

**CATALINA RENEWABLE ENERGY PROJECT
BIRD AND BAT CONSERVATION STRATEGY**

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SECTION 1.0 INTRODUCTION

1.1 POLICY AND COMMITMENT TO ENVIRONMENTAL PROTECTION

enXco Development Corporation (enXco) is committed to siting, design, construction, and operation of renewable energy projects in an environmentally sustainable manner that avoids and minimizes the potential for impacts to birds and bats. This Bird and Bat Conservation Strategy (BBCS, formerly Avian and Bat Protection Plan) is intended to support enXco's compliance with federal and state statutes and regulations, through the implementation of procedures that shall be in force throughout the life of the Catalina Renewable Energy Project (project) to avoid and minimize impacts to birds and bats and their habitats, and compensate or mitigate for unavoidable impacts to these resources.

This BBCS fulfills the requirements of mitigation measure (MM) 4.4-9W and 4.4-5W of this project's Environmental Impact Report (EIR), which address the following: (1) the submittal of a current copy of the BBCS to Kern County before the issuance of the first building permit for a wind turbine generator, and (2) documentation to the California Department of Fish and Game (CDFG), U.S. Fish and Wildlife Service (USFWS), and Kern County that the project is in compliance with the Bald and Golden Eagle Protection Act (BGEPA). This BBCS will specifically address potential risks to the golden eagle. As recommended by the USFWS' *Draft Eagle Conservation Plan Guidance*,¹ conservation measures, also known as advanced conservation practices, will be implemented to avoid and minimize take of golden eagle (*Aquila chrysaetos*) to the point at which any remaining take is unavoidable. If any additional eagle take does occur, this take will be offset through compensatory mitigation so that the "no-net-loss" standard is met, thereby satisfying MM 4.4-5W.

Key considerations within the Tehachapi Wind Resource Area (WRA) are the potential for impacts to federally and state-listed threatened and endangered avian and bat species, "fully protected" avian species designated by the State Fish and Game Code, and avian and bat species that are present as resident or migratory species. Despite the efforts to site projects within portions of the wind resource areas that minimize the potential for impacts to avian and bat species, the potential exists for such conflicts to occur as a result of operation of wind turbines and the presence of associated overhead transmission and collector lines, including impacts to avian and bat species afforded protection by federal and state statutes and regulations.

enXco has committed to seven specific actions to fulfill its commitment to avoid and minimize impacts to avian and bat species:

1. Participate with public and private organizations in programs and scientific research to identify causes and effective controls for adverse effects to avian and bat species that result from operation, maintenance, and decommissioning of the project;
2. Undertake due diligence in selecting locations for wind energy development within the Tehachapi WRA that avoid and minimize the potential for impacts to avian and bat species;
3. Implement and comply with the measures specified in this BBCS;

¹ U.S. Fish and Wildlife Service. January 2011. *Draft Eagle Conservation Plan Guidance*. Available at: http://www.fws.gov/windenergy/docs/ECP_draft_guidance_2_10_final_clean_omb.pdf

4. Integrate procedures for design, construction, operation, maintenance, and decommissioning of the project that are compliant with the applicable federal and state statutes and regulations that govern the protection of avian and bat species;
5. Provide regular training to ensure that all personnel involved in construction, operation, maintenance, and decommissioning of the wind element of the project understand the requirements of the BBCS and are committed to its successful implementation;
6. Undertake mortality monitoring during the initial phases of operation of the wind element of the project to document avian and bat mortalities and injuries at wind turbines and overhead transmission and collector lines to determine if adaptive management measures need to be implemented; and
7. Ensure that regular updates are made to the BBCS in response to lessons learned, research results, new technologies, and revisions to the federal and state statutes and regulations that govern avian and bat species.

1.2 BIRD AND BAT CONSERVATION STRATEGY

This BBCS details enXco's commitment to protect avian and bat species during the construction and operation of the Catalina Renewable Energy Project. enXco has engaged in dialogue with USFWS, CDFG, and other stakeholders who are concerned with the protection of resident and migratory birds and bats. The BBCS is organized in five sections:

- Section 1 discusses enXco's commitment to avoiding and minimizing the potential for conflict between the wind element of the project and conservation of native avian and bat species.
- Section 2 gives an initial assessment of the project site as evaluated at the landscape scale, including consideration of which avian and bat species may be impacted.
- Section 3 describes site-specific surveys and assessments.
- Section 4 analyzes the fatality risks for avian and bat species at the project site in association with the wind element of the project.
- Section 5 describes conservation measures to be implemented based on the risk analysis.

The goals of the measures described in this BBCS are to minimize changes in the local prey base; monitor avian and bat activities in the area including nesting, roosting, and mortality; and use the compiled data to minimize impacts to avian and bat species and compensate or mitigate for any unavoidable adverse impact that results during construction, operation, maintenance, or decommissioning of the project. In addition, the BBCS documents conformance with the *California Guidelines for Reducing Impacts to Birds and Bats from Wind Energy Development*,² the *Interim*

² California Energy Commission and California Department of Fish and Game. 2007. *California Guidelines for Reducing Impacts to Birds and Bats from Wind Energy Development*. Commission Final Report. CEC-700-2007-008-CMF.

Guidelines for the Development of a Project Specific Avian and Bat Protection Plan for Wind Energy Facilities,³ and the *Draft Eagle Conservation Plan*.⁴ This BBCS has been prepared in compliance with these guidelines.

As a standard practice, enXco met with agencies and stakeholders early in the process of evaluating the potential to develop the project and before permit applications were submitted or irretrievable commitments of resources were made. Coordination was undertaken with resource agencies, including the USFWS and CDFG, to evaluate the potential presence of special-status species within the project property. Meetings with agencies included the review of an overall site work plan by the USFWS, CDFG, and Kern County on December 6, 2010. Agency representatives were taken on a reconnaissance site visit in conjunction with the work plan review on November 9, 2010. These stakeholder and agency discussions served as a screening process for avian and bat issues at the project to help identify appropriate pre-project avian and bat studies. Early discussions with agencies and nongovernmental organizations (NGOs) also helped identify areas or regions with known sensitive habitats and/or avian and bat resources that should be avoided for wind project development.

To determine potential impacts to avian and bat species resulting from the development of the project within the Tehachapi WRA, a variety of field studies and literature reviews were conducted. enXco determined, based on the information collected for the initial site assessment, that the project will likely have a relatively low potential for risk of injury or mortality to birds and bats. Therefore, enXco engaged Sapphos Environmental, Inc. to gather baseline information for avian and bat species at the project site. Data were compiled from published and unpublished literature, including agency consultation with USFWS, CDFG, Bureau of Land Management (BLM), and other responsible agencies; databases including the California Natural Diversity Database (CNDDB), Breeding Bird Surveys, U.S. Geological Survey (USGS) Breeding Bird Atlas, and Audubon Important Bird Area (IBA) maps; and other relevant state or local information sources.

Birds

- Farrand, J. 1988. *Western Birds: An Audubon Handbook*. New York, NY: McGraw-Hill.
- Garrett, Kimball, and Jon Dunn. 1981. *Birds of Southern California: Status and Distribution*. Los Angeles, CA: Artesian Press.
- Johnsgard, P.A. 1990. *Hawks, Eagles, & Falcons of North America*. Washington, DC: Smithsonian Institution Press.
- Kaufman, K. 1996. *Lives of North American Birds*. Boston, MA: Houghton Mifflin.
- Palmer, R.S. 1988. *Handbook of North American Birds, Volume 5*. New York, NY: Yale University Press.
- Sibley, D.A. 2000. *The Sibley Guide to Birds*. New York, NY: Alfred A. Knopf.
- Small, A. 1994. *California Birds: Their Status and Distribution*. Vista, CA: Ibis Publishing.

Sacramento, CA: California Energy Commission, Renewables Committee, and Energy Facilities Siting Division; and California Department of Fish and Game, Resources Management and Policy Division.

³ U.S. Fish and Wildlife Service. 2010. *Interim Guidelines for the Development of a Project Specific Avian and Bat Protection Plan for Wind Energy Facilities*. Washington, DC.

⁴ U.S. Fish and Wildlife Service. January 2011. *Draft Eagle Conservation Plan Guidance*. Available at: http://www.fws.gov/windenergy/docs/ECP_draft_guidance_2_10_final_clean_omb.pdf

- Zeiner, D.C., W.F. Laudenslayer Jr., K.E. Mayer, and M. White, eds. 1990. *California's Wildlife, Volume II: Birds*. Sacramento, CA: California Department of Fish and Game.

Bats

- Ingles, L.G. 1965. *Mammals of the Pacific States*. Stanford, CA: Stanford University Press.
- Jameson, E.W., Jr., and H.J. Peeters. 2004. *Mammals of California*. Berkeley, CA: University of California Press.
- Zeiner, D.C., W.F. Laudenslayer Jr., K.E. Mayer, and M. White, eds. 1990. *California's Wildlife, Volume III: Mammals*. Sacramento, CA: California Department of Fish and Game.

Birds and Bats

- California Department of Fish and Game. 2005. "California Wildlife Habitat Relationships System." Available at: <http://www.dfg.ca.gov/whdab/html/B520.html>
- Dudek and Associates. October 2000. *Western Riverside County Multiple Species Habitat Conservation Plan*. Revised Species Accounts. Available at: <http://ecoregion.ucr.edu/dudek/>
- Laabs, D. 18 April 2002. "West Mojave Plan Species Accounts." Available at: http://www.ca.blm.gov/cdd/wemo_species_plants.html
- Thelander, C.G., D.C. Pearson, and G.E. Olson, eds. 1994. *Life on the Edge*. Santa Cruz, CA: BioSystems Books.

Finally, a site reconnaissance visit was conducted by wildlife biologists to observe project site conditions and identify habitats present. Species and site-specific surveys are described in Section 3 of this BBCS and also summarized in the project's Biological Resources Technical Report.⁵

1.3 PROJECT DESCRIPTION AND BACKGROUND

The Catalina Renewable Energy Project is a wind and solar project designed to produce a maximum capacity of 350 megawatts (MW) of energy. The project applicant, enXco, would operate up to 134 wind turbine generators (WTGs) and up to 150 photovoltaic (PV) solar system blocks (2,241,000 individual solar panels). The project consists of 345 privately owned parcels of largely agricultural zoned land that totals approximately 6,739 acres located in the south-central portion of the unincorporated area of Kern County, California. Lands surrounding the site have either been approved or are in the planning stages for development for wind energy. The project is bordered by the Tehachapi Mountains to the northwest and is approximately 12 miles southeast of the City of Tehachapi, approximately 9 miles northwest of the unincorporated community of Rosamond, and 11 miles southwest of the City of Mojave.

Regionally, the project site can be accessed from State Route (SR) 14. The project has crossings for both electrical and vehicular access on 170th Street West. The solar and wind elements of the project can be accessed separately. Access to the wind element of the project would be provided

⁵ Sapphos Environmental, Inc. 30 June 2011. *Catalina Renewable Energy Project Biological Resources Technical Report*. Prepared for: enXco Development Corporation. Pasadena, CA

via 170th Street West located north of the Los Angeles Aqueduct and/or via Willow Springs Road through the adjacent, proposed Avalon Wind Energy Project (Figure 1.3-1, *Project Vicinity Map*). The solar element of the project site is accessed by Backus Road, which is maintained by the County to the intersection of 110th Street West, at the eastern border of the project property (Figure 1.3-1). The solar element of the project would also be accessed from Champagne Avenue.

The project would also entail underground/overhead collection and underground communication cables; up to three meteorological towers; up to 10 laydown yards, including two project substations, four concrete batch plants (two for solar and two for wind), and two operations and maintenance (O&M) facilities (one for solar and one for wind) (Figure 1.3-2, *Project Conceptual Site Plan*). The proposed project would also include a 14-mile-long, 230-kilovolt (kV) overhead transmission line, which would generally be aligned from the northeast to the southwest, where it ultimately would connect to the Southern California Edison (SCE) Whirlwind Substation. If approved, power generated at the project would be transferred to the SCE 220-kilovolt (kV) transmission system. The power would then be sold to a power purchaser (via a power purchase agreement), who in turn would sell energy output to California investor-owned utilities, municipalities, or other purchasers, in furtherance of the goals of the California Renewable Portfolio Standards (RPS) and other similar renewable programs in the state. The Energy element of the Kern County General Plan (KCGP) describes the Tehachapi Mountains as one of California's largest areas for wind energy development, responsible for about 40 percent of the state's total wind-generated power.⁶ This area is known as the Tehachapi WRA. The western half of the project would lie in the southeastern portion of the Tehachapi WRA.

1.4 KEY LAWS, REGULATIONS, AND AUTHORIZATIONS

Federal

Federal Endangered Species Act

The Endangered Species Act of 1973 (ESA) (16 USC 1531–1544) provides a framework for the protection of endangered and threatened plant and animal species. Federal agencies may not jeopardize the existence of listed species, which includes ensuring that actions they authorize, fund, or carry out do not adversely affect the species or adversely modify designated critical habitats. Under the federal ESA, all federal departments and agencies must utilize their authorities, as appropriate, to promote the recovery of listed species. The federal ESA prohibits all persons, including federal agencies, from harming or killing (“taking”) individuals of a listed species without authorization. When “take” of a listed species is likely to occur as the result of a project, Section 10(a) of the federal ESA requires a permit. In order to obtain a Section 10(a) permit, a Habitat Conservation Plan (HCP) is developed with the assistance of the USFWS and the National Marine Fisheries Service, to be submitted along with an application form, and a draft National Environmental Policy Act (NEPA) document.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) of 1918 (16 USC 703–712), as amended, provides for federal protection of all migratory bird species, their active nests, eggs, and so forth. Permits are required to remove these birds from their roosting and nesting areas. Nesting birds and the

⁶ Kern County. 15 June 2004 (Amended 13 March 2007). *Kern County General Plan, Energy Element*. Bakersfield, CA. Available at: <http://www.co.kern.ca.us/planning/pdfs/kcgp/KCGPChp5Energy.pdf>

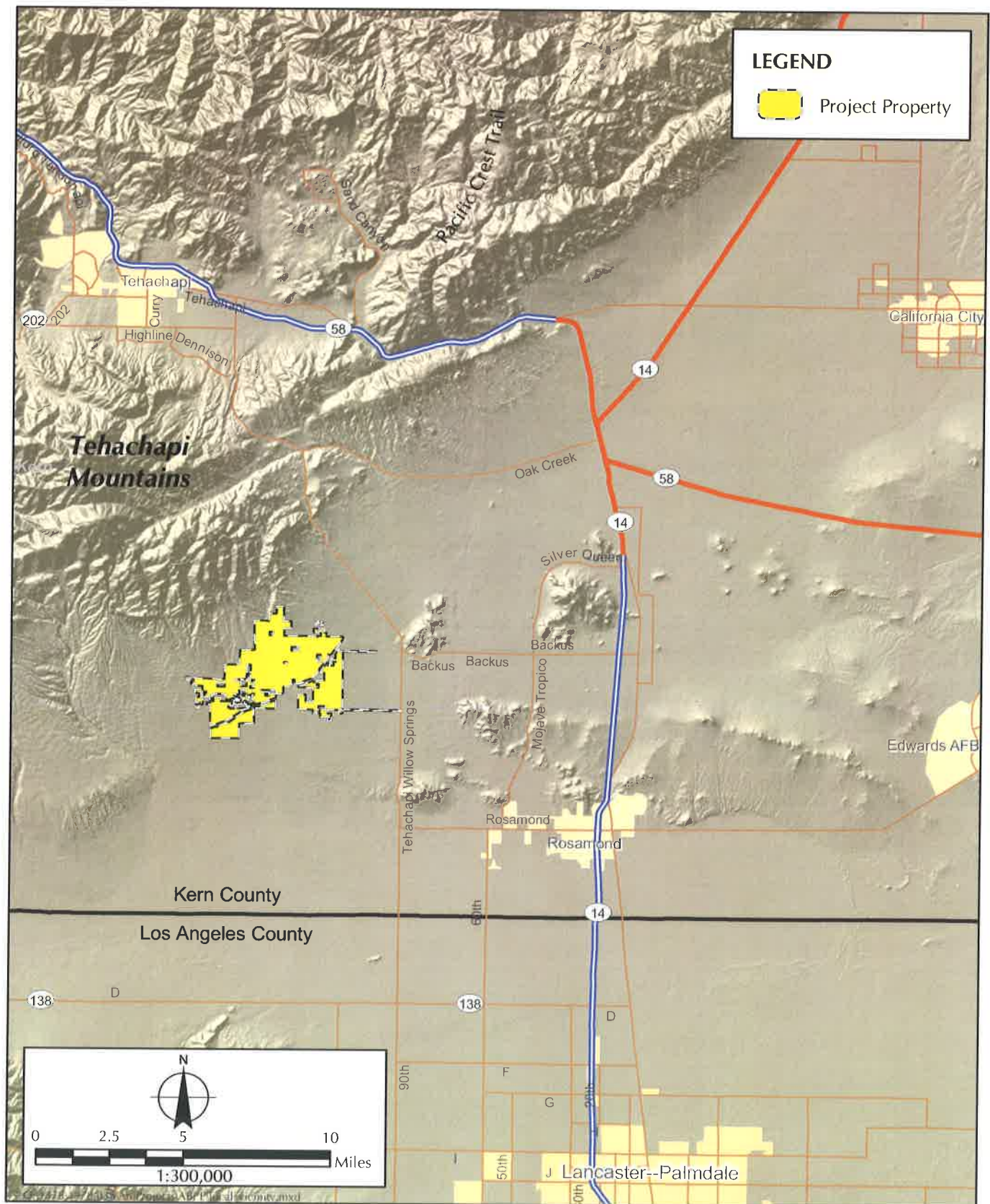
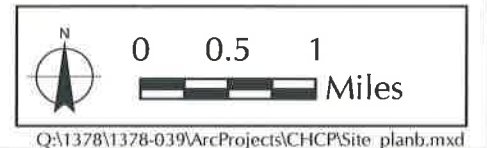
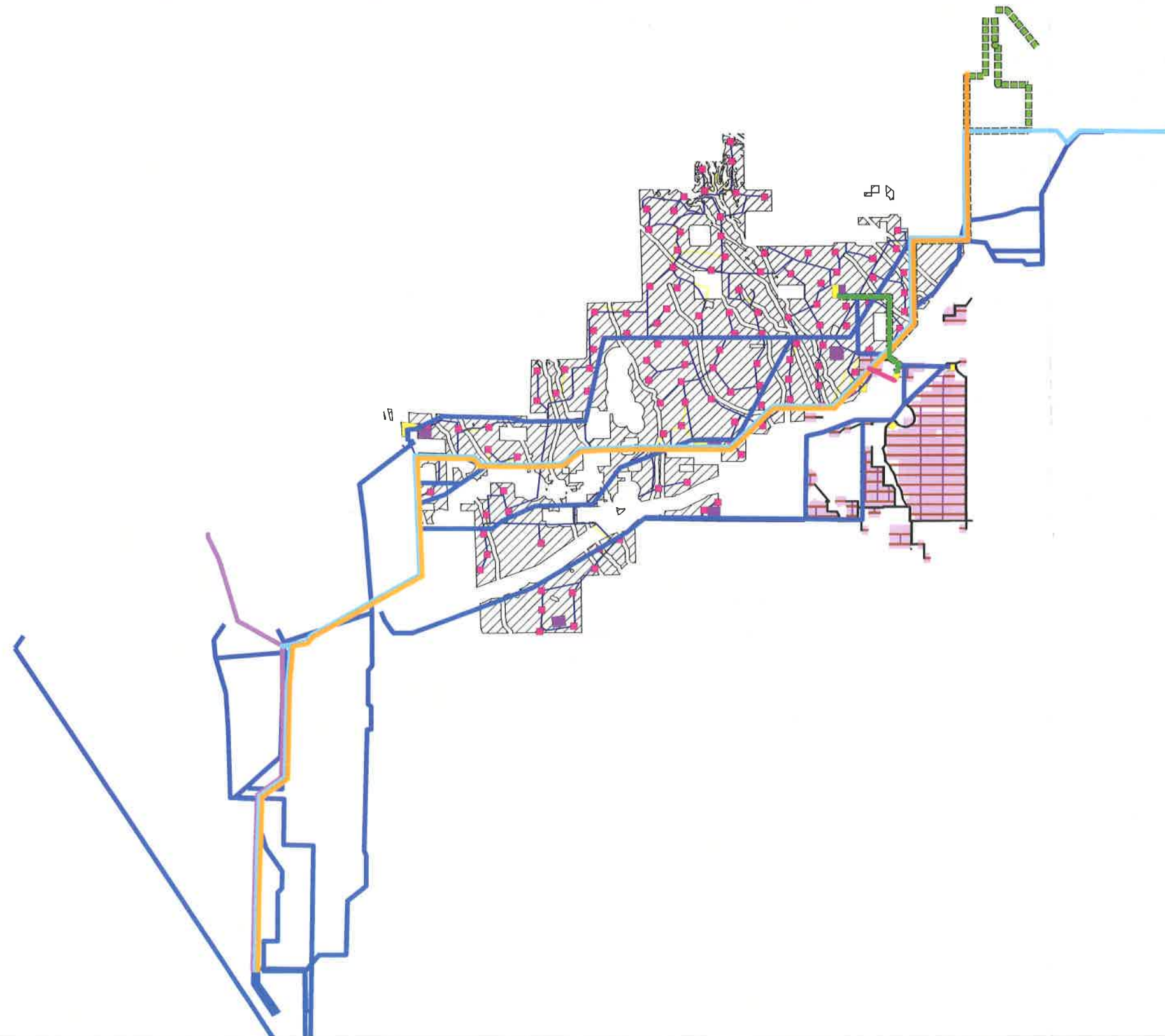


FIGURE 1.3-1
Project Vicinity Map

- LEGEND**
- Turbines_v18z2.shp
 - Gentle Corridor
 - Corridor 1
 - Corridor 2
 - Corridor 3
 - Corridor 4
 - Corridor Alt
 - O&M Facility Communication Lines
 - Transmission Routes
 - Wind Roads
 - Wind Underground_Electrical_Collection
 - Solar (Roads_major_v20)
 - Solar (Roads_minor_v20)
 - Solar (Utilities_underground_20110628)
 - Solar (Modules_v20)
 - Wind (substations_20110804)
 - Wind (yards_construction_20110804)
 - Solar_substations_v21
 - Solar_Temporary_Laydown_Yard_and_O&M_Facility
 - ▨ (WE_CAT_v7_1_w_acres) 6-21-2011



contents of the nest within the project property are afforded protection during the nesting season pursuant to the MBTA. Nonfederal contractors are required to obtain a depredation permit from the USFWS prior to removal or disturbance of nesting birds.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (16 USC 668–668d, 54 Stat. 250) is administered by the USFWS to protect bald (*Haliaeetus leucocephalus*) and golden eagles, their nests, eggs, and parts.⁷ The BGEPA states that no person shall take, possess, sell, purchase, barter, offer for sale, purchase or barter, transport, export, or import any bald or golden eagle alive or dead, or any part, nest, or egg without a valid permit to do so. The BGEPA also prohibits the take of bald and golden eagles unless pursuant to regulations. Take is defined by the BGEPA as an action “to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb.” Disturb is defined in the BGEPA as,

to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available; (1) injury to an eagle; (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior; or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.⁸

In addition to immediate impacts, this definition covers impacts from human-caused alterations initiated near a previously used nest site during a time when eagles were not present. Although the bald eagle was removed from the Endangered Species List in June 2007, it is still federally protected under the BGEPA. The *National Bald Eagle Management Guidelines* were published in conjunction with delisting by the USFWS in May 2007 to provide provisions to continue to protect bald eagles from harmful actions and impacts.⁹

Take Permits under the Bald and Golden Eagle Protection Act

On September 11, 2009, the USFWS implemented new rules (74 FR 46835) governing the take of bald and golden eagles.¹⁰ The new rules were released under the existing BGEPA, which has been the primary regulation protection for unlisted eagle populations since 1940. All activities that may disturb or incidentally take an eagle or its nest as a result of an otherwise legal activity must be permitted by the USFWS under this act. The definition of *disturb* (72 FR 31132) includes “interfering with normal breeding, feeding, or sheltering behavior to the degree that it causes or is likely to cause decreased productivity or nest abandonment.”¹¹ The new rules address authorization of (1) disturbance-type take of bald and golden eagles due to otherwise lawful

⁷ U.S. Fish and Wildlife Service. n.d. *Bald Eagle Management Guidelines and Conservation Measures: Bald and Golden Eagle Protection Act*. Available at: <http://www.fws.gov/midwest/Eagle/guidelines/bgepa.html>

⁸ U.S. Fish and Wildlife Service. n.d. *Bald Eagle Management Guidelines and Conservation Measures: Bald and Golden Eagle Protection Act*. Available at: <http://www.fws.gov/midwest/Eagle/guidelines/bgepa.html>

⁹ U.S. Fish and Wildlife Service. May 2007. *National Bald Eagle Management Guidelines*. Available at: <http://www.fws.gov/pacific/eagle/NationalBaldEagleManagementGuidelines.pdf>

¹⁰ U.S. Fish and Wildlife Service. 11 September 2009. “Eagle Permits; Take Necessary to Protect Interests in Particular Localities; Final Rules.” *Federal Register*, 74(175): 46836–46879.

¹¹ U.S. Fish and Wildlife Service. 5 June 2007. “Protection of Eagles and Authorizations under the Bald and Golden Eagle Protection Act for Take of Eagles; Final Rule and Proposed Rule; Protection of Eagles and National Bald Eagle Management Guidelines; Notices.” *Federal Register*, 72(107): 31132–31140.

activities and (2) take of eagle nests in rare cases where their location poses a risk to human safety or the eagles themselves.

A programmatic permit will be available to industries or agencies undertaking activities that may disturb or otherwise take eagles on an ongoing operational basis. The USFWS has defined *programmatic take* as “take that (1) is recurring, but not caused solely by indirect effects, and (2) occurs over the long term and/or in a location or locations that cannot be specifically identified.” The second criterion is the key factor that distinguishes programmatic take from any other take that has indirect effects that continue to cause take after the initial action.

In January 2011, the USFWS issued a set of draft rules delineating the conditions for issuance of programmatic permits for incidental take of eagles under BGEPA, with particular focus on the wind energy industry.¹² These rules were issued to clarify when take permits may be issued but do not add any binding requirements beyond those already specified under existing regulations. As described in these draft rules, conservation measures must be implemented that will avoid and minimize take to the maximum extent possible, and advanced conservation practices must be used such that any residual take is unavoidable. Furthermore, when the permitted take would otherwise cause eagle populations to decline, compensatory mitigation must be employed such that no net population decline occurs. These rules recommend five steps in developing an Eagle Conservation Plan (ECP) to support permits for take of eagles, including: (1) a landscape-scale site assessment to identify areas where take of eagles will be manageable; (2) completion of on-site surveys for the selected site to obtain data allowing for eagle mortality; (3) estimate of mortality risk from wind turbines based on the survey data; (4) identification and evaluation of the anticipated effectiveness of advanced conservation practices (ACPs) to avoid mortality and, if necessary, identification of compensatory mitigation; and (5) postconstruction monitoring to determine whether anticipated take exceeds actual take such that adaptive management will be required.

USFWS Recommendations to Avoid and Minimize Wildlife Impacts from Wind Turbines

On March 4, 2010, the USFWS Wind Turbine Guidelines Advisory Committee issued *Recommended Guidelines to Avoid and Minimize Wildlife Impacts from Wind Turbines* in a report submitted to the Secretary of the Interior.¹³ The guidelines outline effective measures to avoid or minimize impacts to wildlife and their habitats from wind energy facilities. The guidelines encourage reviewing agencies and other professionals to (1) complete a proper evaluation of potential wind energy development site, (2) ensure the proper location and design of turbines, and (3) complete preconstruction and postconstruction research and monitoring to identify and assess impacts to wildlife to ensure that the actions that they authorize, implement, or fund will not jeopardize the continued existence of any federally endangered or threatened species.

West Mojave Plan

The West Mojave Plan is a proposed HCP and an amendment to the California Desert Conservation Area Plan covering more than 9 million acres in five counties (Inyo, Kern, Los Angeles, San Bernardino, and Riverside) (Figure 1.4-1, *Project in Relation to the West Mojave Plan*) with a purpose of creating a comprehensive strategy to conserve and protect the federally and state

¹² U.S. Fish and Wildlife Service. January 2011. *Draft Eagle Conservation Plan Guidance*. Available at: http://www.fws.gov/windenergy/docs/ECP_draft_guidance_2_10_final_clean_omb.pdf

¹³ U.S. Fish and Wildlife Service Wind Turbine Guidelines Advisory Committee. 4 March 2010. *Recommendations to Avoid or Minimize Impacts to Wildlife and Habitat from Wind Energy Development*. Washington, DC.



FIGURE 1.4-1
Project in Relation to the West Mojave Plan

threatened desert tortoise (*Gopherus agassizii*), the state threatened Mohave ground squirrel (*Spermophilus mohavensis*), and almost 100 other sensitive species, as well as the natural communities where they reside.^{14,15} The West Mojave Plan area in Kern County begins at the Kern, Inyo, and San Bernardino County intersection northeast of the City of Ridgecrest, California. The area follows approximately the Sierra Nevada Mountain range to the southwest and continues to the Tehachapi Mountains north of the project study area to the Los Angeles County line east-northeast of Quail Lake. In addition, this HCP provides a streamlined program for complying with the requirements of the California ESA and federal ESA.

The project study area falls within the West Mojave Plan planning area, but is located entirely on non-Federal lands, which are currently not subject to the West Mojave Plan, as it has not yet been adopted for lands not administered by the BLM.

State

California State Endangered Species Act (Fish and Game Code §§2050 et seq.)

California has a parallel mandate to the federal ESA, which is embodied in the California Endangered Species Act (CESA) of 1984 and the California Native Plant Protection Act (CNPA) of 1977. These laws regulate the listing and take of plant and animal species designated as endangered, threatened, or rare. The State of California also lists species of special concern based on limited distribution; declining populations; diminishing habitat; or unusual scientific, recreational, or educational value. Under state law, the CDFG is empowered to review projects for their potential to result in negative impacts to listed species and their habitats.

California State Fish and Game Code Sections 2080 and 2081

Section 2080 of the State Fish and Game Code (the Code) states:

No person shall import into this state [California], export out of this state, or take, possess, purchase, or sell within this state, any species, or any part or product thereof, that the commission [State Fish and Game Commission] determines to be an endangered species or threatened species, or attempt any of those acts, except as otherwise provided in this chapter, or the Native Plant Protection Act, or the California Desert Native Plants Act.

Pursuant to Section 2081 of the Code, the CDFG may authorize individuals or public agencies to import, export, take, or possess any state-listed endangered, threatened, or candidate species. These otherwise prohibited acts may be authorized through permits or MOUs if: (1) the take is incidental to an otherwise lawful activity, (2) impacts of the authorized take are minimized and fully mitigated, (3) the permit is consistent with any regulations adopted pursuant to any recovery plan for the species, and (4) the applicant ensures adequate funding to implement the measures

¹⁴ U.S. Department of the Interior, Bureau of Land Management. 1980. *Final Environmental Impact Report and Statement for the West Mojave Plan*. Moreno Valley, CA: California Desert District. Available at: http://www.blm.gov/ca/pdfs/cdd_pdfs/wemo_pdfs/plan/wemo/Vol-1-Chapter1_Bookmarks.pdf

¹⁵ U.S. Department of the Interior, Bureau of Land Management. January 2005. *West Mojave Plan—A Habitat Conservation Plan and California Desert Conservation Area Plan Amendment Final Environmental Impact Report and Statement*. Moreno Valley, CA. Available at: http://www.blm.gov/ca/pdfs/cdd_pdfs/wemo_pdfs/plan/wemo/Vol-1-Chapter1_Bookmarks.pdf

required by the CDFG. The CDFG makes this determination based on available scientific information and considers the ability of the species to survive and reproduce.

California State Fish and Game Code Section 3500

This state law makes it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by the Code or any associated regulation.

California State Fish and Game Code Section 3503 and 3503.5

This state law provides regulatory protection to resident and migratory birds and all birds of prey within the State of California, including the prohibition of the taking of nests and eggs, unless otherwise provided for by the Code.

California State Fish and Game Code Section 3511

This state law describes bird species, primarily raptors that are “fully protected.” Fully protected birds may not be taken or possessed, except under specific permit requirements.

Title 14, California Code of Regulations, Sections 670.2 and 670.5

These state regulations list plant and animal species designated as threatened and endangered under the CESA. California species of special concern (CSC) are those species that are indicators of regional habitat changes or are considered to be potential future protected species. CSCs do not have any special legal status but are intended by CDFG for use as a management tool to take these species into special consideration when decisions are made concerning the future of any land parcel.

California Guidelines for Reducing Impacts to Birds and Bats from Wind Energy Development

The California Energy Commission together with the CDFG issued voluntary guidelines for reducing impacts to birds and bats from wind energy development.¹⁶ These guidelines provide information to help reduce impacts to birds and bats from new development or repowering of wind energy projects in California. They include preliminary screening of wind energy project sites; pre-permitting study design and methods; assessing direct, indirect, and cumulative impacts to birds and bats in accordance with state and federal laws; developing avoidance and minimization measures; establishing appropriate compensatory mitigation; and post-construction operations monitoring, analysis, and reporting methods. The subject guidelines have not been approved or disapproved by the California Energy Commission or the CDFG, nor has the Energy Commission or the CDFG passed on the accuracy or adequacy of the guidelines. Nevertheless, due to the potential for effects as a result of project implementation to birds and bats, the avian and bat studies conducted in support of baseline characterization of avian and bat resources found at the project study area were designed to be consistent with the California Energy Commission Guidelines.

¹⁶ California Energy Commission. 26 September 2007. *California Guidelines for Reducing Impacts to Birds and Bats from Wind Energy Development*. Final Committee Report. Prepared for: California Department of Fish and Game. Sacramento, CA.

Local

Kern County General Plan

The Kern County General Plan includes the following policies related to biological resources:¹⁷

- Protection of threatened and endangered plant and wildlife species in accordance with state and federal laws
- Avoidance or minimization of impacts to fish, wildlife, and botanical resources
- Protection of listed plant and wildlife species through conservation plans and other methods promoting management and conservation of habitat lands
- Promotion of public awareness of endangered species laws
- Solicitation of comments from CDFG and USFWS when an environmental document is prepared
- Management of riparian areas in accordance with the U.S. Army Corps of Engineers (USACOE) and CDFG rules and regulations to enhance the drainage, flood control, biological, recreational, and other beneficial uses while acknowledging existing land use patterns

In addition, the General Plan sets forth two specific sections—Oak Tree Conservation¹⁸ and Threatened and Endangered Species¹⁹—that include distinct goals, policies, and specific implementation measures regarding the management of biological resources. Furthermore, the project is subject to numerous compliance measures required by the Kern County Zoning Ordinance, including the Wind Energy (WE) Combining District²⁰ requirements and Military Protection Zone Review Requirements.²¹ The project applicant will be required to demonstrate compliance with the goals of the Kern County General Plan during the project entitlement process.

Kern County Zoning Ordinance

Wind Energy Combining District

Under the Kern County Zoning Ordinance,²² the project study area is subject to the Kern requirements established for the WE Combining District. A component of the project will pursue a zoning ordinance change from the existing zoning designations to Kern County's WE Combining

¹⁷ Kern County. 15 June 2004 (Amended 13 March 2007). *Kern County General Plan*. Chapter 1, Land Use, Conservation, and Open Space Element. Bakersfield, CA. Available at: <http://www.co.kern.ca.us/planning/pdfs/kcgp/KCGPChp1LandUse.pdf>

¹⁸ Kern County. 15 June 2004 (Amended 13 March 2007). *Kern County General Plan*. Chapter 1, Land Use, Conservation, and Open Space Element. General Provisions, Section 1.10.10, Oak Tree Conservation. Bakersfield, CA. Available at: <http://www.co.kern.ca.us/planning/pdfs/kcgp/KCGPChp1LandUse.pdf>

¹⁹ Kern County. 15 June 2004 (Amended 13 March 2007). *Kern County General Plan*. Chapter 1, Land Use, Open Space and Conservation Element. General Provisions, Section 1.10.5, Threatened and Endangered Species. Bakersfield, CA. Available at: <http://www.co.kern.ca.us/planning/pdfs/kcgp/KCGPChp1LandUse.pdf>

²⁰ Kern County. February 2005. Zoning Ordinance, Title 19, Section 19.64.010. Available at: <http://www.co.kern.ca.us/planning/pdfs/zo/zotoc.pdf>

²¹ Kern County. February 2005. Zoning Ordinance, Chapter 19.08, Section 19.08.160 (B1): "Height of Structures." Figure 19.08.160. Bakersfield, CA. Available at: <http://www.co.kern.ca.us/planning/pdfs/zo/zotoc.pdf>

²² Kern County. February 2005. Zoning Ordinance, Title 19. Available at: <http://www.co.kern.ca.us/planning/pdfs/zo/zotoc.pdf>

District.²³ The WE Combining District includes these specific requirements related to biological resources for the approval procedure, placement, and construction specifications for turbines and wind farms:²⁴

- Fencing shall be erected for each wind machine or on the perimeter of the total project property. Wind project facilities shall be enclosed with a minimum 4-foot-high security fence constructed of four-strand barbed wire or materials of a higher quality. Fencing erected on the perimeter of the total project shall include minimum 18-inch by 18-inch signs warning of wind turbine dangers. Such signs shall be located a maximum of 300 feet apart and at all points of site ingress and egress. Where perimeter fencing is utilized, the Planning Director may waive this requirement for any portion of the site where unauthorized access is precluded due to topographic conditions.
- All wind projects including wind generators and towers shall comply with all applicable County, State, and federal laws, ordinances, or regulations.
- Prior to the issuance of any grading permit, a plan for the mitigation of potential soil erosion and sedimentation shall be prepared by a registered civil engineer or other professional and submitted for the approval by the Director of the Engineering and Survey Services Department. The plan shall include provisions for site revegetation, including any necessary resoiling, plant species, plant density and percentage of ground coverage, and the methods and rates of application and shall include sediment collection facilities as may be required by the Engineering and Survey Services Department.

The soil erosion and sedimentation control plan shall be consistent with the applicable requirements of the California Regional Water Quality Control Board pertaining to the preparation and approval of Storm Water Pollution Prevention Plans. Notwithstanding the foregoing, the revegetation portion of the soil erosion and sedimentation plan shall be prepared by a professional biologist or other professional approved, in advance, by the Engineering and Survey Services Department.

The plan shall include a timetable for full implementation, estimated costs, and a surety bond or other security as approved by the Engineering and Survey Services Department in an amount determined by that department to guarantee plan implementation. The soil erosion and sedimentation control plan, including the revegetation plan and security instrument, shall be submitted to, and approved by, the Floodplain Management Section of the Engineering and Survey Services Department prior to the issuance of any grading permit. The security shall remain on file with the Engineering and

²³ Kern County. February 2005. Zoning Ordinance, Title 19, Section 19.64.010. Available at: <http://www.co.kern.ca.us/planning/pdfs/zo/zotoc.pdf>

²⁴ Kern County. February 2005. Zoning Ordinance, Title 19. Available at: <http://www.co.kern.ca.us/planning/pdfs/zo/zotoc.pdf>

Survey Services Department until that department has verified that the plan has been successfully implemented.

The project applicant was required to demonstrate compliance with the requirements of the Kern County Zoning Ordinance WE Combining District, 19.64.140 Development Standards and Conditions, during the project entitlement process. Compliance with the requirements specified in the Kern County Zoning Ordinance will be ensured by the project applicant throughout the duration of the project.

Military Protection Zone Review Requirements

The Kern County Zoning Ordinance also includes structure height limitations, which require review and compliance with military standards.²⁵ The project study area is located within an area that requires military review for structures exceeding a height of 500 feet.²⁶

The largest turbine model (Vestas V90, 3.0 megawatts or equivalent) would not exceed a maximum total height of 500 feet above ground, and it is anticipated that wind turbine and transmission line tower heights would not exceed the specified height limits. However, compliance with the height requirements specified in the Military Protection Zone Review Requirements was considered in the evaluation of the project. The project is designed to be in conformance with Section 19.08.160 (Height of Structures) of the Kern County Zoning Ordinance to avoid military flight test airspace for Edwards Air Force Base.²⁷

²⁵ Kern County. February 2005. Zoning Ordinance, Chapter 19.08, Section 19.08.160 (B1): "Height of Structures." Available at: <http://www.co.kern.ca.us/planning/pdfs/zo/zotoc.pdf>

²⁶ Kern County. February 2005. Zoning Ordinance, Chapter 19.08, Section 19.08.160 (B1): "Height of Structures." Available at: <http://www.co.kern.ca.us/planning/pdfs/zo/zotoc.pdf>

²⁷ Kern County. February 2005. Zoning Ordinance, Chapter 19.08, Section 19.08.160 (B1): "Height of Structures." Available at: <http://www.co.kern.ca.us/planning/pdfs/zo/zotoc.pdf>

SECTION 2.0

LANDSCAPE-SCALE SITE ASSESSMENT

Developing wind energy projects in California is essential to meeting both federal standards for renewable energy and California's legislative requirement that the state's utilities acquire 33 percent of its electrical needs with renewable energy by 2020.¹ Within the state, wind energy resources occur in five main regions, designated as Wind Resource Areas (WRAs): Altamont Pass, Tehachapi, San Geronio Pass, Solano County (also known as Montezuma Hills), and Pacheco Pass. Together, projects located in the Altamont, San Geronio, and Tehachapi WRAs accounted for nearly 95 percent of California's wind power generated in 2005, and they continue to lead the state in wind energy production today.² The Energy element of the Kern County General Plan (KCGP) describes the Tehachapi Mountains as one of California's largest areas for wind energy development, responsible for about 40 percent of the State's total wind-generated power.³ By siting wind energy projects in areas with the highest wind energy potential, installed turbines can be used to their maximum potential, resulting in efficient project footprints. Producing maximal megawatts (MW) per turbine would translate to less energy required from other sources that might result in negative impacts to birds and bats. Thus, minimizing the impacts of the entire energy production industry necessitates choosing wind project sites that balance both energy production per turbine and impacts to birds and bats on site.

In addition to wind energy potential, a major consideration in selecting a wind energy project site is environmental impact, especially with respect to mortality of birds and bats. Avian mortality has proven problematic for some projects, particularly in the Altamont WRA. Wind turbines at Altamont have caused substantial mortality for protected bird species, including numerous federally protected golden eagles. Over the past decade, several studies have concluded that wind energy turbines located within primary migratory corridors or in the immediate vicinity of occupied breeding habitat represent higher risks for mortality or injury from collisions than do wind turbines located 0.5 kilometer or more away from primary migratory corridors or occupied breeding habitat for raptors, other large birds, and bats. The Tehachapi WRA presents a relatively low risk to bats and birds from wind turbine collision as it does not represent a primary migratory corridor.⁴ The Tehachapi WRA thus provides an opportunity for wind energy development at the landscape scale, from the standpoint of both environmental considerations and wind energy potential.

2.1 PROJECT SITE

This Bird and Bat Conservation Strategy (BBCS) was developed specifically for the wind element of the Catalina Renewable Energy Project (project), located in the southeastern portion of the Tehachapi WRA, in the south-central portion of the unincorporated area of Kern County (Figure 2.1-1, *Project in Relation to Tehachapi Wind Resource Area*). The project site consists of

¹ Senate Bill No. 2X (Joe Simitian, 2011-2012 1st Ex. Sess.). n.d. Available at: http://www.leginfo.ca.gov/pub/11-12/bill/sen/sb_0001-0050/sbx1_2_bill_20110412_chaptered.pdf

² California Energy Commission, Research and Development Office (Dora Yen-Nakafuji). April 2005. *California Wind Resources*. Draft Staff Paper. Presented at Intra-state IEPR Workshop, Sacramento, CA, on 9 May 2005. Available at: <http://www.energy.ca.gov/2005publications/CEC-500-2005-071/CEC-500-2005-071-D.PDF>

³ Kern County. 15 June 2004 (Amended 13 March 2007). *Kern County General Plan, Energy Element*. Bakersfield, CA. Available at: <http://www.co.kern.ca.us/planning/pdfs/kcgp/KCGPChp5Energy.pdf>

⁴ Anderson R., M. Morrison, K. Sinclair, and D. Strickland. 1999. *Studying Wind Energy / Bird Interactions: A Guidance Document, Metrics and Methods for Determining or Monitoring Potential Impacts on Birds at Existing and Proposed Wind Energy Sites*. Prepared for: Avian Subcommittee and National Wind Coordinating Committee, Washington, DC.

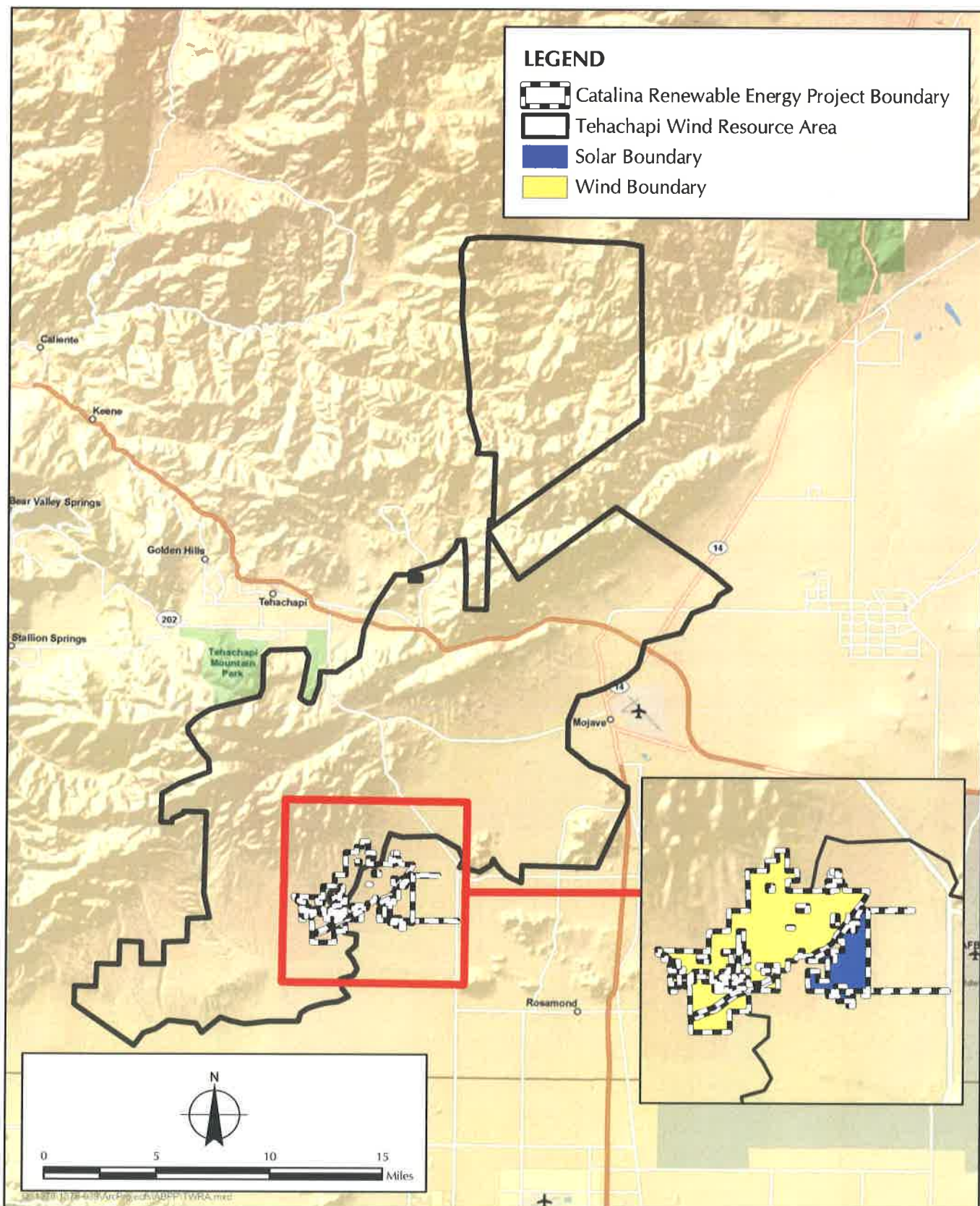


FIGURE 2.1-1
Project in Relation to Tehachapi Wind Resource Area

approximately 345 privately owned parcels, with a total area of approximately 6,739 acres. The wind element of the project would be situated on 4,187 acres and the solar element on 1,223 acres. The project site is primarily located to the south and west of the intersection of Backus Road and Tehachapi-Willow Springs Road, with Backus Road running along the northern edge of the project site. The project property is generally bordered by the Tehachapi Mountains to the north and northwest, to the south by Dawn Road and to the east by 110th Street West. The Los Angeles Aqueduct, operated by the Los Angeles Department of Water and Power (LADWP), bisects the project site. The nearest populated areas to the project property in Kern County are the City of Mojave, the unincorporated community of Rosamond, and the City of Tehachapi, which are located approximately 11 miles northeast, 9 miles southeast, and 12 miles northwest of the project property, respectively.

2.2 AVIAN AND BAT SPECIES THAT MAY BE IMPACTED

The project is located in an area that provides potentially suitable habitat for 25 special-status avian species and 10 species of bats. Special-status species include those listed as threatened or endangered under the federal and California Endangered Species Acts, species for listing and species listed as California species of special concern or fully protected species by the California Department of Fish and Game (CDFG). Of the 25 avian and 10 bat species, many have specific habitat requirements—riparian corridors, for example, that do not exist on the project property—and so these species are not likely to be found within the project property. After extensive field studies to determine presence and absence of these species, it has been determined that implementation of the project may result in potential impacts to 11 sensitive avian species and 5 sensitive bat species that were present within or adjacent to the project property (Table 2.2-1, *Sensitive Birds and Bats Present within or Adjacent to the Project Area*). Species observed either within or adjacent to the project area are expected to forage within the site grounds.

TABLE 2.2-1
SENSITIVE BIRDS AND BATS WITHIN OR ADJACENT TO
THE PROJECT PROPERTY

Species	Status (Federal/State/BLM/ WeMo)	Habitat	Potential Occurrence on the Project Property
Birds			
American white pelican (<i>Pelecanus erythrorhynchos</i>)	-/CSC/-/WeMo	Away from the Salton Sea, this species is a transient through Southern California; forages on edges of lakes, marshes, rivers and estuaries, during day and night by dipping bill into water to catch fish.	Present. One large flock (~ 250 birds) observed migrating through the project property in late winter.
California condor (<i>Gymnogyps californianus</i>)	FE/SE,CFP/-/-	Lives in rocky scrubland, coniferous forests, and oak savannas. They are often found near cliffs or large trees, which they use as nesting sites. Individual birds have a large home range and have been known to travel up to 150 miles in search of carrion.	Absent. No known occurrences of this species within the project property or the immediate surrounding region. Nearest known occurrence of this species is approximately 5.9 miles to the northwest.
Northern harrier (<i>Circus cyaneus</i>)	-/CSC/-/WeMo	Occurs from annual grassland to lodgepole pine and alpine meadow habitat as high as 9,840 feet (3,000 m); widespread winter resident and migrant in suitable habitat.	Present. No known nesting population, but common during winter and during migration.
Swainson's hawk (<i>Buteo swainsoni</i>)	-/ST/-/WeMo	Inhabits grassland, shrubland, and agricultural areas with open areas to forage for its small prey and where roost sites are available.	Present. No nesting population, but were observed using the project property during migration.
Golden eagle (<i>Aquila chrysaetos</i>)	-/CFP/-/-	Uncommon permanent resident and migrant throughout California, except center of Central Valley; ranges from sea level to 12,572 feet (3,833 m); habitat typically rolling foothills, mountain areas, sage-juniper flats, and desert.	Present. No nesting population, but were observed using the project property during migration and for foraging. Nearest known nest is 17 miles west of the project property.
American peregrine falcon (<i>Falco peregrinus anatum</i>)	-/CFP/-/-	Open and semi-open habitats, including grasslands and shrublands during migration.	Present. No nesting population, but two observations made in late spring and late summer, most likely during migration.

TABLE 2.2-1
SENSITIVE BIRDS AND BATS WITHIN OR ADJACENT TO
THE PROJECT PROPERTY, Continued

Species	Status (Federal/State/BLM/ WeMo)	Habitat	Potential Occurrence on the Project Property
Burrowing owl (<i>Athene cunicularia</i>)	–/CSC/BLM/WeMo	Open grasslands, agricultural and range lands, and desert habitats and often associated with burrowing animals, specifically, the California ground squirrel (<i>Spermophilus beecheyi</i>); can also inhabit grass, forbs, and shrub stages of pinyon and ponderosa pine habitats.	Present. A total of 23 active burrowing owl burrows were recorded at the project site. Burrowing owls were frequently observed during area searches of Mojave Desert Wash Scrub.
Long-eared owl (<i>Asio otus</i>)	–/CSC/–/WeMo	Riparian groves and other semi-open woodland habitats.	Present. Nested adjacent to the project property in spring and was observed on fall surveys. Likely a year-round resident at the project property.
Vaux's swift (<i>Chaetura vauxi</i>)	–/CSC/–/WeMo	Summer resident in northern California; fairly common migrant throughout most of the state in April and May, and August and September.	Present. The project is not within breeding range. Expected to be seen only during migration.
Loggerhead shrike (<i>Lanius ludovicianus</i>)	–/CSC/–/WeMo	Nests in shrublands and forages in open grasslands. Often found associated with agriculture and urbanized areas. All plant community types in the project property provide suitable habitat.	Present. Year-round resident at the project property.
Le Conte's thrasher (<i>Toxostoma lecontei</i>)	–/CSC/–/WeMo	Desert resident, primarily of open desert wash, desert scrub, alkali desert scrub, and desert succulent scrub habitats; nests in dense, spiny shrub or densely branched cactus.	Present. Year-round resident at the project property.
Bats			
Pallid bat (<i>Antrozous pallidus</i>)	–/CSC/BLM/–	Locally common in California; occupies a wide variety of habitats including arid habitats, shrubland, woodlands, grasslands, and forests; population status: resident.	Present. Year-round resident at the project property but no roost sites were identified.
Western small-footed myotis (<i>Myotis ciliolabrum</i>)	–/–/BLM/–	Found in a variety of habitats including arid, wooded, and brushy uplands adjacent to water; population status: resident.	Potentially present. Based on identification within a phonic group during acoustic surveys and presence of suitable habitat. No roost sites identified.

**TABLE 2.2-1
SENSITIVE BIRDS AND BATS WITHIN OR ADJACENT TO
THE PROJECT PROPERTY, Continued**

Species	Status (Federal/State/BLM/ WeMo)	Habitat	Potential Occurrence on the Project Property
Long-eared myotis (<i>Myotis evotis</i>)	—/—/BLM/—	Occupies primarily coniferous forests, but also occurs seasonally in riparian and desert habitats; population status: resident.	Potentially present. Based on identification within a phonic group during acoustic surveys and presence of suitable habitat. No roost sites identified.
Fringed myotis (<i>Myotis thysanodes</i>)	—/—/BLM/—	Occupies habitats ranging from mountainous pine, oak, and pinyon-juniper to desert scrub, but seems to prefer grassland areas at intermediate elevations; population status: migratory.	Present. Occur during migration. Identified during spring and summer acoustic surveys. No roost sites identified.
Yuma myotis (<i>Myotis yumanensis</i>)	—/—/BLM/—	Uncommon in Mojave and Colorado desert regions; optimal habitat is open forest and woodlands adjacent to water; population status: resident.	Potentially present. Based on identification within a phonic group during acoustic surveys and presence of suitable habitat. No roost sites identified.

KEY:

BLM = Bureau of Land Management Sensitive Species

CFP = CDFG fully protected species

CSC = California Department of Fish and Game (CDFG) Species of Special Concern

FE = USFWS endangered species

SE = CDFG endangered species

ST = CDFG threatened species

WeMo = Avian species included in the West Mohave Plan

SECTION 3.0

SITE-SPECIFIC SURVEYS AND ASSESSMENT

enXco Development Corporation (enXco) will use the best available accepted science in its siting decisions and will participate in industry/stakeholder research to continuously improve decisions about siting and designing wind projects and reducing environmental impacts. Normally, site assessment and design will parallel other project development activities and include the following:

- Preliminary site assessment: fatal flaw assessment and/or Phase I avian or bat risk assessment
- Site-specific avian and bat studies
- Incorporation of information from environmental studies in the layout and design of projects
- Where enXco is expanding an existing wind project or developing a new wind project adjacent to a project for which abundant relevant environmental information is available, one or more of these steps may be modified based on the amount and value of previously collected environmental information.

3.1 ENVIRONMENTAL SETTING

The Catalina Renewable Energy Project (project) property is located on approximately 6,739 acres of generally undeveloped, agriculturally zoned land in the foothills of the Tehachapi Mountains. The project site appears on the U.S. Geological Survey (USGS) 7.5-minute series Willow Springs and Tylerhorse Canyon topographic quadrangles^{1,2} (Township 10 North, Range 14 West, Sections 9, 14-16, 20-23, 26-32, 34 and 35; and Township 10 North, Range 15 West, and Section 25) (Figure 3.1-1, *Topographic Map*).

The topography of the project property is a southeasterly sloping alluvial fan ranging in elevation from about 3,800 feet above mean sea level (msl) on the lower bajada slopes of the Tehachapi Mountains to 3,000 feet msl on the Antelope Valley floor. There are numerous small desert washes and a few large drainages that traverse the area. On-site vegetation consists primarily of six vegetation types: Mojave Creosote Bush Scrub, Mojave Mixed Woody Scrub, Mojavean Juniper Woodland Scrub, Desert Grassland, Mojave Desert Wash Scrub, and Rabbitbrush Scrub.

Current and historical uses of the project property include atmospheric monitoring (planned/existing meteorological towers), producing and non-producing water wells, cattle ranching and maintenance facilities, and off-road recreational vehicle activities. Scattered structures exist at the project property, generally consisting of mobile homes, modular homes, and recreational vehicles and one confirmed residence. The Pacific Crest Trail (PCT) is located approximately 3 miles west of the project at its closest point. Northrop Grumman Corporation's Tejon Test Site is located 4 miles south of the project site. Lands surrounding the site have either been approved for or are in the planning stages for development for wind energy.

¹ U.S. Geological Survey. 1995. *7.5-Minute Series, Willow Springs, California, Topographic Quadrangle*. Reston, VA.

² U.S. Geological Survey. 1995. *7.5-Minute Series, Tylerhorse Canyon, California, Topographic Quadrangle*. Reston, VA.

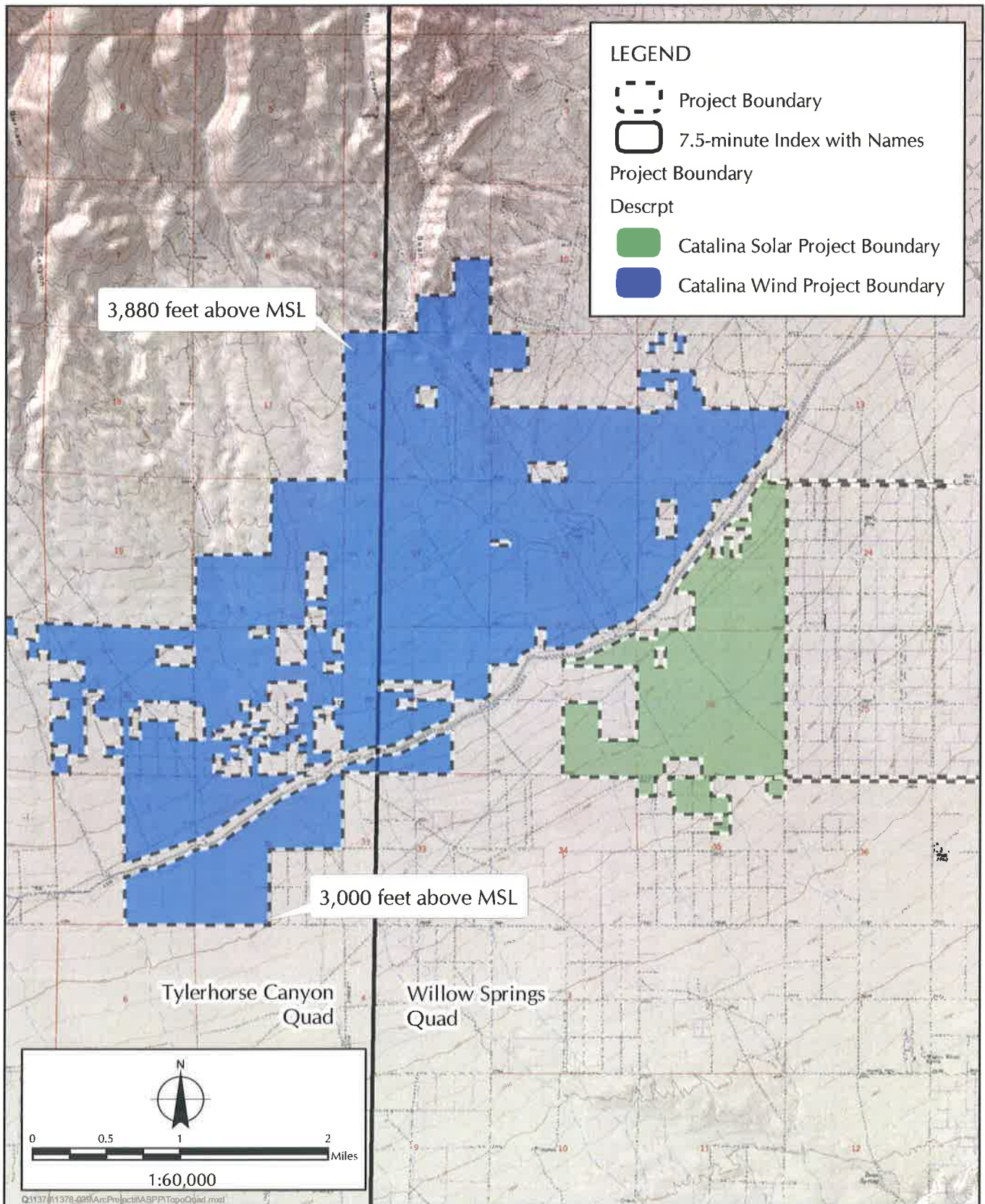


FIGURE 3.1-1
Topographic Map

3.1.1 Birds

Sapphos Environmental, Inc. conducted directed avian surveys for listed and special-status, resident, and migratory species identified as having the potential to occur at the project property as a result of a literature review, agency consultation, and habitat assessment. Results from these studies have been used to determine the potential effects of the project on avian species, including nesting raptors, and the presence of special-status species.

Passerines

Bird use counts (BUCs) were conducted at 17 locations throughout the project property in a variety of habitats (Figure 3.1.1-1, *Avian Bird Use Count Locations*). Six replicates of bird use counts were conducted at each point during each of the four seasons. These surveys were completed between December 2010 and October 2011, and methods were consistent with the California Energy Commission's (CEC's) *California Guidelines for Reducing Impacts to Birds and Bats from Wind Energy Development*.³ Additionally, reconnaissance counts were conducted twice each season in two linear habitat types in the project, Mojave Desert Wash Scrub and Rabbitbrush Scrub, for which the BUC methodology is not ideal.

Raptors

BUCs and reconnaissance counts were also used to detect resident or migratory raptor species utilizing the project property. In addition, Sapphos Environmental, Inc. surveyed the project property for nesting raptors between late winter and early summer of 2011.

California Condor

To ascertain the risk associated with the nearby presence of the California condor's (*Gymnogyps californianus*) historic range, Sapphos Environmental, Inc. recently developed a simple model that qualitatively and quantitatively assesses the relative probability of use by California condors in areas within and adjacent to the project property.⁴ The resident California condor is listed as endangered pursuant to the federal Endangered Species Act (ESA) and California ESA. All acreage within the project property constitutes potentially suitable foraging habitat for California condor, but California condors have not been observed in the vicinity of the project property for many decades.^{5,6}

³ California Energy Commission. 26 September 2007. *California Guidelines for Reducing Impacts to Birds and Bats from Wind Energy Development*. Final Committee Report. Prepared for: California Department of Fish and Game. Sacramento, CA.

⁴ Sapphos Environmental, Inc. 2 April 2010. *Screen Check California Condor Position Paper*. Prepared for: enXco Development Corporation. Pasadena, CA.

⁵ Walters, J.R., S.R. Derrickson, D.M. Fry, S.M. Haig, J.M. Marzluff, and J.M. Wunderle Jr. August 2008. *Status of the California Condor and Efforts to Achieve its Recovery*. Prepared by: AOU Committee on Conservation, California Condor Blue Ribbon Panel, a Joint Initiative of the American Ornithologists' Union and Audubon California, Sacramento, CA.

⁶ Heindel, M.T. 2000. *Birds of Eastern Kern County*. Available at: <http://fog.ccsf.cc.ca.us/~jmorlan/>

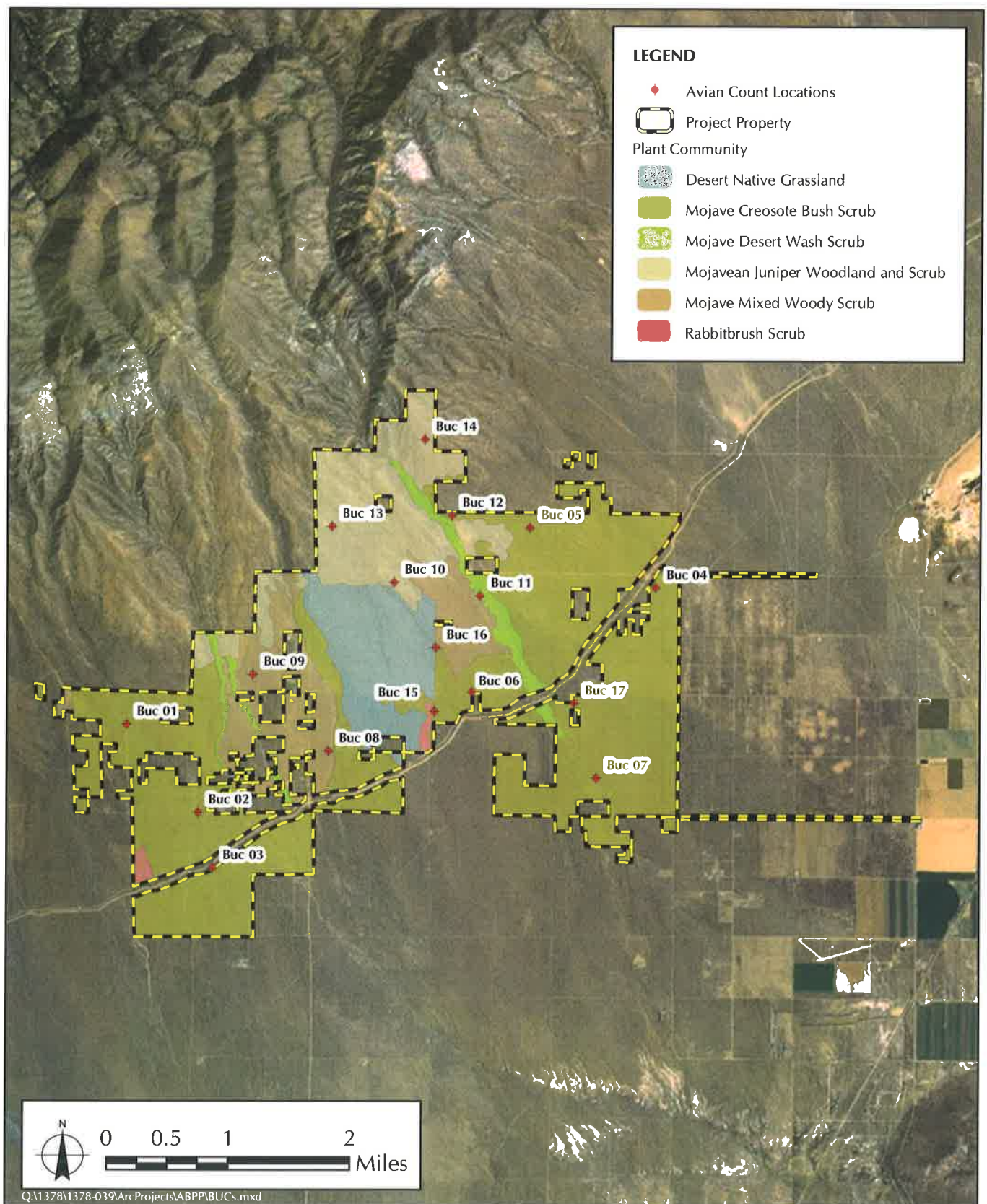


FIGURE 3.1.1-1
Avian Bird Use Count Locations

Golden Eagle

In addition to the BUCs, reconnaissance counts, and raptor survey methods described above, Sapphos Environmental, Inc. conducted aerial surveys for golden eagle (*Aquila chrysaetos*) and other raptors to identify and map nesting sites located within 10 miles (16 kilometers) of the project property in 2010 and 2011. Three replicate surveys of all potential suitable golden eagle habitats were conducted between May 20 to 31, 2010; February 28 to March 10, 2011; and May 25 to June 1, 2011. Aerial survey methods for the golden eagle and other raptors followed interim U.S. Fish and Wildlife Service (USFWS) protocols.⁷

3.1.2 Bats

Sapphos Environmental, Inc. conducted both roosting surveys and acoustical monitoring for bats within the project property. Roosting surveys were conducted during four (4) evenings for approximately four (4) hours each evening on June 8, 9, 21, and 22, 2010. Surveys included an assessment of specific geological formations that may support cave- and crevice-roosting bat species. An assessment of roosting habitat for arboreal roosting species was conducted in the survey area. In addition, Sapphos Environmental, Inc. performed acoustical studies to determine bat activity levels at the project property to identify phonic groups associated with particular calls employing broadband frequency-dividing Anabat SD2 acoustical detectors (Titley Electronics, Ballina, NSW, Australia). Sapphos Environmental, Inc. conducted acoustical surveys from winter of 2010 through summer of 2011.

All studies of the level of bat activity at specific sites from the Tehachapi Wind Resource Area (WRA) generally document low bat activity.⁸ Therefore, the project property does not constitute a significant migratory route for migrating bat species, and bat mortality from collisions with wind turbines is likely to be low.⁹ In the literature, the foraging heights of bats have been recorded mostly as observations, not measurements. However, evidence indicates that bats can forage from ground level to up to 2,400 feet, with echolocation calls recorded as high as 3,900 feet msl.¹⁰ The project property lacks the topographic, physiographic, and habitat features to attract large numbers of bats transiting to other geographical areas, such as deep canyons and ridge systems, or areas with perennial water flow. In addition, the project property contains few habitats that would serve as refuge or as stopover areas for migrating or resident bats, such as riparian areas. Bat migration through the project property is likely to be generally diffuse and of light volume.

⁷ Pagel, J.E., D.M. Whittington, and G.T. Allen. 2010. *Interim Golden Eagle Technical Guidance: Inventory and Monitoring Protocols; and Other Recommendations in Support of Golden Eagle Management and Permit Issuance*. Carlsbad, CA: U.S. Fish and Wildlife Service.

⁸ Solick, D., and W. Erickson. 24 March 2009. *Bat Acoustic Studies for the Alta-Oak Creek Wind Resource Area, Kern County, California*. Final Report. Cheyenne, WY: Western Ecosystems Technology, Inc.

⁹ Solick, D., and W. Erickson. 24 March 2009. *Bat Acoustic Studies for the Alta-Oak Creek Wind Resource Area, Kern County, California*. Final Report. Cheyenne, WY: Western Ecosystems Technology, Inc.

¹⁰ McCracken, Gary F. 1996. "Bats Aloft: A Study of High-altitude Feeding." *Bats*, 14(3): 7–10.

4.1 COLLISION RISK TO BIRD SPECIES

Collision risk may be introduced to avian species that migrate, breed, or winter within the Catalina Renewable Energy Project (project) property, and at least some degree of avian mortality from collisions with turbines would be an unavoidable consequence of operation. Collisions may occur with resident birds foraging and flying within the project area or with migrant birds seasonally moving through the area. However, because overall avian use of the project area is lower compared to many areas in Southern California, where avian species concentrate at wetlands, oases, or along ridgelines where avian species are known to migrate in moderate to high numbers, risk to migrating, breeding, or wintering passerine birds is expected to be low at the project property.

Based on the results of fatality monitoring at other wind plants throughout the West, including the Tehachapi Wind Resource Area (WRA) in California, the degree of collision risk to birds at wind plants appears to be species-specific except along important migration corridors; the project area is not located along an important migration corridor. For example, fatalities of common ravens (*Corvus corax*), turkey vultures (*Cathartes aura*), and ferruginous hawks (*Buteo regalis*) are generally low, whereas fatalities of American kestrels (*Falco sparverius*), red-tailed hawks (*Buteo jamaicensis*), and horned larks (*Eremophila alpestris*) are more common.¹ The siting of a wind power project site in a migration corridor, in specific types of habitat, or in areas of high biodiversity, and the behavior of individual species, play a large role in the risk of collision.

Passerines

Of the non-raptor avian groups, protected passerines (excluding house sparrows, European starlings, and rock doves) constitute the most abundant avian fatalities at newer-generation wind facilities, often comprising more than 80 percent of the avian fatalities.² Both migrant and resident passerine fatalities have been observed. Based on species and seasonal information, in some studies up to 70 percent of fatalities found were believed to be migrants;³ however, fatality estimates are highly variable and range from 0 to 70 percent. In general, the number of migrant fatalities is higher in wind projects in the eastern United States.⁴ The overall national average for passerine fatalities at wind projects has been approximately 2.2 birds per turbine per year.⁵

¹ Erickson, W., G. Johnson, D. Young, et al. 2002. *Synthesis and Comparison of Baseline Avian and Bat Use, Raptor Nesting and Mortality Information from Proposed and Existing Wind Developments*. Prepared by: Western EcoSystems Technology, Inc., Cheyenne, WY. Prepared for: Bonneville Power Administration, Portland, OR.

² Erickson, W., G.D. Johnson, M.D. Strickland, et al. 2001. *Avian Collisions with Wind Turbines: A Summary of Existing Studies and Comparisons to Other Sources of Avian Collision Mortality in the United States*. Prepared by: Western EcoSystems Technology, Inc., Cheyenne, WY. Prepared for: National Wind Coordinating Committee, Washington, DC.

³ Howe, R.W., W. Evans, and A.T. Wolf. 2002. *Effects of Wind Turbines on Birds and Bats in Northeastern Wisconsin*. Technical Report submitted to: Wisconsin Public Service Corporation and Madison Gas and Electric Company, Madison, WI.

⁴ Erickson, W., G. Johnson, D. Young, et al. 2002. *Synthesis and Comparison of Baseline Avian and Bat Use, Raptor Nesting and Mortality Information from Proposed and Existing Wind Developments*. Prepared by: Western EcoSystems Technology, Inc., Cheyenne, WY. Prepared for: Bonneville Power Administration, Portland, OR.

⁵ Erickson, W., G. Johnson, D. Young, et al. 2002. *Synthesis and Comparison of Baseline Avian and Bat Use, Raptor Nesting and Mortality Information from Proposed and Existing Wind Developments*. Prepared by: Western EcoSystems Technology, Inc., Cheyenne, WY. Prepared for: Bonneville Power Administration, Portland, OR.

Frequency indices of non-raptors (listed by taxonomy) indicate that the California quail (*Callipepla californica*), mourning dove (*Zenaida macroura*), common raven (*Corvus corax*), white-crowned sparrow (*Zonotrichia leucophrys*), western meadowlark (*Sturnella neglecta*), and house finch (*Carpodacus mexicanus*) are most likely to be exposed to potential collisions with wind turbines at the project property as these six species comprise around 64 percent of the total number of bird observations identified to species (includes repeat observations) recorded during winter, spring, summer, and fall seasons of bird use counts (BUCs) in 2010–2011. The white-crowned sparrow, a common migrant through the Antelope Valley, was the most frequently observed species over the year of bird use counts (BUCs), accounting for 24 percent of observations. The common raven, a resident species in the Antelope Valley, was the second most frequently recorded avian species within the project property during this time period, comprising approximately 12 percent of bird observations. Despite relatively high use and exposure, common ravens are rarely reported as fatalities according to monitoring studies at other wind energy facilities.^{6,7} At the Tehachapi Wind Resource Area (WRA) in California, common ravens were found to be the most common large bird, yet few fatalities for this species were documented during intensive studies.⁸ Most non-raptors had relatively low exposure indices due to the majority of individuals flying below the zone of risk. Because they tend to fly at relatively high altitudes, birds conducting long-range migrations may not be likely to be impacted by turbines except during weather conditions that induce them to fly low.⁹ Resident birds may have a higher probability of colliding with turbines than migrants, given that residents tend to fly lower and spend more time in any given area.¹⁰

Predicting numbers of fatalities is difficult in large part due to the lack of post-construction monitoring studies in the American Southwest and desert environments that are similar to the project property. However, due to generally low impacts for other western wind projects and the low exposure risks at the project property, it is unlikely that populations of passerine bird species would be adversely affected by direct mortality from the operation of the project; any impacts would be on individuals and not species. Thus, this level of mortality is not expected to result in population-level impacts to any non-raptor avian species with the possible exception of horned lark, as breeding and nonbreeding individuals have been killed from collisions with wind turbines at many sites in mid-western and western North America due to their aerial courtship displays.¹¹ The horned lark is generally common at the project property, comprising 2.3 percent of all avian observations; species populations in the Mojave Desert lack any special status designation by resource agencies.

⁶ Erickson, W., G.D. Johnson, M.D. Strickland, et al. 2001. *Avian Collisions with Wind Turbines: A Summary of Existing Studies and Comparisons to Other Sources of Avian Collision Mortality in the United States*. Prepared by: Western EcoSystems Technology Inc., Cheyenne, WA. Prepared for: National Wind Coordinating Committee, Washington, DC.

⁷ Erickson, W., G. Johnson, D. Young, et al. 2002. *Synthesis and Comparison of Baseline Avian and Bat Use, Raptor Nesting and Mortality Information from Proposed and Existing Wind Developments*. Prepared by: Western EcoSystems Technology, Inc., Cheyenne, WY. Prepared for: Bonneville Power Administration, Portland, OR.

⁸ Anderson, R.L., J. Tom, N. Neumann, and J.A. Cleckler. 1996. *Avian Monitoring and Risk Assessment at Tehachapi Pass Wind Resource Area, California*. Sacramento, CA: California Energy Commission.

⁹ Hanowski, J.M., and R.Y. Hawrot. 2000. "Avian Issues in the Development of Wind Energy in Western Minnesota." In *Proceedings of the NWCC National Avian-Wind Power Planning Meeting III, San Diego, CA, May 1998*.

¹⁰ Janss, G. 2000. "Bird Behavior in and Near a Wind Farm at Tarifa, Spain: Management Considerations." In *Proceedings of NWCC National Avian-Wind Power Planning Meeting III, San Diego, CA, May 1998*.

¹¹ National Research Council. 2007. *Environmental Impacts of Wind-Energy Projects*. Washington, DC: National Academies Press.

Based on the mortality estimates from the other wind farms studied,¹² the midrange expected for passerine mortality would be approximately 1.2 to 1.8 birds per turbine per year. To put this into context, an in-depth review of avian mortalities associated with collisions with human structures (roads, power lines, communication towers, buildings, and windows) suggests that about 0.01 to 0.02 percent of all avian mortalities are associated with wind turbines.¹³ This equates to 1 to 2 out of every 10,000 bird deaths.

Raptors

Substantial data on raptor mortality at wind energy facilities are available from studies in California and throughout the West and Midwest United States.¹⁴ High numbers of raptor fatalities have been documented at some wind energy facilities like Altamont Pass, with an estimate of 0.10 raptors per turbine per year; however, a review of studies at wind energy facilities across the United States reported that collision-related raptor fatalities across the United States amounted to 0.033 raptor fatalities per turbine per year.¹⁵ At newer generation wind plants in the United States, raptor mortality has been absent to relatively low when compared to that at Altamont Pass. These new generation wind plants are generally composed of fewer larger, slower moving turbines and raptor mortality at these plants has ranged from 0 to 0.04 raptor fatalities per turbine per year. Although raptors occur in most areas with the potential for wind energy development, individual species appear to differ from one another in their susceptibility to collision.¹⁶ A regression analysis of raptor use and mortality for 12 new-generation wind energy facilities, where similar methods were used to estimate raptor use and mortality, found that there was a significant positive correlation between use and mortality within species at different sites. These estimates, however, are based on survey methods that may or may not be equivalent between wind energy facilities and may not accurately estimate actual mortality estimates. Nevertheless, raptor fatalities at most western wind energy facilities have been relatively low.

Raptor use in the Tehachapi WRA, where the project is located, is low compared with other wind farms operating in the state, such as those in Altamont and Solano Fall WRAs.¹⁷ As such, raptor mortality is expected to be equal to or lower than many of the wind farms with similar turbine types. During four seasons of BUC data on the project property between winter 2010 and fall 2011, raptors were observed at a rate of 0.01 raptors per minute. The turkey vulture (49.5 percent

¹² Erickson, W., G.D. Johnson, M.D. Strickland, et al. 2001. *Avian Collisions with Wind Turbines: A Summary of Existing Studies and Comparisons to Other Sources of Avian Collision Mortality in the United States*. Prepared by: Western EcoSystems Technology, Inc., Cheyenne, WY. Prepared for: National Wind Coordinating Committee, c/o RESOLVE, Inc., Washington, DC.

¹³ Erickson, W., G.D. Johnson, M.D. Strickland, et al. 2001. *Avian Collisions with Wind Turbines: A Summary of Existing Studies and Comparisons to Other Sources of Avian Collision Mortality in the United States*. Prepared by: Western EcoSystems Technology, Inc., Cheyenne, WY. Prepared for: National Wind Coordinating Committee, c/o RESOLVE, Inc., Washington, DC.

¹⁴ Young, D.P., Jr., J.D. Jeffrey, K. Bay, and W.P. Erickson. 2009. *Puget Sound Energy, Hopkins Ridge Wind Project Phase 1, Post-construction Avian and Bat Monitoring, Second Annual Report, January–December 2008*. Prepared for: Puget Sound Energy, Dayton, WA.

¹⁵ Erickson, W., G.D. Johnson, M.D. Strickland, et al. 2001. *Avian Collisions with Wind Turbines: A Summary of Existing Studies and Comparisons to Other Sources of Avian Collision Mortality in the United States*. Prepared by: Western EcoSystems Technology, Inc., Cheyenne, WY. Prepared for: National Wind Coordinating Committee, Washington, DC.

¹⁶ National Research Council. 2007. *Environmental Impacts of Wind-Energy Projects*. Washington, DC: National Academies Press.

¹⁷ Anderson, R.L., et al. *Avian Monitoring and Risk Assessment at Tehachapi Pass and San Geronio Pass Wind Resource Areas, California: Phase I Preliminary Results*. Paper presented at: National Avian-Wind Power Planning Meeting III; 1998 May 27-29; San Diego, CA.

of observations) and red-tailed hawk (23.2 percent of observations) account for much of the raptor use at the site, totaling 72.7 percent of observations; these species would be expected to have the highest collision risk. Turkey vultures, however, appear less susceptible to turbine collision than most other raptors despite their high use and exposure. This is likely due to their foraging behavior and a propensity to scavenge rather than actively hunt.¹⁸ Despite the fact that large groups of turkey vultures move through the Tehachapi Mountains during fall and spring migration, there was no turkey vulture mortality over a 1-year and 7-month study in the 637-turbine Tehachapi WRA.¹⁹ In contrast, the red-tailed hawk hunts by stooping on prey, which requires high-speed flights and high concentration.²⁰ Due to their common nature and active hunting behavior, red-tailed hawks seem very susceptible to collision at wind farms. In a synthesis of avian fatality data at several well-studied wind plants over several years, the red-tailed hawk was the most abundant fatality, raptor or otherwise, at Altamont Pass (36 percent of total fatalities), Montezuma Hills (31 percent of total fatalities), and Tehachapi (10.2 percent of total fatalities).²¹

Golden eagle (*Aquila chrysaetos*) use of the site is low relative to other wind sites, and the mortality risk for golden eagles is also expected to be correspondingly low. Nevertheless, the project proponent will coordinate with the U.S. Fish and Wildlife Service (USFWS) regarding compliance with the Bald and Golden Eagle Protection Act (BGEPA) and achievement of the “no-net-loss” standard as described in the USFWS’ *Draft Eagle Conservation Plan Guidance*.²² Conservation measures and an adaptive management framework aimed at minimizing golden eagle take to the maximum degree, and providing compensatory mitigation in the event of unavoidable golden eagle take, is outlined in Section 5.0 of this document.

Adjusted Mortality Estimates

To normalize studies conducted on wind projects in arid environments similar to the project, an assessment was conducted using adjusted mortality data from 2 years of postconstruction mortality monitoring at High Winds (a 162-megawatt [MW] project in Solano County, California), 1 year at Alite (a 24-MW project in Mojave, California), and 2 years at Oak Creek (a 23-MW project in Tehachapi, California). The Alite and Oak Creek facilities are useful to compare with the project because of their desert location and the similarity of the species encountered. The High Winds facility, despite its location in the Bay Area of California, is also useful due to the thorough methodology used and the similarity between the name-plate capacity of High Winds and Catalina’s turbines (1.8 MW versus 1.6 MW). However, the differences between High Winds and Catalina must be considered due to the differences in species composition at the two sites. For example, raptor use estimates at High Winds were higher than several other facilities that have

¹⁸ Orloff, S., and Flannery, A. 1992. *Wind Turbine Effects on Avian Activity, Habitat Use, and Mortality in Altamont Pass and Solano County Wind Resource Areas*. Work performed by: BioSystems Analysis, Inc., Tiburon, CA. Sacramento, CA: California Energy Commission.

¹⁹ Anderson, R.N., J.T. Neumann, W.R. Erickson, M.D. Strickland, M. Bourassa, K.J. Bay, and K.J. Sernka. 2004. *Avian Monitoring and Risk Assessment at the Tehachapi Pass Wind Resource Area*. Golden, CO: National Renewable Energy Laboratory, U.S. Department of Energy.

²⁰ Orloff, S., and Flannery, A. 1992. *Wind Turbine Effects on Avian Activity, Habitat Use, and Mortality in Altamont Pass and Solano County Wind Resource Areas*. Work performed by: BioSystems Analysis, Inc., Tiburon, CA. Sacramento, CA: California Energy Commission.

²¹ Erickson, W., G.D. Johnson, M.D. Strickland, et al. 2001. *Avian Collisions with Wind Turbines: A Summary of Existing Studies and Comparisons to Other Sources of Avian Collision Mortality in the United States*. Prepared by: Western EcoSystems Technology, Inc., Cheyenne, WY. Prepared for: National Wind Coordinating Committee, Washington, DC.

²² U.S. Fish and Wildlife Service. January 2011. *Draft Eagle Conservation Plan Guidance*. Available at: http://www.fws.gov/windenergy/docs/ECP_draft_guidance_2_10_final_clean_omb.pdf

been studied for postconstruction mortality estimates. Only Altamont had higher raptor use estimates for golden eagles.²³

The estimated per turbine, per MW, and annual total mortality estimates for the project arrived at through this comparative process are not conclusive estimates, but a general guide for assessing the risk to certain species and groups of species from construction and operation of the project. Actual risk of collision on the project is highly influenced by local species population levels and habits.

To ensure an objective assessment, the data were calculated in two ways. Table 4.1-1, *Adjusted Mortality Estimates for Selected Species at Wind Projects*, shows estimates based on fatalities per turbine per year. Table 4.1-2, *Adjusted Mortality Estimates for Selected Species at Wind Projects (per Megawatt)*, shows estimates based on fatalities per megawatt (MW) per year.

Data from the Los Angeles Department of Water and Power's (LADWP's) Pine Tree Wind Farm, which published a report summarizing a year's worth of avian mortality data collected between 2009 and 2010, were not included in this analysis, despite Pine Tree's relative proximity to the project within Kern County.²⁴ The Pine Tree project is located approximately 12 miles north of the town of Mojave and is situated in a more diverse topographical area than the project, with elevation ranging from 3,200 feet to over 5,000 feet in the southern Sierra Nevada Mountains. The area is characterized by a combination of rolling grasslands and steep rocky cliffs and outcrops that potentially support a different variety or concentration of species, particularly golden eagle, as compared with the project. LADWP's report found relatively high fatality rates as compared to mortality rates gathered from other similar wind energy projects.

**TABLE 4.1-1
ADJUSTED MORTALITY ESTIMATES FOR SELECTED SPECIES AT WIND PROJECTS**

Species/Group	Mortality Rates of Three Studies (per Turbine per Year)			Catalina Renewable Energy Project Wind Element	
	High Winds (2-Year Average) ^a	Alite (1-Year) ^b	Oak Creek (2-Year Average) ^b	Estimated per Turbine Average ^c	Estimated Annual Total ^f
Overall avian	2.448	1.06	1.04	1.607	215.36
<i>Selected raptors</i>					
American kestrel	0.378	0	0.016	0.159	21.12
Red-tailed hawk	0.252	0	0.130	0.160	20.48
Golden eagle	0.018	0	0.016	0.015	1.82
White-tailed kite	0.041	0	0	0.016	2.20
Ferruginous hawk	0.018	0	0	0.007	0.96
Rough-legged hawk	0.018	0	0	0.007	0.96
Great horned owl	0	0	0.081	0.037	4.34
Prairie falcon	0	0	0.033	0.015	1.77
Burrowing owl	0	0	0.016	0.008	0.86
Overall bat	3.636	0	0	1.454	194.89
Western red bat	0.126	0	0	0.050	6.75

²³ Curry & Kerlinger, LLC. 2006. *Post-construction Avian and Bat Fatality Monitoring Study for the High Winds Wind Power Project, Solano County, California: Two-year Report*. Prepared for: High Winds, LLC, FPL Energy. McLean, VA.

²⁴ BioResource Consultants, Inc. 14 October 2010. *2009/2010 Annual Report Bird and Bat Mortality Monitoring, Pine Tree Wind Farm, Kern County, California*. Prepared for: Los Angeles Department of Water and Power, Los Angeles, CA.

NOTES: Estimates presented are based on the average mortality observed during all three studies adjusted to reflect searcher efficiency and scavenger removal rates.

¹ This estimate is based on use of 134 1.6-MW turbines.

SOURCES: ^a Curry & Kerlinger, LLC. 2006. *Post-construction Avian and Bat Fatality Monitoring Study for the High Winds Wind Power Project, Solano County, California: Two-Year Report*. Prepared for: High Winds, LLC, FPL Energy. McLean, VA.

^b Erickson, W., A. Krause and A. Chatfield. 2008. *Final Report: Fatality Study Summary at the Alite and Oak Creek Energy Systems Wind Facilities, Alta-Oak Creek Wind Resources Area, Kern County, California*. Prepared by: Western EcoSystems Technology, Inc., Cheyenne, WY. Prepared for: Alta Windpower Development, LLC, New York, NY, and CH2M Hill, San Diego, CA.

^cThe weighted averages assign greater statistical importance to studies based on the duration of the study. This approach entailed multiplying the mortality rates by the length of the study (in years). For example the High Winds rate was multiplied by 2, the Alite rate was multiplied by 1, and the Oak Creek rates were multiplied by 2. The sum of these rates was then divided by 5 to reflect each of the study years included.

**TABLE 4.1-2
ADJUSTED MORTALITY ESTIMATES FOR SELECTED SPECIES AT WIND PROJECTS
(PER MEGAWATT)**

Species/Group	Mortality of Three Studies (per MW per Year)			Catalina Renewable Energy Project Wind Element	
	High Winds (2-Year Average) ^a	Alite (1-Year) ^b	Oak Creek (2-Year Average) ^b	Estimated per MW Average ^c	Estimated Annual Total ¹
Overall avian	1.36	0.35	1.93	1.456	291.2
<i>Selected raptors</i>					
American kestrel	0.21	0	0.030	0.096	19.20
Red-tailed hawk	0.14	0	0.241	0.152	30.48
Golden eagle	0.01	0	0.030	0.016	3.20
White-tailed kite	0.023	0	0	0.009	1.84
Ferruginous hawk	0.01	0	0	0.004	0.80
Rough-legged hawk	0.01	0	0	0.004	0.80
Great horned owl	0	0	0.151	0.060	12.08
Prairie falcon	0	0	0.060	0.024	4.80
Burrowing owl	0	0	0.030	0.012	2.40
Overall bat	2.02	0	0	0.808	161.60
Western red bat	0.07	0	0	0.028	5.60

NOTE: Estimates presented are based on the average mortality observed during all three studies adjusted to reflect searcher efficiency and scavenger removal rates.

¹ This estimate is based on 200 MW.

SOURCE: ^a Curry & Kerlinger, LLC. 2006. *Post-construction Avian and Bat Fatality Monitoring Study for the High Winds Wind Power Project, Solano County, California: Two-Year Report*. Prepared for: High Winds, LLC, FPL Energy. McLean, VA.

^b Erickson, Wallace, Andy Krause, and Andrea Chatfield. 2008. *Final Report: Fatality Study Summary at the Alite and Oak Creek Energy Systems Wind Facilities, Alta-Oak Creek Wind Resources Area, Kern County, California*. Prepared by: Western EcoSystems Technology, Inc., Cheyenne, WY. Prepared for: Alta Windpower Development, LLC, New York, NY, and CH2M Hill, San Diego, CA.

^cThe weighted averages assign greater statistical importance to studies based on the duration of the study. This approach entailed multiplying the mortality rates by the length of the study (in years). For example the High Winds rate was multiplied by 2, the Alite rate was multiplied by 1, and the Oak Creek rates were multiplied by 2. The sum of these rates was then divided by 5 to reflect each of the study years included.

The range of estimates in these two tables can be attributed to the differing approaches of data analysis. In the past, calculating fatalities per MW per year has been used to help standardize estimates across widely varying turbine types and capacities, but with the transition to new-

generation, large-capacity turbines, there appears to be a trend toward assessing mortality on a per turbine basis. The average name plate capacity of the turbines in the above tables are as follows: High Winds, 1.8 MW; Alite, 3 MW; Oak Creek, 0.54 MW. Turbines in the project will have name plate capacities of 1.6 MW. The smaller turbines at Oak Creek have the potential to skew the overall data towards a slightly higher mortality estimate than may be realistic for the project, as Catalina will only contain larger, newer generation wind turbines. In addition, smaller turbines have lower rotor-swept heights, which could explain the mortality of species such as the great-horned owl and burrowing owl at the Oak Creek facility and not at either of the other two projects used in this analysis. These species generally remain lower in the air column and mortality risk to these species is likely much higher at wind farms with smaller turbines than those intended for the project.

Exposure indices may provide some insight into what species might be the most likely turbine casualties based on site-specific data on abundance and flight behavior. The index considers relative probability of exposure based on abundance, proportion of activity recorded as flying, and observed flight height of each species. The analysis is based on observations of birds made during the studies and does not take into consideration varying ability among species to detect and avoid turbines, habitat selection, or other factors that may influence exposure to turbines such as breeding or hunting behavior. Based on species composition of the most common raptor fatalities at other western wind energy facilities, species composition of raptors observed during 2011 surveys conducted within the project property, and considering the exposure indices evaluated, the diurnal raptors most likely at risk of turbine collision would be the red-tailed hawk and turkey vulture; only the red-tailed hawk and turkey vulture are relatively common at the project property. Small numbers of fatalities of other raptors, including other falcons, accipiters, and harriers may also occur over the life of the project but are expected to be rare. Based on the seasonal use estimates, it is also expected that risk to raptors would be lowest during the post-breeding period in summer when resources have been depleted and temperatures are very high, when very few raptors were observed, and highest during the fall and winter seasons, due to increased number of migrants passing through the area and renewal of resource productivity brought upon by regular winter season rainfall and cooler temperatures.

Implementation of this BBCS would minimize project-related impacts and help ensure that the project would be in compliance with the Migratory Bird Treaty Act (MBTA) and BGEPA. The operational practices aspects of this BBCS will help address any take of migratory birds, including passerine and raptor species. Conservation measures, such as those delineated in Section 5, have been developed to minimize impacts. Postconstruction monitoring and risk assessment validation have been designed to evaluate the project during operation to determine actual impacts. Adaptive management has been designed to use monitoring data to evaluate whether impacts are as predicted or higher and, if so, to address such impacts. Compensatory mitigation actions provide options to address impacts from unmitigated mortality to avian species.

Special-status Species Collision Risk

It has been determined that implementation of the project may result in potential impacts to 11 sensitive avian species that were present within and adjacent to the project property. Individual assessments of species' collision risk with wind turbine generators are presented below, in taxonomic order (Figure 4.1-1, *Observed and Potential Raptor and Special-status Species Flight Heights*).

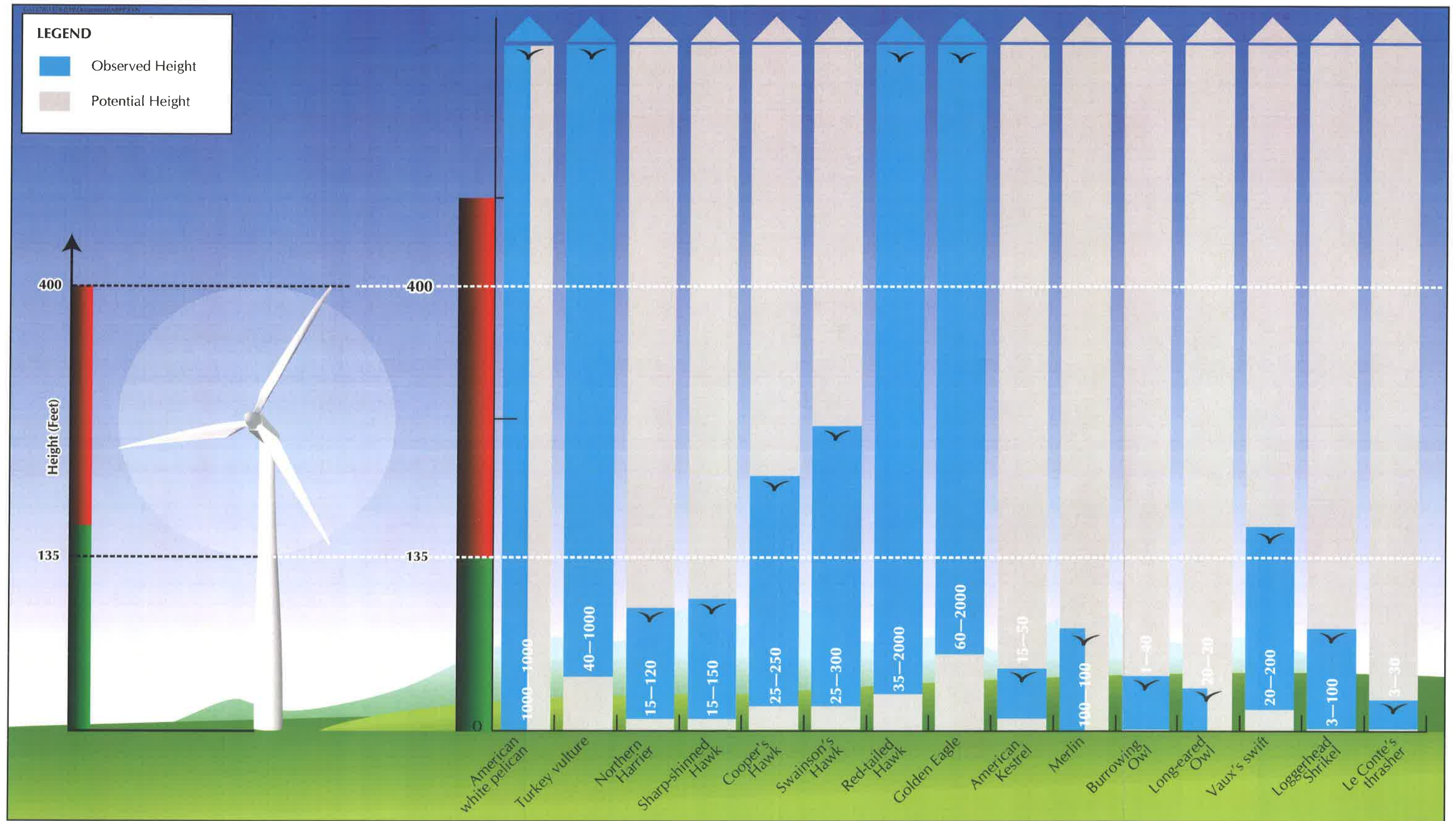


FIGURE 4.1-1
Observed and Potential Raptor and Special-status Species Flight Heights

4.1.1 American White Pelican

The American white pelican (*Pelecanus erythrorhynchos*) is listed as a species of special concern by the California Department of Fish and Game (CDFG), but only in its nesting colonies. This species is migratory within the Antelope Valley and has a high potential to migrate over the project property in spring or fall. A single, large flock of 250 American white pelicans was observed migrating northwest across the property on March 24, 2011, flying at approximately 1,000 feet above ground level (AGL).

There are no breeding or foraging grounds within the project property; therefore, American white pelicans flying within the project area would only have exposure to turbine mortality during migration. The project would not be expected to result in significant impacts to the American white pelicans due to direct impacts from collision with wind turbines.

4.1.2 California Condor

The California condor (*Gymnogyps californianus*) is listed as endangered pursuant to both the federal and state Endangered Species Acts (ESAs) and is also a state fully protected species. There are no known occurrences of California condor within the project property. Condors were not detected during over a year of avian surveys on the project and during avian surveys conducted over several thousand hours on over 30,000 acres in the immediately surrounding area. Furthermore, results of the probability of use model developed for the condor in the Antelope Valley, as it merges with the Tehachapi and San Gabriel Mountains, have shown that the entire project property is located in a zone of low probability of use for condors (Figure 4.1.2-1, *California Condor Probability of Use*).

The species' potential for occurrence on the project property is low for three reasons: (1) the marginal foraging habitat, (2) the lack of available overnight and diurnal nesting and roosting locations, and (3) the lack of ridges required to create the thermal air lift California condors utilize to soar. There are no known nesting sites within the project property or the nearby Tejon Ranch Critical Habitat Unit (CHU). All recently documented California condor nest sites in Southern California are located on public lands within the Los Padres, Angeles, and Sequoia National Forests. No cliffs or large trees of the size required by California condors exist in the project property or within the Tejon Ranch CHU. The nearest nest site is more than 24 miles away from the project, and the nearest recorded observation of a California condor was 5.9 miles to the west.

Based on the lack of known occurrences of the California condor within the project property and habitat use, the level of risk associated with the project for the California condor is considered to be low. In light of the overall low probability for a California condor in the southern flock to be present outside its historic range, it is conceivable for a California condor to wander into the project area. The ability of condors to avoid wind turbines is unknown. Based on preliminary searches of the scientific literature, there appears to be a potential risk of collision to California condors from wind turbines if and when the condor range and wind turbines are located within close proximity of historical nesting sites and primary movement corridors. However, to date, no known California condor deaths have been attributed to wind turbines. As California condor numbers continue to increase in Southern California, including the Tehachapis, and their range expands, even into the margin of the Mojave Desert, the likelihood of condor mortality from collisions with wind turbines increases; but mortality events would remain a rare event.

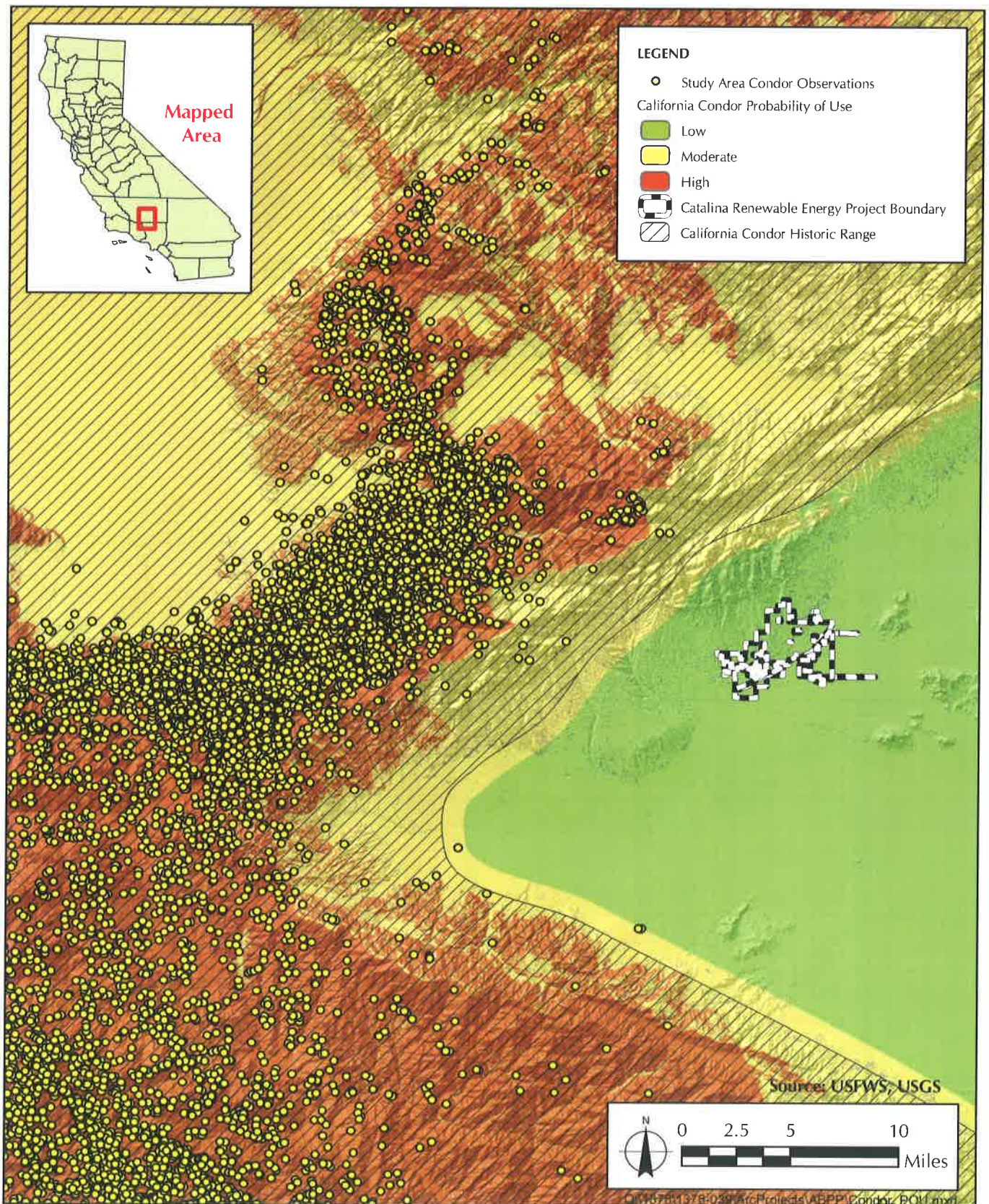


FIGURE 4.1.2-1
California Condor Probability of Use

4.1.3 Northern Harrier

The northern harrier (*Circus cyaneus*) is a California species of special concern and is considered in the West Mojave Plan. In eastern Kern County, the northern harrier is a fairly common winter visitor, and a rare breeder, but it does not breed within or near the project property.²⁶ A total of eight individual northern harriers were observed during winter, spring, and fall avian surveys at the project property in 2011, all flying or foraging below 120 feet AGL. Northern harriers, while foraging, normally range less than approximately 16.4 feet AGL,²⁷ but the species flies higher during migration, primarily above 1,000 feet AGL.²⁸ Potential migrating heights can reach the anticipated rotor-swept range of wind turbines (135 to 400 feet) in the project property, although northern harrier mortality is generally low at studied sites.²⁹

The northern harrier might be at risk of collision with turbines; however, studies of raptor behavior have documented high raptor collision avoidance behaviors, noting that the diurnal flight of raptors may provide these birds with the ability to visually and acoustically detect turbines. While it is possible that small numbers of fatalities of northern harriers could occur over the life of the project, such events are expected to be rare, and impacts are not expected to be substantial.

4.1.4 Swainson's Hawk

The Swainson's hawk (*Buteo swainsoni*) is listed as threatened by the CDFG and is also considered in the West Mojave Plan. The Swainson's hawk is a rare spring migrant and rare to uncommon fall migrant in the Antelope Valley and surrounding areas in Southern California. While foraging, Swainson's hawks can range from ground level to over 1,000 feet AGL; thus, potential foraging heights within the project property can occur within the rotor-swept range of anticipated wind turbines (135 to 400 feet). The largest flocks of Swainson's hawk were reported at 50 birds in spring 2004 and 12 birds in spring 2005 at the adjacent, approved Manzana (formerly PdV) Wind Energy Project site, 2 miles north of the project study area. During spring 2011 BUC surveys on the project property, one adult was observed flying on March 24, 2011, at approximately 25 feet AGL. An additional observation of an adult was made on April 4, 2011, at approximately 40 feet AGL. Four individual Swainson's hawks were observed on March 24, 2011, during an area search flying between 150–300 feet AGL, indicating migratory behavior. No Swainson's hawks were observed at the project property during the summer season of avian surveys, confirming their migratory status in the area.

Based on species population factors and/or habitat use, the level of risk associated with the project for the Swainson's hawk was considered to be low to moderate. While Swainson's hawks flying within the project area would have some exposure to turbine mortality, there have been no documented fatalities of this species at wind energy plants in the region. Moreover, studies of raptor behavior have documented high raptor collision avoidance behaviors, noting that the diurnal flight of raptors may provide these birds with the ability to visually and acoustically detect

²⁶ Heindel, M.T. 2000. *Birds of Eastern Kern County*. Available at: <http://fog.ccsf.cc.ca.us/~jmorlan/>

²⁷ Macwhirter, R. Bruce and Keith L. Bildstein. 1996. *Northern Harrier (Circus cyaneus)*, The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology. Available Retrieved from the Birds of North America Online: <http://bna.birds.cornell.edu.bnaproxy.birds.cornell.edu/bna/species/210>

²⁸ Kerlinger, P. 1989. *Flight Strategies of Migrating Hawks*. University of Chicago Press.

²⁹ Erickson, W., G.D. Johnson, M.D. Strickland, et al. 2001. *Avian Collisions with Wind Turbines: A Summary of Existing Studies and Comparisons to Other Sources of Avian Collision Mortality in the United States*. Prepared by: Western EcoSystems Technology, Inc., Cheyenne, WY. Prepared for: National Wind Coordinating Committee, Washington, DC.

turbines. While it is possible that small numbers of fatalities of Swainson's hawks could occur over the life of the project, such events are expected to be rare, and impacts are not expected to be substantial.

4.1.5 Golden Eagle

The golden eagle (*Aquila chrysaetos*) is afforded federal protection under the BGEPA,³⁰ and is fully protected under California regulations.³¹ The species occurs throughout the entire State of California, thus there are no sites for wind energy development within California, or in the western United States, where there is zero risk of golden eagle mortality. However, careful site selection and application of advanced conservation practices can significantly minimize the risk to golden eagles and other protected species.

Some golden eagle populations may be declining, but other populations are generally stable in western North America,³² and overall numbers are still substantial (e.g., over 27,000 in four conservation regions of western North America).³³ The golden eagle ranges throughout most of the state, including the Tehachapi WRA. Within the three USFWS Bird Conservation Regions (BCRs) that include Kern County and the Tehachapi WRA, golden eagles can be characterized as widely distributed and uncommon in the western Mojave Desert and fairly common in trans-montane areas of the Tehachapis and southern Sierra Mountains.

The probability of collision fatality of raptors at wind farms, including the golden eagle, has often not depended on raptor abundance. Rather, the probability of collision fatality of raptors at wind farms has usually depended upon species-specific flight behaviors, particularly avoidance behaviors, as well as location, local topographic characteristics of the wind farm site, weather, turbine design, and wind farm design.^{34,35,36} Nonetheless, the golden eagle has been susceptible to collisions with wind turbines, and not only at the Altamont Pass WRA, which has one of the highest densities of resident golden eagles in the world.³⁷ In the Valencia region of eastern Spain, for example, preconstruction site-specific data incorporated into an additive scoring model based on the attributes of raptor species produced a raptor sensitivity index that identified the golden eagle as the most vulnerable of nine raptors to collisions with wind turbines at this site.³⁸

³⁰ U.S. Code. 30 April 2004. Title 16, Sections 668–668d: "Bald and Golden Eagle Protection Act." Available at: <http://www.fws.gov/le/pdf/bepa.pdf>

³¹ California Department of Fish and Game. 2008. *Fully Protected Animals*. Sacramento, CA. Available at: http://www.dfg.ca.gov/wildlife/species/t_e_spp/fully_pro.html

³² McCaffery, B.J., and C. McIntyre. 2005. "Disparities between Results and Conclusions: Do Golden Eagles Warrant Special Concern Based on Migration Counts in the Western United States?" *Condor*, 107: 469–473.

³³ Good, R.E., R.M. Nielson, H. Sawyer, and L.L. McDonald. 2007. "A Population Estimate for Golden Eagles in the Western United States." *Journal of Wildlife Management*, 71: 395–402.

³⁴ Madders, M., and D.P. Whitfield. 2006. "Upland Raptors and the Assessment of Wind Farm Impacts." *Ibis*, 148: 43–56.

³⁵ De Lucas, M., F.E.J. Guyonne, D.P. Whitfield, and M. Ferrer. 2008. "Collision Fatality of Raptors in Wind Farms Does Not Depend on Raptor Abundance." *Journal of Applied Ecology*, 45: 1695–1703.

³⁶ Noguera, J.C., I. Pérez, and E. Mínguez. 2010. "Impact of Terrestrial Wind Farms on Diurnal Raptors: Developing a Spatial Vulnerability Index and Potential Vulnerability Maps." *Ardeola*, 57: 41–53.

³⁷ Hunt, W.G., R.E. Jackman, T.L. Hunt, D.E. Driscoll and L. Culp. 1998. "A population study of golden eagles in the Altamont Pass Wind Resource Area: population trend analysis 1997." Report to National Renewable Energy Laboratory, Subcontract XAT-6-16459-01. Predatory Bird Research Group, University of California, Santa Cruz.

³⁸ Noguera, J.C., I. Pérez, and E. Mínguez. 2010. "Impact of Terrestrial Wind Farms on Diurnal Raptors: Developing a Spatial Vulnerability Index and Potential Vulnerability Maps." *Ardeola*, 57: 41–53.

Few other mortality studies have been conducted in the Tehachapi WRA, but in studies conducted from 1996 to 1998, during a 19-month study in the Tehachapis,³⁹ no golden eagles were reported killed, despite the fact that approximately 43 individuals of other species of raptors (e.g., red-tailed hawk, great horned owl) were reported as fatalities.

A golden eagle was reportedly killed at the nearby OCES Wind Farm between 2006 and 2008,⁴⁰ indicating golden eagle susceptibility to wind turbine collisions despite low incidences of occurrence. It is believed that this golden eagle fatality may have been an anomaly due to recent fires in the area driving birds out of their normal foraging habitats.

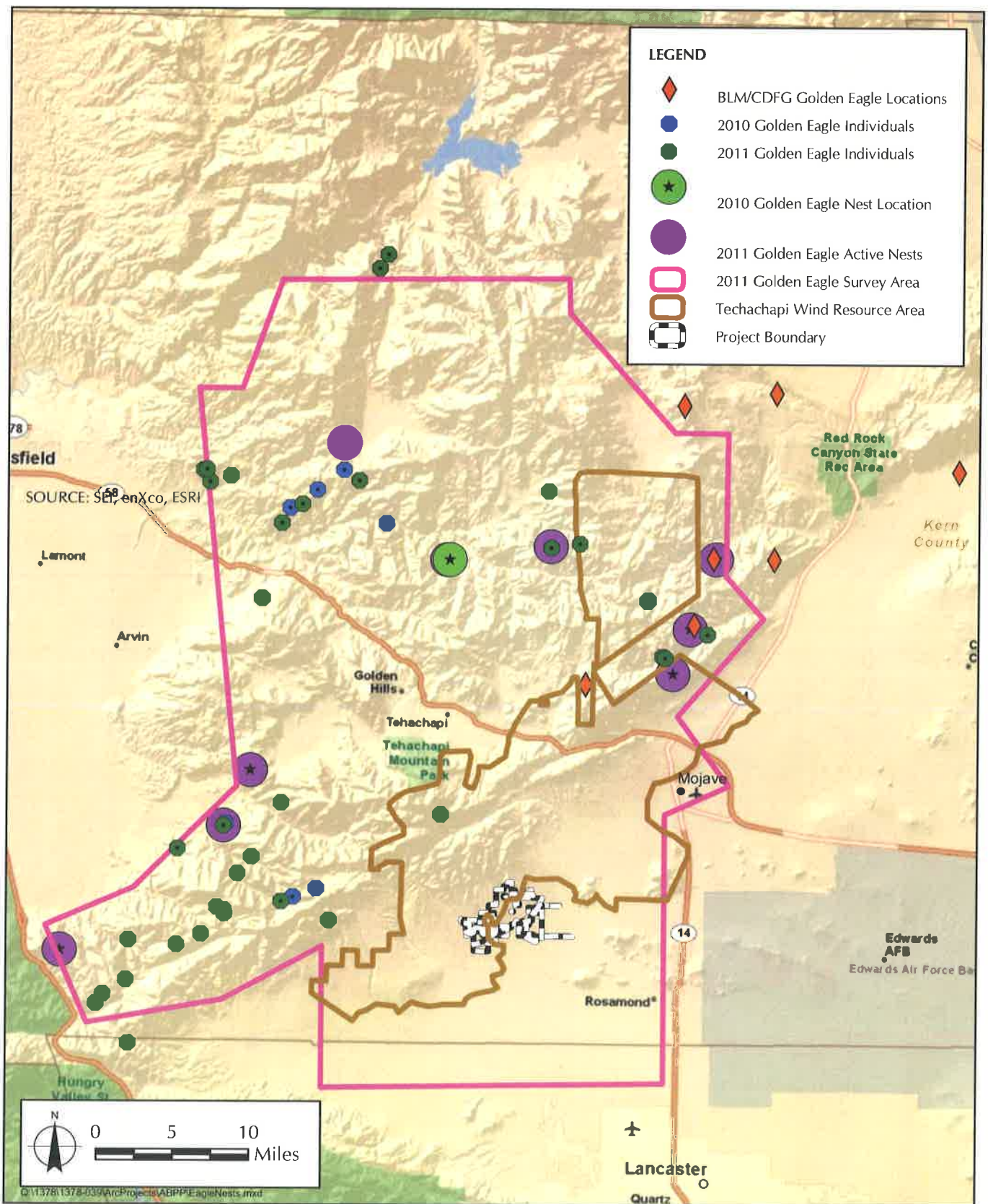
In addition to the reported fatality at the OCES Wind Farm, a total of six golden eagle fatalities were documented at the Pine Tree Wind Farm between 2009 and 2011, a much higher rate of fatality than predicted by similar mortality estimates done for other wind projects within the Tehachapi WRA. The Pine Tree Wind Energy Project is located approximately 25 miles northeast of the project property. Pine Tree is located at a higher elevation with much different topography than the project, including steep cliffs and outcroppings favored by nesting raptors, such as golden eagles, and prime golden eagle foraging habitat in the form of open, rolling grasslands. The Pine Tree Wind Farm is also located in close proximity to Kelso Valley and Butterbrecht Springs, prime golden eagle foraging habitat. In addition, the site is located within 5 miles of at least 2 golden eagle nests documented by Sapphos Environmental, Inc. during aerial raptor surveys in 2010 and 2011.

Golden eagles are not known to breed in desert portions of the Tehachapi WRA, but have been documented to breed in the Tehachapi Mountains. Aerial surveys completed in 2010 and 2011 did not document nesting golden eagles within the project property or surrounding region. Nesting substrates, which in Southern California can include vertical cliffs or oak trees, are not present on the project. In total, 34 golden eagle observations were recorded on aerial surveys, in addition to 10 active golden eagle nests used by breeding eagles in 2011 (Figure 4.1.5-1, *Golden Eagle Observations and Nests in Relation to Project Area*). All nests found during the surveys were located within the foothills and mountains of the Tehachapi range. No nests were located within 10 miles of the project; the closest active nest was approximately 17 miles northwest of the project property. Breeding golden eagles typically forage within 3 to 4 miles of their nest, and projects located farther than 10 miles from the nearest nest are considered unlikely to take breeding adults during the breeding season.

During detailed field surveys conducted for the project study area, no nests were identified within the project property. However, resident golden eagles from nearby areas were observed foraging in the project property throughout the year and were observed in the project during spring migration. A total of eight (8) golden eagles were seen flying over the project property during seven observations between February 2011 and May 2011. The majority of observations involved adults or sub-adults flying over 200 feet AGL, though one observation in spring involved an adult foraging at 60 feet AGL. No golden eagles were observed on the project during summer or fall 2011.

³⁹ Anderson, R.N., J.T. Neumann, W.R. Erickson, M.D. Strickland, M. Bourassa, K.J. Bay, and K.J. Sernka. 2004. *Avian Monitoring and Risk Assessment at the Tehachapi Pass Wind Resource Area*. Golden, CO: National Renewable Energy Laboratory, U.S. Department of Energy.

⁴⁰ Erickson, W., A. Krause and A. Chatfield. 2008. *Final Report: Fatality Study Summary at the Alite and Oak Creek Energy Systems Wind Facilities, Alta-Oak Creek Wind Resources Area, Kern County, California*. Prepared by: Western EcoSystems Technology, Inc., Cheyenne, WY. Prepared for: Alta Windpower Development, LLC, New York, NY, and CH2M Hill, San Diego, CA.



surveys. In four seasons of bird use counts on the property in 2011, golden eagles accounted for only 4.0 percent of all raptor observations and only 0.08 percent of all avian observations.

Golden eagles may fly within the wind turbine blade heights of 135 to 400 feet AGL at the project property. The adjusted mortality estimates for golden eagles based on postconstruction monitoring results at Alite, Oak Creek, and High Winds Wind Farms predict that golden eagle mortality could range from 1.82 to 3.02 golden eagles per year at the project site. However, it must be emphasized that these estimates do not account for differences in golden eagle use between the sites used in the estimates and the project site. Both Alite and Oak Creek are located closer to the Tehachapi foothills, and therefore, closer to higher quality golden eagle foraging and nesting habitat than the project, which is located on the floor of the Antelope Valley. High Winds is located in Solano County in Northern California and has a much higher raptor use than the Catalina project.

Under certain foraging conditions, such as when suitable prey (e.g., jackrabbits) is concentrated, golden eagles are susceptible to collisions with wind turbines. However, golden eagles do not nest within the project property. Therefore, the potential for golden eagle injury or mortality due to collision with wind turbines at the project property is low based on the fact that this species is an infrequent visitor within the project property. These mortality estimates also do not take into consideration the conservation measures proposed by enXco to minimize and avoid take of golden eagles at the project site. It is anticipated that these measures, also known as advanced conservation practices, will minimize take of eagles such that any remaining take is unavoidable. These measures are summarized in Section 5.

4.1.6 American Peregrine Falcon

The American peregrine falcon (*Falco peregrinus anatum*) was de-listed as an endangered species under the California ESA in 2008, but remains a fully protected state species. The American peregrine falcon does not breed in Kern County,⁴⁹ but the entire project property provides suitable foraging habitat. American peregrine falcons are migratory and may pass through the project property during their autumn migration from the northern hemisphere to the southern hemisphere, and return during their spring migration. This species can range from ground level to over 1,000 feet AGL while foraging; thus, potential foraging heights within the project property can occur within the rotor-swept range of proposed wind turbines (135 to 400 feet). This species was observed in the project property during spring and summer 2011 surveys. The first individual was recorded calling on May 16, 2011, and the second individual falcon was recorded calling on July 1, 2011.

Based on species population factors and/or habitat use, the level of risk associated with the project for the American peregrine falcon was considered to be low to moderate. While American peregrine falcons flying within the project area would have some exposure to turbine mortality, there have been no documented fatalities of this species at wind energy plants in the region. Moreover, studies of raptor behavior have documented high raptor collision avoidance behaviors, noting that the diurnal flight of raptors may provide these birds with the ability to visually and acoustically detect turbines. While it is possible that small numbers of fatalities of American peregrine falcons could occur over the life of the project, such events are expected to be rare, and impacts are not expected to be substantial.

⁴⁹ Comrack, L. and Logsdon, R. 2008. *Status Review of the American Peregrine Falcon in California*. California Department of Fish and Game, Wildlife Branch, Nongame Wildlife Program Report 2008-06.

4.1.7 Burrowing Owl

Burrowing owl (*Athene cunicularia*) is a California species of special concern and is considered in the West Mojave Plan. The burrowing owl is a grassland- and desert-inhabiting species that nests underground, usually in ground squirrel burrows. This species nests in small numbers in the Antelope Valley, including the project property, which has a local concentration. Twenty-three (23) burrowing owl burrows were located in suitable habitat and within 150 meters of project impact areas on the project property. Of the 23 burrows, 13 were observed to be occupied and 10 burrows were determined to be unoccupied during the 2011 breeding season. Winter occupancy status will be determined during burrow visits scheduled between December 1, 2011, and January 31, 2012. Twenty-nine (29) burrowing owls were observed at or in close proximity to the burrows that were located in suitable habitat. In addition, four juvenile burrowing owls were observed on the site more than 150 meters from the closest known burrow. These individuals most likely fledged from burrows on and adjacent to the project property and subsequently dispersed from their natal burrows (Figure 4.1.7-1, *Burrowing Owl Burrows in Relation to Project Area*).

Burrowing owls while foraging normally range less than 100 feet AGL, and thus potential foraging heights are below the anticipated rotor-swept range of wind turbines (135 to 400 feet) on the project property. No burrowing owls were observed during BUC surveys, the species was only detected during reconnaissance counts of Mojave Desert Wash Scrub and during checks of occupied burrows. Of the eight burrowing owl observed flying during reconnaissance counts, flight heights ranged from 1 to 40 feet AGL.

Based on species population factors and/or habitat use, the level of risk associated with the project for the burrowing owl was considered to be moderate. Burrowing owls can be susceptible to collision mortality at small turbines with very low to low rotor-swept heights above ground level;⁵⁰ however, there have been few documented burrowing owl fatalities at wind energy plants in the region. Moreover, studies of raptor behavior have documented high raptor collision avoidance behaviors, noting that the diurnal flight of raptors may provide these birds with the ability to visually and acoustically detect turbines. While it is possible that small numbers of fatalities of burrowing owls could occur over the life of the project, such events are expected to be rare, and impacts are not expected to be substantial. Thus, any mortality that might occur over the project life would be at a relatively low level and would be unlikely to have an appreciable effect on burrowing owl populations.

4.1.8 Long-eared Owl

The long-eared owl (*Asio otus*) is a California species of special concern and is considered in the West Mojave Plan. The long-eared owl is an uncommon yearlong resident throughout the State of California. Requiring dense stands of trees near open country for hunting and breeding, it is usually transient or wintering in the Antelope Valley.⁵¹ Long-eared owl numbers have declined at least moderately overall in California, and they occur very locally within the southern deserts, including the Antelope Valley where breeding has been documented. A long-eared owl nest was discovered in late March 2011, in the south-central section of the project property. By May 6, 2011, at least two live fledglings and one dead fledgling were found in a dense thicket of tamarisk (*Tamarix* spp.) adjacent to the nest site. In addition, a single long-eared owl was detected flying at 20 feet AGL at

⁵⁰ Smallwood, K.S., C.G. Thelander, M.L. Morrison, and L.M. Rugge. 2007. "Burrowing Owl Mortality in the Altamont Pass Wind Resource Area." *Journal of Wildlife Management*, 71: 1513–1524.

⁵¹ Small, A. 1994. *California Birds: Their Status and Distribution*. Vista, CA: Ibis, p. 137.

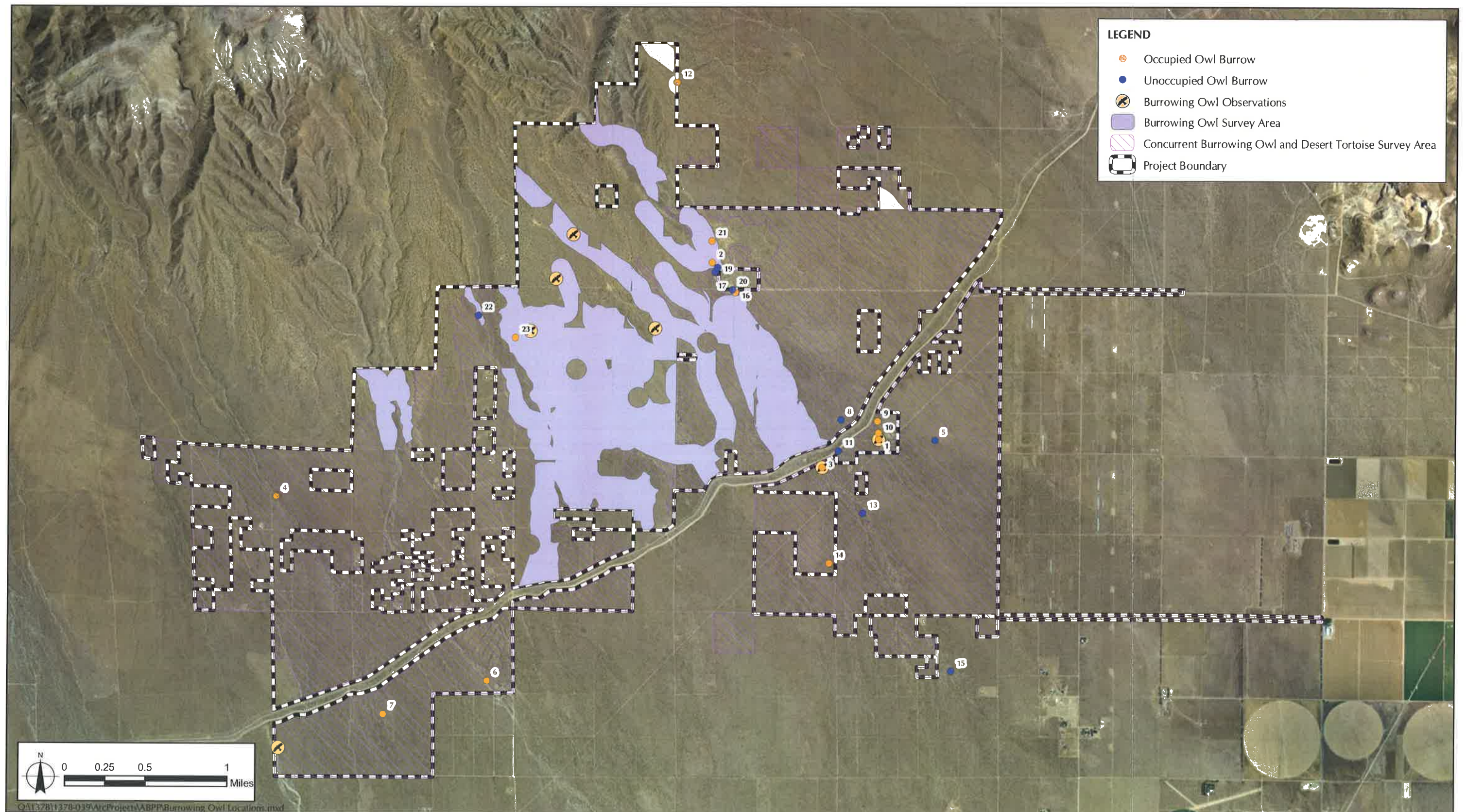


FIGURE 4.1.7-1
Burrowing Owl Burrows in Relation to Project Area

a BUC point in fall 2011 in the far north of the project property, located approximately 2.5 miles away from the nest site.

Based on species population factors and/or habitat use, the level of risk associated with the project for the long-eared owl was considered to be low. While long-eared owls nesting in the project area would have some exposure to turbine mortality, there have been few documented long-eared owl fatalities at wind energy plants in the region. One long-eared owl was reported as a fatality within the Tehachapi WRA in a 1997–1998 study, comprising less than 1 percent of the total number of fatalities found.⁵² While it is possible that small numbers of fatalities of long-eared owls could occur over the life of the project, such events are expected to be rare, and impacts are not expected to be substantial. Thus, any mortality that might occur over the project life would be at a relatively low level and would be unlikely to have an appreciable effect on overall long-eared owl populations.

4.1.9 Vaux's Swift

The Vaux's swift (*Chaetura vauxi*) is listed as a California species of special concern and is considered in the West Mojave Plan. Vaux's swift (*Chaetura vauxi*) is a sporadically common migrant in eastern Kern County.⁵³ While foraging, this species can range from ground level to over 1,000 feet AGL, and thus potential foraging heights within the project study area can occur within the rotor-swept range of proposed wind turbines (135 to 400 feet). During spring 2011 BUCs, an individual Vaux's swift was recorded on April 21, 2011, flying at 20 feet AGL. Five flocks of between 2 to 15 Vaux's swifts were observed flying in late September 2011 during fall BUC counts at heights ranging from 100 to 200 feet AGL. These were most likely migrants passing through the project property.

Based on species population factors and/or habitat use, the level of risk associated with the project for the Vaux's swift was considered to be low. While Vaux's swifts migrating through the project area would have some exposure to turbine mortality, there have been no documented Vaux's swift fatalities at wind energy plants in the region. While it is possible that small numbers of fatalities of Vaux's swift could occur over the life of the project, such events are expected to be rare, and impacts are not expected to be substantial. Thus, any mortality that might occur over the project life would be at a relatively low level and would be unlikely to have an appreciable effect on Vaux's swift populations.

4.1.10 Loggerhead Shrike

The loggerhead shrike (*Lanius ludovicianus*) is listed as a California species of special concern and is considered in the West Mojave Plan. All of the shrub plant communities in the project property provide suitable foraging and nesting habitat for loggerhead shrikes. While foraging, the loggerhead shrike normally ranges from ground level to below 100 feet AGL, which is below the rotor-swept range of proposed wind turbines at the property.

Loggerhead shrikes occur year-round at the project property, where they are fairly common and breed, and are probably composed of a mixture of resident and migrant individuals. The loggerhead shrike normally ranges from ground level to below 100 feet AGL during its daily

⁵² Anderson, R.L., J. Tom, N. Neumann, and J.A. Cleckler. 2004. *Avian Monitoring and Risk Assessment at Tehachapi Pass Wind Resource Area, California*. Sacramento, CA: California Energy Commission.

⁵³ Heindel, M.T. 2000. *Birds of Eastern Kern County*. Available at: <http://fog.ccsf.cc.ca.us/~jmorlan/>

foraging and roosting activities, which is below the rotor-swept range of proposed wind turbines at the project property. Loggerhead shrikes are the most numerous and widely distributed avian species of special status that occurs and breeds at the project property. Counts of loggerhead shrikes in the project property during the full year of BUC counts ranged from 18 in winter 2010, 6 in spring 2011, 39 in summer 2011, and 11 in fall of 2011. Due to its healthy population and a foraging strategy that keeps it generally below the rotor-swept zone, it is expected that the level of collision risk associated with this species at the project is low. While it is possible that small numbers of fatalities of loggerhead shrikes could occur over the life of the project, such events are expected to be rare, and impacts are not expected to be substantial. Thus, any mortality that might occur over the project life would be at a relatively low level and would be unlikely to have an appreciable effect on overall loggerhead shrike populations.

4.1.11 Le Conte's Thrasher

Le Conte's thrasher (*Toxostoma lecontei*) is a California species of special concern and is considered in the West Mojave Plan. Suitable habitat for the species exists within the Mojave Desert Wash Scrub and Mojavean Juniper Woodland and Scrub plant communities within the project property. The Le Conte's thrasher is a year-round resident and a confirmed breeder on the project property. A total of 19 individual birds were seen throughout the year of BUC surveys at a variety of locations within the project property.

The Le Conte's thrasher is a secretive ground forager that is rarely observed in flight, and it is expected that the level of collision risk associated with this species at the project is low. While it is possible that small numbers of fatalities of Le Conte's thrasher could occur over the life of the project, such events are expected to be rare, and impacts are not expected to be substantial. Thus, any mortality that might occur over the project life would be at a relatively low level and would be unlikely to have an appreciable effect on overall Le Conte's thrasher populations.

4.2 COLLISION RISK TO BATS

Bat mortality has been associated with wind farm operations, where bats can be killed or injured through collision with turbine blades. Most studies have shown that the majority of bat mortalities at wind plants are long-distance migratory tree and foliage roosting species, such as the hoary bat (*Lasiurus cinereus*), little brown myotis (*Myotis lucifugus*), and silver-haired bat (*Lasionycteris noctivagans*). Of these species, the hoary bat has a higher wind turbine impact mortality rate than all other species in the West.^{54,55} The data also show that mortality is almost nonexistent during the breeding season and generally occurs during migration and dispersal in late summer between July and September.^{56,57} The same studies also showed that mortality rates were higher during fall migration than spring. This was attributed to a lower migration concentration because females

⁵⁴ Erickson, W., G. Johnson, D. Young, et al. 2002. *Synthesis and Comparison of Baseline Avian and Bat Use, Raptor Nesting and Mortality Information from and Existing Wind Developments*. Prepared by: Western EcoSystems Technology, Inc., Cheyenne, WY. Prepared for: Bonneville Power Administration, Portland, OR.

⁵⁵ Gruver, J.C. 2002. "Assessment of Bat Community Structure and Roosting Habitat Preferences of the Hoary Bat (*Lasiurus cinereus*) Near Foot Creek Rim, Wyoming." Master's thesis, Department of Zoology and Physiology, University of Wyoming, Laramie.

⁵⁶ Johnson, G.D., W.P. Erickson, D.A. Shepard, et al. 2002. *Bat Interactions with Wind Turbines at the Buffalo Ridge, Minnesota Wind Resource Area: 2001 Field Season*. Palo Alto, CA: Electric Power Research Institute.

⁵⁷ Gruver, J.C. 2002. "Assessment of Bat Community Structure and Roosting Habitat Preferences of the Hoary Bat (*Lasiurus cinereus*) Near Foot Creek Rim, Wyoming." Master's thesis, Department of Zoology and Physiology, University of Wyoming, Laramie.

leave earlier than males in the spring, but not in the fall.⁵⁸ Studies also indicate that bats follow large migrations of moths during the fall months. Furthermore, it is well documented that these same species have a history of impact mortality with transmission interconnect lines, television and communication towers, and even lighthouses.⁵⁹

The evidence also shows that resident bats, which are foraging or commuting between roosts, do not make up the bulk of collision mortality.^{60,61} This is based on impact distribution data among turbines and observed forage habitat characteristics. Since resident bats would have a defined flight corridor between roosts, they should exhibit higher densities of fatalities in these corridors, but in a majority of the cases that were studied, there are no patterns; rather, there are no areas of appreciably higher densities in the distribution of fatalities.^{62,63}

In addition to flight corridor data, evidence from foraging behavior demonstrates that it is unlikely that fatalities would occur in resident bat populations.⁶⁴ Normally, bats do not forage at heights associated with turbine activity or in areas associated with wind turbine projects, since these areas generally are very flat and windy and have reduced insect populations. Rather, they are normally associated with less wind and more water.⁶⁵

Migratory bat species may be more likely to be involved with collision mortality events because they fly higher in the air and in denser clusters when migrating.⁶⁶ This not only puts the bats at a height associated with the turbines' rotor swept area but, because bats migrate in groups, their ability to use echolocation is affected.⁶⁷ Evidence also shows that fatality events during migration may be dependent on the surrounding habitat. Studies done at Foote Creek Rim (Wyoming) and

⁵⁸ Gruver, J.C. 2002. "Assessment of Bat Community Structure and Roosting Habitat Preferences of the Hoary Bat (*Lasiurus cinereus*) Near Foot Creek Rim, Wyoming." Master's thesis, Department of Zoology and Physiology, University of Wyoming, Laramie.

⁵⁹ Erickson, W., G. Johnson, D. Young, et al. 2002. *Synthesis and Comparison of Baseline Avian and Bat Use, Raptor Nesting and Mortality Information from Proposed and Existing Wind Developments*. Prepared by: Western EcoSystems Technology, Inc., Cheyenne, WY. Prepared for: Bonneville Power Administration, Portland, OR.

⁶⁰ Crawford, R. L. and W. W. Baker. 1981. "Bats Killed at a North Florida Television Tower: A 25 Year Record." *Journal of Mammalogy*, 62: 651–652.

⁶¹ Johnson, G.D., D.P. Young, W.P. Erickson, et al. 2000. *Avian and Bat Mortality Associated with Initial Phase of the Foot Creek Rim Wind Power Project, Carbon County, Wyoming: November 3, 1998–October 31, 1999*. Technical report prepared for: SeaWest Energy Corporation, San Diego, CA, and Bureau of Land Management, Rawlins, WY.

⁶² Johnson, G.D., D.P. Young, W.P. Erickson, et al. 2000. *Wildlife Monitoring Studies: Seawest Wind Power Project, Carbon County, Wyoming: 1995-1999*. Technical Report prepared by: Western EcoSystems Technology, Inc., Cheyenne, WY. Prepared for: SeaWest Energy Corporation, San Diego, CA, and Bureau of Land Management, Rawlins, WY.

⁶³ Erickson, W., G. Johnson, D. Young, et al. 2002. *Synthesis and Comparison of Baseline Avian and Bat Use, Raptor Nesting and Mortality Information from Proposed and Existing Wind Developments*. Prepared by: Western EcoSystems Technology, Inc., Cheyenne, WY. Prepared for: Bonneville Power Administration, Portland, OR.

⁶⁴ Erickson, W., G.D. Johnson, and M.D. Strickland, et al. 2000. *Avian and Bat Mortality Associated with the Vansycle Wind Project, Umatilla County, Oregon: 1999 Study Year*. Technical Report prepared by: Western EcoSystems Technology, Inc. Prepared for: Umatilla County Department of Resource Services and Development, Pendleton, OR.

⁶⁵ Johnson, G.D., W.P. Erickson, and D.A. Shepard, et al. 2002. *Bat Interactions with Wind Turbines at the Buffalo Ridge, Minnesota Wind Resource Area: 2001 Field Season*. Palo Alto, CA: Electric Power Research Institute.

⁶⁶ Harvey, M.J., J.S. Altenbach, and T.L. Best. 1999. *Bats of the United States*. Little Rock, AR: Arkansas Game and Fish Commission.

⁶⁷ Griffin, D.R. 1970. "Migrations of Homing Bats." In *Biology of Bats*. Vol. 1. New York, NY: Academic Press.

Buffalo Ridge (Minnesota) wind plants have shown an inverse relationship between the number of turbine mortalities and the distance to the nearest woodland habitat.^{68,69}

Collisions of migratory bats with wind turbines have been reported for wind farms in the United States.⁷⁰ A review of mortality studies consistently finds that most bats were killed on nights with low wind speed (<6 meters per second) and that fatalities increased immediately before and after passage of storm fronts.⁷¹ Based on a review of 21 postconstruction fatality studies conducted at 19 facilities in five United States regions and one Canadian province, estimates of bat fatalities were highest at wind energy facilities located on forested ridges in the eastern United States (20.8 to 69.6 annual bat fatalities per turbine), and the Pacific Northwest region had among the lowest fatality rates. For the five studies completed in the Pacific Northwest, mortality ranged from 0.7 to 3.4 bats per turbine per year. In these studies, the predominance of the composition of the bat fatalities were hoary bat (up to 64 percent), followed by, in four studies, silver-haired bat (up to 56 percent). While there are no known published studies of bat mortality at wind projects in the southwestern desert, other western projects including those in California have generally shown relatively low impacts. The recently published Dillon, California fatality project showed a bat fatality rate of 2.17 fatalities per turbine per year (2.17 fatalities per MW per year).⁷²

Due to the current lack of understanding of bat populations in North America, the species and relative abundance of bats occurring within the project property are difficult to determine. Using the rate of 2.17 fatalities per turbine per year from the recently published Dillon, California bat mortality study, it could be reasonably estimated that approximately 291 bats would be killed per year at the project property. Two non-special-status species, hoary bats and silver-haired bats, which are likely to occur in the project property, would be expected to represent the majority of wind turbine-related bat fatalities from operation of the project. Hoary bats and silver-haired bats are widely distributed species that, in North America, are found within most of the United States and parts of Canada and Mexico.^{73,74}

Based on the available information, larger, less maneuverable, migrating species are primarily associated with wind turbine mortality events. In addition, those species, most notably hoary and silver-haired bats in the western United States, migrating in large colonies in late fall, make up the

⁶⁸ Erickson, W., G. Johnson, D. Young, et al. 2002. *Synthesis and Comparison of Baseline Avian and Bat Use, Raptor Nesting and Mortality Information from Proposed and Existing Wind Developments*. Prepared by: Western EcoSystems Technology, Inc., Cheyenne, WY. Prepared for: Bonneville Power Administration, Portland, OR.

⁶⁹ Johnson, G.D., D.P. Young, W.P. Erickson, et al. 2000. *Avian and Bat Mortality Associated with Initial Phase of the Foot Creek Rim Wind Power Project, Carbon County, Wyoming: November 3, 1998–October 31, 1999*. Technical report prepared for: SeaWest Energy Corporation, San Diego, CA, and Bureau of Land Management, Rawlins, WY.

⁷⁰ Johnson, Greg. September 2004. "Bat Ecology Related to Wind Development and Lessons Learned about Impacts on Bats from Wind Development" In *Proceedings of the Wind Energy and Birds/Bats Workshop: Understanding and Resolving Bird and Bat Impacts*, Washington, DC.

⁷¹ Arnett, E.B., K. Brown, W.P. Erickson, J. Fiedler, T.H. Henry, G.D. Johnson, J. Kerns, R.R. Kolford, C.P. Nicholson, T. O'Connell, M. Piorkowski, and R. Tankersley Jr. 2008. "Patterns of Bat Fatalities at Wind Energy Facilities in North America." *Journal of Wildlife Management*, 72: 61–78.

⁷² Chatfield, A., W. Erickson, and K. Bay. 2009. *Avian and Bat Fatality Study Dillon Wind Energy Facility, Riverside, California*. Technical report prepared by: Western EcoSystems Technology, Inc., Cheyenne, WY. Prepared for: Iberdrola Renewables, Portland, OR.

⁷³ Bolster, Betsy, C. 2005. "Lasiurus cinereus Hoary Bat." Western Bat Working Group (WBWG) Species Accounts. Rapid City, ND: WBWG.

⁷⁴ Perkins, Mark. 2005. "Lasionycteris noctivagans Silver-Haired Bat." Western Bat Working Group (WBWG) Species Accounts. Rapid City, ND: WBWG.

majority of fatalities observed and recorded.^{75,76} Although there have been limited quantifiable data about wind turbine / bat collision effects on bat populations, qualitative and circumstantial data suggest that turbine mortalities do not appreciably contribute to population declines,⁷⁷ at least in the West.

Of the 10 special-status bat species subject to detailed field surveys, 5 bat species, pallid bat (*Antrozous pallidus*), western small-footed myotis (*Myotis ciliolabrum*), long-eared myotis (*Myotis evotis*), fringed myotis (*Myotis thysanodes*), and Yuma myotis (*Myotis yumanensis*), were identified to be present or potentially present in the project property. Of these 5 species, 1 species is classified as migratory. Of the 5 special-status bat species, the fringed myotis (*Myotis thysanodes*) would be expected to be the most affected from operation of the project, as it is the only potentially present migratory species. Although the potential of incidental loss of resident and migratory sensitive bats through collision with operational wind turbines exists, the project would not be expected to adversely affect the survival and recovery in the wild of the 4 other sensitive bat species, which are all resident species.

The iterative operational practices aspects of this BBCS will help address any impacts to sensitive bat species from collisions with wind turbines. Additionally, conservation measures have been developed to address impacts that are likely to occur. Postconstruction monitoring and risk assessment validation have been designed to evaluate the project during operation to determine actual impacts. Adaptive management has been designed to use monitoring data to evaluate whether impacts are greater than predicted and, if so, to implement measures to address them. Compensatory mitigation actions are available to address impacts from unmitigated mortality to bat species if monitoring shows higher than expected mortality to sensitive bat species.

⁷⁵ Erickson, W., G. Johnson, D. Young, et al. 2002. *Synthesis and Comparison of Baseline Avian and Bat Use, Raptor Nesting and Mortality Information from Proposed and Existing Wind Developments*. Prepared by: Western EcoSystems Technology, Inc., Cheyenne, WY. Prepared for: Bonneville Power Administration, Portland, OR.

⁷⁶ Johnson, G.D., D.P. Young, W.P. Erickson, et al. 2000. *Wildlife Monitoring Studies: SeaWest Wind Power Project, Carbon County, Wyoming: 1995-1999*. Technical report prepared by: Western EcoSystems Technology, Inc., Cheyenne, WY. Prepared for: SeaWest Energy Corporation, San Diego, CA, and Bureau of Land Management, Rawlins, WY.

⁷⁷ Erickson, W., G. Johnson, D. Young, et al. 2002. *Synthesis and Comparison of Baseline Avian and Bat Use, Raptor Nesting and Mortality Information from Proposed and Existing Wind Developments*. Prepared by: Western EcoSystems Technology, Inc., Cheyenne, WY. Prepared for: Bonneville Power Administration, Portland, OR.

SECTION 5.0 CONSERVATION APPROACH

5.1 CONSERVATION MEASURES

This Bird and Bat Conservation Strategy (BBCS) conservation approach builds on commitments developed through the environmental compliance process. The Environmental Impact Report (EIR) prepared for the Catalina Renewable Energy Project (project) specified 18 mitigation measures for biological resources, including 15 measures to specifically avoid avian and bat mortality.¹ These mitigation measures are summarized below. Additional protective measures are integrated into the project description. enXco Development Corporation (enXco) has also adopted several conservation measures (CMs) as part of its other environmental compliance processes, which serve to go beyond the mitigation measures laid out in the EIR and cement enXco's commitment to reduce impacts to wildlife.

Many of the mitigation and conservation measures described below are similar to the advanced conservation practices (ACPs) described in the U.S. Fish and Wildlife Service's (USFWS) *Draft Eagle Conservation Plan Guidance*.² The Bald and Golden Eagle Protection Act (BGEPA) defines advanced conservation practices as "scientifically supportable measures that are approved by the Service and represent the best available techniques to reduce eagle disturbance and ongoing mortalities to a level where remaining take is unavoidable." The measures described below will collectively serve to minimize and avoid general avian and bat mortality and disturbance, but more specifically they will minimize and avoid golden eagle mortality and disturbance. Through enXco's adherence to these measures, it is anticipated that golden eagle risks will be minimized to the point that any take is unavoidable. Furthermore, the implementation of an adaptive management program will provide a blueprint for future management actions, including compensatory mitigation, should they be deemed necessary. This process will ensure that the net effect on the eagle population by the project is, at a minimum, no change.

5.1.1 Design and Construction

The first two conservation measures detailed below are not prescribed by the EIR and are included as a showing of enXco's commitment to reduce impacts to birds and bats. Conservation measures 3 through 11 are in accordance with mitigation measures outlined in the project's EIR (Appendix A, *Catalina Renewable Energy Project EIR Mitigation Measures*).

CM-1: Establish a No-disturbance Buffer around Potential Raptor Nesting Habitat

Using the results of the preconstruction surveys as well as information from previous survey efforts, the project will be designed to maintain a 500-foot setback from groves of mature trees that can provide nesting habitat for raptors, including golden eagles, and electricity pylons that contain active raptor nests.

¹ County of Kern. October 2011. *Catalina Renewable Energy Project Final Environmental Impact Report*. Prepared by: County of Kern Planning Department, Bakersfield, CA, with technical assistance by: RBF Consulting, Sacramento, CA.

² U.S. Fish and Wildlife Service. January 2011. *Draft Eagle Conservation Plan Guidance*. Available at: http://www.fws.gov/windenergy/docs/ECP_draft_guidance_2_10_final_clean_omb.pdf

CM-2: Retain Nest Trees

enXco will retain any trees with active or suspected raptor nests. Any trees (without nests) that cannot be avoided must be replaced with similar native trees of comparable size, unless otherwise requested in writing by the landowner and approved by the County of Kern (County).

CM-3: Provide Training

enXco will train construction and operations personnel, including discussion of the federal and state Endangered Species Acts (ESAs), BGEPA, and the Migratory Bird Treaty Act; the consequences of non-compliance with these acts; review of mitigation requirements; familiarity with the BBBS requirements; and identification and values of plant and wildlife species and significant natural plant community habitats. Personnel will be briefed on known avian and bat issues related to the project property, including known sensitive areas that should be avoided within the project property and the procedures for handling and reporting dead or injured avian and bat species (see Appendix B, *Wildlife Response and Reporting System for Wildlife Incidents*). Personnel and visitors will be instructed to drive at low speeds (< 15 miles per hour [mph]) and nighttime traffic will be kept to a minimum to avoid nocturnal wildlife mortality.

This conservation measure is in accordance with the following mitigation measures in the project's EIR: MM 4.4-1c, MM 4.4-12, and MM 4.4-17 (b) and (c).

CM-4: Conduct Preconstruction Survey

A qualified biologist will conduct preconstruction surveys for all potential nesting birds and potential bat nursery habitat within 500 feet of construction areas within 30 days prior to construction. Species-appropriate buffers will be created around active bird nests and bat nurseries during the breeding season or until young have fledged. In particular, there will be a 0.25 mile no-activity buffer around any golden eagle nests.

For the state-listed threatened Swainson's hawk, biologists will conduct a pre-construction nesting survey within one-half mile of the project in areas with potentially suitable nesting habitat. The removal of nest trees for Swainson's hawk will be avoided. If one must be removed, a Management Authorization must be obtained from the California Department of Fish and Game (CDFG).

A biological monitor will be on hand to monitor, recover, and relocate ground-dwelling special-status species during construction as well as to monitor for trapped wildlife. If an injured or dead special-status species is encountered, construction work in the vicinity will be halted until the appropriate agencies have been contacted and consulted to determine the appropriate course of action. Any capture and relocation activities shall require the appropriate scientific collecting permits issued by the CDFG, if applicable. The recovery and relocation of ground-dwelling special-status species shall not include any species listed under the federal or California ESAs unless the project proponent obtains the appropriate permit authorization as issued by the USFWS and CDFG.

In addition, biologists will conduct burrowing owl surveys in accordance with guidelines set forth in CDFG's *Staff Report on Burrowing Owl Mitigation*,³ which specifies preconstruction surveys and

³ California Department of Fish and Game. 1995. *Staff Report on Burrowing Owl Mitigation*. Sacramento, CA.

standard measures to avoid or relocate owls as well as guidance for compensatory mitigation for loss of habitat.

This conservation measure is in accordance with the following mitigation measures in the project's EIR: MM 4.4.1 (b), (d), and (e); MM 4.4-2 (e); MM 4.4-6 (a), (e), and (f); and MM 4.4-17 (a), (b), and (d).

CM-5: Site Turbines to Avoid Avian and Bat Impacts

enXco will site turbines to avoid features of the landscape known to attract raptors, such as on or immediately adjacent to upwind sides of ridge crests, to the extent feasible. In addition, the distance of the lowest point (i.e., the tip of any blade at the 6:00 position) of the turbine rotor will be no less than 85 feet (26 meters) above ground surface.⁴ The rotor tip of one of the turbine models proposed for the project, the Vestas 90, is approximately 118 feet (36 meters) above ground surface. Studies at other wind energy projects have indicated that the majority of all bird observations occur at heights lower than 30 meters.⁵

This conservation measure is in accordance with the following mitigation measures in the project's EIR: MM 4.4-10W (a) and MM 4.4-11 (c).

CM-6: Avoid Impacts to California Condor

A qualified biologist experienced in California condor identification will be on site to monitor all construction activities. All California condor sightings will be reported directly to USFWS, CDFG, and the County within 24 hours. In addition, enXco will develop a flier containing information on the California condor. The flier will include: species description with photos and/or drawings; protective status and penalties for violation of the federal and California ESAs; avoidance measures being implemented on the project; and contact information for communicating condor sightings. A copy of the flier will be provided to Kern County to demonstrate compliance with this mitigation. Workers will also be trained on the issue of microtrash and daily sweeps of the work area will occur to collect and remove trash. In addition, all spills of ethylene glycol will be cleaned up immediately and a report documenting the actions taken to remediate the spill will be provided to USFWS, CDFG, and the County.

To avoid attracting California condors to the project site, a full-time monitor will be present during periods of livestock grazing to ensure immediate removal of carcasses on the project site. enXco will also work together with the area grazing permittees to develop best management practices (BMPs) for grazing. This measure will also reduce the attraction of golden eagles to the project site.

enXco will provide funding to the California Condor Recovery Program for conservation measures such as radio telemetry or condor feeding programs. Funding will be calculated at six (6) units per one hundred (100) turbines installed as part of the project. Total funding will not exceed \$376,200.

This conservation measure is in accordance with the following mitigation measure in the project's EIR: MM 4.4-7 (a–e).

⁴ County of Kern. July 2011. *Catalina Renewable Energy Project Draft Environmental Impact Report*. Prepared by: County of Kern Planning Department, Bakersfield, CA, with technical assistance by: RBF Consulting, Sacramento, CA.

⁵ Curry & Kerlinger, LLC. 2009. *Avian Monitoring Study and Risk Assessment for the Shiloh III Wind Power Project*, Solano County, California. McLean, VA.

CM-7: Incorporate Avian-safe Practices into Design of Overhead Power Lines and Meteorological Towers

enXco will incorporate avian-safe design characteristics for the 230-kilovolt (kV) overhead power collection line and the 230-kV transmission line. Specifically, for the overhead power collection line, design will comply with avian-safe practices as outlined in *Suggested Practices for Avian Protection on Power Lines*⁶ using insulated jumper wires, covering all exposed terminals at the substation (e.g., pot heads, lighting arresters, transformer bushing) with wildlife boots or other insulating materials, using nonconductive materials on riser poles, spacing energized wires a safe distance apart, installing perch and next discouragers on cross-arms and poles, avoiding use of guy wires, using conductor wire no smaller than 4/0 to ensure visibility, and installing bird diverters in the event that postconstruction monitoring indicates that overhead wires are causing adverse effects on raptors. In addition, the overhead 230-kV transmission line will be installed in accordance with Avian Power Line Interaction Committee.^{7,8}

Any permanent meteorological towers on the property will be un-guyed. Any proposed temporary meteorological towers that utilize guy wires will require review and authorization by the County on a case-by-case basis. If guy wires are deemed necessary, bird deterrents will be used.

This conservation measure is in accordance with the following mitigation measures in the project's EIR: MM 4.4-7 (e (i)), MM 4.4-10W (f), and MM 4.4-13.

CM-8: Incorporate Features to Discourage Increased Prey Base

Site preparation will entail moving rock piles away from wind turbines. Turbine foundations will be designed and constructed to prevent underburrowing by small mammals through the placement of gravel at least 5 feet around the turbine foundation. enXco will minimize cutting into hill slopes during turbine construction to achieve smooth rounded terrain, rather than sudden berms or cuts, which may attract burrowing small mammals. enXco will not participate in rodent control programs on leased lands and will discourage landowners from using poisoning in the vicinity of the project.

At the completion of project construction, enXco will prepare road edges such that agricultural activities can be conducted immediately adjacent to the road surface. This preparation will entail clearing excess gravel and soil from the shoulder, feathering road edges for runoff control, and replacing topsoil to support farming operations to the same grade as the roadway or adjacent drainage channels. In areas where topography precludes this approach, the road edges will be smoothed and compacted. These measures are intended to minimize opportunities for fossorial mammals to become established, and thereby create a prey base that could become an attractant for raptors.

⁶ Avian Power Line Interaction Committee. 2006. *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006*. Available at: <http://www.aplic.org/>

⁷ Avian Power Line Interaction Committee. 2006. *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006 and Mitigating Bird Collisions with Power Lines: The State of the Art in 1994*. Available at: <http://www.aplic.org/>

⁸ Avian Power Line Interaction Committee. 1994. *Mitigating Bird Collisions with Power Lines: The State of the Art in 1994*. Available at: <http://www.aplic.org/>

This conservation measure is in accordance with the following mitigation measure in the project's EIR: MM 4.4-10W (b), (c), and (d).

CM-9: Install Appropriate Lighting

Turbines and meteorological towers will be lit only to the extent required for compliance with Federal Aviation Administration (FAA) requirements. Other project lighting will be focused downward and minimized to limit skyward illumination. This measure will reduce the risk of bats and night-migrating birds being attracted into flight paths that could lead them to collisions with wind turbines.

This conservation measure is in accordance with the following mitigation measure in the project's EIR: MM 4.4-8W and MM 4.4-12.

5.1.2 Operations and Monitoring

CM-10: Conduct Postconstruction Breeding Monitoring

Qualified biologists will conduct postconstruction breeding monitoring on the wind element of the site in the first, second, and third years following the first delivery of power in order to demonstrate whether sensitive resident birds are compatible with operation of wind turbine generators (WTGs), and to show that the level of incidental injury and mortality does not result in a long-term decline in sensitive resident bird species in the region. The monitoring will include a Nesting Analysis provided to the County and the CDFG detailing the results of the study and comparative data analysis.

Field surveys for nesting raptors will be conducted during the breeding season: February 15 to August 15. These surveys will be conducted by qualified biologists by vehicle and on foot to determine the presence or absence of raptor nests, especially mid-sized to large raptor nests within suitable habitat.

If after the end of the second round of monitoring (three years following the initial operation of the project), the operation of the wind turbine generators has been determined to result in a level of incidental injury and mortality to nesting birds that constitutes a significant adverse impact on a breeding population, the project proponent shall undertake supplemental compensatory measures to support regional conservation of migratory birds.

This conservation measure is in accordance with the following mitigation measure in the project's EIR: MM 4.4-14W.

CM-11: Conduct Postconstruction Mortality Monitoring and Bird Use Surveys

Monitoring Requirements

Qualified biologists will conduct annual bird and bat mortality monitoring surveys to validate the risk assessment and document actual fatalities associated with wind turbines and other project-related activities and facilities, such as meteorological towers and overhead power lines.

These studies will be conducted in the first, second, and third years following the first delivery of power in accordance with standard guidelines as set forth in the California Energy Commission's

(CEC's) *Guidelines for Reducing Impacts to Birds and Bats from Wind Energy Development*⁹ and the United States Fish and Wildlife Service's *Draft Land-Based Wind Energy Guidelines*.¹⁰ The biologists will conduct bird use surveys—consistent with protocols observed during the preconstruction use surveys—concurrently with mortality monitoring surveys.

The biologists and enXco will prepare an annual report documenting the results of each year's monitoring efforts. The report will be submitted to USFWS within 90 days after the end of each calendar year, unless additional time has been approved by the County. Monitoring data will also be submitted to the Wildlife Response and Reporting System Database. The mortality analysis will consider the following three factors:

- Number of annual avian and bat mortalities per turbine,
- Disproportionate representation of a particular species, and
- Comparison to existing data on wind farm mortality.

Postconstruction mortality monitoring for golden eagle in particular will commence in the first year of project operation and continue for the life of the project. A summary of these findings will be provided to USFWS, CDFG, and the County.

Monitoring Protocols

Approximately 20 percent of constructed turbines will be selected as a subset for monitoring surveys using data collected during preconstruction bird use surveys to ensure a meaningful representation of project-wide conditions. Before the initiation of standardized searches, the biologist will conduct an initial sweep to clear existing carcasses.

With the onset of standardized searches, the biologist will survey each turbine using a circular search pattern with a radius of 105 meters. The biologist will circle the base of each turbine and walk 13 concentric circles. The first 6 will be walked at concentric 5-meter intervals; the remainder, beginning at 30 meters from the base of the turbine, will be spaced 10 meters apart. Each turbine search is estimated to require about 1.5 hours. However, the number of carcasses found may extend that time. The searchers will use a staggered rotation pattern to ensure that every turbine is searched at different times over the course of the survey periods.

Each find will be documented by recording the precise location and description of the carcass, the start and end times of the survey, the level of vegetation, and the searcher's identity. Banding information will be reported to USFWS.

Fatality estimates will be calculated for the following categories:

- All species collectively (excluding species not protected by the Migratory Bird Treaty Act [MBTA])

⁹ California Energy Commission and California Department of Fish and Game. 2007. *California Guidelines for Reducing Impacts to Birds and Bats from Wind Energy Development*. Commission Final Report. CEC-700-2007-008-CMF. Sacramento, CA: California Energy Commission, Renewables Committee, and Energy Facilities Siting Division; and California Department of Fish and Game, Resources Management and Policy Division.

¹⁰ U.S. Fish and Wildlife Service. 2010. *Draft Land-Based Wind Energy Guidelines: Recommendations on measures to avoid, minimize, and compensate for effects to fish, wildlife, and their habitats*. Available at http://www.fws.gov/windenergy/docs/Wind_Energy_Guidelines_2_15_2011FINAL.pdf

- Individual bird species
- Bats (all species collectively)
- Individual bat species
- Raptors (all species collectively)
- Waterfowl (all species collectively)
- Passerines (all species collectively)
- Nocturnal migrants (all species collectively)

Fatality Estimates

The estimates of avian and bat fatalities will be calculated using the actual number of carcasses found during carcass searches, the detection probability (i.e., searcher efficiency and scavenger removal), and the ratio of searched turbines to the total number of turbines.

The point estimates for the fatality rates will be calculated for each season by the following formula (or an appropriate variation):

$$C = \frac{C_d}{S_c \cdot S_e \cdot P_s}$$

where C = adjusted total number of kills estimated at the wind facility.

C_d is the total number of carcasses detected for the period of study, S_c is the proportion of test carcasses left by scavengers within the search period, S_e is the proportion of carcasses not missed by observers in the search efficiency trials, and P_s is the ratio of turbines sampled to the total operational turbines in the project.

Initially, the variance of the number of kills found will be calculated per tower using standard methods; then the variance due to the adjustment factors S_c and S_e will be calculated, using the variance of the produce formula.¹¹ The variance of the product of S_c and S_e is shown below.

$$Var(\hat{C}) = \left(\frac{1}{P_s}\right)^2 \cdot \hat{C}^2 \cdot \left[\frac{VarC}{C^2} + \frac{Var(S_c \cdot S_e)}{(S_c \cdot S_e)^2}\right]$$

The calculation method may be changed slightly or comparisons made with one or more estimator. Researchers are currently trying to refine these methods. However, simple arithmetical calculations that typically provide results within about 5 percent of those from the sophisticated calculations outlined above can also be used.

Searcher Efficiency and Carcass Removal Study

The data collected through monitoring will be analyzed to estimate the proportion of carcasses that a searcher is likely to find, out of the total number of carcasses present. A detection probability is calculated to estimate the total numbers of birds and bats killed by the wind turbines when corrected for detection bias.

¹¹ Goodman, L. 1960. "On the Exact Variance of Products." *Journal of the American Statistical Association*, 55: 708–713.

Four independent searcher efficiency trials and carcass removal trials will be conducted annually for birds, and two will be conducted for bats. For birds, trials would be in spring (April–May), summer (July–August), fall (September–October), and winter (December–January).

Bird and bat carcasses will be placed randomly beneath wind turbines scheduled for search before dawn on the day of the turbine search or late the evening before. At each test site, zero to three bats or birds will be randomly assigned and placed in attitudes simulating those of actual finds. This trial will determine searcher efficiency rates for individual searchers as well as variability between bats and birds. Two size classes of birds will be used: small (warblers and thrushes) and large (hawks and waterfowl). Avian and bat carcasses will include road- and window-killed birds, game farm birds, and bats killed by turbines in the project area, as well as carcasses obtained from depredation and control programs operated or permitted by the appropriate state or federal agencies.

The direction and distance of carcass placement from turbines will be randomly selected for each carcass prior to the carcass removal study. The number and locations of carcasses (direction and distance from the nearest turbine) will be plotted on a project map. Carcasses will be placed by the tester at each location and left in the position in which they fall (after being thrown in the air to simulate carcass condition following collision with a wind turbine). Test birds and bats will be discreetly marked with dental floss so that they can be identified as test birds on recovery. Reasonable efforts will be made to conduct blind tests so that searchers do not know they are being tested. The position of each test bird detected will be recorded in the same manner as carcasses detected in standardized searches. Test birds will not be removed from the study site but will be left in place for carcass removal studies and to determine if they are found in one or more subsequent rounds of the standardized searches.

Detection probability (Se) is defined as the proportion of carcasses not missed by observers in the searcher efficiency trials. This probability is estimated by size of bird carcasses (see below). One detection probability would be determined for all bats.

The objective of a carcass removal study is to determine the proportion of carcasses remaining after a search interval before being removed from the study area by scavengers. This proportion will be used to adjust for removal bias when estimating the total number of carcasses present.

Some additional carcasses detected during standardized searches may be left in place if they are fresh to increase the sample size for carcass removal studies. The goal is to have a sufficient sample size to enhance accuracy.

Carcasses will be checked daily from the first 7 days after placement, and then will be checked weekly for 3 to 4 weeks or until the carcass is removed or decomposed. At each check of the carcass, presence/absence as well as body condition (e.g., lightly scavenged, heavily scavenged) will be recorded.

Large and small birds will be examined independently when calculating Sc . All bat carcasses will be pooled during each of the carcass removal study periods.

An approximate fatality rate per turbine and for the set of turbines will be estimated on the basis of carcass recoveries, scavenger proportions, and searcher efficiency. Actual and projected numbers will be computed for each species to determine the potential for population-level impacts.

This conservation measure is in accordance with the following mitigation measure in the project's EIR: MM 4.4-15W.

5.2 ADAPTIVE MANAGEMENT FRAMEWORK

The eleven conservation measures outlined above will serve to avoid and minimize, to the greatest extent possible, effects to birds and bats, especially golden eagle, during construction and operation of the project. Specifically for golden eagles, conservation measures such as the siting of turbines to avoid golden eagle impacts, the discouragement of an increased prey base, the implementation of avian safe practices into design of overhead power lines, the removal of carcasses from the project site, a 0.25 mile activity buffer around golden eagle nests, and golden eagle post-construction monitoring for the life of the project will serve to reduce the attraction of golden eagles to the site and reduce negative impacts to the species during the infrequent periods when it is present. It is expected that through implementation of these conservation measures, the risk of take to golden eagles will be minimized to the point that any take is unavoidable.

Because of the rapid development of the wind energy industry and the large amount of data still being collected, the body of knowledge is continually growing. Accordingly, pursuing an adaptive management strategy to adjust to results of monitoring new technology and new behavioral information is crucial to ensuring that impacts are minimized to the greatest extent feasible. The first step in the adaptive management process is the validation of the risk assessment that was developed prior to project implementation.

If the actual levels of mortality exceed the estimates developed in the risk assessment, especially for golden eagles, adaptive management measures should be implemented. However because the precise distribution and implications of such exceedances are impossible to predict, it is not reasonable to tie specific, adaptive management measures to specific biological triggers. Rather, this BBCS presents a suite of possible actions from which an appropriate response, in consultation with the wildlife agencies, can be selected to best address the specific conditions on the ground.

5.2.1 Validation of Risk Assessment

Validation of the risk assessment entails measuring the results of the postconstruction avian and bat mortality monitoring surveys against the estimated mortality rates developed in the pre-project risk assessment. The adjusted mortality rates for the Catalina project initially estimated a minimum of 1.8 golden eagle mortalities per year (on a per turbine basis). However, these are only estimations, and are based on post-construction mortality results of other wind energy projects whose project design and raptor use are not always directly comparable with those of the project's. Therefore, due to low golden eagle use on the site and the implementation of advanced conservation practices outlined above, it is predicted that no golden eagle take will occur on the project. If mortality exceeds estimates, additional mitigation may be warranted.

After three years of post-construction avian and bat mortality monitoring, enXco will consult with USFWS, CDFG, and the County to determine if the project is resulting in unanticipated significant impacts on avian or bat species or on any migratory corridor. If this determination is made, enXco will provide supplemental mitigation in consultation with the above agencies.

5.2.2 Biological Triggers

Specific biological triggers that could indicate the need for adaptive management actions are listed below:

- Take of one or more golden eagles per year.
- Exceedance of mortality estimates by 100 percent as averaged over the 3 years of study results;
- Cause an avian or bat species to drop below self-sustaining levels;
- Threat to eliminate a bat or avian community;
- Substantially reduce the number or restrict the range of an endangered, rare or threatened species;
- Substantially impair movement through any migratory corridor;
- Have a substantial adverse effect on any candidate, sensitive or special status avian or bat species;
- Scientific research demonstrating that population effects are a result of the local project.

5.2.3 Potential Adaptive Management Actions

5.2.3.1 Off-Site Mitigation for Golden Eagles

Specifically, if golden eagle take occurs on the project, compensatory mitigation will be implemented in one or both of the following ways, pending discussion with wildlife agencies. Compensatory mitigation will be designed so that the net effect on the eagle population after implementation is, at a minimum, no change.

- Contribute funds into the National Fish and Wildlife Foundation's Bald and Golden Eagle Protection Act account (NFWF BGEPA) to enable utilities to install safety features (e.g., anti-electrocution retrofits, bird diverters on power lines) in off-site areas where bird mortality is a concern. This is of particular value in offsetting golden eagle fatalities to ensure that regional populations remain stable or increase. Fund levels will be based on the resource equivalency analysis (REA) described in Appendix F of the Draft Eagle Conservation Plan Guidance.¹²
- Contribute funds to enhance and preserve existing foraging and nesting habitat in an amount not to exceed the value of acreage representing the project's rotor-swept area based on installed turbines.

5.2.3.2 Additional Adaptive Management Actions

A variety of potential management actions and other mitigation options may be appropriate if additional mitigation is deemed necessary to address general avian and bat mortality. Examples of these are discussed below; several are experimental in nature:

¹² U.S. Fish and Wildlife Service. January 2011. *Draft Eagle Conservation Plan Guidance*. Available at: http://www.fws.gov/windenergy/docs/ECP_draft_guidance_2_10_final_clean_omb.pdf

- Implement visual modifications to the wind turbines. Measures to reduce *motion smear*—the blurring of turbine blades because of their rotation that renders them less visible and hence more perilous to birds in flight—are currently being tested. Suggested techniques include painting blades with staggered stripes or painting one blade black. More research is needed to assess the efficacy of such techniques.
- Modify use of WTGs that contribute to significant avian and/or bat mortality. This could include changing WTG cut-in speed or decommissioning individual WTG(s) that are accounting for a disproportionately high level of mortality.
- Install anti-perching devices on poles within 1 mile of project facilities (with landowner permission) to discourage bird use of the area.
- Install additional nesting structures or platforms in off-site areas.
- Contribute funds to support research and evaluation of new technologies that could help to reduce turbine-related mortality as well as research to increase the understanding of bird-turbine interactions; similarly, enXco could deploy experimental technologies (if appropriate innovations become available) at its facilities to test their efficacy in reducing mortality.
- Perform additional migration count surveys using similar methodology as those conducted in 2010 and 2011 to allow for comparison.

The adaptive management framework detailed above is in accordance with the following mitigation measure in the project's EIR: MM 4.4-16W.

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APPENDIX A
CATALINA RENEWABLE ENERGY PROJECT
EIR MITIGATION MEASURES

CATALINA RENEWABLE ENERGY PROJECT EIR MITIGATION MEASURES

Mitigation Measure Number	Mitigation Measure
4.4-1	Prior to the issuance of grading permits for the wind and/or solar components of the project, the project proponent(s) shall submit written documentation to the Kern County Planning and Community Development Department of the following: a. That the grading plans have minimized, to the greatest extent feasible, the area required for project construction and operation. Except for permanent exclusionary fencing for desert tortoise, all fences installed on the project site will be a maximum of eight (8) feet in height, wire strand, with a smooth bottom wire at least eighteen (18) inches from the ground to facilitate wildlife movement during operation of the project. b. Evidence that a biological firm has been retained to monitor construction activities and to recover and relocate ground-dwelling special-status species as encountered during construction. Any capture and relocation activities shall require the appropriate scientific collecting permits issued by the California Department of Fish and Game (CDFG), if applicable. The recovery and relocation of ground-dwelling special-status species shall not include any species listed under the federal Endangered Species Act (FESA) or California Endangered Species Act (CESA); unless, the project proponent obtains the appropriate permit authorization as issued by the United States Fish and Wildlife Service and CDFG. c. Documentation demonstrating that environmental training will be provided to all personnel working on the site during construction and operation. Training materials and briefings shall include but not be limited to: discussion of the Federal and State Endangered Species Acts, Bald and Golden Eagle Protection Act, and the Migratory Bird Treaty Act; the consequences of non-compliance with these acts; identification and values of plant and wildlife species and significant natural plant community habitats; fire protection measures; measures to minimize the spread of weeds during construction; hazardous substance spill prevention and containment measures; a contact person at the on-call biological services provider in the event of the discovery of dead or injured wildlife; and, review of mitigation requirements. A copy of the worker education training materials shall be provided to the United States Fish and Wildlife Service. d. Evidence that a qualified biologist has conducted a pre-construction sweep of the project site for special-status wildlife species. For the desert tortoise, these pre-construction sweeps shall be in addition to any applicable protocol-level surveys that are required by the United States Fish and Wildlife Service. In habitats capable of supporting coast (San Diego) horned lizard and coast (California) horned lizard focused surveys for these species shall occur within 200 feet of work areas no more than 14 days prior to the start of ground disturbance. If either the coast (San Diego) horned lizard or the coast (California) horned lizard are detected during focused surveys, no work shall occur within 200 feet and California Department of Fish and Game shall be contacted and the appropriate approvals and/or permits shall be obtained before construction can proceed.

Mitigation Measure Number	Mitigation Measure
	The project proponent(s) shall submit written documentation to the Kern County Planning and Community Development Department demonstrating compliance with this mitigation. During these surveys the biologist shall: 1. Inspect the project area for any sensitive wildlife species; 2. Ensure that potential habitats within the construction zone are not occupied by sensitive species (e.g., potential burrows/nests are inspected); and 3. In the event of the discovery of a non-listed, special-status ground-dwelling animal, recover and relocate the animal to adjacent suitable habitat within the project site at least 200 feet from the limits of construction activities. e. Evidence that the project proponent(s) have conducted pre-construction surveys for nesting birds if construction, ground disturbance, and/or vegetation trimming/removal activities are scheduled to occur during the breeding season (February 1 to August 31). A qualified biologist shall conduct the breeding bird surveys within thirty (30) days prior to the start of construction, ground disturbance, or vegetation trimming/removal activities to identify the presence of breeding birds protected by the Migratory Bird Treaty Act, the Bald and Golden Eagle Protection Act, and the California and federal Endangered Species Acts. In riparian habitats, pre-construction nesting surveys for southwestern willow flycatcher, gray vireo, and western yellowbilled cuckoo following the most current United States Fish and Wildlife Service protocols for each species will be conducted. If a nesting listed riparian bird is detected, a 500-foot disturbance-free buffer will be established and Kern County, California Department of Fish and Game, and/or the United States Fish and Wildlife Service (as appropriate) shall be notified. Buffer sizes may be modified in consultation with the California Department of Fish and Game and/or the United States Fish and Wildlife Service. The project proponent(s) shall submit written documentation to the Kern County Planning and Community Development Department, California Department of Fish and Game and/or United States Fish and Wildlife Service that the construction avian nest survey was conducted on the project site per the requirements of this mitigation. The pre-construction sweep for breeding birds shall be conducted no more than thirty (30) days prior to the start of construction at each work area. If nesting birds are encountered during preconstruction nesting surveys and/or sweeps, a 300-foot disturbance-free buffer shall be established around each nest, and no activities will be allowed within the buffer(s) until the young have fledged from the nest or the nest fails. If nesting golden eagles are identified, a 0.25-mile no-activity buffer will be implemented when nests have a direct line of sight to the work area. If the work area is not within direct view of the nest, the no-disturbance buffer shall be 660 feet. Nest buffers for eagles and other nesting birds may be adjusted to reflect existing conditions including ambient noise, topography, and species' disturbance tolerance with the approval of the appropriate resource agencies (California Department of Fish and Game and/or United States Fish and Wildlife Service). If for any reason a bird nest must be removed during the nesting season, the project proponent(s) shall provide written documentation providing concurrence from the United States Fish and Wildlife Service and the California Department of Fish and Game authorizing the nest relocation. The project proponent(s) shall provide a written report to the Kern County Planning Department, the United States Fish and Wildlife Service, and the California Department of Fish and Game

Mitigation Measure Number	Mitigation Measure
4.4	documenting the relocation efforts. The report shall include what actions were taken to avoid moving the nest, the location of the nest, what species is being relocated, the number and condition of the eggs taken from the nest, the location of where the eggs are incubated, the survival rate, the location of the nests where the chicks are relocated, and outcome (whether or not the chicks survived and fledged). Prior to the issuance of grading or building permits for the wind and/or solar components of the project, the project proponent shall develop and submit a <i>Habitat Restoration and Revegetation Plan</i> to the Kern County Planning and Community Development Department for review and approval. The Habitat Restoration and Revegetation Plan shall include, but shall not be limited to, the following: - Restore all areas disturbed by project construction, including temporary disturbance areas around structure construction sites, laydown/staging areas, and temporary access roads. - All grading activities shall include topsoil salvage. Topsoil shall be removed, stockpiled on-site, and returned to the original site or used in habitat restoration activities elsewhere on the site. - Hydroseeding, drill seeding, broadcast seeding or an otherwise proven restoration technique shall be utilized on all disturbed surfaces using a locally endemic native seed mix approved by Kern County. - The plan shall include the Best Management Practices identified in the California Department of Fish and Game Streambed Alteration Agreement. - For any permanent loss of desert wash and riparian habitat, the project proponent shall mitigate at a minimum of 3:1 or as identified in the California Department of Fish and Game Streambed Alteration Agreement. All other native habitats shall be mitigated at a 1:1 ratio for permanent impacts. Permanent impacts to ruderal or disturbed habitats shall be mitigated at a 1:1 ratio if those habitats support special-status species, such as the burrowing owl and desert tortoise. Permanent impacts shall be mitigated through one or more of the following: - Through a conservation easement, or through acquisition and conservation of off-site lands which support comparable habitats and species. Restoration and/or enhancement/re-vegetation shall be conducted on mitigation lands as necessary to achieve a functional value comparable to habitats impacted by the project. - Onsite restoration, enhancement, and management (i.e., weed control, etc.) of disturbed areas not impacted by project construction. - Mitigation banking, in consultation with Kern County. - The Habitat Restoration and Revegetation Plan developed shall establish performance criteria, tentative time frames for restoration of the site in addition to provisions for a monitoring program to assess the success of restoration efforts. The Habitat Restoration and Revegetation Plan shall be developed and implemented to preserve native shrub communities to the maximum extent feasible. - As part of the Habitat Restoration and Revegetation Plan, the project proponent(s) shall prepare and implement a Joshua Tree Preservation Plan to compensate for permanent impacts to Joshua tree woodlands. The Joshua Tree Preservation Plan

Mitigation Measure Number	Mitigation Measure
	shall be submitted for review and approval by the Kern County Planning and Community Development Department. Upon approval of the Plan, and prior to initiating project construction, the project proponent(s) shall have a qualified biologist document the location and acreage of Joshua tree woodland that would be subject to permanent disturbance. The Joshua Tree Preservation Plan shall describe field methods used to delineate acreage of Joshua tree woodland and shall provide a detailed compensatory mitigation strategy, based on one or both of the following options: - On-site or off-site preservation of Joshua tree woodland habitat shall occur on parcels within Kern County that contain at minimum the number of individual Joshua trees impacted by the project. The project proponent(s) may mitigate all or part of the project's impacts to Joshua trees, as follows: Delineate and designate one or more parcels for dedication for permanent conservation management; establish a conservation easement on those parcels, the easement to be held and managed by a suitable management entity as determined by the Director of the Kern County Planning and Community Development Department; prepare and implement a Habitat Management Plan to maintain habitat conditions on the site in perpetuity; and provide a non-wasting endowment sufficient to implement the habitat management plan in perpetuity. The mitigation lands shall provide habitat at a 1:1 ratio for impacted lands, comparable to habitat to be impacted by the project (i.e., similar abundance and size of Joshua trees, similar dominant vegetation community, similar levels of disturbance or habitat degradation). Suitable mitigation lands provided for other species may be used for Joshua tree woodland mitigation, at a 1:1 ratio. The Habitat Management Plan shall specify maintenance and monitoring requirements for each parcel, which shall include but shall not be limited to fencing and access control; signage; security and enforcement; weed control; control measures for feral animals or pets; native habitat enhancement; fire prevention and management; and other long-term habitat considerations as appropriate. - In lieu monetary funding. The project proponent(s) may mitigate all or part of the project's impacts to Joshua tree woodlands by funding the acquisition and management in perpetuity of Joshua tree woodland habitat or habitats similar to those that contain impacted Joshua trees on site. Funding and management shall be provided through a Kern County approved conservation Plan, either through an existing mitigation bank (e.g., as managed by the City of Lancaster Parks, Recreation and Arts Department) or through a third-party entity such as the Wildlife Conservation Board or a regional Land Trust. The in-lieu fee shall provide sufficient funds to acquire appropriate lands to provide habitats containing Joshua trees at a 1:1 ratio for impacted lands, comparable to habitat to be impacted by the project (i.e., similar abundance and size of Joshua trees, similar dominant vegetation community, similar levels of disturbance or habitat degradation). Suitable mitigation lands provided for other species may be used for Joshua tree woodland mitigation, at a 1:1 ratio. Additionally, the Joshua Tree Preservation Plan shall contain provisions for the following: - The plan shall identify specific efforts that will be made to minimize vegetation removal and permanent loss at construction sites. If necessary, native vegetation should be flagged for protection. When non-native vegetation is removed or disturbed, then native vegetation shall be the replacement.

Mitigation Measure Number	Mitigation Measure
4.4-3	b. The plan shall identify specific methods for avoiding Joshua tree woodlands and cactus. To provide the basis for mitigation, a Joshua tree woodland and cactus survey shall be conducted within areas proposed for disturbance. All Joshua tree woodlands and cactus within disturbance areas shall be mapped, and their condition recorded. Suitable candidates for translocation shall be identified and this strategy shall be employed over removal. c. The plan shall disclose the amount of acres of Joshua tree woodland to be removed. This quantification shall be used for compensation purposes. d. The plan shall specify that a qualified biologist shall monitor construction and all Joshua trees and cactus removed or damaged shall be recorded and replaced at appropriate mitigation ratios. The creation or restoration of all habitats, as mitigation for both temporary and permanent impacts, shall be monitored until established success criteria are met, to assess progress and identify potential problems with the restoration site. Remedial activities (e.g., additional planting, weeding, or erosion control) shall be taken during the monitoring period if necessary to ensure the success of the restoration effort. If the mitigation fails to meet the established performance criteria within the established maintenance and monitoring period, monitoring shall extend beyond the initial period until the criteria are met or unless otherwise approved by Kern County and the California Department of Fish and Game. Prior to the issuance of grading or building permits for the wind and/or solar components of the project, the project proponent shall prepare a comprehensive, adaptive <i>Weed Control Plan</i>, for review and approval by the Kern County Planning and Community Development Department. The purpose of the plan will be to minimize the establishment and spread of nonnative and invasive weed species within the project area during construction activities. The Weed Control Plan shall be implemented upon commencement of construction activities. The Weed Control Plan shall include measures such as, but not limited to, the following: <i>Prevention Measures</i> a) All landscaping and restoration seeds and plant materials shall be weed-free; b) All straw materials such as those used for erosion control shall be weed-free; c) Revegetate areas of temporary disturbance with local native plant species as soon as construction is complete to reduce erosion and inhibit the establishment of invasive weeds. d) Vehicles and equipment shall be cleaned (with water or high pressure air) prior to commencing work in off-road areas. Vehicles and equipment shall be cleaned at existing construction yards or legally operating car washes, or at onsite washing station(s) at project access points. Once equipment and vehicles have been staged on the job site no further washing would be required unless the vehicles or equipment are exposed to populations of non-native and invasive weeds present on the site; and, e) The project proponent shall document that all vehicles have been washed prior to commencing project work. A written daily log shall be kept for all vehicle/equipment washing that states the date, time, location, type of equipment washed, methods used, and staff present. The log shall include the signature of a responsible staff member. Logs shall be available

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	to Kern County for inspection at any time and shall be submitted to Kern County upon request.
	<i>Weed Control Methods</i> a) Develop species-specific control procedures for high priority invasive weeds (as determined through consultation with the BLM weed specialist, the Kern County Agricultural Commissioner, and the Kern County Weed Management Area) b) Potential methods include physical or mechanical removal, chemical control, and environmental control c) The application of herbicides shall be in compliance with all State and Federal laws and regulations and implemented by a Licensed Qualified Applicator. Herbicides shall not be applied during or within 72 hours of a scheduled rain event. In riparian areas only water-safe herbicides shall be used. Herbicides shall not be applied when wind velocities exceed six mph. d) Establish a long-term schedule for regular weed control throughout the project site. e) Implement a regular weed control program using approved procedures, properly maintained equipment, and safety gear.
	<i>Monitoring and Follow-Up</i> a) Conduct annual monitoring to assess weed presence and the success of control measures. b) Implement remedial (follow-up) control measures if previous procedures have not achieved eradication or control objectives.
	<i>Reporting</i> a) Prepare a final report for submittal to the Kern County Planning and Community Development Department at the end of the project construction phase. The report shall document the implementation of the Weed Control Plan, including outcome of the weed control measures and recommendations for changes to improve rates of success.
4.4.4	Prior to the issuance of grading or building permits for the wind and/or solar components of the project, a Raven Management Plan shall be developed for the project site in consultation with the United States Fish and Wildlife Service and California Department of Fish and Game to minimize the potential for the project to indirectly impact desert tortoise by subsidizing raven populations. Implementation of the Raven Management Plan only applies to areas that are desert tortoise habitat. The Raven Management Plan will require measures such as annual nest removal by a qualified biologist. In consultation with the California Department of Fish and Game and the United States Fish and Wildlife Service, removal of carrion at the base of turbines, storage of garbage in raven-proof containers, and installation of anti-nesting devices on structures where raven nests could be built. In addition, to offset the cumulative contributions of the project to desert tortoise from increased raven numbers, the project proponent(s) shall also contribute to the United States Fish and Wildlife Service Regional Common Raven Management Program through the payment of fees not to exceed \$150 per disturbed acre. This number shall be verified utilizing the formula established by the Desert Managers Group.

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4.4-5	Prior to the issuance of grading or building permits for the wind and/or solar components of the project, the project proponent(s) shall provide documentation to the California Department of Fish and Game, United States Fish and Wildlife Service, and the Kern County Planning and Community Development Department that the project is in compliance with the Bald and Golden Eagle Protection Act (Title 16, United States Code, sections 668-668c). Mitigation may be satisfied through compliance with MM 4.4-9 (Avian Bat Protection Plan).
4.4-6	Prior to the issuance of grading or building permits for the wind and/or solar components of the project, the project proponent shall conduct the following pre-construction surveys: - Swainson's hawks: To assure that nesting Swainson's hawks are not disturbed by construction activities, the project proponent shall submit written documentation to the Kern County Planning and Community Development Department, and the California Department of Fish and Game, and the United States Fish and Wildlife Service showing that a qualified ornithologist has conducted a pre-construction nesting survey within one-half mile of the project in areas with potentially suitable nesting habitat for Swainson's hawks no more than thirty (30) days prior to commencement of construction. If a nest site is found, consultation with California Department of Fish and Game shall be required to ensure project construction will not result in nest disturbance. No new disturbances or other project-related activities that may cause nest abandonment or forced fledging shall be initiated within one-half mile of an active nest between March 1 and September 15, or until August 15 if a Management Authorization is obtained for the project from the California Department of Fish and Game. These buffer zones may be adjusted as appropriate in consultation with a qualified ornithologist and California Department of Fish and Game. If impacts to nesting Swainson's hawks cannot be avoided, the California Department of Fish and Game shall be consulted for authorization, through the context of an incidental take permit. If accidental take should occur, the California Department of Fish and Game and the United States Fish and Wildlife Service shall be notified. - Mohave Ground Squirrel: The project proponent(s) shall submit written documentation to the Kern County Planning and Community Development Department and the United States Fish and Wildlife Service showing implementation of pre-construction surveys for the Mohave ground squirrel within all suitable habitat prior to initial ground disturbing activities. The name and phone number of the biological monitor shall be provided to a California Department of Fish and Game regional representative at least 14 days before the initiation of ground-disturbing activities. If the biological monitor observes a Mohave ground squirrel on the construction site, work shall be halted and redirected to areas not supporting this species. A written report shall be sent to California Department of Fish and Game within five calendar days of the sighting. The report will include the date, time of the finding or incident (if known), and location of the animal. If a dead Mohave ground squirrel is encountered, all work shall stop in the immediate vicinity of the encounter and the California Department of Fish and Game shall be contacted immediately to determine the appropriate course of action, such as the need for an Incidental Take Permit. If accidental take should occur, the California Department of Fish and Game and the United States Fish and Wildlife Service shall be notified.

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	c. American badger: The project proponent(s) shall submit written documentation to the Kern County Planning and Community Development Department showing implementation of pre-construction surveys for American badger within suitable habitat. If present, occupied badger dens shall be flagged and ground-disturbing activities avoided within 50 feet of the occupied den avoided. Maternity dens shall be avoided during pup-rearing season (February 15 through July 1) and a minimum 200-foot buffer established. Maternity dens shall be flagged for avoidance, identified on construction maps, and a biological monitor shall be present during construction. If avoidance of a non-maternity den is not feasible, badgers shall be passively relocated by slowly excavating the burrow (either by hand or mechanized equipment under the direct supervision of the biologist, removing no more than four inches at a time) before or after the rearing season (February 15 through July 1). Any relocation of badgers shall occur only after consultation with the California Department of Fish and Game and the Kern County monitor. A written report documenting the badger removal shall be provided to the California Department of Fish and Game and Kern County within 30 days of relocation. d. Desert kit fox: The project proponent(s) shall submit written documentation to the Kern County Planning and Community Development Department showing implementation of pre-construction surveys, no less than 14 days and no more than 30 days prior to the beginning of ground disturbance and/or construction activities, for desert kit fox when construction is proposed in portions of the project site containing suitable habitat for the species. If present, occupied kit fox dens shall be flagged and ground-disturbing activities avoided within 50 feet of the occupied den avoided. Maternity dens shall be flagged for avoidance, identified on construction maps, and a biological monitor shall be present during construction. If an occupied desert kit fox den is encountered, all work in the immediate vicinity shall stop until the California Department of Fish and Game is consulted for the appropriate course of action. e. Bats: The project proponent(s) shall conduct a survey for roosting bats prior to any ground disturbance activities in all areas within 200 feet of rocky outcrops, large trees, or any other habitat capable of supporting roosting bats. The project proponent(s) shall also conduct surveys for roosting bats during the maternity season (1 March to 31 July) within 300 feet of project activities near rocky outcrops or other habitat capable of supporting bat nursery colonies. These areas shall be surveyed by a qualified bat biologist. Surveys shall include a minimum of one day and one evening visit. If active maternity roosts or hibernacula are found, the rock outcrop or tree occupied by the roost shall be avoided (i.e., not removed) by the project, if feasible. If avoidance of the roost is not feasible, the bat biologist shall survey (through the use of radio telemetry or other California Department of Fish and Game -approved methods) for nearby alternative maternity colony sites. If the bat biologist determines, in consultation with and with the approval of the California Department of Fish and Game and the United States Fish and Wildlife Service, that there are alternative roost sites used by the maternity colony and young are not present, then no further action is required. However, if there are no alternative roost sites used by the maternity colony, provision of substitute roosting bat habitat is required. If active maternity roosts are absent, but a hibernaculum (i.e., a non-maternity roost) is present, then exclusion of bats prior to demolition of roosts is required. If accidental take should occur,

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	the California Department of Fish and Game and the United States Fish and Wildlife Service shall be notified. i. Provision of substitute roosting bat habitat. If a maternity roost will be impacted by the project, and no alternative maternity roosts are in use within one mile of the site, substitute roosting habitat for the maternity colony shall be provided on, or in close proximity to, the project site no less than three months prior to the eviction of the colony. Alternative roost sites will be constructed in accordance with the specific bats' requirements in coordination with California Department of Fish and Game and Kern County. Alternative roost sites must be of comparable size and proximal in location to the impacted colony. The California Department of Fish and Game shall also be notified of any hibernacula or active nurseries within the construction zone. ii. Exclude bats prior to demolition of roosts. If non-breeding bat hibernacula are found in rocky outcrops scheduled to be removed or in crevices in rock outcrops within the grading footprint, the individuals shall be safely evicted, according to timing and under the direction of the qualified bat biologist, by opening the roosting area to allow airflow through the cavity or other means determined appropriate by the bat biologist (e.g., installation of one-way doors). In situations requiring one-way doors, a minimum of one week shall pass after doors are installed and temperatures should be sufficiently warm for bats to exit the roost. This action should allow all bats to leave during the course of one week. Roosts that need to be removed in situations where the use of one-way doors is not necessary in the judgment of the qualified bat biologist shall first be disturbed by various means at the direction of the bat biologist at dusk to allow bats to escape during the darker hours, and the roost tree shall be removed or the grading shall occur the next day (i.e., there shall be no less or more than one night between initial disturbance and the grading or tree removal). If an active maternity roost is located in an area to be impacted by the project, and alternative roosting habitat is available, the demolition of the roost site must commence before maternity colonies form (i.e., prior to 1 March) or after young are flying (i.e., after 31 July) using the exclusion techniques described above. f. Burrowing Owl: A pre-construction survey for burrowing owls, in conformance with the Burrowing Owl Survey Protocol and Mitigation Guidelines (California Burrowing Owl Consortium, 1993), shall be completed no more than 30 days prior to the start of construction within suitable habitat at the project site(s) and buffer zone(s). The project proponent(s) shall submit the results of the pre-construction survey to the Kern County Planning and Community Development Department, and the California Department of Fish and Game, and the United States Fish and Wildlife Service. The project proponent shall also submit evidence of conformance with federal and State regulations regarding the protection of the burrowing owl by demonstrating compliance with the following: i. Unless otherwise authorized by California Department of Fish and Game, no disturbance shall occur within 50 meters of occupied burrows during the non-breeding season (September 1 through January 31) or within 75 meters during the breeding season (February 1 through August 31). ii. Occupied burrows shall not be disturbed during the nesting season (February 1 through August 31) unless a qualified

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	biologist approved by California Department of Fish and Game verifies through non-invasive methods that either the birds have not begun egg-laying and incubation or that juveniles from the occupied burrows are foraging independently and are capable of independent survival. Eviction outside the nesting season may be permitted pending evaluation of eviction plans (developed in accordance with California Department of Fish and Game protocol for burrowing owls) by California Department of Fish and Game and receipt of formal written approval from the California Department of Fish and Game authorizing the eviction. iii. Any damaged or collapsed burrow will be replaced with artificial burrows in adjacent habitat. iv. Unless otherwise authorized by California Department of Fish and Game, a 250-foot buffer, within which no activity will be permissible, will be maintained between project activities and nesting burrowing owls during the nesting season. This protected area will remain in effect until August 31 or at California Department of Fish and Game's discretion and based upon monitoring evidence, until the young owls are foraging independently. v. If accidental take (disturbance, injury, or death of owls) occurs, the lead biological monitor will be notified immediately. vi. Impacts to burrowing owl territories shall be mitigated at a 1:1 ratio through the acquisition of occupied habitat off-site in an area of Kern County where turbines would not pose a mortality risk. Acquisition of habitat shall be consistent with the Burrowing Owl Survey Protocol and Mitigation Guidelines (California Burrowing Owl Consortium, 1993). Off-site habitat must be suitable burrowing owl habitat, as defined in the Burrowing Owl Survey Protocol and Mitigation Guidelines (California Burrowing Owl Consortium, 1993). Additionally, the site shall be approved by the California Department of Fish and Game. Land should be purchased and/or placed in a conservation easement in perpetuity and managed to maintain suitable habitat. Relocated burrowing owls will be color-banded and the artificial burrows will be monitored to determine whether the land acquisition and passive relocation of burrowing owls are successful. The offsite area to be preserved can coincide with off-site desert tortoise mitigation lands for this project. g. Bakersfield cactus: Prior to the issuance of grading or building permits, if Bakersfield cactus is identified within the construction area, the project proponent shall submit written documentation to the Kern County Planning and Community Development Department to demonstrate how the following measures to reduce impacts to the Bakersfield cactus shall be implemented: i. The project proponent(s) shall work with the designated biologist(s) to identify all known Bakersfield cactus and to establish "avoidance areas." All Bakersfield cacti found within the WE-corridor shall be avoided by a buffer of 25 feet through micro-siting activities within the project area. Sturdy, highly visible, orange plastic construction fencing shall be installed around all Bakersfield cactus avoidance areas and shall be located in accordance with direction from the designated biologist(s). The fence shall be securely staked and installed in a durable manner that would be reasonably expected to withstand wind and weather events and last at least through the construction period. Fencing shall be removed upon completion of the project construction. ii. The project proponent(s) shall work with the designated biologist(s) to identify all known Bakersfield cactus and to

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4.4.7	establish "avoidance areas." All Bakersfield cacti found within the WE-corridor shall be avoided by a buffer of 25 feet through micro-siting activities within the project area. Sturdy, highly visible, orange plastic construction fencing shall be installed around all Bakersfield cactus avoidance areas and shall be located in accordance with direction from the designated biologist(s). The fence shall be securely staked and installed in a durable manner that would be reasonably expected to withstand wind and weather events and last at least through the construction period. Fencing shall be removed upon completion of the project construction. Prior to the issuance of grading or building permits for the wind and/or solar components of the project, the project proponent(s) shall submit written documentation to the Kern County Planning and Community Development Department and the United States Fish and Wildlife Service of the following regarding the California condor: a. A qualified biologist with demonstrated knowledge of California condor identification will be on site to monitor all construction activities within the project area and assist the project proponent(s) in the implementation of the monitoring program. b. Workers will be trained on the issue of microtrash—what it is, its potential effects to California condors, and how to avoid the deposition of microtrash. In addition, daily sweeps of the work area will occur to collect and remove trash. All spills of ethylene glycol will be cleaned up immediately and a report documenting the actions taken to remediate the spill will be provided to Kern County, United States Fish and Wildlife Service, and California Department of Fish and Game within five calendar days. c. The project proponent(s) shall develop a flier that will be distributed to all workers on the project concerning information on the California condor. Information to be included consists of the following: species description with photos and/or drawings indicating how to identify the California condor and how to distinguish condors from turkey vultures and golden eagles; protective status and penalties for violation of the Federal and California Endangered Species Acts; avoidance measures being implemented on the project; and, contact information for communicating condor sightings. A copy of the flier shall be submitted to the Kern County Planning and Community Development Department to demonstrate compliance with this mitigation. d. All California condor sightings in the project area during construction will be reported directly to the United States Fish and Wildlife Service, California Department of Fish and Game, and Kern County within five calendar days 24 hours. e. The project proponent(s) shall also provide written documentation to the Kern County Planning Department showing implementation of the following additional measures: i. Bird flight diverters shall be installed on all meteorological tower guy wires on structures constructed as part of the project. ii. During periods of livestock grazing, a full-time monitor shall be present to ensure immediate removal of carcasses on the project site. iii. The applicant shall work together with the area grazing permittees to develop Best Management Practices for grazing. iv. Funding for conservation measures such as radio telemetry, condor feeding programs, or other such measures as deemed appropriate shall be provided to the California Condor Recovery Program. Funding shall be calculated at six

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	(6) units per one hundred (100) turbines installed as part of the project. Prior to the issuance of any building or grading permits for the first (1st) turbine, the project proponent shall fund six telemetry units in the amount of \$188,100 (\$4,150 per unit plus an "endowment" of \$163,200 to be used for tracking data over an eight-year period). Prior to the issuance of any building or grading permits for the one-hundred-and-first (101st) turbine, the project proponent shall fund six additional telemetry units in the amount of \$188,100 (\$4,150 per unit plus an endowment of \$163,200 to be used for tracking data over an eight year period). The total funding to be provided shall not exceed \$376,200.
4.4-8	Prior to the issuance of grading permits for the wind component of the project, and to reduce collisions of avian and bat species with turbines, the project proponent(s) shall submit written documentation to the Kern County Planning and Community Development Department demonstrating coordination with the Federal Aviation Administration to minimize the number of wind turbine generators and meteorological towers that require night lighting and to use lighting that would minimize attraction of birds and bats to the project area. The project proponent(s) shall utilize only red, dual, and white strobe, strobe-like, or flashing lights, not steady burning lights, to meet Federal Aviation Administration (FAA) requirements for visibility lighting of wind turbines, permanent met towers, and communication towers. Only a portion of the turbines within the wind project should be lighted, and all pilot warning lights should fire synchronously.
4.4-9	Prior to the issuance of the first building permit for a wind turbine generator, if applicable, the project proponent shall submit a current copy of their Avian and Bat Protection Plan to the Kern County Planning and Community Development Department.
4.4-10	Prior to issuance of approval for final occupancy of the wind component of the project, the project proponent(s) shall submit written documentation to the Kern County Planning and Community Development Department showing that the following measures to reduce avian and bat impacts from turbine activities have been implemented. This mitigation measure includes the following: - Wherever feasible, turbines shall not be sited on or immediately adjacent to the upwind sides of ridge crests. - Turbine construction shall minimize cutting into hill slopes in an attempt to achieve smooth rounded terrain, rather than sudden berms or cuts, to reduce prey abundance. - Rocks unearthed during the excavation process shall be used during construction of foundations or hauled off site and disposed of properly, and not be left in piles near turbines. - Discourage small mammals and reptiles from burrowing under or near turbine bases by placing gravel at least 5 feet around each tower foundation. - The wind component developer shall not participate in rodent control programs on leased lands and will discourage landowners from using poisoning for rodent control in the vicinity of the project. - Permanent un-guyed meteorological towers shall be constructed for the wind project. All meteorological towers shall be un-guyed, unless evidence is provided that topography, safety, access and/or climate conditions prohibit free standing towers. If guy wires are necessary, bird deterrents shall be used. Any proposed temporary meteorological towers which utilize guy wires will require review and authorization by Kern County on a case-by-case basis. If guy wires are necessary, bird

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	deterrents shall be used. Temporary MET towers shall only be permitted for three years.
4.4-11	Prior to the issuance of building permits for the wind and/or solar components of the project, the project proponent shall implement the following siting constraint measures and provide documentation to Kern County Planning and Community Development Department that these design measures have been met on the final siting plan: a. All ground-disturbing work and any work involving hazardous materials shall be conducted at least 100 feet from wetlands. b. Specifications for wind tower foundations shall provide at least a 2,500-square-foot (50 feet by 50 feet) clear vegetation zone. c. Turbine specifications shall ensure that the lower reach of rotor blades is no lower than 85 feet above the ground surface.
4.4-12	Prior to the issuance of final occupancy approval for the wind and/or solar components of the project, the building inspector shall verify that all exterior lighting at operation and maintenance facilities, substations, and appurtenant structures located within half a mile of the turbines shall be of the lowest illumination required for security and human safety. The project proponent(s) shall install and continuously use and maintain lights with motion or heat sensors and switches to keep lights off when not required. Light fixtures shall be fully shielded and directed downward to minimize illumination above the horizontal plane. The project proponent(s) shall continuously minimize use of high-intensity lighting, steady-burning, or bright lights such as sodium vapor, quartz, halogen, or other bright spotlights. Nighttime vehicle traffic associated with project activities shall be kept to a minimum volume and speed to prevent mortality of nocturnal wildlife species.
4.4-13	Prior to issuance of approval for final occupancy for the wind and/or solar components of the project, the project proponent(s) shall submit written documentation to the Kern County Planning and Community Development Department showing that all power lines are constructed to the most current Avian Power Line Interaction Committee Guidelines. The project proponent(s) shall conform to the latest practices to protect birds from electrocution and collision.
4.4-14	Once the wind component of the project is operational, the project proponent(s) or its representative shall conduct Post-Construction Breeding Monitoring in the first, second, and third years following the initial operation of the project to demonstrate to Kern County Planning and Development Department. The purpose of this monitoring would be to demonstrate whether sensitive resident birds are compatible with operation of wind turbine generators, and to show that the level of incidental injury and mortality does not result in a long-term decline in sensitive resident bird species in the region. Post-construction Breeding Monitoring shall include a Nesting Analysis that shall be conducted as follows: a. The project proponent(s) shall provide to the Kern County Planning and Community Development Department, and the California Department of Fish and Game and the United States Fish and Wildlife Service the results of a study and comparative data analysis, using methods approved by the County. Qualified ornithologists shall conduct the study of nesting raptors.

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	b. Nesting raptor surveys shall be conducted throughout the project site between February 15 and August 15. c. Directed field surveys for nesting raptors shall be conducted during the breeding season by vehicle and on foot to determine the presence or absence of raptor nests, especially mid-sized to large raptor nests within suitable habitat areas. d. If at the end of the second round of monitoring (three years following the initial operation of the project), the operation of wind turbine generators has been determined to result in a level of incidental injury and mortality to nesting birds that constitutes a significant adverse impact on a breeding population, the project proponent(s) shall undertake supplemental compensatory measures to support regional conservation of migratory birds. The results of the Nesting Analysis shall be made available to regional entities involved in research related to the conservation of nesting birds such as the Audubon Society.
4.4-15	Once the wind component of the project is operational, the project proponent(s) or its representatives shall perform Post-Construction Avian and Bat Mortality Monitoring in the first, second, and third years following the initial operation of the project to demonstrate the level of incidental injury and mortality to populations of avian or bat species in the vicinity of the project site. Post-Construction Avian and Bat Mortality Monitoring shall include a Mortality Analysis, which shall be conducted as follows: - The project proponent(s) shall provide to the Kern County Planning and Community Development Department, and the California Department of Fish and Game, the United States Fish and Wildlife Service the results of a the mortality study for avian and bat species on an annual basis. A qualified wildlife biologist shall conduct mortality monitoring using a statistically significant sample size of operational turbines within the wind energy development project. - The Mortality Analysis shall note species number, location, and distance from the turbine for each recovered bird or bat, availability of bird and bat prey species, and apparent cause of avian or bat mortality. The project proponent(s) shall provide all results to the Wildlife Response and Reporting System database within 90 days of completion of the annual study. - The mortality monitoring shall follow standardized guidelines outlined by the California Energy Commission and California Department of Fish and Game (CEC and CDFG, 2007) and the United States Fish and Wildlife Service (USFWS, 2010), and shall include carcass scavenging and searcher efficiency trials. - At a minimum, the Mortality Analysis shall consider three factors: - Number of annual avian and bat mortalities per turbine, - Disproportionate representation of a particular species, and - Comparison to existing data on wind farm mortality. - Comparison to existing data on wind farm mortality from the Tehachapi Wind Resource area and the western United States. - In addition to Mortality Analysis described above, starting in year 1 of project operation and continuing for the life of the project, annual Post-Construction Mortality Monitoring for golden eagle shall be conducted by the project proponent, in conjunction with other monitoring, and submitted to the Kern County Planning and Community Development Department, the United States Fish and Wildlife Service, and the California Department of Fish and Game.

Mitigation Measure Number	Mitigation Measure
4.4-16	After three years of Post-Construction Avian and Bat Mortality Monitoring, the project proponent shall consult with the Kern County Planning and Community Development Department and the California Department of Fish and Game and United States Fish and Wildlife Service, to determine if the project is resulting in unanticipated significant adverse impacts on the population of an avian or bat species or is significantly interfering with any migratory corridor. If this determination is made, the project proponent(s) shall provide supplemental mitigation as determined by the Agencies listed above. In accordance with California Environmental Quality Act Guidelines Section 15065 and Appendix G, a significant impact shall be determined on a species-by-species basis according to the following criteria: a. Cause an avian or bat species to drop below self-sustaining levels; b. Threaten to eliminate a bat or avian community; c. Substantially reduce the number or restrict the range of an endangered, rare or threatened species; d. Substantially impair movement through any migratory corridor; or e. Have a substantial adverse effect on any candidate, sensitive or special status avian or bat species. Supplemental measures to be considered shall include: a. Additional migration count surveys, conducted using a methodology that allows comparison with the baseline surveys conducted in 2010/2011. b. Provision of additional nesting structures or platforms. c. Contribution to research that addresses the sources of mortality and population impacts on the species of concern. d. Funding of regional conservation measures with the intent of enhancing and preserving existing foraging and nesting habitat in an amount not to exceed the value of acreage representing the project's rotor swept area based on installed turbines.
4.4-17	The project proponent shall continuously comply with the following during all project-related construction activities for the wind and/or solar component of the project: a. During construction activities, if an injured or dead special-status species is encountered, the project proponent(s) shall stop work within the immediate vicinity. Prior to the commencement of construction, the project proponent(s) shall notify the Kern County Planning and Community Development Department, the on-call biologist, and the appropriate resources agency (e.g., United States Fish and Wildlife Service or California Department of Fish and Game) and shall consult with the appropriate resource agencies to determine the appropriate course of action, such as the need for an Incidental Take Permit. b. At the end of each work day, the biological monitor shall ensure that all potential wildlife pitfalls (trenches, bores, and other excavations) have been backfilled. If backfilling is not feasible, all trenches, bores, and other excavations shall be sloped at a 3:1 ratio at the ends to provide wildlife escape ramps, or covered completely to prevent wildlife access, or fully enclosed with exclusion fencing. If any wildlife species become entrapped, construction shall not occur until the animal has left the trench or been removed by a qualified biological monitor as feasible. Employees and contractors shall look under vehicles

Mitigation Measure Number	Mitigation Measure
	and equipment for the presence of wildlife before moving vehicles and equipment. If wildlife is observed, no vehicles or equipment would be moved until the animal has left voluntarily or is removed by the biological monitor. No listed species will be handled. If an entrapped special-status species is encountered, the project proponent(s) shall stop work within the immediate vicinity. Prior to the commencement of construction, the project proponent(s) shall notify the Kern County Planning and Community Development Department, the on-call biologist, and the appropriate resources agency (e.g., United States Fish and Wildlife Service or California Department of Fish and Game) and shall consult with the appropriate resource agencies to determine the appropriate course of action. Any entrapped species that is listed under the federal Endangered Species Act (FESA) or California Endangered Species Act (CESA) shall not be disturbed unless the appropriate authorization is obtained from the appropriate resource agency. c. Vehicle speed limits shall not exceed 15 miles per hour (mph) during construction and operation of the project. A speed limit sign shall be posted at all project site entry locations. d. Within 24 hours prior to construction activities at each site within potential habitat for this species, a qualified biologist shall conduct focused clearance surveys for desert tortoise, including Mojave mixed woody scrub, creosote bush scrub, black brush scrub, and juniper woodlands. Clearance surveys are required in any area (including appropriate buffers) that supports suitable desert tortoise habitat and that would be subject to disturbance as a result of implementation and operation of the project, unless otherwise authorized by the United States Fish and Wildlife Service and/or the California Department of Fish and Game. Clearance surveys shall follow the most current wildlife agency's desert tortoise survey protocol. The authorized biologist shall determine whether tortoises are present at the site. If tortoises or intact burrows are found in the impact area or if the authorized biologist determines that a tortoise may enter the construction site, the project proponent(s) shall halt work within 500 feet of the tortoise or burrow and construction activities may not resume within this 500-foot buffer without concurrence from the United States Fish and Wildlife Service and California Department of Fish and Game. Upon discovery of a tortoise or active tortoise burrow, and prior to any project construction in potentially suitable habitat for the desert tortoise, a Desert Tortoise Mitigation and Monitoring Plan shall be developed and implemented that includes the following measures in consultation with the United States Fish and Wildlife Service and California Department of Fish and Game: i. The project proponent(s) shall retain a qualified biologist with demonstrated expertise with desert tortoise to monitor all construction activities and assist in the implementation of the monitoring program. This person will be approved by the United States Fish and Wildlife Service prior to the onset of ground-disturbing activities. This biologist will be referred to as the authorized biologist hereafter. The authorized biologist will be present during all construction activities immediately adjacent to or within habitat that supports desert tortoise. ii. Prior to the onset of construction activities, the project proponent(s) shall provide all personnel who will be present on work areas within or adjacent to the project area the following information:

Mitigation Measure Number	Mitigation Measure
	a. A detailed description of the desert tortoise including color photographs; b. The protection the desert tortoise receives under the federal and State Endangered Species Acts and possible legal action that may be incurred for violation of the Acts; c. The protective measures being implemented to conserve the desert tortoise and other species during construction activities associated with the project; d. A point of contact if desert tortoises are observed. iii. All trash that may attract predators of desert tortoises will be removed from work sites or completely secured at the end of each work day. iv. Where construction can occur in habitat where desert tortoise are widely distributed, work areas will be fenced in a manner that excludes tortoises from the work area and prevents equipment and vehicles from straying from the designated work area into adjacent habitat. The authorized biologist will assist in determining the boundaries of the area to be fenced in consultation with the United States Fish and Wildlife Service/California Department of Fish and Game/Kern County. All workers will be advised that equipment and vehicles must remain within the fenced work areas. Installation of the fencing and any necessary surveys will be directed and/or conducted by the authorized biologist in concurrence with the United States Fish and Wildlife Service/California Department of Fish and Game/Kern County. v. Temporary tortoise-proof fencing shall be replaced by permanent fencing for the operational phase of the project. The temporary tortoise-proof fencing shall not be removed until the permanent exclusionary fencing is erected. The permanent desert tortoise exclusionary fencing shall be implemented in conjunction with the project security fencing. Permanent tortoise-proof fencing shall be located around solar arrays, substations, and Operations and Maintenance facilities. The permanent tortoise-proof fencing shall be erected and maintained between the interface of permanent project structures, exclusive of turbine pads, transmission towers, and roadways, and any remaining desert tortoise habitat prior to initiating operation of the structure. Permanent desert tortoise exclusionary fencing would comply with the United States Fish and Wildlife Service September 2005 Recommended Specifications for Desert Tortoise Exclusionary Fencing. Installation of fencing shall be monitored by a qualified biologist. If desert tortoises are found within an area that has been fenced to exclude the species, activities will cease and the authorized biologist will contact California Department of Fish and Game and United States Fish and Wildlife Service for further direction. If desert tortoises are found in a construction area where fencing was deemed unnecessary, work will cease until the animal(s) leave on their own. The authorized biologist in consultation with United States Fish and Wildlife Service/California Department of Fish and Game/Kern County will then determine whether additional surveys or fencing are needed. Work may resume while this determination is being made, if deemed appropriate by the authorized biologist. vii. The authorized biologist will have the authority to stop all activities until appropriate corrective measures have been completed. If impacts to desert tortoise cannot be avoided, the California Department of Fish and Game and The United States Fish and

Mitigation Measure Number	Mitigation Measure
	Wildlife Service shall be consulted and the necessary approvals and/or permits obtained. e. Nest trees for Swainson's hawks within the project shall not be removed. If a nest tree for a Swainson's hawk must be removed, a Management Authorization (including conditions to offset the loss of the nest tree) must be obtained from the California Department of Fish and Game. If construction or other project-related activities that may cause nest abandonment by a Swainson's hawk or forced fledging occur, the work shall be halted until the birds have fledged.
4.4-18	Prior to the issuance of grading or building permits for the wind and/or solar component of the project, the project proponent(s) shall submit to the Kern County Planning and Community Development Department all required water quality permits before engaging in soil-disturbing construction activities, before entering flowing or ponded water, and before constructing crossing(s) at flowing or ponded water. Such permits may include, but are not limited to, a Streambed Alteration Agreement from the California Department of Fish and Game, a Clean Water Act Section 404 permit from the United States Army Corps of Engineers, a Clean Water Act Section 402 National Pollutant Discharge Elimination System General Permit for Storm Water Discharges Associated with Construction Activities, and/or a Clean Water Act Section 401 certification from the Lahontan Regional Water Quality Control Board, and Hazardous Materials Business Plan approval from the Kern County Environmental Health Services Department. Additionally, after review and approval of all required water quality permits, the project proponent(s) shall maintain and make available on-site at all times an approved copy of all required permits.

FOREWORD

The purpose of this manual is to standardize the actions taken by enXco Development Corporation (enXco) in response to wildlife injuries and fatalities found within the Catalina Renewable Energy Project site.

The U.S. Fish and Wildlife Service (USFWS) requires the reporting of birds protected under the Bald and Golden Eagle Protection Act (BGEPA) and the Migratory Bird Treaty Act (MBTA). Nearly all birds seen are protected under these acts. This manual describes the enXco wildlife response and reporting system for wildlife incidents.

SUBJECT: Personnel Listing
DESCRIPTION: Contact Locations and Phone Numbers

Administration

Plant Manager TBD

Office:
Cell:

Site Supervisor TBD

Office:
Cell:

WRRS Program Manager
_____, Biologist

Office:
Cell:

Wildlife Response

Avian Respondent
_____, Biologist

Office:
Cell:

Bat Respondent
_____, Biologist

Office:
Cell:

Reporting Agencies

U.S. Fish and Wildlife Service
Representative to the Tehachapi Pass Wind
Resource Area (TPWRA) for
Kern County TAC (KCTAC)

Office:

California Department of Fish and Game
Representative to the KCTAC

Office:

FIELD PERSONNEL PROCEDURES

Wildlife Fatality Reporting

Every wildlife fatality (bird or bat) found must be reported to the Site Supervisor / Avian Respondent / Bat Respondent immediately. The following procedures instruct field maintenance crews on how to report wildlife fatalities.

What Constitutes a Reportable Fatality?

An intact carcass, parts, bones, or scattered feather debris are all considered reportable finds. Report all such discoveries even if you are uncertain if the carcass / parts are associated with a wind energy plant structure. (The U.S. Fish and Wildlife Service [USFWS] appreciates and expects that all discoveries are reported; those fatalities not likely caused by wind energy plant structures are classified as "Incidentals.")

1. DO NOT DISTURB THE FIND (USFWS considers disturbing the avian carcass in any way, especially the taking of parts and/or feathers, to be a crime). Bat carcasses should be treated in the same way.
2. Identify the nearest landmark (i.e., turbine number, transmission pole number).
3. Immediately contact the Site Supervisor / Avian Respondent / Bat Respondent. Be prepared to provide the following information:

Report type: *Fatality*

Find description: *Fresh or Decomposed*

Species, if known

Vehicle ID number

Location of find (Catalina Renewable Energy Project) / Nearest landmark

4. No further action is necessary.

Wildlife Injury Reporting

Every wildlife injury (bird or bat) found must be reported to the Site Supervisor / Avian Respondent / Bat Respondent immediately. The following procedures instruct field maintenance crews on how to report wildlife injuries.

First, determine that the bird or bat is injured. Prior to assuming a bird is injured, make an observation. Raptors may walk on the ground, especially if they have a prey item with them. Raptors also "mantle" or hold their wings down to hide prey from other predators. This defensive action may make the wings appear broken.

If the bird or bat is injured, what constitutes an injured find?

Any wildlife with an apparent injury or that exhibits signs of distress (caused by poison, infection, emaciation, etc.).

QUICK REFERENCE

Field Maintenance Crews Reporting Procedures: Dead Birds or Bats, Injured Birds or Bat, and Nests

When a Dead Bird or Bat Is Discovered

A reportable dead bird or bat includes an intact carcass, parts, bones, and/or scattered feathers. Report all such discoveries even if you believe that the carcass / parts are not associated with a wind turbine or electrical pole (USFWS expects enXco to report all discoveries; those fatalities not likely caused by a wind energy structure are classified as "Incidentals"). Do not touch the carcass.

Notify the Site Supervisor / Avian Respondent / Bat Respondent.

Tell Site Supervisor / Avian Respondent / Bat Respondent the location of the bird or bat (nearest landmark / tower number / pole number) and, if known; the species of bird or bat.

When an Injured Bird or Bat Is Discovered

Prior to assuming a bird or bat is injured, please watch the bird or bat. Raptors do walk, especially if they have prey. Raptors also "mantle" or hold their wings down to hide prey from other predators. This action may make the wings appear broken.

If injured, a reportable injured bird or bat includes any species of bird or bat with an apparent injury or that exhibits signs of distress (caused by poison, infection, emaciation, etc.).

If you determine that the bird or bat is injured, do the following:

- Move far enough away from the injured bird or bat that it is not disturbed by your presence.

- Immediately notify the Site Supervisor / Avian Respondent / Bat Respondent.

- Unless otherwise instructed, continue to monitor until the respondent arrives.

You may be asked to assist in the capture of the injured bird or bat. Your participation is greatly appreciated but optional.

When a Nest Is Discovered

Notify the Site Supervisor / Avian Respondent / Bat Respondent.

If you notice a nest from the ground, unless it is an eagle nest, climb the tower as soon as possible, to determine if it has eggs or chicks, then proceed accordingly.

If the nest has eggs or chicks in it, leave the tower immediately.

If the nest has no eggs or chicks in it, and you are certain that it could not belong to an eagle, remove the nesting material from the turbine and place it at the base of the tower (the respondent will come out to the site to identify the nest species).

IF YOU SUSPECT THAT THE NEST OR ROOST IS THAT OF A GOLDEN EAGLE, INHABITED OR UNINHABITED, THE NEST OR ROOST MUST NOT BE DISTURBED. THE TURBINE MUST BE DEACTIVATED. USFWS WILL BE CONTACTED.

Avian Primary Respondent (as of 1 January 2011)

on call 24 hrs a day / 7 days a week

000-000-0000 office
000-000-0000 cell
000-000-0000 home

Bat Primary Respondent (as of 1 January 2011)

on call 24 hrs a day / 7 days a week

000-000-0000 office
000-000-0000 cell
000-000-0000 home

Brief Overview of Nesting Procedures

If the nest is uninhabited (an empty nest) the nest material may be removed by the crew at the time it is found.* Removing the nest entails simply throwing it to the bottom of the tower. You must still notify the site supervisor so that the Avian Respondent can come on site, pick up, and remove the nesting material so that the bird will not attempt to continue to build the nest. The turbine will also be checked periodically by the respondent to ensure the nest is not being rebuilt. Crews should also continue to monitor the tower.

An inhabited nest (nest containing eggs or chicks) must be left alone. The tower must be left immediately. No work may be done on the turbine or tower; it may not be climbed, and downtower work is not permitted. Once you have notified the site supervisor, the Avian Respondent will come on-site and verify if the nest is that of a protected species. If it is, the turbine will be deactivated until further notice. The Respondent will periodically check on the nest to determine when the chicks have fledged (left the nest) and then the turbine will be reactivated. If the nest is that of an unprotected species, the turbine will be reactivated, and work on the turbine will be permitted. The nest of an unprotected species will remain in the same location and should not be disturbed in any way. The Respondent is the only one authorized to make these determinations.

***Golden eagle nests and roosts are the exception to this rule. An uninhabited golden eagle nest or roost is protected under federal law, and a permit must first be obtained before it is removed or disturbed. Notify Supervisor / Primary Respondent immediately of a possible golden eagle nest or roost.**

Observing bird activity around a turbine could possibly indicate that a nest is being built or the presence of a nest even if you can't actually see it. **Bird activity:** Bird or birds continually flying near a particular turbine or turbines, bird perching on a tower or flying with sticks or twigs in its beak, etc.

It is in enXco's best interest for the crews to make these observations and to report them so that nesting activity can be caught early before eggs are laid and turbines must be shut down.

VISITING PERSONNEL PROCEDURES

Wildlife Fatality Reporting

Every wildlife fatality (birds and bats) found must be reported to the Site Supervisor / Avian Respondent / Bat Respondent immediately. The following procedures instruct visiting personnel on how to report wildlife fatalities.

What Constitutes a Reportable Fatality?

An intact carcass, parts, bones, or scattered feather debris are all considered reportable finds. If you are uncertain about a find, report it.

1. DO NOT DISTURB THE FIND. Even if you have a collection permit you may not disturb the find in any way.
2. Identify the nearest landmark (i.e., turbine number, pole number, etc.).
3. Immediately contact Site Supervisor / Avian Respondent / Bat Respondent. Be prepared to provide the following information:

Report type: *Fatality*.
Description: *Fresh or Decomposed*.
Species, if known.
Your site vehicle identification number.
Location of find / Nearest landmark.
4. If the fatality is to be included in a study you are conducting, you may record data as needed. However, USFWS law prohibits disturbing the find in any way. Additional information may be obtained from the Project Manager.
5. If you have been provided with ground flags, you should place one near the carcass. You should use as many flags as needed to indicate multiple parts, or birds, found.

Wildlife Injury Reporting

Every wildlife injury found must be reported to the Site Supervisor / Avian Respondent / Bat Respondent immediately. The following procedures instruct any visiting personnel on how to report wildlife injuries.

Prior to assuming a bird or bat is injured, make a careful observation. Raptors do walk, especially if they have a prey item with them. Raptors also "mantle" or hold their wings down to hide prey from other predators. This defensive action makes the wings appear broken.

What Constitutes an Injured Find?

Any wildlife with an apparent injury, or that exhibits signs of distress.

If you determine that the bird or bat is injured, initiate the following procedure:

1. Move to a distance far enough away from the injured wildlife that it is not visibly uneasy with your presence. Monitor the injured wildlife.
2. Identify the nearest landmark (i.e., turbine number, pole number, etc.).
3. Immediately notify Site Supervisor / Avian Respondent / Bat Respondent. Be prepared to provide the following information:

Report type: *Injury*.
Species, if known.
Your site vehicle identification number.
Location of find / Nearest landmark.
4. The Respondent may contact you for additional information.
5. Continue to monitor until the Respondent arrives, or the Respondent gives you other instructions. Use the following guidelines:
 - a) You are the assigned monitor. Keep any curious persons from disturbing the injured bird or bat.

You may be asked to assist in the capture of an injured find. Your participation is appreciated but optional.

Nesting Activity Reporting

All nesting activity found must be reported to the Site Supervisor / Avian Respondent / Bat Respondent immediately. The following procedures instruct visiting personnel on how to report nesting activity.

1. Make an observation. Is there a bird in the area and/or at the nest? Does this bird appear to be associated with the nest? Can you identify the bird?
2. Notify Site Supervisor/Avian Respondent of the discovery. You will be asked to provide the following information:

Report type: *Nesting*
Nest description: *Uninhabited, Inhabited, or Unknown*
Nest Identification (Species), if known
Your site vehicle identification number
Structure number, and nest location on structure
3. No further action is necessary.

IF YOU SUSPECT THAT THE NEST OR ROOST IS THAT OF A GOLDEN EAGLE WHETHER INHABITED OR UNINHABITED, THE NEST OR ROOST MUST NOT BE DISTURBED. THE TURBINE WILL REMAIN DEACTIVATED. PERMITS MUST BE OBTAINED IF THE DECISION IS MADE TO REMOVE THE NEST OR NEST MATERIAL OR TO DISTURB THE ROOST.

CATALINA RENEWABLE ENERGY PROJECT—POLICY STATEMENT

As employees of enXco Development Corporation or one of our contractors, we have a responsibility to be good stewards of the environment and to adhere to the law. Most birds that are present within the Catalina Renewable Energy Project site are protected by one or both of two laws: the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act.

Whoever, . . . shall . . . take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or in any manner any bald eagle commonly known as the American eagle or any golden eagle, alive or dead, or any part, nest, or egg thereof of the foregoing eagles, . . . shall be fined not more than \$5,000 or imprisoned not more than one year or both. (Bald Eagle Protection Act—16 U.S.C.S. 668 (a))

It will be unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, kill, attempt to take, capture, or kill, possess, offer for sale, sell, offer to barter, barter, offer to purchase, purchase, deliver for shipment, ship, export, import, cause to be shipped, exported, or imported, deliver for transportation, transport or cause to be transported, carry or cause to be carried, or receive for shipment, transportation, carriage, or export, any migratory bird, any part, nest, or egg of any such bird, or any product, whether or not manufactured, which consists, or is composed in whole or part, of any such bird or any part, nest, or egg thereof. . . (Migratory Bird Treaty Act—16 U.S.C.S. 703)

These are legal ways of saying: *Do not touch any bird that you find.* Follow the procedures of the Wildlife Response and Reporting System by immediately reporting the find to the designated respondent. The integrity of our Wildlife Response and Reporting System and the ongoing operation of our wind energy plant structures depend on following the instructions described in the Wildlife Response and Reporting System manual and complying with the law.

We are committed to providing a secure environment for all natural inhabitants at all wind energy development sites. The possession, transfer, or tampering with any avian or bat species (alive or dead) at any time is strictly prohibited. It is a violation of enXco's policy to violate either of these laws and can be punishable through enXco up to and including termination.

If you witness any of these violations, please inform your supervisor immediately.