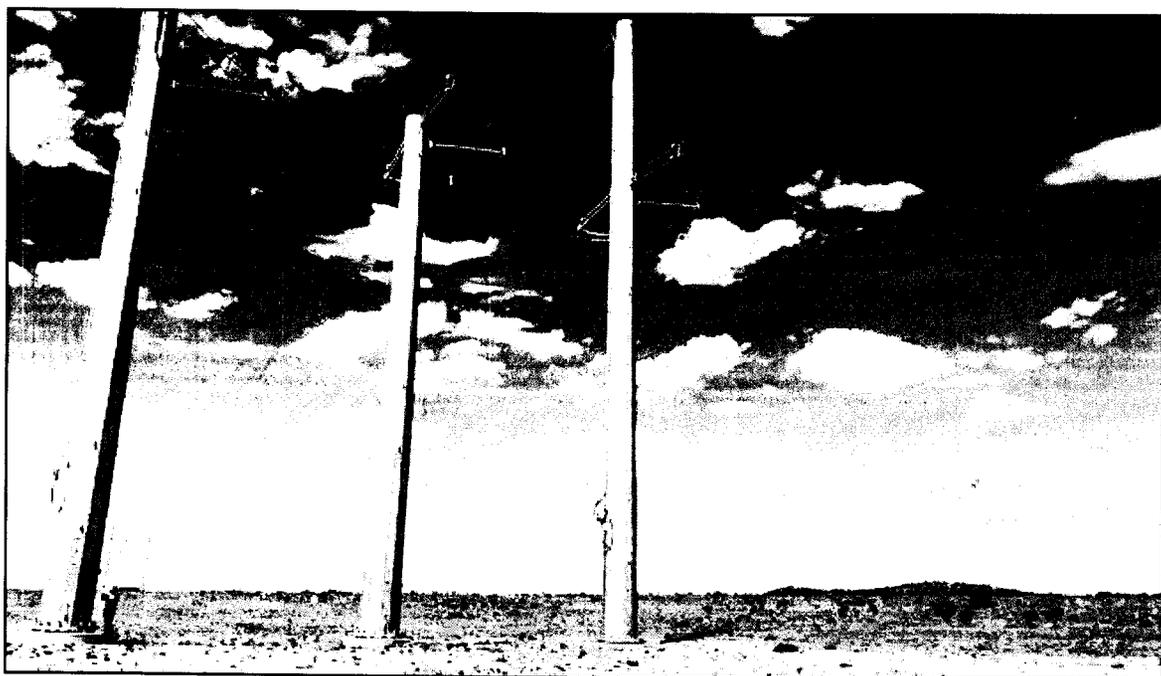


Photo 8: Northern terminus of Gen-Tie Corridor at the proposed Torrance Switching Station located adjacent to the El Cabo Gen-Tie Line (looking north).

**VERIFICATION**

STATE OF Colorado )  
COUNTY OF El Paso ) ss.

Krista Dearing, first being sworn on her oath, states:

I am the witness identified in the foregoing Direct Testimony of Krista Dearing. I hereby verify that I have read the foregoing Direct Testimony of Krista Dearing and the statements contained therein are true and correct to the best of my knowledge and belief.

*Krista Dearing*  
Krista Dearing

Subscribed, sworn to, and acknowledged before me on this 13 day of November, 2018.

*Mackenzie Nicole Smith*  
Notary Public

My commission expires November 30, 2021

