

Rising Tree Wind Energy Project Bird and Bat Conservation Strategy and Golden Eagle Conservation Plan

**Preliminary Draft
Confidential for USFWS and CDFW Comment Only**



Prepared for:

**Rising Tree Wind Farm LLC, Rising Tree Wind Farm II LLC, and Rising Tree Wind Farm III
LLC**

Prepared by:

Western EcoSystems Technology, Inc.

415 W. 17th Street, Suite 200
Cheyenne, Wyoming 82001

**Original Submittal: February 4, 2014
Revision 1: May 5, 2014**



Draft Pre-Decisional Document - Privileged and Confidential - Not For Distribution

TABLE OF CONTENTS

1	INTRODUCTION	1
1.1	Background and Purpose	1
1.2	Objectives.....	2
1.3	Consultation History	2
2	SITE AND PROJECT DESCRIPTION	4
2.1	Regional Setting	4
2.2	Project Characteristics.....	6
3	REGULATORY REQUIREMENTS RELEVANT TO THIS BBCS AND ECP	9
3.1	Federal Endangered Species Act	9
3.2	Migratory Bird Treaty Act.....	9
3.3	Bald and Golden Eagle Protection Act.....	10
3.4	California Endangered Species Act	10
4	DECISION FRAMEWORK.....	11
5	PRELIMINARY SITE EVALUATION AND SITE CHARACTERIZATION.....	12
6	SITE-SPECIFIC BASELINE AVIAN AND BAT STUDIES	15
6.1	Fixed-Point Bird Use Surveys	15
6.1.1	Methods.....	15
6.1.2	Results.....	18
6.1.3	Conclusions	20
6.2	Mist-Net Surveys	23
6.2.1	Methods.....	23
6.2.2	Results.....	23
6.2.3	Conclusions	23
6.3	Nocturnal Radar Studies.....	23
6.3.1	Methods.....	23
6.3.2	Results.....	24
6.3.3	Conclusions	24
6.4	Raptor Nest Surveys	24
6.4.1	Methods.....	24
6.4.2	Results.....	25
6.4.3	Conclusions	25
6.5	Burrowing Owl Surveys	29
6.5.1	Methods.....	29
6.5.2	Results.....	29

6.5.3	Conclusions	29
6.6	Bat Acoustical Surveys	29
6.6.1	Methods	29
6.6.2	Results	29
6.6.3	Conclusions	30
7	RISK ASSESSMENT	30
7.1	Golden Eagle	30
7.1.1	Eagle Nest Sites/Breeding	30
7.1.2	Eagle Concentration Areas	30
7.1.3	Eagle Risk Factors	31
7.1.3.1	Topography and Wind	35
7.1.3.2	Potential for Distractive Behaviors	39
7.1.3.3	Adult vs. Juvenile and Resident vs. Floater/Migrant	39
7.1.4	Fatality Predictions	39
7.1.4.1	Relevant Fatality Studies	39
7.1.4.2	Fatality Prediction Using the USFWS Bayesian Model	42
7.1.5	Population Status and Local Area Population Thresholds	45
7.2	Burrowing Owl	48
7.3	Other Raptors	48
7.4	California Condor	49
7.5	Other Birds	51
7.6	Bats	51
8	AVOIDANCE AND MINIMIZATION MEASURES	51
8.1	Conservation Measures Implemented During Site Selection and Project Design	52
8.1.1	Eagle Specific Site Selection and Project Design Conservation Measures	53
8.2	Conservation Measures Implemented during Construction	54
8.2.1	Eagle Specific Conservation Measures Implemented during Construction	57
8.3	Conservation Measures Implemented during Operations	58
8.3.1	Eagle Specific Conservation Measures Implemented During Operations	59
9	RESOURCE EQUIVALENCY ANALYSIS AND UPFRONT COMPENSATORY MITIGATION FOR GOLDEN EAGLES	60
9.1	Resource Equivalency Analysis	60
9.2	Upfront Compensatory Mitigation for Eagles	63
10	POST-CONSTRUCTION MONITORING	64
10.1	Avian and Bat Fatality Monitoring	64
10.1.1	Carcass Searches	65

10.1.2	Searcher Efficiency Trials	66
10.1.3	Carcass Removal Trials	66
10.2	Long Term Monitoring	67
10.3	Reporting	68
11	ADAPTIVE MANAGEMENT STRATEGY	68
11.1	Advanced Conservation Practices to Reduce Risk to Eagles	69
11.2	Avian (Non-Eagle) and Bat Mortality Consultation Triggers	71
11.3	Voluntary (Non-Eagle) Mitigation Measures.....	73
12	CONCLUSIONS	74
13	KEY RESOURCES.....	75
14	REFERENCES.....	75

LIST OF TABLES

Table 1.	Sensitive bird and bat species with the potential for occurrence in the Rising Tree Wind Resource Area (RTWRA).	14
Table 2.	Baseline avian and bat studies conducted at the Rising Tree Wind Resource Area. ...	15
Table 3.	Distances to conceptual turbine locations from the five active golden eagle nests identified during 2010 and 2011 surveys at the Rising Tree Wind Resource Area.	27
Table 4.	Nearest neighbor distances for occupied golden eagle nests identified in 2011 at the Rising Tree Wind Resource Area.	27
Table 5.	Potential collision risk factors as identified by the USFWS and a discussion of these factors for the Rising Tree Wind Resource Area.	32
Table 6.	Recorded golden eagle fatalities in comparison to survey effort at western US wind energy facilities ¹	41
Table 7.	Estimated Exposure Rate (λ) from eagle observations made during avian use surveys at the Rising Tree Wind Energy Project, Kern County, California.	43
Table 8.	Expansion Factors (ϵ) for the proposed turbine layout at the Rising Tree Wind Energy Project, Kern County, California. Turbine Hazardous Area = $\pi \times \text{turbine radius}^2$. Expansion factor = Line 9 x Line 11 x Line 12.	44
Table 9.	Collision Correction Factor (C) calculated as $\text{Line 14}/(\text{Line 14} + \text{Line 15})$	44
Table 10.	Eagle fatalities per year (F) given the proposed turbine layout.	45
Table 11.	Debit summary: Total debit with foregone reproduction using two take scenarios: 0.28 eagles/year and 0.40 eagles/year.	61
Table 12.	Credit summary: Relative productivity.	62

Table 13. Resource equivalency mitigation cost with foregone reproduction for two take scenarios: 0.28 eagles/year and 0.40 eagles/year.....	63
Table 14. Rising Tree Wind Energy Project stepwise mitigation approach.	70
Table 15. Upper quartile (75 th percentile) for fatality rates observed at other existing facilities in the western US.....	72
Table 16. Three-year average mortality consultation triggers.	73

LIST OF FIGURES

Figure 1. Location of the Rising Tree Wind Resource Area.....	5
Figure 2. Facility layout for the Rising Tree Wind Energy Project.	8
Figure 3. Location of the Rising Tree Wind Resource Area as well as several alternative sites that were considered at a macro-scale prior to selecting the Rising Tree Wind Resource Area.	13
Figure 4. Location of 2005/2006 and 2010/2011 fixed-point avian use survey points at the Rising Tree Wind Resource Area along with an associated 800-m view-shed.	17
Figure 5. Location of eagle observations recorded during baseline avian use surveys at the Rising Tree Wind Resource Area.	21
Figure 6. Comparison of annual diurnal raptor use at the Rising Tree Wind Resource Area and other US wind energy facilities. The data from the Rising Tree Wind Resource Area during the 2005/2006 study season is shown by the green bar and the 2010/2011 study season data is shown by the red bar.	22
Figure 7. Location of 2010 and 2011 golden eagle nests identified during raptor nest searches conducted for the Rising Tree Wind Resource Area.	26
Figure 8. Approximate territory boundaries for the five active golden eagle nests (four individual territories) in the vicinity of the Rising Tree Wind Energy Project based on the nearest neighbor calculations.	28
Figure 9. Wind rose diagrams depicting the prominent wind direction at the Rising Tree Wind Resource Area.	35
Figure 10. Slopes within the Rising Tree Wind Energy Project.....	37
Figure 11. Aspects within the Rising Tree Wind Energy Project.	38
Figure 12. Average pre-construction golden eagle use values for facilities with and without observed golden eagle fatalities.	40
Figure 13. Bird Conservation Regions contained within a 140-mile buffer surrounding the Rising Tree Wind Energy Project, Kern County, California.	47

LIST OF APPENDICES

Appendix A. Results of the Baseline Surveys Conducted at the Rising Tree Wind Resource Area in 2005 and 2006

Appendix B. Results of the Baseline Surveys Conducted at the Rising Tree Wind Resource Area in 2010 and 2011

Appendix C. Results of the Acoustic Bat Surveys Conducted at the Rising Tree Wind Resource Area from July 1, 2008 – August 13, 2009

Appendix D. California Condor Risk Assessment

Appendix E. Existing Facilities in the Western US Used to Determine Upper Quartiles and Consultation Triggers

1 INTRODUCTION

1.1 Background and Purpose

While wind energy projects, or “wind farms”, utilize a renewable-energy resource (wind), there are potential avian and bat effects resulting from their construction and operation. Interactions of birds and bats with generating facilities (including wind turbines, transmission and distribution lines, substations, and other associated structures and equipment) are potentially harmful or fatal to birds and bats. In addition to these direct effects, indirect effects include the potential to displace wildlife, either temporarily or permanently, during the facility’s construction or operation.

To address these concerns, Rising Tree Wind Farm LLC, Rising Tree Wind Farm II LLC, and Rising Tree Wind Farm III LLC (collectively the “Proponent”), each wholly owned subsidiaries of EDP Renewables North America LLC (EDPR), has designed this site-specific Bird and Bat Conservation Strategy and Golden Eagle Conservation Plan (collectively the “Plan”) for the proposed Rising Tree Wind Energy Project (RTWEP or “Project”; formerly known as the Homestead Wind Energy Project and Bent Tree Wind Energy Project, and a portion of which is referred to as the Addison Energy Wind Project in a separate California Environmental Quality Act Environmental Impact Report). This Plan outlines various processes that the Proponent has employed and/or will employ to: 1) comply with all state and federal avian and bat conservation and protection laws and regulations applicable to the RTWEP; 2) ensure that any effects to avian and bat resources are identified, quantified, and analyzed; and 3) avoid, minimize, and mitigate potential effects consistent with the US Fish and Wildlife Service (USFWS) Wind Energy Guidelines (WEG; USFWS 2012) and the USFWS Eagle Conservation Plan Guidance (ECPG; USFWS 2013a).

The Plan is intended to provide a review of the site specific golden eagle (*Aquila chrysaetos*) data and to formulate a golden Eagle Conservation Plan for the proposed RTWEP. The sections of this Plan focused on golden eagles include: Section 6.1) golden eagle use of the RTWEP site and surrounding area and potential for golden eagle concentration areas in the vicinity of the RTWEP; Section 6.4) golden eagle nest sites and breeding territories near the proposed RTWEP; Section 7.1) factors known or thought to influence golden eagle risk and predictions of golden eagle mortality associated with the RTWEP; Section 8) avoidance measures to reduce risk of golden eagle mortality; Section 10) post-construction efforts to verify risk estimates; and Section 11) adaptive management commitments to respond to post-construction fatality results. Proponent has developed this Plan in order to meet the requirements of the Bald and Golden Eagle Protection Act (BGEPA). This Plan is intended as a living document that will be updated through coordination with USFWS. It is the intent of Proponent that the final version of this Plan will be incorporated into an application for a 30-year programmatic Eagle Take Permit (ETP).

Federal laws and regulations protect the majority of birds found in and around the RTWEP site, including the Migratory Bird Treaty Act (MBTA), the BGEPA, the federal Endangered Species Act (ESA) and the California Endangered Species Act (CESA). The purpose of the Plan is to meet the intent of these regulatory drivers by reducing and managing risks to avian and bat

species. It is the Proponent's goal to develop an environmentally sustainable project that results in no project-specific effects leading to population level declines for bird and bat species. This Plan has been voluntarily prepared as a good faith effort by the Proponent to proactively address potential effects to birds and bats resulting from the construction and operation of the RTWEP. The initial version of this Plan was provided to the California Department of Fish and Wildlife for review and comment on February 24, 2014.

1.2 Objectives

The Proponent has developed this Plan with the intent of meeting the following objectives:

- 1) Document and describe the maximum potential scope of the Project and the biological survey work that has been conducted to date, and an assessment of risk to avian and bat resources posed by the RTWEP. This objective includes providing a single point of reference for information related to avian and bat studies performed in relation to the proposed RTWEP.
- 2) Provide a plan that avoids, minimizes, or mitigates potential effects to avian and bat species resulting from the construction and operation of the RTWEP consistent with the WEG and ECPG.
- 3) Outline the adaptive management framework that the Proponent is committed to over the life of the RTWEP and how the Proponent plans to implement adaptive management during operation of the RTWEP.
- 4) Describe post-construction monitoring efforts that will be implemented to identify any potential effects, as well as the methods for reporting the results of monitoring.
- 5) Provide an educational and practical point of reference for the Proponent's employees and contractors that enables avoidance and minimization of effects to avian and bat species at the RTWEP.

1.3 Consultation History

The Proponent has coordinated and consulted with the USFWS, Bureau of Land Management (BLM), and California Department of Fish and Wildlife (CDFW [formerly, California Department of Fish and Game (CDFG)]) regarding wildlife study protocols and progress for the RTWEP. The following is a chronology of coordination with state and federal agencies leading up to the preparation of this Plan:

- June 14, 2007 – Proponent received a letter from USFWS verifying their review of the 2005-06 wildlife studies. USFWS noted that the “methods used to evaluate bird use on and above the site were exceptionally extensive, and more than adequate for evaluating the potential risk to birds.”
- November 7, 2008 – Proponent provided early pre-construction studies for the Project for USFWS review.

- January, 2009 – USFWS provided feedback consistent with the June 14, 2007, letter, with a recommendation for additional acoustic bat surveys, which were subsequently completed in August 2009 by Proponent.
- March 11, 2010 – Initial meeting with the USFWS and CDFW to present results from 2005/2006 avian studies and 2008/2009 bat studies, and to present study plan for proposed 2010/2011 wildlife and botanical surveys. In response to agency comments, EDPR immediately incorporated a recommended 10-mile (16-kilometer [km]) survey radius targeting golden eagle nests and added an additional year of avian point surveys to the proposed study protocol.
- April 9, 2010 – Conference call with the USFWS and CDFW to discuss revisions to study plan.
- June 29, 2010 – Meeting with USFWS Condor Recovery Coordinator, Jesse Grantham, to discuss population status and potential avoidance strategies.
- September 9, 2010 – USFWS sent a letter to Proponent informing Proponent of responsibilities and potential liabilities associated with the Project and requesting continued coordination with USFWS during Project planning and post-construction.
- September 23, 2010 – A field visit was organized to the RTWEP to introduce the USFWS, BLM, and CDFW to the project site, discuss results of surveys conducted to date, as well as ongoing and future studies planned for the project.
- October 13, 2010 – Conference call with CDFW to discuss Mohave ground squirrel survey protocol.
- January 26, 2011 – Meeting with BLM biologists to discuss potential wildlife issues, particularly golden eagle and California condor (*Gymnogyps californianus*).
- September 6, 2011 – Meeting with USFWS and CDFW to review all wildlife and botanical studies conducted to date, as well as the need for preparation of an Avian and Bat Protection Plan and Eagle Conservation Plan.

In 2012, the development of the Project was suspended due to a land rights question that was resolved in late summer 2013 with the result that the Project was split into two separate projects with Proponent retaining control of the northern Rising Tree Wind Farm, and Terra-Gen Power, LLC retaining control of the southern Addison Energy Wind Project (“Addison”). Two separate Environmental Impact Reports (EIRs) were prepared by Kern County to assess the environmental impacts of the projects under the California Environmental Quality Act (CEQA). During the processing of these EIRs, Proponent regained control of Addison, and has incorporated this project into the larger RTWEP, as defined herein. The Proponent subsequently re-engaged its effort to permit and develop the Project.

- December 4, 2013 – Meeting with USFWS and CDFW to re-introduce the Project following a land rights dispute which previously put ownership of the Project in doubt. USFWS provided suggestions for incorporation into the pending BBCS and ECP. Those suggestions have been incorporated into this Plan where feasible.

- February 7, 2014 – Version 1 of this Plan submitted to USFWS for review and comment.
- February 26, 2014 – USFWS and EDPR discussed scheduling considerations for the project, and a proposed project and permitting milestone document was provided to USFWS.
- March 28, 2014 – USFWS provided detailed written comments on Version 1 of the Plan, as well as templates for a Consultant Disclosure Statement and Statement of Responsibilities in preparation for selecting a USFWS-approved contractor to prepare an Environmental Assessment under the National Environmental Policy Act.
- April 1, 2014 – Conference call between EDPR and USFWS to discuss the Consultant Disclosure Statement, Statement of Responsibilities, and details regarding transmission line conductor spacing to reduce risk to California condor.
- May 5, 2014 – Version 2 of this Plan submitted to USFWS for review and comment.

2 SITE AND PROJECT DESCRIPTION

2.1 Regional Setting

The proposed RTWEP is located approximately three miles (about five km) west of Mojave, California, within the Tehachapi Wind Resource Area in the southeastern portion of the unincorporated area of Kern County (Figure 1). Based on a maximum-impact scenario, environmental conditions were evaluated within an approximate 3,461-acre (5.4-square mile [mi²]) study area, referred to as the RTWRA, with the recognition that some portions of the maximum-impact Study Area may not be developed as part of the currently proposed RTWEP. The current site plan for the RTWEP includes approximately 2,826 acres (2.5 mi²) (Figure 1). The RTWRA consists largely of private lands as well as some public land administered by the BLM; however, all turbines and associated infrastructure will be sited only on private land.

The RTWRA is surrounded by existing wind farms in all directions. Parcels bordering the Los Angeles Aqueduct constitute the eastern edge of the RTWRA. South of the RTWRA is Oak Creek Road, which has provided adequate construction access to a number of existing wind farms in the Tehachapi area. Southern California Edison's Windhub Substation is located approximately 1.3 miles (2.1 km) west of the RTWRA's southern boundary along Oak Creek Road.

Elevations in the RTWRA range from approximately 3,150 to 3,651 feet (ft; 960 to 1,113 meters [m]). The proposed Project would be situated on the lower slopes of Cameron Ridge and the Horned Toad Hills, which have a maximum elevation of over 4,800 ft (1,463 m). The southeastern portion of the RTWRA is relatively flat while the northwestern portion is more topographically diverse, with a number of ridges oriented northwest-southeast. There are several small desert washes that traverse the area. Vegetation in the RTWRA consists primarily of creosote bush (*Larrea tridentata*) scrub, Mojave mixed scrub, and scattered patches of Joshua tree (*Yucca brevifolia*) woodland. In addition, there is a significant amount of disturbed habitat within the RTWRA.

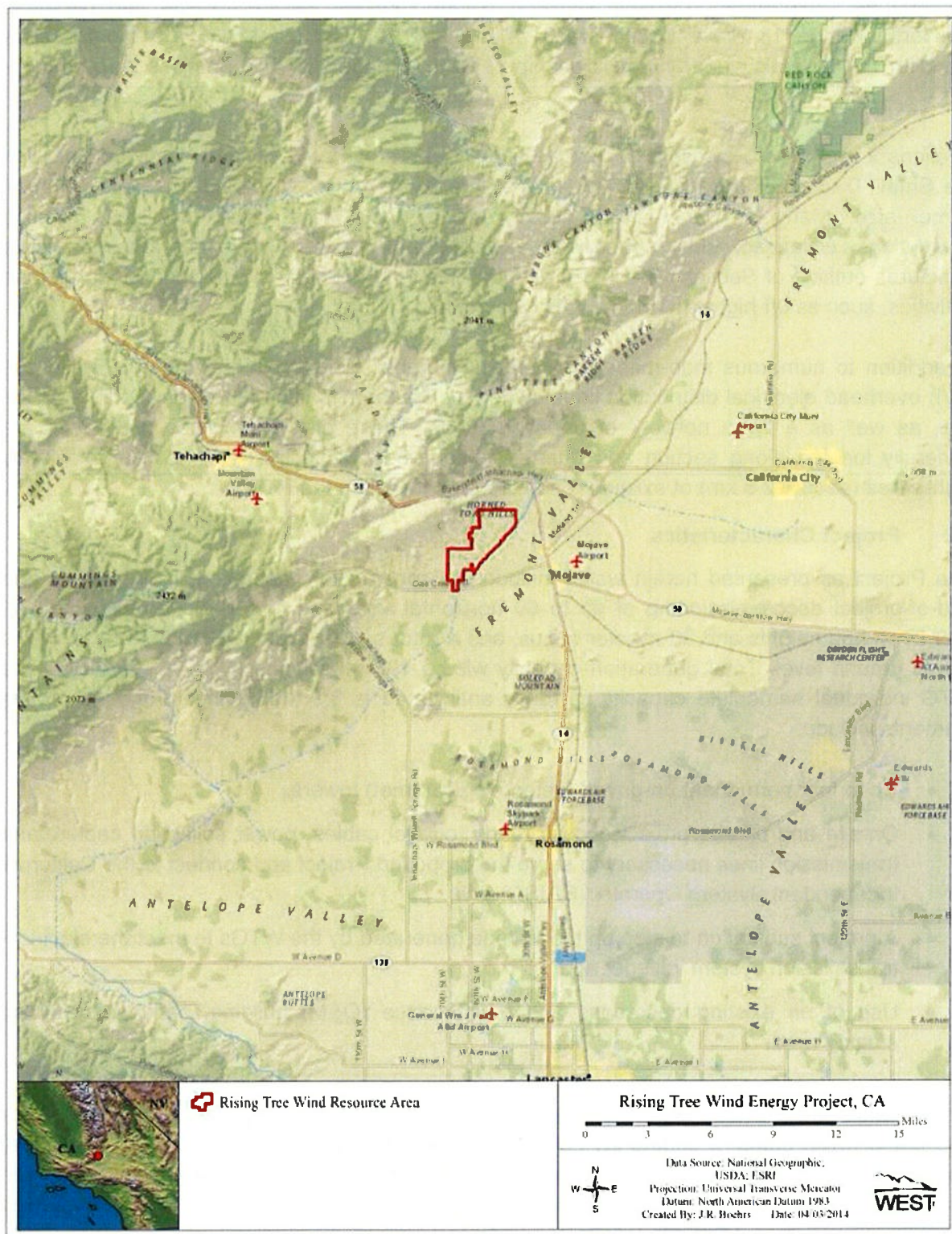


Figure 1. Location of the Rising Tree Wind Resource Area.

The RTWRA appears on the US Geological Survey (USGS) 7.5-minute Series Mojave Topographic Quadrangle (Township 12 North, Range 13 West, Sections 35–36; and Township 11 North, Range 13 West, Sections 1-3, 10-11, and 15) and the USGS 7.5-minute series Monolith Topographic Quadrangle (Township 11 North, Range 13 West, Sections 9-10, and 15-16).

Sections 2 and 10 of Township 11 North Range 13 West were subdivided in conjunction with the Small Tracts Act passed in 1938, with 5-acre (0.01 mi²) tracts being the most common parcel size. Many of the 5-acre privately-owned tracts have small dwellings, building foundations, collapsed ruins, abandoned vehicles, and rubbish. There are few man-made structures outside of Sections 2 and 10, although the land is used for other occasional human activities, such as off-highway vehicle (OHV) recreation.

In addition to numerous man-made structures, a number of low-voltage (under 100 kilovolts [kV]) overhead electrical distribution lines owned by Southern California Edison (SCE) exist on site, as well as a large network of unpaved roads. These distribution lines and roads are generally located along section and quarter-section lines within the RTWRA. Approximately eight miles (about 12.8 km) of existing roads are present within the RTWRA.

2.2 Project Characteristics

The Project as presented herein would include the construction, operation, maintenance and end-of-project decommissioning of up to 60 horizontal-axis wind turbine generators (WTGs), with 84-m hub heights and 56-m rotor radius, and a rotor swept height (RSH) of 28-m to 140-m above ground level. Total generation capacity will be 198 megawatts (MW) of electricity. The WTG individual nameplate capacity currently anticipated is 3.3 MW. Other proposed project elements include:

- Up to four permanent un-guyed meteorological (met) towers.
- On-site and off-site project access roads, control cables, power collection cables, and transmission lines necessary to serve the proposed Project and connect to the California Independent System Operator (CAISO) grid;
- A project substation to step up the voltage generated by the WTGs to meet the electrical transmission system voltage; and
- Use of an existing operations and maintenance (O&M) building, parking area, and staging area.

Construction of the project would also require the following temporary facilities: access roads and crane travel paths, a central lay-down yard, staging areas next to each WTG, temporary guyed meteorological towers, and mobile rock crushers. The wind turbines are expected to have a total tip height of 140m, a hub height of 84m, and a rotor diameter of 112m. The proposed WTG locations are presented in Figure 2.

The RTWEP would interconnect to the grid at Southern California Edison's Windhub Substation. This substation serves as the northern terminus of the Tehachapi Renewable Transmission Project (TRTP) and is located approximately 1.5 miles (2.4 km) west of the RTWEP's southern boundary (Figure 2). Depending on the transmission feeder line route secured, the Proponent would construct an approximate 4.0-mile transmission feeder line (Figure 2). The Proponent anticipates beginning construction of the RTWEP in the June of 2014 – pending all required regulatory approval and executed power purchase agreement – with a commercial operation start date of at least 99MW in December 2014, and additional commercial start date of another 99MW in the 2nd quarter of 2015.

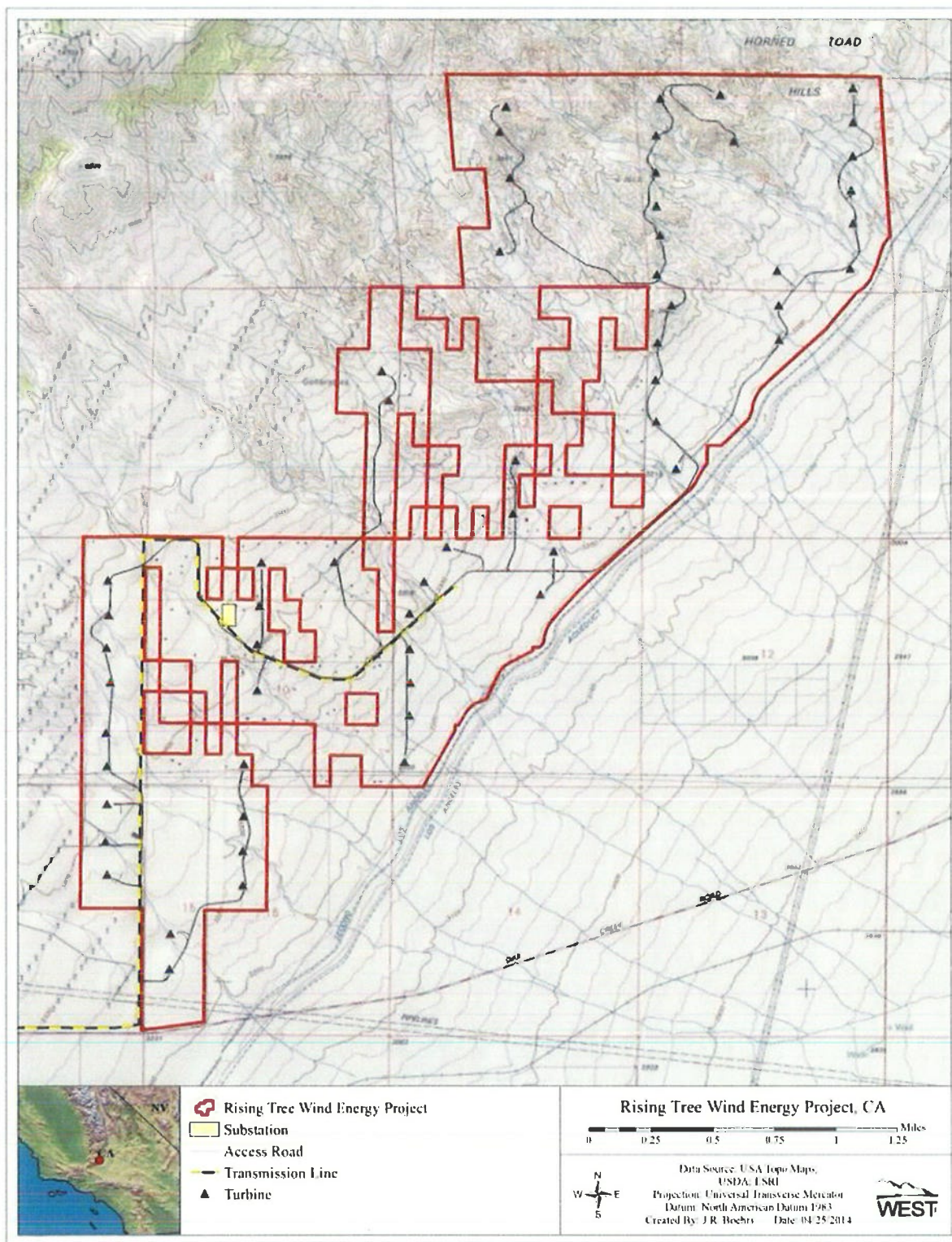


Figure 2. Facility layout for the Rising Tree Wind Energy Project.

3 REGULATORY REQUIREMENTS RELEVANT TO THIS BBCS AND ECP

3.1 Federal Endangered Species Act

Species at risk of extinction, including many birds and bats, are protected under the federal ESA of 1973, as amended. The purpose of the ESA is to protect threatened and endangered species and to provide a means to conserve their ecosystems. Take under the ESA is defined as "...to harass, harm, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct." Harm is an act which injures or kills a wildlife species, including significant habitat modification or degradation; whereas harass is defined as an intentional or negligent act or omission which creates the likelihood of injury by annoying the animal to the extent it significantly disrupts normal behavior patterns such as breeding, feeding, or sheltering. The ESA authorizes the USFWS to issue permits for "incidental take" of wildlife species, which is take resulting from an otherwise lawful activity.

A review of the USFWS endangered, threatened, and candidate species within the California Natural Diversity Database (CNDDDB 2011, USFWS 2011) was conducted to identify avian and bat species listed under the ESA that have the potential to occur in Kern County. The only federally-listed avian or bat species with at least some potential for future occurrence in the RTWRA is the California condor. While suitable nesting, roosting, and foraging habitat is generally absent from the RTWRA, condors are a wide-ranging species and the potential for future occurrence in the RTWRA cannot be entirely ruled out.

3.2 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) is the cornerstone of migratory bird conservation and protection in the United States. The MBTA implements four treaties that provide for international protection of migratory birds. It is a strict liability statute, meaning that proof of intent, knowledge, or negligence is not an element of an MBTA violation. The statute's language is clear that actions resulting in a "taking" or possession (permanent or temporary) of a protected species, in the absence of a USFWS permit or regulatory authorization, are a violation of the MBTA. The MBTA states, "Unless and except as permitted by regulations ... it shall be unlawful at any time, by any means, or in any manner to pursue, hunt, take, capture, kill ... possess, offer for sale, sell ... purchase ... ship, export, import ... transport or cause to be transported ... any migratory bird, any part, nest, or eggs of any such bird [The Act] prohibits the taking, killing, possession, transportation, import and export of migratory birds, their eggs, parts, and nests, except when specifically authorized by the Department of the Interior." 16 U.S.C. 703. The word "take" is defined by regulation as "to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect." 50 CFR 10.12. The USFWS maintains a list of all species protected by the MBTA at 50 CFR 10.13. This list includes over one thousand species of migratory birds, including eagles and other raptors, waterfowl, shorebirds, seabirds, wading birds, and passerines.

Although the MBTA does not include provisions for permits to authorize incidental take of migratory birds, the USFWS's Land-Based WEG describe the USFWS's approach to

enforcement in the absence of an incidental take permit program. Specifically, the USFWS will take a developer's adherence to the WEG and communication with the USFWS into account when deciding whether to refer for prosecution any alleged "take" of species. Although adherence to the WEG does not absolve developers from liability under the MBTA, the USFWS views such an effort as an appropriate means of avoiding "take" of protected species.

3.3 Bald and Golden Eagle Protection Act

Under authority of the Bald and Golden Eagle Protection Act (BGEPA), 16 U.S.C. 668–668d, bald eagles (*Haliaeetus leucocephalus*) and golden eagles are afforded additional legal protection. BGEPA prohibits the take, sale, purchase, barter, offer of sale, purchase, or barter, transport, export or import, at any time or in any manner of any bald or golden eagle, alive or dead, or any part, nest, or egg thereof. 16 U.S.C. 668. BGEPA also defines take to include "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb," 16 U.S.C. 668c, and includes criminal and civil penalties for violating the statute. See 16 U.S.C. 668. The Service further defined the term "disturb" as agitating or bothering an eagle to a degree that causes, or is likely to cause, injury, or either a decrease in productivity or nest abandonment by substantially interfering with normal breeding, feeding, or sheltering behavior.

In 2009, the Service promulgated a final rule on two new permit regulations that specifically authorize under BGEPA the non-purposeful (i.e., incidental) take of eagles and eagle nests in certain situations (see 50 CFR 22.26 and 22.27). The permits authorize limited take of bald and golden eagles; authorizing individuals, companies, government agencies and other organizations to disturb or otherwise take eagles in the course of conducting lawful activities. To facilitate issuance of ETPs for wind energy facilities the Service finalized the ECPG - Module 1 - Land-based Wind Energy Version 2. If eagles are identified as a potential risk at a project site, developers are strongly encouraged to follow the ECPG. The ECPG describes specific actions that are recommended to achieve compliance with the regulatory requirements in BGEPA for an ETP, as described in 50 CFR 22.26 and 22.27. The ECPG provides a national framework for assessing and mitigating risk specific to eagles through development of ECPs and issuance of programmatic ETPs for eagles at wind facilities.

On December 20, 2011 the USFWS issued an Advanced Notice of Public Rulemaking (ANOPR), which seeks input on ways to improve the permitting process for bald and golden eagles. As of the date of this Plan, no ETPs have yet been issued by the USFWS. The ANOPR gives interested members of the public the opportunity to review the regulations and recommend revisions that would make permitting possible while continuing to provide adequate protection for eagles.

3.4 California Endangered Species Act

The CESA, administered by the CDFW, was established to protect native California wildlife and plants which are in danger of becoming extinct throughout all, or a portion, of their range. Section 2080 of the Fish and Game Code prohibits "take" of any species determined by the Fish and Game Commission to be threatened or endangered. In Section 86 of the Fish and Game Code, "take" is defined as to "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue,

catch, capture, or kill.” Unlike its federal counterpart, CESA take prohibition applies also to species which are candidate for state listing pursuant to Fish and Game Code Section 2085. Section 2081(b) and (c) of the CESA allows the CDFW to issue an incidental take permit for a state endangered, threatened, or candidate species provided the following criteria are met: 1) the take is incidental to otherwise lawful activities; 2) impacts of the authorized take are minimized and fully mitigated; and 3) the issuance of the permit will not jeopardize the continued existence of a state-listed species. A review of all state endangered, threatened, or candidate species occurring in Kern County, California (CNDDDB 2011, CDFG 2011a) revealed six bird species with the potential to occur in the County. Based on the range and habitat requirements of these species, only Swainson’s hawk (*Buteo swainsoni*) and California condor have the potential to occur in the RTWRA or the surrounding area.

The CDFW additionally maintains a list of state Species of Special Concern (SSC; see CDFG 2011a). While SSC is an administrative designation with no formal legal status, species on this list are considered during the environmental review process. The SSC designation serves several purposes including: to focus attention on animals with a need for conservation on a state or regional level, stimulate research on poorly known species, and achieve conservation and recovery of a species before they meet the criteria for listing under CESA. Based on a review of the California Natural Diversity Database (CNDDDB 2011), as well as the results of site-specific baseline studies conducted to date, 17 avian and bat SSC have been documented within, or have the potential to occur in the RTWRA. In the 1960’s, prior to state and federal endangered species laws and regulations, the state established the classification of Fully Protected Species in an effort to provide protection to animals that were rare or faced possible extinction. Fully protected species may not be taken or possessed at any time and no licenses or permits may be issued for their take except in the case of necessary scientific research. While, most fully protected species have since been listed as threatened or endangered under CESA, a few species, such as the golden eagle and the peregrine falcon (*Falco peregrinus*) have not.

4 DECISION FRAMEWORK

The Proponent has adopted the decision framework and “tiered” process as outlined by the 2012 WEGs and the 2013 USFWS ECPG. The tiered process that has been and is being implemented at the RTWEP includes the following:

- 1) WEG Tier 1: Preliminary Site Evaluation (landscape-level screening of possible project sites) and ECPG Stage 1: site assessment stage;
- 2) WEG Tier 2: Site Characterization (broad characterization of one or more potential project sites) and ECPG Stage 1: site assessment stage;

- 3) WEG Tier 3: Field studies to document site-specific wildlife conditions and predict project effects (site-specific surveys and assessments at and around the proposed project site) and ECPG Stages 2, 3, & 4: site-specific surveys and assessments, predicting eagle fatalities, and avoidance and minimization of risk using ACPs, and compensatory mitigation;
- 4) WEG Tier 4: Post-construction studies to estimate impacts and ECPG Stage 5: Calibration and updating of the fatality prediction and continued risk-assessment; and
- 5) WEG Tier 5: Other post-construction studies to assess and evaluate direct and indirect effects to certain species of concern including habitat effects, nest productivity, and other potential effects and ECPG Stage 5: Calibrating and updating of the fatality prediction and continued risk-assessment.

This process and decision framework starts with a broad scope and becomes more specific as information is gathered at each tier and the potential for avian and bat issues are better understood. At each tier potential issues associated with the development or operations of the project are identified and questions are formulated to guide the decision process. This approach ensures that sufficient data are collected to enable the Proponent to make informed decisions regarding the proposed project while ensuring that the Proponent is complying with its corporate environmental policy.

The studies that have been conducted at the RTWRA to date will be used to inform and direct subsequent post-construction monitoring at the RTWEP, as well as to identify the potential need for additional conservation measures. The following sections provide details of the tiered process being utilized for the RTWEP.

5 PRELIMINARY SITE EVALUATION AND SITE CHARACTERIZATION

The Proponent evaluated several potential sites for development prior to selecting the RTWRA (Figure 3). Through evaluation of the potential sites, the RTWRA was selected as a site with comparatively low potential for impacts to bird, bat, and terrestrial species. The results of the site specific baseline studies (discussed in section 6.0 below) provide further support for development of the RTWEP.

In 2004, a biological resources constraints analysis was conducted at the RTWRA (formerly the Homestead Project) by Jones & Stokes to provide information on significant biological resource issues that might present obstacles to wind energy development at the site. Biological resources within the Project and evaluation areas were evaluated through a site visit conducted on July 28, 2004, as well as a search of existing data. Several sources of available data were used to identify biological resources within the RTWRA, including published literature, field guides, and public data sets, such as the CNDDB (2004). Based on the analysis, the only potential sensitive avian species identified with possibility for occurrence within the RTWRA were LeConte's thrasher (*Toxostoma lecontei*) and California horned lark (*Eremophila alpestris actia*).

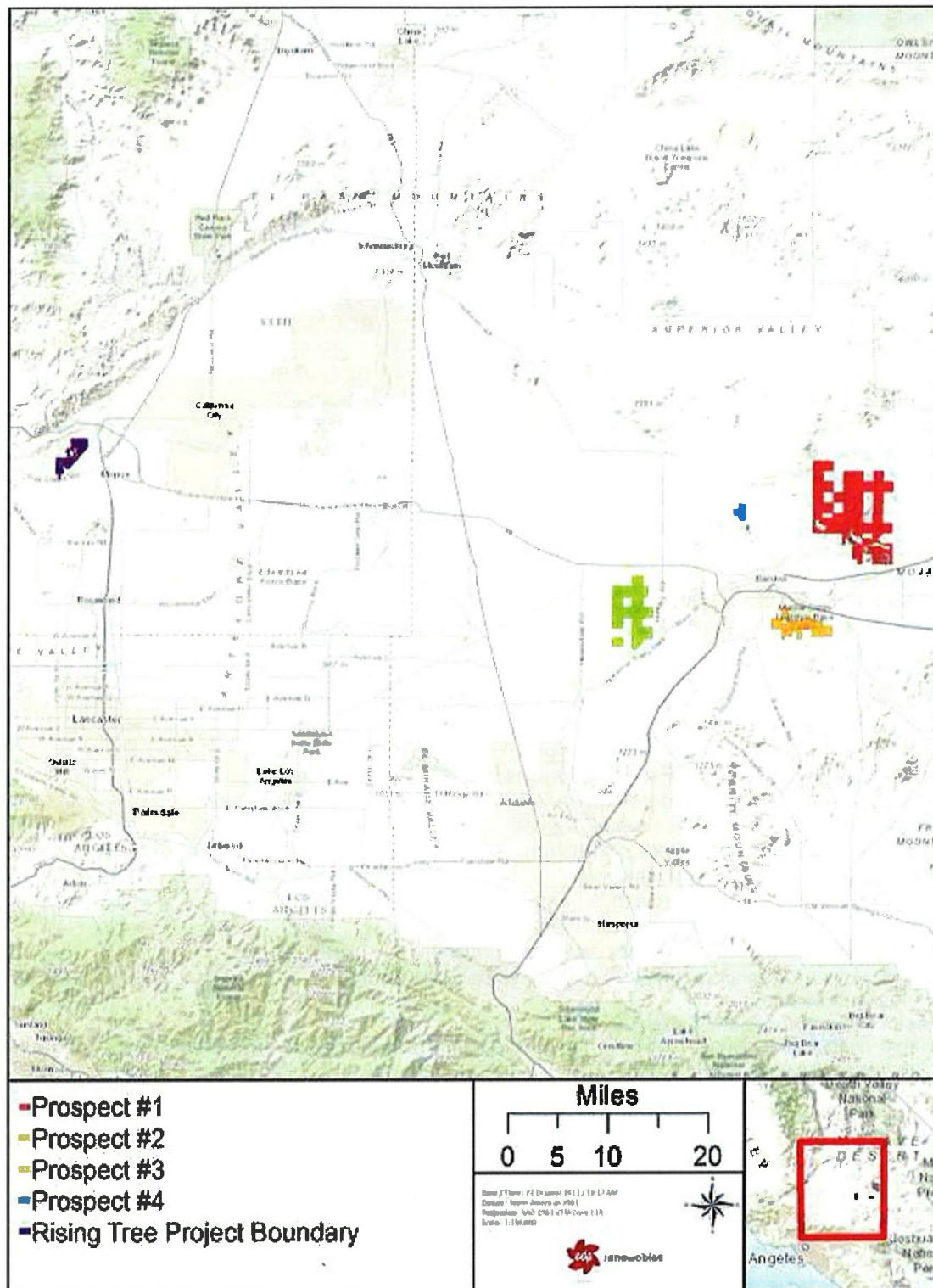


Figure 3. Location of the Rising Tree Wind Resource Area as well as several alternative sites that were considered at a macro-scale prior to selecting the Rising Tree Wind Resource Area.

A list of sensitive bird and bat species with potential for occurrence in the RTWRA has been compiled based on the biological resources constraints analysis conducted in 2004, site specific baseline studies (see Section 6 and Appendices B-D), and a search of the CNDDDB (2011; Table 1).

Table 1. Sensitive bird and bat species with the potential for occurrence in the Rising Tree Wind Resource Area (RTWRA).

Species	Scientific Name	Status ¹ Fed/BLM/State	Observed during baseline studies at the RTWRA
American white pelican	<i>Pelecanus erythrorhynchos</i>	-I-/SSC	No
Brewer's sparrow	<i>Spizella breweri</i>	BCC/-I-	Yes
burrowing owl	<i>Athene cunicularia</i>	BCC/S/SSC	Yes
California condor	<i>Gymnogyps californianus</i>	E/-E	No
ferruginous hawk	<i>Buteo regalis</i>	BCC/-SSC	Yes
golden eagle	<i>Aquila chrysaetos</i>	BCC/-FP	Yes
Lawrence's goldfinch	<i>Spinus lawrencei</i>	BCC/-I-	Yes
Le Conte's thrasher ²	<i>Toxostoma lecontei</i>	BCC/-SSC	Yes
loggerhead shrike	<i>Lanius ludovicianus</i>	BCC/-SSC	Yes
long-billed curlew	<i>Numenius americanus</i>	BCC/-SSC	Yes
northern harrier	<i>Circus cyaneus</i>	-I-/SSC	Yes
American peregrine falcon	<i>Falco peregrinus anatum</i>	BCC/-FP	Yes
prairie falcon ²	<i>Falco mexicanus</i>	BCC/-I-	Yes
purple martin	<i>Progne subis</i>	-I-/SSC	Yes
short-eared owl	<i>Asio flammeus</i>	-I-/SSC	Yes
Swainson's hawk	<i>Buteo swainsoni</i>	BCC/-IT	Yes
yellow warbler	<i>Dendroica petechia brewsteri</i>	BCC/-SSC	Yes
Vaux's swift	<i>Chaetura vauxi</i>	-I-/SSC	Yes
California leaf-nosed bat	<i>Macrotus californicus</i>	-I-/SSC	- ³
pallid bat	<i>Antrozous pallidus</i>	-I-/SSC	-
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	-I-/SSC	-
spotted bat	<i>Euderma maculatum</i>	-I-/SSC	-
western red bat	<i>Lasiurus blossevillei</i>	-I-/SSC	-
western small-footed myotis	<i>Myotis ciliolabrum</i>	-I-/I-	-
long-eared myotis	<i>Myotis evotis</i>	-I-/I-	-
fringed myotis	<i>Myotis thysanodes</i>	-I-/I-	-
Yuma myotis	<i>Myotis yumanensis</i>	-I-/I-	-
western mastiff bat	<i>Eumops perotis californicus</i>	-I-/SSC	-

¹Compiled from the California Natural Diversity Database (CNDDDB) as well as baseline studies (CNDDDB 2011a; Appendices B-D).

²Species identified in Jones and Stokes 2004

³Aside from hoary bat (*Lasiurus cinereus*), bat species were not identified to species during the bat acoustical surveys (Appendix C)

E=Endangered (CDFG 2011b); T=Threatened (CDFG 2011b); S=Sensitive (CDFG 2011a); USFWS BCC=Bird of Conservation Concern (USFWS 2008); FP=Fully Protected (CDFG 2011a); SSC=Species Special Concern (CDFG 2011a)

The RTWRA was ultimately chosen as the preferred project site due to the fact that the project would be least likely to contribute to habitat fragmentation. Some of the factors that contributed to this decision include the following:

- The site is surrounded by existing wind farms, reducing disturbance to un-fragmented native habitat.

- The site is located directly adjacent to a primary access point, reducing the need for additional delivery roads.
- The site contains a substantial road network on site, reducing the need for additional access roads.
- The site is located in very close proximity to Southern California Edison's Windhub substation, reducing the need for additional transmission feeder line.

6 SITE-SPECIFIC BASELINE AVIAN AND BAT STUDIES

Several site-specific baseline avian and bat studies have been conducted within the RTWRA. Surveys were conducted within the larger approximate 3,461-acre RTWRA. The current site plan for the RTWEP involves a much smaller impact area consisting of approximately 2,826 acres. The RTWEP falls entirely within the 3,461-acre RTWRA study area surveyed during the 2005-2011 baseline studies. As such, all lands included in the RTWEP were surveyed extensively during these baseline studies. A comprehensive list of the baseline avian and bat studies conducted to date within the RTWRA is included in Table 2. Summaries of the baseline avian and bat studies are provided below and final reports are provided in Appendices B-D.

Table 2. Baseline avian and bat studies conducted at the Rising Tree Wind Resource Area.

Study Type	Date
Fixed-point avian use surveys - Round 1	March 14, 2005 – November 17, 2006
Avian mist-netting	Spring 2006
Nocturnal radar surveys	Spring 2006
Raptor nest survey	Spring/summer 2006
Acoustic bat studies	July 2008 – August 2009
Golden eagle/raptor nest survey - Round 1	Spring/summer 2010
Burrowing owl survey - Round 1	Spring/Summer 2010
Fixed-point avian use surveys - Round 2	June 1, 2010 – May 31, 2011
Golden eagle/raptor nest survey - Round 2	Spring/summer 2011
Burrowing owl survey - Round 2	Spring/summer 2011

6.1 Fixed-Point Bird Use Surveys

6.1.1 Methods

The purposes of conducting fixed-point bird use surveys at the project were two-fold: first the points were selected to provide maximum area coverage and obtain an overall bird species count, and species richness to make inferences about presence; second, the flight height of each bird observed was recorded in order to make inferences about potential collision risk and exposure. Three years of fixed-point bird use surveys were conducted at the RTWRA. The first survey effort was conducted over two years from March 14, 2005, through November 17, 2006 (Appendix A), and the second survey effort was conducted from June 1, 2010, through May 31, 2011 (Appendix B). The objective of the surveys was to estimate the seasonal and spatial use of the study area by birds, particularly diurnal raptors. Fixed-point surveys (variable circular plots) were conducted using methods described by Reynolds et al. (1980). Consistent with the California Wind Energy Guidelines, eight points (consisting of an 800-m [2,625-ft] radius plot for large birds and a 100-m [328-ft] radius plot for small birds) were surveyed during the 2005-2006

surveys and seven survey points were surveyed during the 2010/11 surveys based on consultation with the USFWS and the CDFW (Figure 4). All birds observed were recorded, but for analysis and calculation of use estimates, only small birds within 100-m radius plots were included. Combined, the avian use survey points and associated 800-m buffer resulted in coverage of 61.6% of the area within a 1-mi (1.6-km) buffer of proposed turbine locations.

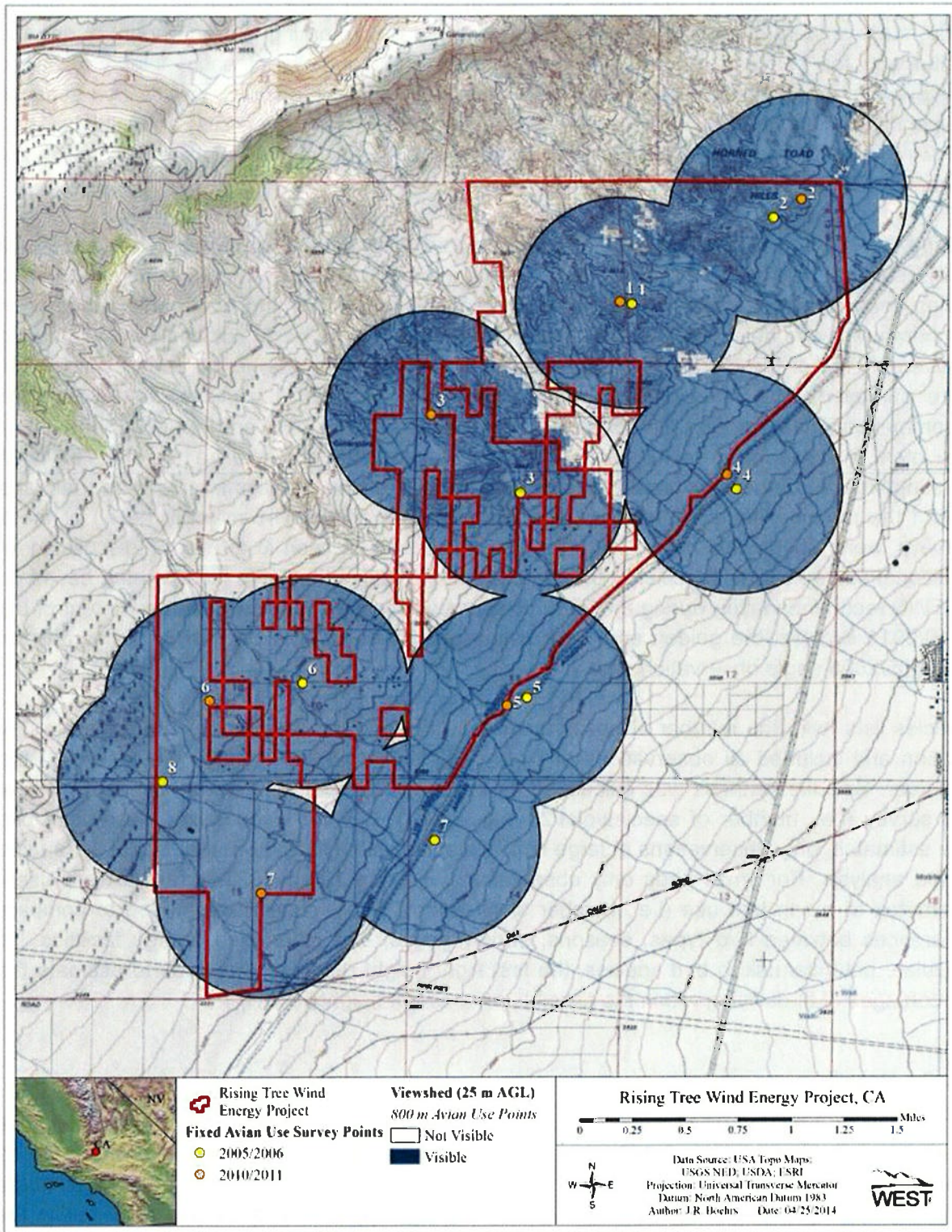


Figure 4. Location of 2005/2006 and 2010/2011 fixed-point avian use survey points at the Rising Tree Wind Resource Area along with an associated 800-m view-shed.

Sampling intensity was designed to document bird use by habitat and season within the study area. During both years of the study, surveys at each point were 20 min in duration. During 2005, surveys were conducted at each point twice per day (morning and afternoon) during the spring and fall seasons, on two consecutive days (four surveys at each point per week). Surveys were conducted twice per day every other week during the summer and winter seasons (Appendix A). During 2006, surveys were conducted in the spring (five visits) and fall (six visits) following a similar schedule as spring/fall surveys in 2005; no surveys were conducted in the summer or winter during 2006.

During the 2010/2011 study, surveys were conducted twice per month during a 2-month period in the summer and winter seasons, and twice per week during a 2-month period in fall and spring seasons (Appendix B). Surveys were restricted to the morning hours unless afternoon temperatures were below 80°F (27°C). To the extent practicable, each plot was surveyed during a different time of the morning from the previous survey to vary the period during which plots were surveyed. The survey effort and timing of the 2010/2011 surveys were based on recommendations from the USFWS as discussed during March 2010 and April 2010 meetings. The intent of the supplemental 2010/2011 surveys was to better characterize use of the RTWRA by songbirds and other nocturnal migrants with more intensive surveys in spring and fall, and during the morning hours when these species are more active. The majority (92%) of these surveys were conducted before 12:00 pm. Please see Section 6.4.1 for a discussion of additional survey efforts specifically targeted at golden eagles that were incorporated based on USFWS recommendation during the 2010 pre-survey meetings. Given the primary intent of the 2010/2011 surveys, the golden eagle risk assessment presented in Section 7.1 relies only on the 2005/2006 eagle observation data.

Species lists (with the number of observations and the number of groups) were generated by season and included all observations of birds detected, regardless of their distance from the observer. Species richness was calculated as the mean number of species observed per plot per survey (i.e., number of species/plot/20-min survey). For the standardized fixed-point bird use estimates, only observations of large birds detected within the 800-m radius plot were used in the analysis. For small birds only observations within a 100-m (328-ft) radius were used. Estimates of mean bird use (i.e., number of birds/plot/20-min survey) were used to compare differences between bird types, seasons, survey points, and other wind energy facilities. To calculate potential risk to bird species, the first flight height recorded was used to estimate the percentages of birds flying within the possible rotor-swept heights (RSH).

6.1.2 Results

In 2005/2006, a total of 91 bird species were recorded during 1,048 point count surveys. A total of 13,254 individual birds in 8,263 groups were observed. Bird species richness and bird use were highest in the fall and lowest in the summer. Passerines were the most abundant bird type observed during surveys. Of all birds observed flying, approximately 66.9% were below the potential RSH and approximately 33.1% were recorded within or above the RSH. Raptor use (excluding turkey vultures [*Cathartes aura*]) was determined to be 0.38 raptors per 20-minute

(min) survey, and the most commonly observed raptor species was red-tailed hawk (*Buteo jamaicensis*). Very little use was observed by doves, waterfowl, and waterbirds. Relatively higher use was observed for upland game birds; however, none of the upland game bird observations were recorded within the RSH (Appendix A).

In 2010/2011, a total of 273 20-min surveys were conducted and 49 bird species were identified (4,451 individuals in 1,014 groups). Bird diversity was highest in the spring and lowest in the summer. Mean use was highest in the fall (large birds) and winter (small birds) and was lowest in the summer (both large and small birds). Passerines were the most abundant bird type observed during surveys. Of all birds observed flying, 85.8% were initially recorded below the RSH and 11.4% were within the RSH. Raptor use (excluding turkey vultures) was determined to be 0.12 raptors/20-min survey, and similarly to the 2005-2006 studies, red-tailed hawk was the most commonly observed raptor species. Also similar to the 2005-2006 studies, relatively low use was observed for doves, waterfowl, and waterbirds, and higher use was observed for upland game birds (Appendix B).

The only golden eagle observations recorded during standardized fixed point surveys occurred on four separate dates during the fall 2005 survey period. During the 2005/2006 surveys, a total of 1,048 20-minute (min) surveys were conducted and eight golden eagle observations (five adults, one juvenile, and two of undetermined age) were recorded, resulting in a mean golden eagle use of 0.005 eagles/plot/20-min survey. Seven of the eight observations were recorded in the afternoon (between 1:47 pm and 3:25 pm) with the remaining observation recorded at 10:04 am. Golden eagle observations were recorded at survey station 2 (two separate observations of adults on November 16 and a pair of adults observed on November 17), station 3 (a single observation on November 17), station 5 (a single observation on November 9), station 7 (a single adult observed on November 17), and station 8 (a single juvenile observed on October 13; Figure 5; Appendix A). Five of the eight eagles were observed circle-soaring above the study area at altitudes ranging from 60 to 200 m (197 to 656 ft), while the pair was initially observed perched together but also began circle-soaring during survey period, and the remaining individual was observed flying through the study area at a height of approximately 80 m (262 ft).

A total of 273 20-min surveys were conducted during the 2010/2011 survey effort and no golden eagle observations were recorded. Annual precipitation records in the vicinity of the Project suggest that 2005 was wetter than the average annual precipitation recorded from 2001 through 2013 (CDWR 2014), and it is possible that precipitation may have influenced eagle observations during this year. However, the majority of surveys (92%) were conducted in the morning in 2010/2011, which may also have influenced eagle observations as seven of the eight observations recorded in 2005 were in the afternoon. As a result, golden eagle use estimates from only the 2005/2006 study period were used to inform the risk assessment and fatality prediction for golden eagles provided in Section 7.1.

6.1.3 Conclusions

The data from the 2005/2006 and the 2010/2011 avian point count studies suggest that the RTWRA is not within a major migratory pathway for diurnal migrants and use of the RTWRA by all birds was lower than many other wind resource areas (WRAs) evaluated throughout the US, and similar to other WRAs in the region (Figure 6 or see Figure 8 in Appendix B). It is important to note, however, that while comparison with other WRAs helps to estimate potential raptor fatality rates at a particular facility, the actual impacts of those fatality rates should be evaluated in the context of regional raptor populations.

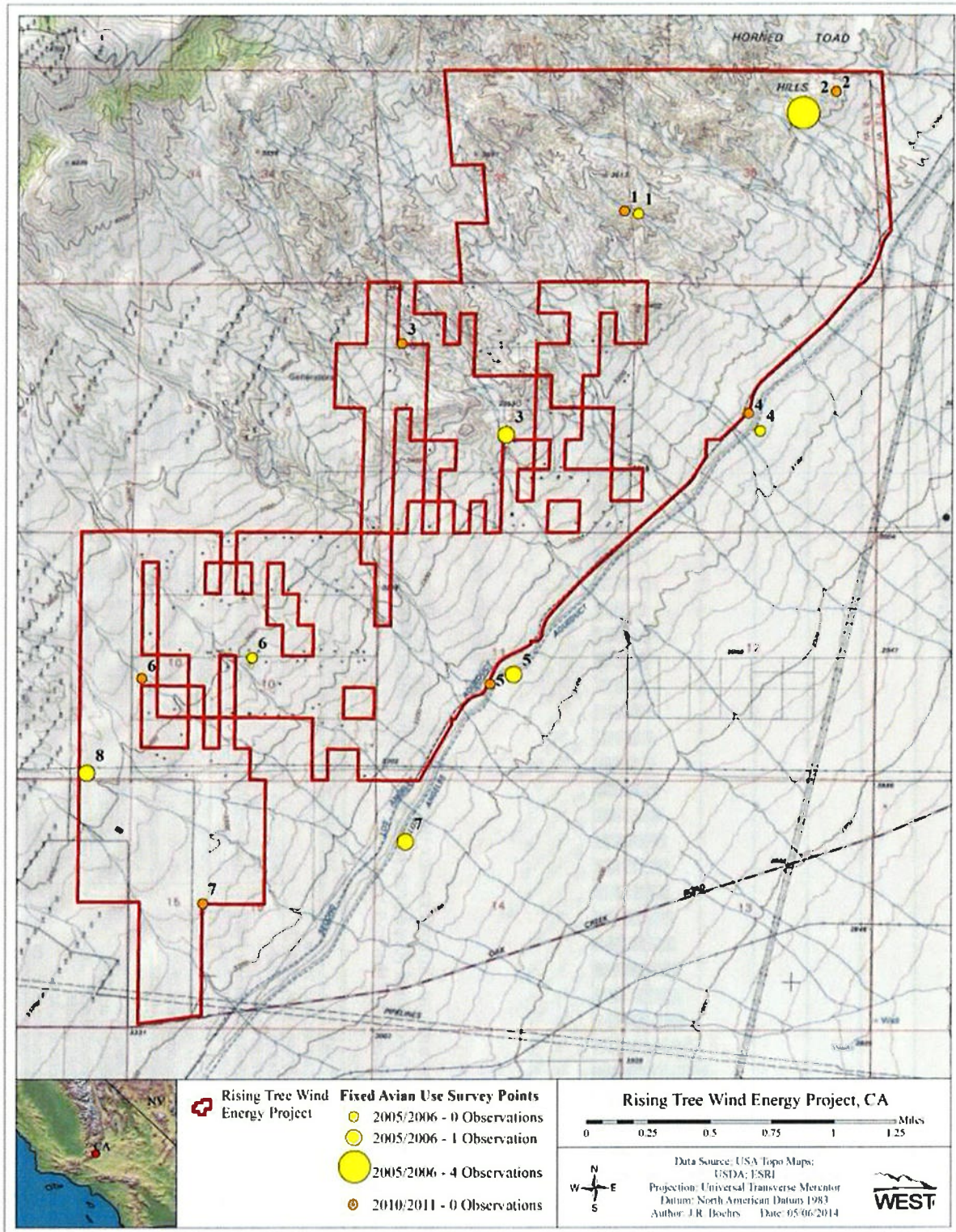


Figure 5. Location of eagle observations recorded during baseline avian use surveys at the Rising Tree Wind Resource Area.

Diurnal Raptors

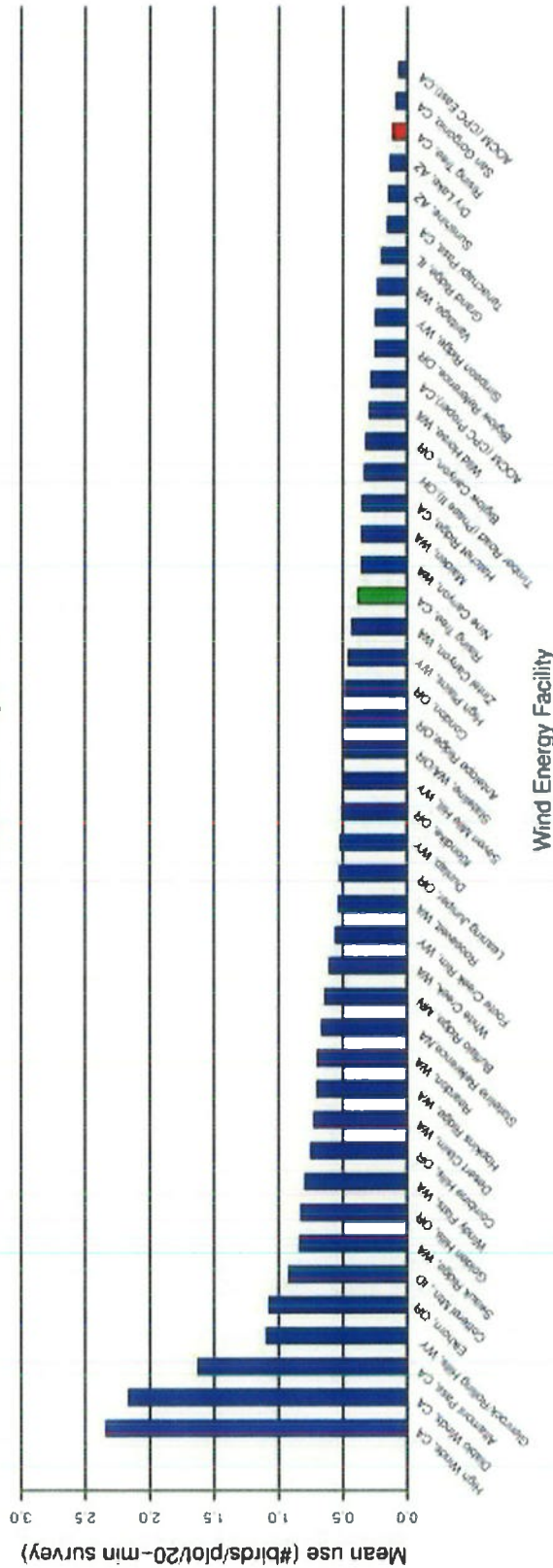


Figure 6. Comparison of annual diurnal raptor use at the Rising Tree Wind Resource Area and other US wind energy facilities. The data from the Rising Tree Wind Resource Area during the 2005/2006 study season is shown by the green bar and the 2010/2011 study season data is shown by the red bar.

Data from the following sources:

Study and Location	Reference	Study and Location	Reference	Study and Location	Reference
Rising Tree, CA (2010/2011)	Chaffield et al. 2012a	White Creek, WA	NWC and WEST 2005a	Timber Road (Phase II), OH	Good et al. 2010
Rising Tree, CA (2005/2006)	Johnson et al. 2007a	Footo Creek Rim, WY	Johnson et al. 2000b	Biglow Canyon, OR	WEST 2005d
High Winds, CA	Kerlinger et al. 2005	Roosevelt, WA	NWC and WEST 2004	Wild Horse, WA	Erickson et al. 2003d
Diablo Winds, CA	WEST 2006	Leaning Juniper, OR	Kronner et al. 2005a	AOCM (CPC Proper), CA	Chaffield et al. 2010a
Altamont Pass, CA	Orloff and Flannery 1992	Dunlap, WY	Johnson et al. 2009a	Biglow Reference, OR	WEST 2005d
Glenrock/Rolling Hills, WY	Johnson et al. 2008a	Clondike, OR	Johnson et al. 2002	Simpson Ridge, WY	Johnson et al. 2000b
Elkhorn, OR	WEST 2005a	Seven Mile Hill, WY	Johnson et al. 2008b	Vantage, WA	WEST 2007
Cottrell Mtn., ID	BLM 2006	Stateline, WA/OR	Erickson et al. 2003a	Derby et al. 2009	Derby et al. 2009
Swaik Ridge, WA	Erickson et al. 2003b	Antelope Ridge, OR	WEST 2009	Anderson et al. 2000	Anderson et al. 2000
Golden Hills, OR	Jeffrey et al. 2008	Condon, OR	Erickson et al. 2002b	Anderson et al. 2000	Erickson et al. 2002b
Windy Flats, WA	Johnson et al. 2007b	High Plains, WY	Johnson et al. 2009b	WEST and the CPRS 2006	WEST and the CPRS 2006
Combine Hills, OR	Young et al. 2003c	Zintel Canyon, WA	Erickson et al. 2002a, 2003c	Young et al. 2007c	Young et al. 2007c
Desert Claim, WA	Young et al. 2003b	Nine Canyon, WA	Erickson et al. 2001	Anderson et al. 2000	Anderson et al. 2000
Hopkins Ridge, WA	Young et al. 2003a	Maiden, WA	Young et al. 2002	Chaffield et al. 2010a	Chaffield et al. 2010a
Reardon, WA	WEST 2005b	Hatchet Ridge, CA	Young et al. 2007b		
Stateline Reference, OR	URS et al. 2001				
Buffalo Ridge, MN	Johnson et al. 2000a				

6.2 Mist-Net Surveys

6.2.1 Methods

The purpose of the mist-net surveys was to obtain, with a high degree of accuracy, the identity of songbird species occupying the study area during spring, including species difficult to identify in flight. Mist-netting was conducted at two different locations within the study area; one site in the north and one in the south (Appendix A). A total of 10 7x42-ft (2x13-m) nets were set up in a continuous row 420-ft (128-m) long, running approximately east to west at each site. Netting was conducted at each site twice per survey week or 22 days during a 2-month period (March 16 to May 11, 2006; 755 mist-net hours). Nets were opened one-half hour before sunrise and remained open as long as weather conditions allowed (i.e., favorable wind speeds and ambient temperatures). Each bird captured was identified to species, morphometric measurements were taken, and a USGS band was applied prior to release (See the 2005/2006 Baseline Survey Report provided as Appendix A).

6.2.2 Results

Twenty-five bird species were captured during the mist-net surveys. The overall capture rate was 40 birds per 100 mist-net hours. White-crowned sparrow (*Zonotrichia leucophrys*) was the most commonly captured species, composing about 63% of all captures. Other commonly captured species included: warbling vireo (*Vireo gilvus*), sage sparrow (*Amphispiza belli*), ruby-crowned kinglet (*Regulus calendula*), and house finch (*Carpodacus mexicanus*). No threatened, endangered or sensitive species were captured during the mist-net surveys (See the 2005/2006 Baseline Survey Report provided as Appendix A).

6.2.3 Conclusions

The mist-net results were generally similar to the results obtained through the point count surveys. Overall, about 72% of the species captured during the mist-net surveys were observed during the 2005-2006 point count study and species abundance estimates were fairly similar between the two efforts. The overall capture rate was below the average capture rate of several other mist-net studies conducted in the western US, and the RTWRA does not appear to provide important stopover habitat for migrating songbirds (Appendix A).

6.3 Nocturnal Radar Studies

6.3.1 Methods

The objective of the survey was to characterize avian migration over the RTWRA and collect data that could be used to determine the relative magnitude of nocturnal migration over the proposed development area when compared to other sites. A single mobile radar lab consisting of a Furuno FR 1510-MKIII marine radar mounted on a vehicle was used at a fixed location for a continuous 30-day period during the spring of 2006 (April 6 – May 5). The radar was an X-band system, similar to other radar labs used to study wind power development sites throughout the US (Cooper et al. 1991, Harmata et al. 1999, Roy and Pelletier 2005). The radar sampling location was selected to optimize the coverage of the study area, with consideration given to ground interference, safety, and access (Appendix A). Baseline information was collected on

flight direction, flight behavior, flight paths, passage rates/density, hourly changes in passage rates and flight altitude of nocturnal migrants.

6.3.2 Results

The overall mean passage rate was approximately 69 targets per km per hour (hr) in the horizontal mode and approximately 255 targets/km/hour in the vertical mode. Mean nightly passage rates were highly variable in both the horizontal and vertical modes. Mean flight altitude was approximately 575 m (1,886 ft) above radar level (arl) based on 17,597 targets and the majority of targets were recorded above a RSH of 30 to 152 m (Appendix A).

6.3.3 Conclusions

The results from the nocturnal radar study suggest the RTWRA is not within a major spring migration corridor for nocturnal migrants, which is supported by the results from site-specific fixed-point avian use surveys, as well as surveys conducted at numerous other sites proposed for wind energy development in the Tehachapi region (e.g., Alta-Oak Creek Mojave [Erickson et al. 2009], Alta East [Chatfield et al. 2010c and 2011a], PDV [Sapphos Environmental, Inc. 2006]). The nocturnal migrant passage rates recorded within the RTWRA during the radar study are among the lowest spring passage rates recorded at other WRA's, and consistent with those recorded during spring and fall at the Wildflower Green Energy Farm in Antelope Valley approximately 20 miles (32 km) to the south of the RTWRA (NRC and WEST 2011), the only other nearby project that has undertaken nocturnal radar surveys. The majority of nocturnal radar targets at the RTWRA were recorded flying above 152 m (Appendix A).

6.4 Raptor Nest Surveys

6.4.1 Methods

Raptor nest surveys were conducted at the RTWRA in 2006, 2010, and 2011, with the objective of locating raptor nests that may be subject to disturbance and/or displacement effects from facility construction and/or operation. The 2006 nest survey included the RTWRA, as well as a 2-mile (3.2-km) buffer surrounding the study area; however, portions of the buffer area to the east, west, and south did not warrant study due to existing land use (e.g., residential and commercial areas and existing wind farms; Appendix A). Throughout the spring 2006 breeding season (approximately March – June), the survey area was systematically searched for active and inactive raptor and raven nests by vehicle and by foot, including all Joshua trees, utility poles, transmission towers, and abandoned man-made structures.

For the 2010 and 2011 raptor nest surveys, the scope was expanded to include golden eagle nesting habitat within 10 miles of the RTWRA at the recommendation of USFWS. While active and inactive nests of all raptor species were recorded, the surveys specifically targeted golden eagles. Survey methods were consistent with the USFWS *Interim Golden Eagle Technical Guidance: Inventory and Monitoring Protocols; and other Recommendations in Support of Golden Eagle Management and Permit Issuance* (Pagel et al. 2010). For all other raptor species (e.g., red-tailed hawk, great horned owl [*Bubo virginianus*]), the survey area included all potential nesting habitat within two miles (3.2 km) of the RTWRA.

Two aerial surveys, each with two observers, were conducted via helicopter during the spring breeding season. In 2010, aerial surveys were flown on April 13-14 and May 24, while in 2011, surveys were flown on February 22, April 12, and June 1 (Appendix B).

6.4.2 Results

No active raptor or golden eagle nests and three inactive raptor nests were identified within the RTWRA and surrounding 2-mile buffer in 2006 (Appendix A). Similarly, aerial surveys in 2010 and 2011 identified no active raptor nests and seven inactive raptor nests within the surrounding 2-mile buffer (Appendix B).

During the 2010 and 2011 aerial golden eagle nest surveys, two active golden eagle nests were identified in 2010 and three were identified in 2011 (Figure 7). Several inactive/alternate golden eagle nests were also identified within the survey area. Of the five active golden eagle nests identified, the closest active golden eagle nest was located 4.7 miles (7.6 km) from the RTWRA boundary (Appendix B) and 4.9 miles (7.9 km) from preliminary turbine locations within the RTWEP (Figure 7; Table 3).

6.4.3 Conclusions

No active raptor nests have been identified within the RTWRA and the surrounding 2-mile buffer during the three years of raptor nest searches. Overall, very few raptors appear to nest in the general vicinity of the RTWRA. Although golden eagle nests have been identified within 10 miles of the RTWRA, the lack of eagle observations during fixed point bird use surveys suggest that breeding individuals do not frequent the site. Furthermore, these nests are not within line-of-site of the project area.

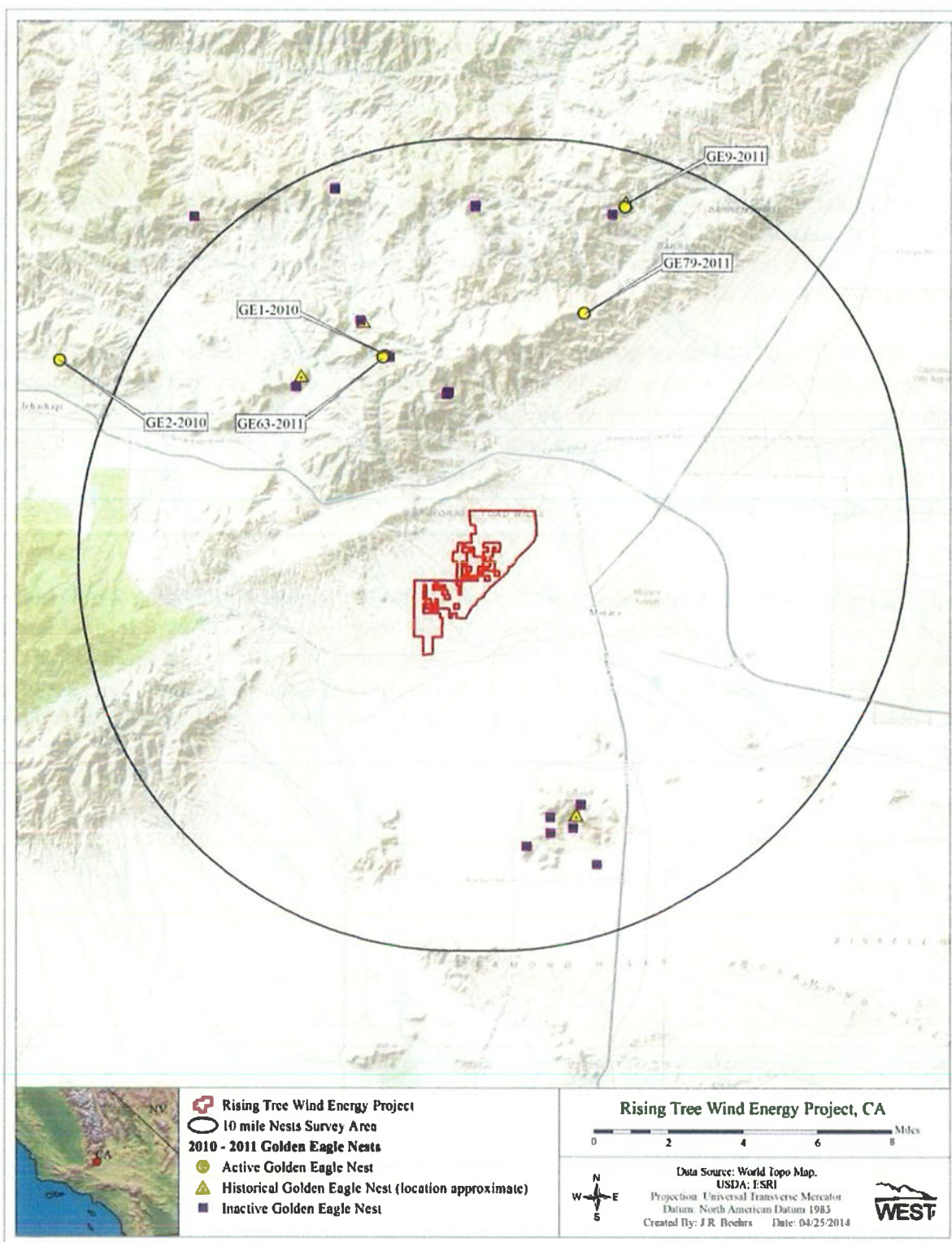


Figure 7. Location of 2010 and 2011 golden eagle nests identified during raptor nest searches conducted for the Rising Tree Wind Resource Area.

Table 3. Distances to conceptual turbine locations from the five active golden eagle nests identified during 2010 and 2011 surveys at the Rising Tree Wind Resource Area.

Nest ID	Turbine ID	Distance (Miles)
GE1-2010	31	4.86
GE63-2011	31	4.86
GE79-2011	59	5.58
GE9-2011	59	8.63
GE2-2010	31	11.81

Using the 2010 and 2011 golden eagle nest survey results, the average nearest neighbor distance between occupied nests is 5.06 miles (Table 4). Nests GE1-2010 and GE63-2011 were used in consecutive years and were separated by less than 100 m; therefore, for the purposes of calculating nearest neighbor distance, these two were considered to be a single territory. Half the average nearest neighbor distance (2.53 miles [4.07 km]) was the buffer used to approximate territory size around the active nests and to evaluate potential territory overlap with the RTWEP (Figure 8).

Table 4. Nearest neighbor distances for occupied golden eagle nests identified in 2011 at the Rising Tree Wind Resource Area.

Nest ID	Nearest Neighbor ID	Distance (miles)
GE63-2011	GE79-2011	5.44
GE79-2011	GE9-2011	3.06
GE9-2010	GE79-2011	3.06
GE2-2010	GE63-2011	8.69
Total		20.25
Average		5.06
½ Average		2.53

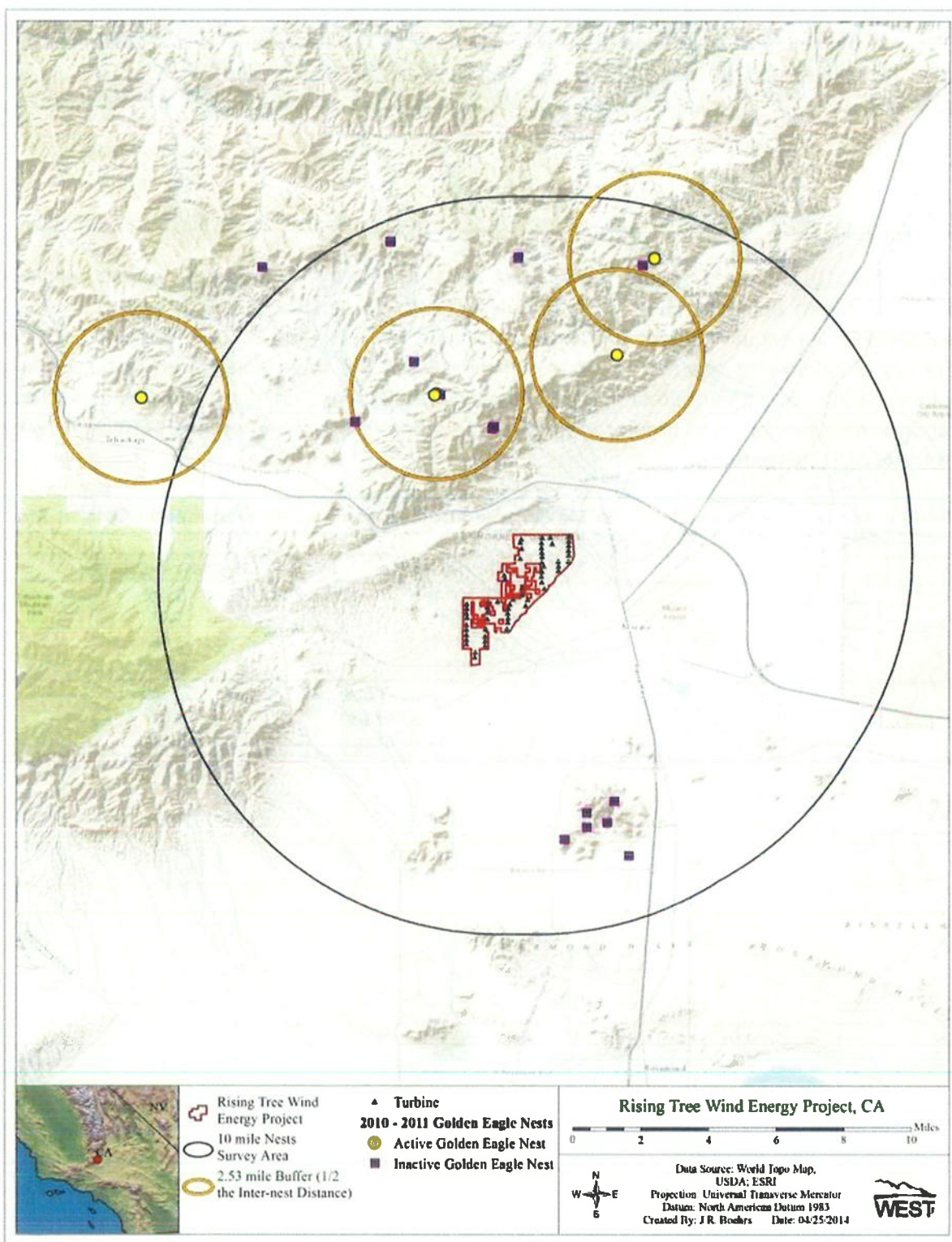


Figure 8. Approximate territory boundaries for the five active golden eagle nests (four individual territories) in the vicinity of the Rising Tree Wind Energy Project based on the nearest neighbor calculations.

6.5 Burrowing Owl Surveys

6.5.1 Methods

Surveys to determine the presence or absence of burrowing owls (*Athene cunicularia*) were conducted throughout the RTWRA during the spring of 2010 and 2011 (Appendix B). The burrowing owl is a California state species of special concern (CDFG 2011a) and a BLM sensitive species (Shuford and Gardall 2008). Surveys were conducted following survey methods specified in the California Burrowing Owl Consortium (CBOC) Burrowing Owl Survey Protocol and Mitigation Guidelines (CBOC 1997) recognized by the CDFW.

Surveys for burrowing owls, burrows, and owl sign were conducted by walking transects, spaced no greater than 30 m (approximately 100 ft) apart, throughout all suitable burrowing owl habitat within accessible parcels of the RTWRA and the proposed transmission line corridor. During the 2010 surveys, access to private lands was available for approximately 3,035 acres (4.74 mi²; about 88%) of the RTWRA (Appendix B). Surveys in 2011 covered an additional 235 acres (0.37 mi²; about 7%) of the RTWRA once access had been granted.

6.5.2 Results

No burrowing owls, or burrows with signs of current or past use by burrowing owls, were identified during the surveys. One burrowing owl was observed during fixed-point bird use surveys; however, follow up visits in the fall, winter, and spring did not identify any burrowing owls or active burrows (Appendix B).

6.5.3 Conclusions

The RTWRA does not appear to be regularly used by burrowing owls. Only one burrowing owl has been observed within the RTWRA during all baseline surveys conducted to date and no active burrows have been identified. The one observation is believed to be a migrant or dispersing juvenile rather than a breeding or wintering resident of the RTWRA (Appendix B).

6.6 Bat Acoustical Surveys

6.6.1 Methods

The objective of the acoustic bat surveys was to estimate the seasonal and spatial use of the RTWRA by bats. Bat activity was surveyed using 10 Anabat™ II (Titley Scientific™, Australia) detectors from July 1, 2008, to August 13, 2009. Paired (ground and raised) detectors were placed at five fixed stations at met towers within the RTWRA (Appendix C).

6.6.2 Results

A total of 291 bat passes were recorded during 2,875 detector nights. Averaging bat passes per detector night across sampling locations, a mean of 0.10 bat passes/detector-night was recorded. Nearly all passes (97.7%) were less than 30 kilohertz (kHz) in frequency (e.g. big brown bat [*Eptesicus fuscus*], hoary bat [*Lasiurus cinereus*], and silver-haired bat [*Lasionycteris*

noctivagaus)). Bat activity peaked in late March through late April, with a smaller peak of activity occurring in late October (Appendix C).

6.6.3 Conclusions

The level of bat use documented at the RTWRA was lower than that at wind-energy facilities in Minnesota and Wyoming, where reported bat mortalities were relatively low, and use at the RTWRA was much lower than at facilities in the eastern US, where reported bat mortality was highest (Appendix C).

7 RISK ASSESSMENT

7.1 Golden Eagle

This risk assessment evaluates site specific data, including: 1) golden eagle nest sites/breeding; 2) golden eagle use; 3) potential for concentration areas; and 4) additional factors known or thought to influence risk. In addition, this risk assessment provides the USFWS-recommended approach for estimating golden eagle mortality at the RTWEP.

7.1.1 Eagle Nest Sites/Breeding

Based on the nest surveys conducted for the Project and surrounding 10-mile buffer, there were no eagle nests identified within the Project boundary (see Section 6.4 above). Five occupied nests were identified within the surrounding 10-mile buffer and the average inter-nest distance was calculated to be 5.06 miles. The approximated territory size (1/2 average inter-nest distance) was calculated consistent with the ECPG to be 2.53 miles. There is no overlap with the approximated territories and the Project, suggesting low risk to nesting eagles relative to areas within this inter-nest distance. This inter-nest distance may influence eagle behavior in the form of territorial defense, as discussed in Table 5. It is noted that a recent report prepared by West Virginia University and submitted to the BLM (Katzner et al 2012a) does indicate that in some circumstances nesting eagles in the Mojave and Sonoran Deserts travel outside of this inter-nest distance. Additionally, based on spatial analysis, none of the five occupied nests identified during the 2010 and 2011 surveys are within direct line-of-sight of the Project, and existing wind projects occur between the Project and all identified nest sites. Of the unoccupied nests identified during the surveys, only three are in direct line-of-site of the Project; however, it should be noted that even the closest unoccupied eagle nest is over three miles (4.8 km) from the Project. This suggests that any disturbance to eagle nesting activity as a result of the Project would be unlikely

7.1.2 Eagle Concentration Areas

There are no known eagle concentration areas within the RTWRA. The limited eagle observations during 2005-06 fixed-point surveys suggests that golden eagles primarily use the RTWRA in the fall. While the data suggest the RTWRA may receive some use by migrating golden eagles as all eagles observed during baseline studies were recorded in the fall, the level of golden eagle use observed during the spring and fall seasons suggests that the RTWRA is not within an important migratory pathway or migration stopover for golden eagles. Potential

roost sites are limited within the RTWRA due to a lack of rock outcrops, cliffs, and large trees. However, there are a number of low-voltage (under 100 kv) overhead distribution lines and some abandoned residential structures present within and adjacent to the RTWRA that could provide opportunities for perching. Furthermore, the RTWRA does not appear to contain areas of concentrated golden eagle foraging, based on the results of avian use surveys. In 2011, protocol-level surveys for the Mojave ground squirrel (*Spermophilus Mohavensis*) were conducted at 15 trapping grids established throughout the RTWRA (Sundance Biology, Inc. 2011). During that study, a total of 3,528 antelope ground squirrels (*Ammospermophilus leucurus*) and 77 California ground squirrels (*Spermophilus beecheyi*) were captured during approximately 210,000 trap-hours resulting in a capture rate of 0.02 captures/trap-hour, or one capture every 50 hours. Despite the fact that antelope ground squirrel are not known to be a primary food source for golden eagles, this low capture rate suggests the RTWRA supports a relatively low density of small mammals, which are a potential prey resource for golden eagles. Additionally, big game and livestock, which might provide scavenging opportunities for golden eagles, will be excluded from the majority of the RTWRA by way of site security fencing. Section 11.1 below identifies additional efforts that will be undertaken if it is determined that this pre-construction assessment varies from post-construction impacts.

7.1.3 Eagle Risk Factors

Individual golden eagles may be at risk of direct or indirect effects associated with the RTWEP. Direct mortality associated with collision with wind turbines is considered the primary threat to eagles from wind facilities. An assessment of the factors known or thought to be associated with increased probability of collisions between eagles (and other raptors) and wind turbines is provided in Table 5 below. The risk factors and the science behind the risk factors have been identified in the ECPG. In addition to abundance, the two main risk factors identified in the ECPG are 1) the interaction of topographic features, season, and wind currents that create conditions for high-risk flight behavior near turbines; and 2) behavior that distracts eagles and presumably makes them less vigilant (e.g., active foraging or inter- and intra-specific interactions such as territorial defense).

Table 5. Potential collision risk factors as identified by the USFWS and a discussion of these factors for the Rising Tree Wind Resource Area.

Risk Factor	Scientific Evidence/Support	Citations	RTWRA Situation	Qualitative Assessment
Bird Density	Mixed findings; likely some relationship but other factors have overriding influence across a range of species	Barrios and Rodriguez (2004), de Lucas et al. (2007), Hunt (2002), Smallwood et al. (2009), Taylor et al. (2010)	Golden eagle use (abundance) of the RTWRA was 0.005 birds/plot/20-min survey based on site specific data collection in 2005/2006; no eagles were observed during 2010/2011 surveys.	Low
Bird Age	Mixed findings. Higher number of fatalities among subadult and adult golden eagles in one area. Higher fatalities among adult white-tailed eagles (<i>Haliaeetus albicilla</i>) in another	Hunt (2002), Nygård et al. (2010)	During 2005/2006 surveys, eagle observations included five adults, one juvenile, and two of unknown age. Two active nests in 2010 and three active nests in 2011 suggest the potential for sub-adults and/or floaters.	Unknown
Proximity to Nests	White-tailed eagle nesting areas close to turbines (within 500 m [1,640 ft]) have been observed to have low nest success and be abandoned over time.	Nygård et al. (2010)	The nearest active golden eagle nest from the baseline data is located approximately 4.86 miles from the nearest turbine.	Low
Bird Residency Status	Mixed findings. Higher risk to resident adults in Egyptian vultures (<i>Neophron percnopterus</i>). Higher number of mortalities among sub-adults and floating adults in golden eagles in one other study.	Barrios and Rodriguez (2004), Hunt (2002), Katzner et al. (2012b)	Golden eagles were observed only in the late fall of 2005; unknown whether these were residents or migratory individuals. Active nests within a 10-mile buffer of the RTWRA suggest that the presence of residents is possible.	Low
Season	Mixed findings. In some cases for some species, risk appears higher in seasons with greater propensity to use slope soaring (fewer thermals) or kiting flight (windy weather) while hunting	Barrios and Rodriguez (2004), de Lucas et al. (2008), Hoover and Morrison (2005), Smallwood et al. (2009)	Golden eagles appear to utilize the RTWRA primarily in the fall based on site-specific avian use data collect to date. Fewer thermals would be expected in the winter and windy weather peaks in late spring/early summer at the RTWRA.	Potential Seasonal Variation in Risk

Table 5. Potential collision risk factors as identified by the USFWS and a discussion of these factors for the Rising Tree Wind Resource Area.

Risk Factor	Scientific Evidence/Support	Citations	RTWRA Situation	Qualitative Assessment
Flight Style	Species most at risk perform frequent flights that can be described as kiting, hovering, and diving for prey.	Smallwood et al. (2009), Katzner et al. (2012b)	Low potential for these flight behaviors within the Project based on low prey abundance, topography, and wind conditions within the RTWRA. Five of the eight eagles were observed circle-soaring above the study area at altitudes ranging from 60 to 200 m (197 to 656 ft), while the pair was initially observed perched together but also began circle-soaring during survey period, and the remaining individual was observed flying through the study area at a height of approximately 80 m (262 ft).	Moderate
Interaction with Other Birds	Higher risk when interactive behavior is occurring	Smallwood et al. (2009)	Based on the average nearest-neighbor distance of active nests in 2011, there is low potential for territorial defense to occur in the RTWRA. No territorial defense behaviors were observed by golden eagles during baseline studies	Low
Active Hunting/Prey Availability	High risk when hunting close to turbines, across a range of species	Barrios and Rodriguez (2004), de Lucas et al. (2008), Hoover and Morrison (2005), Hunt (2002), Smallwood et al. (2009)	Based on low capture rate (0.02 captures/trap-hour) during small mammal trapping efforts and incidental observations, ground squirrels, lagomorphs, and other small mammals occur in relatively small numbers throughout the RTWRA. No fossorial mammal concentrations are known to exist in the RTWRA; livestock will be excluded, and no big game are present.	Low

Table 5. Potential collision risk factors as identified by the USFWS and a discussion of these factors for the Rising Tree Wind Resource Area.

Risk Factor	Scientific Evidence/Support	Citations	RTWRA Situation	Qualitative Assessment
Turbine Height	Mixed, contradictory findings across studies and across a range of species	Barclay et al. (2007), de Lucas et al. (2008); Loss et al. (2013)	Six of eight golden eagle observations were within the rotor swept height (RSH; 28-m to 140-m).	High
Rotor Speed	Higher risk associated with higher blade-tip speed for golden eagles in one study, but this finding may not be generally applicable	Chamberlain et al. (2006)	State of the art technology, low revolutions per minute (RPM), more space between rotor sweeps; however, tip speeds may be similar to older turbine technologies.	Low
Rotor-swept Area	Meta-analysis found no effect, but variation among studies clouds interpretation	Barclay et al. (2007)	75.0% of eagle observations during 2005/2006 surveys were within the RSH; however, larger rotors generally have more space and time between sweeps.	Unknown
Topography	Several studies show higher risk of collision with turbines on ridge lines and on slopes. Also a higher risk in saddles that present low-energy ridge crossing points.	Barrios and Rodriguez (2004), de Lucas et al. (2008), Hoover and Morrison (2005), Smallwood and Thelander (2004); Bohrer et al. (2012); Katzner et al. (2012b)	Based on the prevailing wind direction in relation to topography including slope, aspect, and elevation, there is low potential for strong updrafts, and there are no prominent saddles or other high risk topographic features in the RTWRA	Low
Wind Speed	Mixed findings, probably locality dependent	Barrios and Rodriguez (2004), Hoover and Morrison (2005), Smallwood et al. (2009)	Based on the prevailing wind direction in relation to topography including slope, aspect, and elevation there is low potential for strong updrafts.	Low

7.1.3.1 Topography and Wind

The topography of the RTWRA is provided in Figures 7 and 8. At a landscape scale, elevations in the site are highest in the northwest and fall away towards the southeast. The prominent wind direction at the RTWRA is oriented in a northwesterly direction (i.e. from the northwest; Figure 9). The orientation of the overall topography at a landscape scale and the prominent wind direction in relation to the placement of the RTWRA on the leeward side of the range suggest that the RTWRA has been sited in a location that would not be expected to increase the potential collision risk to golden eagles as the interaction of topography and wind would be less likely to create conditions suitable for strong updrafts of wind.

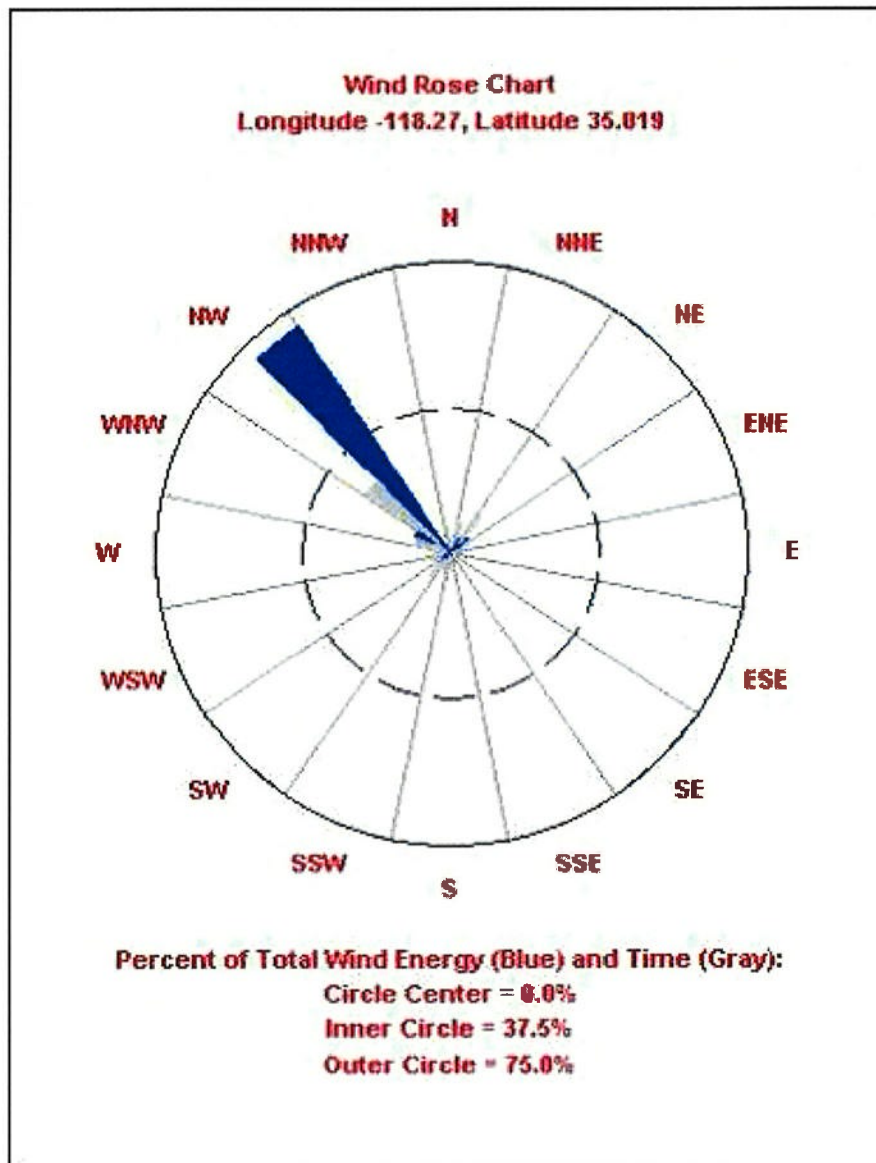


Figure 9. Wind rose diagrams depicting the prominent wind direction at the Rising Tree Wind Resource Area.

Based on limited scientific study, it has been suggested that turbines sited on steeper slopes, especially on upwind sides of ridges, as well as turbines sited in saddles, canyons, or other topographic depressions may potentially increase collision risk to golden eagles. Slope and aspect within the RTWEP were reviewed and assessed within 30-m (98-ft) pixels using ArcGIS Spatial analyst tool. Based on this assessment, the slopes on the vast majority of the RTWEP are less than 11°, and all slopes within the Project are less than 27° (Figure 10). Furthermore, northwest (upwind) slope aspects are generally lacking within the Project (Figure 11). This lack of distinct elevational gradients, combined with the prevailing down-slope wind direction, strongly limit the potential for updrafts that are frequently used by birds of prey, including eagles. This is consistent with the results of baseline avian use surveys conducted during 2005/06 and 2010/11. During those surveys, no specific association between topographic relief and use by eagles or other raptors was noted.

The results of the landscape-scale assessment of topography and wind, as well as the finer scale assessment suggest that topography and wind conditions at the RTWEP would not generally be expected to create conditions suitable for strong updrafts of wind and would not be expected to greatly influence the potential collision risk to golden eagles.

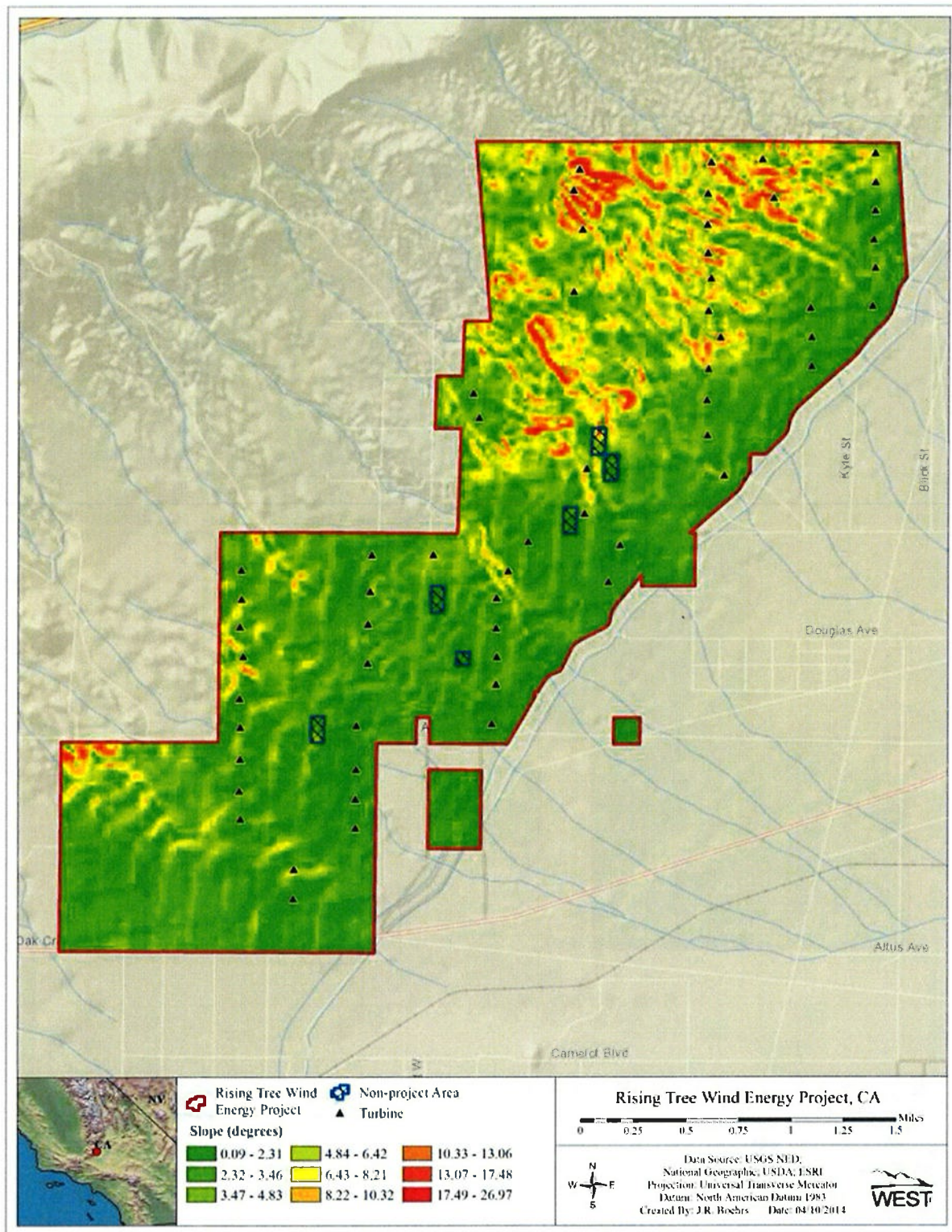


Figure 10. Slopes within the Rising Tree Wind Energy Project.

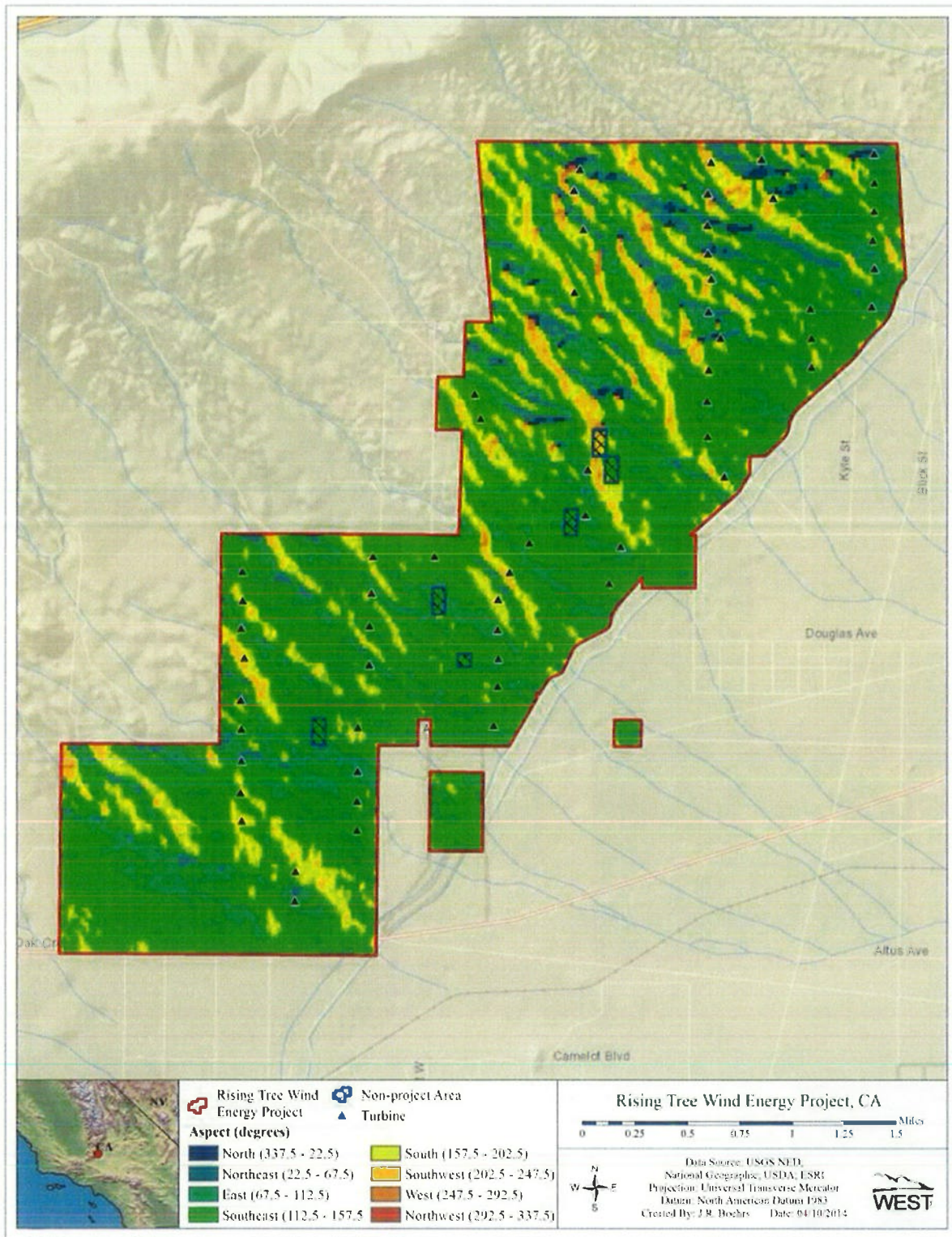


Figure 11. Aspects within the Rising Tree Wind Energy Project.

7.1.3.2 Potential for Distractive Behaviors

Assuming that intra-specific competition and territorial defense increases collision risk, the RTWEP has little potential for these behaviors to occur as there is no overlap with the approximated eagle territories in the vicinity of the RTWEP (Figure 8). Also, no territorial defense behaviors were observed by golden eagles during the baseline studies. While ground squirrels, lagomorphs, and other small mammals occur in relatively small numbers throughout the RTWRA (based on small mammal trapping efforts and incidental observations), there are no known fossorial mammal concentrations within the RTWRA and the results of the avian use surveys suggest that the RTWRA does not contain areas of concentrated golden eagle foraging.

7.1.3.3 Adult vs. Juvenile and Resident vs. Floater/Migrant

A total of eight golden eagle observations were recorded within the RTWRA during baseline surveys, including five adults, one juvenile, and two of undetermined age. In addition, active nests identified in the general area during nest surveys suggest the potential for the presence of sub-adults and/or floaters. All of the eagle observations were recorded in the fall season suggesting the observations might have been migrants; however, it is not clear if the observations were of migrant or resident eagles.

7.1.4 Fatality Predictions

7.1.4.1 Relevant Fatality Studies

The models that have been developed for predicting eagle fatality levels from wind projects assume pre-construction eagle use relates to post-construction fatality, a hypothesis supported by results from a limited number of studies (Figure 12). Table 6 contains a list of these facilities where WEST has empirical fatality information, as well as the total raptor and golden eagle fatality counts.

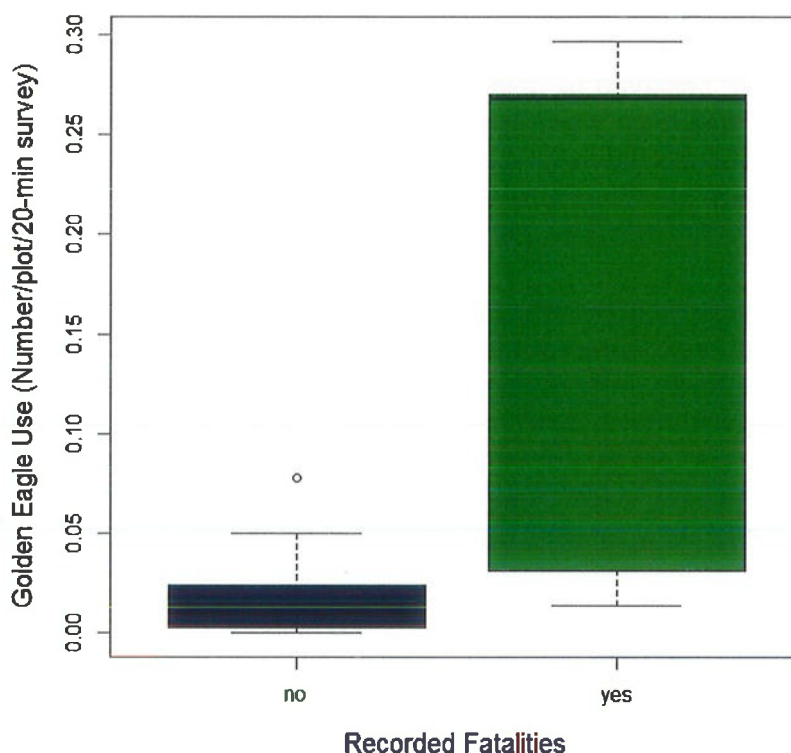


Figure 12. Average pre-construction golden eagle use values for facilities with and without observed golden eagle fatalities.

Data from the following sources:

Wind Energy Facility	Use Estimate	Fatality Estimate
Alta-Oak Creek Mojave, CA	Erickson et al. 2009	Chatfield et al. 2012b
Bighorn, WA	Johnson and Erickson 2004	Kronner et al. 2008
Biglow Canyon, OR	WEST 2005d	Jeffrey et al. 2009a; Enk et al. 2010, 2011a, 2012
Combine Hills, OR	Young et al. 2003c	Young et al. 2006, Enz et al. 2012
Diablo Winds, CA	WEST 2006	WEST 2006, 2008
Elkhorn, OR	WEST 2005c	Jeffery et al. 2009b, Enk et al. 2011b
High Winds, CA	Kerlinger et al. 2006	Kerlinger et al. 2006
Hopkins Ridge, WA	Young et al. 2003a	Young et al. 2007a, 2009
Klondike, OR	Johnson et al. 2002	Johnson et al. 2003; NWC and WEST 2007; Gritski et al. 2010, 2011
Kittitas Valley (Swauk Ridge), WA	Erickson et al. 2003b	Stantec Consulting Services 2012
Leaning Juniper, OR	Kronner et al. 2005b	Gritski et al. 2008
Nine Canyon, WA	Erickson et al. 2001	Erickson et al. 2003c
Stateline, OR/WA	Erickson et al. 2003a	Erickson et al. 2004, 2007
Tuolumne (Windy Point), WA	Johnson et al. 2006	Enz and Bay 2010
Vansycle, OR	WCIA and WEST 1997	Erickson et al. 2000
Vantage, WA	WEST 2007	Ventus Environmental Solutions (Ventus) 2012
Wild Horse, WA	Erickson et al. 2003d	Erickson et al. 2008
Windy Flats, WA	Johnson et al. 2007b	Enz et al. 2011
White Creek, WA	NWC and WEST 2005b	Downes and Gritski 2012

Table 6. Recorded golden eagle fatalities in comparison to survey effort at western US wind energy facilities¹.

Project	Years	Period of Survey (years)	# of Recorded Golden Eagle Fatalities*	# of Incidental Golden Eagle Fatalities	Turbines Searched	Total Turbines	Total Megawatt (MW)	Approximate Golden Eagle Use Estimate (#/20-min survey)
CA3	2003-2005	2	1	1	90	90	162	0.297
OR3	2008	1	2	1	61	61	101	0.270
	2010	1			31	31		
CA2	2005-2007	2	1	1	31	31	20.46	0.268
WA5	2009-2010	1	0	0	21	62	136.6	0.078
WA8	2007	1	0	0	64	127	229	0.050
OR2	2004-2005	1	1	0	41	41	41	0.031
	2011	1			52	104	104	
WA4	2011-2012	1	0	0	48	48	100.8	0.026
OR5	2006-2008	2	0	0	17	67	100.5	0.024
CA1 ²	2011-2012	1	1	1	55	290	720	0.014
OR6	1999	1	0	0	38	38	24.9	0.010
WA6	2010-2011	1	0	0	30	60	90	0.010
WA9	2010-2011	1	0	0	36	114	262.2	0.010
WA3	2006	1	0	0	41	83	150	0.009
	2008	1			43	87	156.6	
ORWA1	2001-2002	1.5			399			
	2003	1	0	0	454	454	263	0.008
	2006	1			39			
WA7	2007-2011	4	0	0	89	89	204.7	0.004
	I: 2002-2003	1			I: 16	16	24	
	II: 2005-2006	1			II: 25	50	75	
OR4	III (Phase I): 2007-2009	2	0	0	III: 46	125	223.6	0.003
	IIla (Phase II): 2008-2010	2			IIla: 34	51	76.5	
WA1	2002-2003	1	0	0	37	37	48.1	0.003
	Phase I: 2008, 2009	2			Phase I: 50	76	125.4	
OR1	Phase II: 2009-2011	2	0	0	Phase II: 50	65	150	0
	Phase III: 2010-2011	1			Phase III: 50	76	174.8	
WA2	2006-2007	1	0	0	133	133	199.5	0

¹References for Table 6 are provided in Figure 10 above.

²Project located in the general vicinity of the Rising Tree Wind Resource Area.

Raw counts of raptor fatalities are often available for wind energy facilities where estimated mortality rates are not provided. Four golden eagle fatalities have been found in Washington (Klickitat County [Associated Press 2009]) and Oregon (Union County [Rautenstrauch 2010]). The High Winds and Diablo Wind facilities in California have each had two golden eagle casualties (Kerlinger et al. 2006, WEST 2008). Oak Creek Energy Systems (OCES) wind energy facility, also in California, had a single golden eagle fatality (M.H. Wolfe and Associates Environmental Consulting [MHW] 2009). Finally, one golden eagle casualty was found at the Foote Creek Rim wind energy facility in Carbon County, Wyoming (Young et al. 2003d). Comparatively higher numbers of raptor fatalities have been recorded at other facilities in California (e.g., Altamont Pass [see Altamont Pass Avian Monitoring Team 2008, Smallwood and Karas 2009]).

During the first year of post-construction fatality monitoring at the nearby Alta-Oak Creek Mojave Project in 2011-2012, no golden eagle fatalities were found during bi-weekly searches of 55 turbines; however, one incidental golden eagle fatality was found at the facility during the monitoring study (Chatfield et al. 2012b). At the Alite wind energy facility, located adjacent to the Alta-Oak Creek Mojave Project, no golden eagle fatalities were found during two years of fatality monitoring (Chatfield et al. 2010b). Data from several on-going golden eagle studies in the region, when they become publicly available, may add to our understanding. We are also aware that at least nine golden eagle fatalities have been reported at the nearby Pine Tree facility and one at the nearby North Sky River facility; however, the topography, elevation, vegetation, and species assemblages are different at Pine Tree and North Sky River than other projects in the Tehachapi Pass Wind Resource Area, including the RTWEP.

At the RTWEP, golden eagle use was estimated to be 0.005 golden eagles/800-m plot/20-min survey in 2005/2006 and zero golden eagles/800-m plot/20-min survey in 2010/2011. Overall, mean golden eagle use at the RTWEP is considerably lower than golden eagle use at facilities with no recorded golden eagle fatalities (Table 6, Figure 12).

7.1.4.2 Fatality Prediction Using the USFWS Bayesian Model

Golden eagle fatality predictions were calculated using the current USFWS Bayesian Collision Risk Model (USFWS 2013a) based on the documented golden eagle observations during the site-specific baseline survey data collected at the RTWEP. Avian use was evaluated within the entire RTWRA and all eagle observations were used in the fatality prediction (Johnson et al. 2007a and Chatfield et al. 2012a; Appendices B and C).

Collision risk modeling estimates the number of annual eagle fatalities that are expected at a proposed wind-energy facility based upon eagle use minutes recorded during on site eagle use surveys. Assuming that eagle mortality is proportional to pre-construction eagle activity (as demonstrated in Figure 12 above), a Bayesian correction factor has been established by the USFWS based on pre- and post-construction golden eagle surveys conducted at four wind energy facilities as reported in Whitfield (2009). Bayesian analyses include a prior belief (or best guess) about eagle exposure and collision probability along with site specific data to estimate

annual eagle mortality from a posterior distribution of eagle exposure and collision probability. In order to obtain an estimate of eagle fatalities at the RTWEP using the USFWS methodology, the following information was used: 1) the number of eagle and unidentified eagle flight paths within 800 m of observers and below 200 m AGL; 2) an estimate of operating time given wind speed data at the RTWEP; 3) the quantity of turbines and rotor radius of turbines proposed for the RTWEP; and 4) the prior Bayesian collision correction factor as recommended by the USFWS (USFWS 2013a). The fatality estimate included herein is calculated based on the largest expected turbine layout scenario of 60 turbines. If this layout and turbine model changes prior to construction, the Bayesian model will be re-run.

A total of 349.33 hours of avian use surveys were completed at the RTWEP, during which a total of eight individual golden eagle observations were recorded. Of these eight observations, all were recorded within 800 m of observers and all were recorded flying below 200 m in height.

Exposure rate (λ), as defined by the USFWS (2013a), is the expected number of flight minutes below 200 m per daylight hour across the surveyed area (km^2). Avian use surveys at the RTWEP were conducted prior to release of the ECPG and, as a result, eagle observations were not conducted on a per-minute basis and the total minutes eagles were observed in flight were not recorded. To account for this in the modeling approach, we assumed one minute of eagle flight time per eagle observation, consistent with the latest ECPG, which state that most observations will likely equal one eagle-minute (USFWS 2013a). A total of eight golden eagle flight minutes were recorded within fixed-point survey plots that covered the sampled portion of the RTWEP during 349.33 survey hours (Table 7). A **Gamma**($\alpha = 0.97, \beta = 2.76$) prior distribution with mean (0.35) and standard deviation (0.357) has been recommended by the USFWS for the exposure prior. Posterior exposure distributions of eagle use at the RTWEP were estimated as **Gamma** distributions with the α parameters equal to the sum of the prior α and total flight minutes below 200 m, and the β parameters equal to the sum of the prior β and effort (hours of surveys x km^2 of area surveyed). This resulted in a posterior distribution for the golden eagle exposure rate at the RTWEP of **Gamma** (8.97, 705.136 with a mean of 0.013 golden eagle flight minutes observed per hour of survey per km^2 (Table 7).

Table 7. Estimated Exposure Rate (λ) from eagle observations made during avian use surveys at the Rising Tree Wind Energy Project, Kern County, California.

Variable	Value
1) Number of Surveys	1048
2) Average Length of Surveys (hours)	0.33
3) Survey Hours	349.33
4) Survey Radius (meters)	800
5) Recorded Flight Minutes below 200 m at points	8
6) Eagle Flight Minutes (α : Line 5 + 0.97)	8.97
7) Effort (β ; survey hours x sq km of area surveyed+2.76)	705.136
8) Mean Exposure Rate (Line 6 / Line 7)	0.013

A facility-specific expansion factor is included to account for the hazardous area within the RTWEP and this expansion factor is multiplied by the eagle exposure rate ($\frac{\text{eagle flight minutes}}{\text{hour} \cdot \text{km}^2}$) to estimate the potential annual eagle-wind turbine interactions (minutes of flight within the turbine hazardous area). The expansion factor also scales the exposure rate to daylight hours (τ) within a year across the total hazardous areas (δ_i) surrounding all proposed turbines (n_t ; USFWS 2013).

$$\varepsilon = \tau \sum_{i=1}^{n_t} \delta_i$$

The USFWS has defined the turbine hazardous area (δ_i) as the rotor-swept area around each turbine or proposed turbine location (km^2 ; USFWS 2012). Expansion factors (ε) were calculated using 4,383 daylight hours as recommended in the ECPG and the originally proposed turbine scenarios (Table 8).

Table 8. Expansion Factors (ε) for the proposed turbine layout at the Rising Tree Wind Energy Project, Kern County, California. Turbine Hazardous Area = $\pi \times \text{turbine radius}^2$. Expansion factor = Line 9 x Line 11 x Line 12.

Variable	
9) Daylight hours	4383
10) Rotor Radius (meters)	56.0
11) Turbine Hazardous Area	0.010
12) Number of Turbines	60
13) Overall Expansion Factor	2590.888

The collision correction factor (collision probability; C) was defined as the probability of an eagle colliding with a turbine given each minute of eagle flight in the turbine hazardous area. The prior distribution for collision probability was developed by the USFWS using the four previous golden eagle fatality studies (Foote Creek Rim, Wyoming; San Geronio, California; Tehachapi, California; and Altamont, California) reported in Whitfield (2009). A mean of the estimated golden eagle flight minutes within the turbine hazardous area to recorded golden eagle collision events at those facilities was used to determine a *Beta* (2.31, 396.69) prior distribution for collision probability with mean and standard deviation of 0.007 and 0.006 eagle fatalities per minute of flight in the turbine hazardous area, respectively (Table 9). The estimates do not incorporate site specific information regarding collision probability. As post-construction monitoring is completed at the RTWEP a posterior, site specific, estimate of collision probability can be estimated.

Table 9. Collision Correction Factor (C) calculated as Line 14/(Line 14 + Line 15)).

Variable	Value
14) Prior Fatalities	2.31
15) Prior exposure events not resulting in fatality	396.69
16) Prior mean collision correction factor	0.00579

The USFWS Bayesian collision risk model assumes that higher site-specific eagle flight activity will correspond to higher annual eagle mortality, once the wind energy facility is operational. Under this assumption, predictions of annual eagle mortality (F) were modeled as the pre-construction measure of eagle exposure (λ) within areas of potential eagle-wind turbine interactions (ε) multiplied by a collision correction factor (C):

$$F = \varepsilon \lambda C$$

Credible intervals (i.e., Bayesian confidence intervals) were calculated using a simulation of 10,000 Monte Carlo draws from the posterior distribution of eagle exposure (λ) and the collision probability distribution (C ; Manly 1991). The product of each of these draws, with the exposure area corresponding to turbine type was used to estimate the distribution of possible fatality at the RTWEP. The upper 80th percentile of this distribution has been recommended by the USFWS as a conservative estimate of take for a proposed project (USFWS 2013a).

Predicted eagle fatalities per year using the USFWS Bayesian Collision Risk Model are 0.191 eagles per year (upper 80th credible interval 0.284; Table 10).

Table 10. Eagle fatalities per year (F) given the proposed turbine layout.

Variable	
Estimated annual eagle fatalities	0.1908
Upper 80th Credible Interval	0.2844

Based on the two approaches used for estimating golden eagle fatalities, one to two eagle fatalities every five years may be expected to occur at the RTWEP. The first method suggests an average of less than one eagle per year and the second method suggests up to 0.28 eagles per year or one eagle approximately every three and a half years. Both methods are predicated on several assumptions, including post-construction eagle use being similar to eagle use measured during the pre-construction baseline studies. Because the 2011-2012 avian use surveys were conducted primarily in the morning, only the 2005-2006 observational data was incorporated into the fatality prediction model.

7.1.5 Population Status and Local Area Population Thresholds

The project lies within the Sonoran and Mohave Desert BCR. Golden eagle density estimates within the Sonoran and Mohave Desert BCR are provided in the USFWS ECPG (USFWS 2013a). Density estimates in the Sonoran and Mohave Desert are 0.0063 golden eagles per mi² (USFWS 2013a). The estimated total number of golden eagles in the Sonoran and Mohave Desert is 600 golden eagles (USFWS 2013a).

The USFWS has previously identified annual take levels of 5% of annual production to be sustainable for a range of healthy raptor populations, and annual take levels of 1% of annual production as a relatively benign harvest rate over at least short intervals, when population status was uncertain (Millsap and Allen 2006, USFWS 2013). This was the approach used to

establish take thresholds at the eagle management unit scale (BCR level for golden eagles; USFWS 2009). However, in 2009, the USFWS determined that golden eagle populations might not be able to sustain any additional unmitigated mortality, and as a result, set the thresholds for golden eagles to zero at the eagle management unit (BCR) scale, and determined that any new authorized take of eagles must be at least equally offset by compensatory mitigation.

The USFWS has identified take rates of between 1% and 5% of the estimated total golden eagle population size at the local-area population scale (140-mile [225-km] buffer surrounding the project) as significant; with 5% being at the upper end of what might be appropriate under the BGEPA preservation standard, whether offset by compensatory mitigation or not (USFWS 2013a). The USFWS ECPG (USFWS 2013a) recommends calculating the local-area 5% benchmark as follows:

$$(\text{Local-area} * \text{Regional Eagle Density}) * 0.05$$

A 140-mile buffer surrounding the RTWEP encompasses the following area within four BCRs: Coastal California (25,999.32 mi² [67,337.93 km²]), Sonoran and Mojave Desert (23,009.65 mi² [59,594.72 km²]), Sierra Nevada (3,537.80 mi² [9,162.86 km²]), and Great Basin (952.94 mi² [2,468.10 km²]; Figure 13). The remaining area (9,072.17 mi² [23,496.81 km²]) within the 140-mile buffer is ocean. Density estimates for resident golden eagles within each of these BCRs are available in USFWS ECPG and are as follows: Coastal California (0.0150 eagles/mi²), Sonoran and Mojave Desert (0.0063 eagles/mi²), Sierra Nevada (0.0041 eagles/mi²), and Great Basin (0.0255 eagles/mi²; USFWS 2013a). Using the equation above, an estimated local area population size for the RTWEP is approximately 574 golden eagles. Based on this analysis, the local-area 5% benchmark would be 29 golden eagles annually. Assuming a mortality rate of 0.28 golden eagles per year, this amount of mortality composes 0.05% of the total estimated local area population and 0.97% of the local-area 5% benchmark for golden eagle mortality. This assessment doesn't consider cumulative effects analysis for other projects within the local area population.



Figure 13. Bird Conservation Regions contained within a 140-mile buffer surrounding the Rising Tree Wind Energy Project, Kern County, California.

7.2 Burrowing Owl

No burrowing owls or burrows with sign of current use by burrowing owls were identified during the standardized burrowing owl surveys (Appendix B). As a result, no risk to burrowing owls nesting on-site is expected to occur from construction or operation of the RTWEP based on Tier 3 surveys.

A single burrowing owl was observed during fixed-point bird use surveys on September 30, 2010. No additional observations of burrowing owls or active burrows were identified in follow-up visits to this location. The individual owl observed was believed to be a young dispersing bird or a migrant passing through the region rather than resident breeding or wintering bird (Appendix B). The single burrowing owl observation suggests that the RTWRA may be used by wintering or migrating burrowing owls, likely in low numbers.

7.3 Other Raptors

No active raptor nests have been identified within the RTWRA or surrounding 2-mile buffer in the three years of raptor nest surveys (Appendix B). One inactive raptor nest was identified within the RTWRA during the 2006 raptor nest survey. The very low density of raptor nests in the vicinity of the RTWRA documented during three years of surveys suggests that potential disturbance/displacement effects on nesting raptors is unlikely to occur during construction or operation of the RTWEP (Appendix B). There is the potential for inactive nests located within the RTWRA and vicinity to become active in subsequent years.

Avian species (i.e., songbirds, chukar [*Alectoris chukar*], quail), lagomorphs (desert cottontail [*Sylvilagus audubonii*] and jack rabbits), and other small mammals (ground squirrels) likely provide the majority of prey species for raptors in the RTWRA. These species generally do not occur in high concentrations in the region and, while raptor species certainly forage within the RTWRA, the site does not serve as prime foraging habitat for concentrations of raptor species, which is evidenced by the very low raptor use observed during three years of baseline avian use studies (Appendices B and C).

Based on the relative abundance of red-tailed hawks as well as flight characteristics, there is a greater potential for red-tailed hawk fatalities compared to other species; however, behavior, habitat selection, avoidance, and other factors may influence collision risk to raptors. The mean raptor fatality rate at existing wind energy facilities in the western US, that are also considered to have low pre-construction raptor use, is 0.08 raptors/MW/year, with a range of zero to 0.21 raptors/MW/year (Appendix B). Raptor fatality rates at existing facilities in California and the Pacific Northwest with publicly available pre- and post-construction data have ranged from zero to 2.18 raptors/MW/year (Appendix B). Raptor use estimates at the same facilities ranged from 0.21 raptors/20-min survey to 2.16 raptors/20-min survey (Appendix B). The raptor use estimate for the RTWRA is considerably lower than the other facilities in California, as well as the majority of facilities in the Pacific Northwest that have pre-construction use data.

Assuming a correlation between use and fatality rates exists, raptor mortality at the RTWEP is expected to be lower than mortality observed at sites in California and more similar to rates observed in the Pacific Northwest (Appendix B). The mean and range of mortality rates for sites considered to have low raptor use is likely a more realistic range to use for predicting mortality at the RTWEP. Although a number of raptor species would potentially be at risk of collision mortality during operation of the RTWEP, the frequency with which they were documented using the site during three years of study suggests that raptor fatality rates would be comparatively low.

7.4 California Condor

WEST prepared a California condor risk assessment that reviewed California condor life history, ecology, and behavior; evaluated habitat use of California condors in relation to available habitat in the RTWRA; reviewed relevant information on wind energy development effects to related species of vultures; and provided a qualitative assessment of the potential for California condor effects at the RTWRA (Appendix D). Based on a review of the literature, it is apparent that a number of physical and behavioral characteristics of condors puts them at high risk for turbine collision, including: 1) high wing loading, 2) social foraging, 3) curiosity for novel objects, and 4) a preference for foraging on sloped grassland sites. Data on flight height has determined that condors spend considerable time flying within the RSH. Additionally, condors are ecologically and morphologically similar to other vulture species (e.g., griffon vultures [*Gyps fulvus*], Egyptian vultures [*Neophron percnopterus*], and turkey vultures) which are susceptible to collisions with wind turbines. While no California condor collision fatalities have been documented at a wind energy facility, it is evident that a facility constructed in an area frequented by California condors would likely pose a collision risk to the species.

Based on the results of the risk assessment (Appendix D), it is unlikely that condors would use the RTWRA for the following reasons:

- The RTWRA is located in the Mojave Desert. The Mojave Desert was not considered to be within the range of the California condor, either historically or presently (Cogan 2009, CDFG 2009). However, if condor populations continue to expand, some possibility exists that condor use could occur in the vicinity of the RTWRA in the future.
- Based on recent mapped global positioning system (GPS) telemetry data, the nearest California condor concentration area is located 11 miles (18 km) from the RTWRA.
- Based on the risk assessment conducted in 2011, The nearest known individual California condor within proximity to the RTWRA (including historical and current locations of the reintroduced flock) was 5.3 miles (8.5 km) away and there were only three documented locations within a 10-mile radius (one current and two historical).
- No California condors have been observed during extensive diurnal avian use surveys of both the RTWRA and the adjacent Tehachapi Pass WRA, and no condors were detected during extensive fatality monitoring at the Tehachapi Pass WRA.

- No California condors were observed during avian use surveys conducted for the Alta-Oak Creek and PdV WRAs, both of which are located near the RTWRA, but closer to California condor concentration areas. No condors have been found during extensive fatality monitoring at the Alta-Oak Creek Mojave WRA.
- The desert shrublands and Joshua tree open woodlands present on the RTWRA do not provide foraging habitats typically used by California condors, which prefer to forage in grassland and oak (*Quercus* spp.) savannah. However, because the area is open, it could conceivably occasionally receive use by foraging condors if suitable carcasses were present.
- The RTWRA is not located within suitable habitat for big game, a primary food source for California condors, and there are no grazing leases for livestock on site. While evidence of some grazing by domestic sheep is present within the RTWRA, this practice would be eliminated to further reduce potential food supplies by fencing off large portions of the site.
- The lack of distinct elevational gradients at the RTWRA, combined with the prevailing down-slope wind direction (see Figures 10 and 11), strongly limit the potential for updrafts that are frequently used by birds of prey, including condors.
- California condor locations based on GPS telemetry data indicate a strong preference for use of slopes of 51–60°, with infrequent use of slopes less than 20°. Slopes on the vast majority of the RTWEP are less than 11°, and all slopes within the project area are less than 27° (Figure 10).
- The GPS telemetry data also show that condors prefer landscapes with northern and northwestern aspects, with the fewest detections occurring over landscapes with eastern aspects. The predominant aspect in the RTWRA is to the southeast, followed by relatively large areas with eastern and southern aspects. Aspects to the north and northwest are limited to very small, fragmented sections of the project area in the northwest portion of the RTWEP (Figure 11).

In a recent study on resource selection by California condors, Rivers et al. (2014), conclude that habitat type and meteorological conditions can interact in complex ways to influence condor use of an area. Rivers et al. (2014) demonstrate that condors are not restricted in the use of any single habitat but instead use all available coarse-scale habitat types in California, at least to some degree. Although the author noted that little is known about variation in condor use of terrestrial habitats and the extent to which meteorological conditions influence their use of space, selection was found to be greatest for coastal dunes and deciduous forest (including oak woodland) habitats, lowest for grassland and savanna habitats, and condors avoided evergreen forest and shrubland habitats, such as those at the majority of the RTWRA. Their results further indicated that meteorological conditions (i.e., thermal height, thermal velocity, and wind speed) can have a particularly strong effect on condor use of some ecoregions, and that effect can vary dramatically throughout the year.

Based on the current range of the California condor and the available information on condor resource selection, it appears unlikely that California condors would occur within the RTWRA in the near future. Although the possibility of a California condor occurrence cannot be ruled out, it is expected that development of the RTWEP would pose a low risk to California condors. Further research on the movements of condors relative to habitat and meteorological conditions on a finer scale, that also incorporate a temporal scale, are necessary to fully evaluate risk to condors in the region. To demonstrate Proponent's interest in ensuring no future impacts to the species in the event range expansion results in use of areas adjacent to the RTWRA, Proponent has agreed to participate in advanced condor avoidance measures, as detailed in Section 8.3 below.

7.5 Other Birds

The data collected during the three years of baseline studies suggest that the RTWRA is not within a high bird use area or major migration corridor (Appendices B and C). The habitat and features of the RTWRA are not unique to the surrounding landscape, nor do they appear to be particularly preferred or critical to migrants. Overall the results of the studies to date do not suggest that wind energy development at the RTWRA would have an adverse impact to avian populations.

7.6 Bats

The RTWRA is not located near any large, known bat colonies, water sources, caves, rocky outcrops, or other features that are likely to attract large numbers of bats. In addition, the RTWRA does not contain topographic features that may funnel migrating bats, and the RTWRA is lacking forested areas. The level of bat use documented at the RTWRA was lower than that at wind-energy facilities in Minnesota and Wyoming, where reported bat mortalities were relatively low, and use at the RTWRA was much lower than at facilities in the eastern US, where reported bat mortality was highest (Appendix C). Assuming that a relationship between bat use and bat mortality exists, and that it extends to the western US, low levels of bat mortality, relative to other facilities, would be expected to occur at the RTWRA with most fatalities occurring during late March to early May (Appendix C).

8 AVOIDANCE AND MINIMIZATION MEASURES

The Proponent has developed the following Conservation Measures (CMs) for the RTWEP based on site-specific baseline avian and bat information. The CMs proposed herein represent the Proponent's willingness to ensure the least harm to avian and bat species. This Plan is being developed separate from the CEQA process, although mitigation measures adopted as part of that process may coincide with measures proposed herein.

8.1 Conservation Measures Implemented During Site Selection and Project Design

Based on the initial landscape-level screening of potential sites (Tier 1), the Proponent determined the RTWRA to be the preferred location for a wind energy project based upon the following reasons related to potential avian and bat effects:

- The RTWRA is located adjacent to a primary transportation route, and over 8 miles of dirt roads exist on site, reducing the need for new road construction.
- The southern boundary of the RTWRA is located in close proximity (approximately 5.5 miles) to SCE's Windhub Substation, requiring a relatively short span of overhead transmission feeder line.
- A significant portion of the RTWRA has been previously disturbed by human activity, reducing existing biological habitat quality. The RTWRA is sited in an area with a history of open-range sheep grazing, illegal dumping and shooting, OHV use, rural residences, and abandoned structures which has greatly reduced the biological habitat quality. A large number of structures and associated ruins exist within the RTWRA. Many of these structures have associated piles of storage and debris.
- The RTWRA is surrounded on all sides by existing wind energy facilities.
- The RTWRA does not currently host avian nests used by species listed under the federal or state endangered species acts or the MBTA or BGEPA, nor does it contain designated critical habitat.
- Although small desert washes are present on site, the RTWRA is sited in an area without substantial riparian habitats or other features known to attract large concentrations of resident or migrating birds or bats. No willows, cottonwood, or other species that would provide riparian canopy were observed during wetland delineations.

The Proponent has made efforts during initial site selection and continues to make efforts during project design to locate and select wind turbines, met towers, and other appurtenances such that bird and bat collisions are minimized. A significant avoidance measure that has been implemented during the project design phase includes the reduction in total number of WTGs and net project energy capacity. As identified in the original Notice of Intent for the Project, the Project was originally contemplated to host up to 95 turbines with a rotor radius up to 56m, for a maximum energy capacity of 285 MWs. Proponent has significantly reduced project size, and taken advantage of the latest WTG technology which allows for increased energy generation per WTG. The result of this reduction in project size, based on the USFWS Bayesian fatality prediction model, is a reduction in the predicted fatality rate of 0.1642 eagles per year, or an approximate 37% reduction in eagle mortality.

Project design and siting measures to avoid or minimize risk to avian and bat species are discussed below. Project design elements will include the following:

- The existing road network will reduce the need for road construction and existing roads will be utilized when feasible.

- The construction staging areas and operation and maintenance facility will use existing infrastructure where feasible, such as using the existing construction laydown yard and operations buildings used for adjacent wind projects.
- Most areas of the Project will be fenced to exclude current damaging activities such as OHV recreation, grazing, and illegal dumping.
- Pending results of geotechnical and soil resistivity studies, all electrical collection will be buried underground. The transmission feeder line will parallel Oak Creek Road and other existing transmission lines, minimizing new disturbance. All new aboveground poles and transmission lines installed will be constructed to Avian Power Line Interaction Committee (APLIC 2006, 2012) standards to reduce the likelihood of collision and electrocution. Given that the California condor could expand its range in the future, Proponent has designed overhead transmission lines for the Project such that the minimum conductor spacing is expected to be 18' 6".
- The Proponent will coordinate with the Federal Aviation Administration (FAA) to minimize the number of wind turbines and met towers that require lighting. Lighting will consist of low-frequency red strobe lights with as long of a dark interval and short flash-on time as allowed.
- Lighting at substations and other operations and maintenance facilities shall be kept at minimum required for safety and security needs (i.e., directional, hooded and/or shielded, low-intensity, low-sodium lights equipped with motion sensors). All Internal turbine nacelle and tower lighting shall be extinguished when unoccupied.
- The RTWEP will maximize power generation per turbine in order to reduce the number of turbines needed to achieve maximum energy production.
- Any guy wires installed for temporary met towers will include bird diverters to minimize collision risk and will be decommissioned in favor of permanent un-guyed towers as soon as feasible.

8.1.1 Eagle Specific Site Selection and Project Design Conservation Measures

Proponent has implemented the following measures during project planning and design specifically intended to avoid and minimize risk to eagles:

- Turbines are sited to avoid features of the landscape known to attract eagles to the extent feasible by siting turbines away from ridges that would provide thermal lift to soaring and hunting eagles. As discussed, turbines will be sited on the leeward slopes of the horned toad hills, which receive winds from the east, southeast, or south only approximately 13% of the time.
- The project is sited below the prominent Cameron Ridge ridgeline, which is approximately 1,000 feet higher in elevation than the highest point within the RTWRA, reducing the likelihood for eagles to use the project area as a crossing point.

- All Turbines have been sited over four miles (six km) from active golden eagle nests, as identified during 2010 and 2011 surveys.

8.2 Conservation Measures Implemented during Construction

Construction of the RTWEP will occur over a period of 6 months at a minimum, and represents the heaviest use of the site during the project life. The following CMs will be implemented to avoid or minimize risk to avian and bat species:

- The Proponent will limit vehicle speeds to 15 mile-per-hour (mph; about 24 km-per-hour [kph]) to avoid wildlife collisions. Construction vehicles will be restricted to pre-designated access routes. Following project construction, roads not needed for site operations will be restored to native vegetation.
- To the extent feasible, the area required for project construction and operation will be minimized. The Proponent will develop a Habitat Restoration and Revegetation Plan for restoring all areas of temporary disturbance to their previous condition, including the use of native species when seeding or planting during restoration. The Habitat Restoration and Revegetation Plan will ensure:
 - All areas disturbed temporarily by project construction will be restored including temporary disturbance areas around structure construction sites, laydown/staging areas, and temporary access roads,
 - Topsoil salvage will be included in all grading activities.
 - Performance criteria, habitat replacement specifications, and tentative time frames for restoration of the site in addition to provisions for a monitoring program to assess the success of the restoration efforts.
 - The Proponent will mitigate any permanent loss of desert wash and riparian habitat found on site as identified by a CDFW Streambed Alteration Agreement.
- Appropriate erosion control methods will be used during construction to eliminate or minimize runoff and avoid impacts to hydrology.
- The Proponent will develop and implement a Joshua Tree Preservation Plan identifying efforts made during construction to minimize vegetation removal and permanent loss. The plan will disclose total acreage for Joshua tree woodland removal and use this amount for compensation to preserve Joshua tree habitat on-site or off-site, or to provide in lieu monetary funding.
- The Proponent will develop and implement a comprehensive noxious weed control plan.
- Rocks unearthed during excavation will be used during construction or removed from the site rather than left in piles near the turbines. Such rock piles create habitat for small mammals which serve as prey for many raptor species.
- Gravel will be placed at least 15 ft (4.6 m) around each turbine foundation to discourage small mammals and reptiles from burrowing under or near turbine bases.

- Within 30 days prior to any grading or other ground-disturbing activities, a qualified biologist will complete pre-construction surveys for all special-status wildlife species with potential to occur in the RTWRA. Pre-construction surveys will include:
 - Swainson's hawk surveys will be conducted within one-half mile (0.8 km) of the project in areas with potentially suitable nesting habitat for Swainson's hawks. If surveys are conducted outside the breeding season, a qualified ornithologist shall monitor Swainson's hawk activity during the breeding season. If an active nest site is found, no new disturbances or other project-related activities that may cause nest abandonment or forced fledging will be initiated within 2,640 ft (800 m) of an active nest between March 1 and September 15.
 - Bat surveys will be conducted in all areas within 200 ft (61 m) of rocky outcrops, large trees, or any other habitat capable of supporting roosting bats. The Proponent will also conduct surveys for roosting bats during the maternity season from March 1 to July 31 within 300 ft (91 m) of project activities near rocky outcrops or other habitat capable of supporting bat nursery colonies. These surveys will include at least one day and one evening visit.
 - 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 will be provided on, or in close proximity to, the project site no less than three months prior to the eviction of the colony.
 - 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 a qualified bat biologist.
 - 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 will commence before maternity colonies form (prior to March 1) or after young are flying (after July 31).
 - Burrowing owl pre-construction surveys will be conducted in conformance with the most current Burrowing Owl Protocol and Mitigation Guidelines,
 - No disturbance will occur within 50 m (164 ft) of occupied burrows during the non-breeding season or within 75 m (246 ft) during breeding season. This breeding season protected area will remain in effect until August 31 or at CDFW's discretion and based upon monitoring evidence. If occupied burrows cannot be avoided, passive relocation outside the nesting season may occur pending approval by CDFW.
 - Any damaged or collapsed burrow will be replaced with artificial burrows in adjacent habitat.

- Impacts to occupied 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.
- Sensitive resources (e.g., nests) identified during pre-construction surveys will be flagged and all site personnel will be notified of their presence and necessary setbacks.
- If construction or vegetation trimming/removal activities are undertaken during the avian breeding season (February 1 to August 31), surveys for nesting birds will be conducted by a qualified biologist. If actively nesting birds are encountered during pre-construction nesting surveys, the Proponent will consult with appropriate resource agencies to establish adequate construction buffers around nests until the young have fledged.
- The Proponent shall retain a biological firm as an on-call service provider throughout construction of the project.
- If an injured or dead special status species is encountered during construction, the Proponent will stop work within the immediate vicinity and notify the appropriate agencies as well as the on-call biologist before construction is allowed to proceed.
- No unleashed dogs will be allowed on the project during construction.
- All trash will be covered in containers and work sites will be cleared daily for any garbage and debris related to food.
- Proponent will utilize a Biological Manager during the construction of the project. The Biological Manager will be on-site during all construction activities to oversee construction activity and ensure that no sensitive species are injured by construction activities.
- All of the Proponent's employees and contractors working on site will receive worker awareness training for identifying and responding to encounters with sensitive biological resources, including avian and bat species. The training will:
 - Be conducted by the lead Biological Manager or their designee.
 - Include a review of mitigation requirements, briefings of relevant regulatory acts and consequences of non-compliance with each.
 - All employees, contractors, and site visitors will be instructed to avoid harassing or disturbing wildlife, particularly during reproductive seasons.
 - Training attendees will be instructed on identification and values of plant and wildlife species and significant natural plant community habitats, the issue of microtrash and its effects, fire protection measures and measures to minimize the spread of weeds during construction as well as hazardous material spill and containment measures.

- The Proponent will develop a flier to be distributed to all workers on the project detailing information on the California condor, desert tortoise (*Gopherus agassizii*), and other potential state and federal special status animal and plant species that may be discovered on the project site.
- A Raven Management Plan will be developed to minimize the potential for common raven (*Corvus corax*) presence at the Project. In addition, the Proponent shall contribute to the USFWS Regional Common Raven Management Program through the payment of one-time fees not to exceed \$150 per disturbed acre.
- Consistent with the Mitigation Measures identified in Kern County's EIRs for Addison and Rising Tree, prior to issuance of grading or building permits or any construction activities, the Proponent will provide funding to the California Condor Recovery Program for conservation measures such as radio telemetry, condor feeding programs, or other such measures as deemed appropriate. Total funding will be \$188,100.
- Turbine construction will minimize cutting into the hill slopes in an attempt to achieve smooth rounded terrain, rather than sudden berms or cuts, to reduce prey abundance.
- The project developer will not participate in rodent control programs on leased lands and will discourage landowners from using poisoning for rodent control in the project vicinity.
- All permanent meteorological towers will be un-guyed, unless terrain prohibits free standing towers, in which case all guy wires will be marked with bird diverters.
- All power lines will be constructed to the most current APLIC Guidelines. The Proponent will conform to the latest practices to protect birds from electrocution and collision. Given that the California condor could expand its range in the future, Proponent has designed overhead transmission lines for the Project such that the minimum conductor spacing is expected to be 18' 6".

8.2.1 Eagle Specific Conservation Measures Implemented during Construction

Proponent will commit to the following measures specifically intended to avoid and minimize risk to eagles during the construction of the RTWEP:

- If construction occurs during the golden eagle breeding season, a qualified biologist will conduct preconstruction surveys of all potential golden eagle nesting habitat within one mile of construction areas within 30 days prior to construction. A 1.5-mile no-disturbance buffer will be created around active nests within sight of construction activities until the nest is no longer active (i.e., absence of an adult, eggs, and young on the nest or the nest has successfully fledged young). Buffers will not apply to construction-related traffic using existing roads that are not limited to project-specific use. If nesting occurs following start of construction within one mile of the nest, construction would continue since the eagles in question were not avoiding such disturbances and the continued presence of construction activities would not likely influence nesting behavior. These

nests would be monitored and any behavior patterns would be noted and communicated to USFWS upon completion of construction.

- The worker awareness training identified above will include an overview of the distribution, general behavior, and ecology of golden eagles. Employees will be informed that they are not authorized to handle or otherwise move any golden eagles that may be encountered during construction, whether alive, injured, or deceased. Construction personnel will be instructed to report any finding of an injured or deceased golden eagle to USFWS within 24 hours of positive identification by a qualified biologist.

8.3 Conservation Measures Implemented during Operations

- Low speed limits (e.g., less than 15 mph) will be enforced on all roads within the facility.
- All temporary guyed met towers will be marked and will be removed as soon as feasible after the project is operational.
- All met towers and wind turbines that are no longer operational will be removed.
- Besides maintenance vehicles which must park at the entrance of turbines for maintenance purposes, parts and equipment which may be used as cover for prey will not be stored at the base of wind turbines while a turbine is operational and spinning.
- Fire hazards from vehicles and human activities will be reduced (e.g., use spark arrestors on power equipment, avoid driving vehicles off roads, allow smoking in designated areas only).
- Noxious weeds will be monitored and removed on an annual basis.
- Pest and weed control measures will be implemented as specified by county, state, and federal requirements.
- An avian fatality monitoring program will be implemented at the start of operation and will continue for at least three years (see Section 10).
- A Wildlife Incident Reporting System (WIRS) will be developed and will be implemented for the life of the RTWEP (see Section 10.2).

- Prior to energizing, the Proponent will participate in a Condor Monitoring and Avoidance Plan utilizing a Condor Monitoring System (CMS) that will detect very high-frequency- (VHF) tagged California condors. This participation may entail installation of a redundant VHF receiver, or collaboration with other operators adjacent to the project to utilize detection data and inform curtailment decisions. As of the date of this document, Proponent is still identifying the strategy that will work best for the Project, and will continue to engage with USFWS on these efforts. The signal will be active during daytime hours including 30 minutes prior to sunrise and 30 minutes after sunset for a period of three years. For the first 6 months of project operations, Proponent will submit quarterly reports regarding the system's findings and curtailment activities. After this time, and once Proponent has more experience with the workings of this system, Proponent will submit monthly reports to USFWS. Details of this Plan will be developed over the coming months in consultation with USFWS, and will be implemented prior to operations. Proponent recognizes that VHF detection may not be a long-term solution if condor populations expand, or the condors are no longer able to be tagged with VHF detection devices. Proponent will continue to explore other experimental detection and avoidance technology options that may be developed by third-party manufacturers.

8.3.1 Eagle Specific Conservation Measures Implemented During Operations

Proponent will be taking the following actions, some of which have already been noted above and consistent with those recommended in Appendix E of the ECPG, specifically intended to avoid and minimize risk to eagles during project operations:

- Maintain facilities and grounds in a manner that minimizes any potential impacts to eagles (e.g. Minimize storage of equipment near turbines that may attract prey, avoid seeding forbs below turbines that may attract prey).
- Avoid practices that attract/enhance prey populations and opportunities for scavenging within the project area.
- Take actions to reduce vehicle collision risk to wildlife and remove carcasses from the Project area, such as deer (*Odocoileus hemionus*), elk (*Cervus elephus*), and livestock.
- Instruct project personnel and visitors to drive at low speeds (less than 15 mph) and remain alert for wildlife, especially in low visibility conditions.
- Provide training for operational personnel. In conjunction with the Project Wildlife Incident Reporting System, operational personnel will be trained in the reporting of any incidental avian and eagle fatalities that may be encountered during project operations.
- Proponent will coordinate with Project landowners to ensure that identified carcasses, which can attract eagles and other scavengers, are removed from the Project area or covered to prevent scavenging.
- A program to clean up trash and large animal carcasses (e.g., big game, domestic livestock, or feral animals) during operations will be implemented to remove potential attractants to scavenging birds.

Additionally, please refer to Sections 9 and 11.1 for Proponent's upfront compensatory mitigation and adaptive management strategy for eagles.

9 RESOURCE EQUIVALENCY ANALYSIS AND UPFRONT COMPENSATORY MITIGATION FOR GOLDEN EAGLES

9.1 Resource Equivalency Analysis

A resource equivalency analysis (REA) was performed to evaluate the number of power pole retrofits that would be required to offset the estimated eagle fatalities due to the operation of the Project. Based on the 60 3.3-MW turbines anticipated at the Project, the estimated golden eagle take using the fixed-point bird use survey data from 2005-2006 was 0.191 eagles per year, with an upper 80% credible interval limit of 0.284 eagles per year (Table 10).

Using these take values, an REA was conducted following the recommendations in the USFWS ECPG. The calculations assumed upfront compensatory mitigation would be provided to offset the first 5-years of operations and the predicted level of take for the first five year period, with power pole retrofits to be maintained for 30 years. The REA included two take rate scenarios: the first being equivalent to the upper 80th credible interval from the Bayesian fatality prediction model (0.28 eagle fatalities/year [1.4 eagles in five years]) and the second rounding up to an even number of eagles in five years (0.40 eagle fatalities/year [2 eagles in five years]). Based on these assumptions, the total cost for the 5-year take using the 0.28 eagle/year take scenario, is 17.97 bird-years in present value (Table 11). For the 0.40 eagles/year take scenario, the total 5-year REA cost is 25.67 bird-years (Table 11).

Credits were also calculated as a part of the REA following the recommendations in the USFWS ECPG. The total relative productivity of a retrofitted power pole over the 30-year maintenance cycle was 0.989 (Table 12).

Table 11. Debit summary: Total debit with foregone reproduction using two take scenarios: 0.28 eagles/year and 0.40 eagles/year.

Lost Bird-Years: 1-Year Take of Golden Eagle		
Source of Bird-Years	Estimated Mean Annual Present Value Bird-Years	
	0.28 eagles/year	0.40 eagles/year
Direct Loss:	1.69	2.42
Indirect Loss—1st Gen	1.37	1.96
Indirect Loss—2nd Gen	0.75	1.07
Subtotal Indirect Loss:	2.12	3.03
Total Debit (Direct+Indirect):	3.81	5.44
Total Debit: 5-year Take of Golden Eagle		
Year	Estimated Mean Annual PV Bird-Years	
	0.28 eagles/year	0.40 eagles/year
2014	3.81	5.44
2015	3.70	5.28
2016	3.59	5.13
2017	3.49	4.98
2018	3.39	4.84
Total Present Value Bird-Years	17.97	25.67

Table 12. Credit summary: Relative productivity.

Retrofitting Lethal Electric Poles for Avoided Loss of Golden Eagles	
Source of Bird-Years	PV Bird-Years
Avoided Direct Loss:	0.02
<i>Avoided Indirect Loss—1st Gen</i>	0.02
<i>Avoided Indirect Loss—2nd Gen</i>	0.01
Avoided Indirect Loss:	0.03
Total Credit (Direct + Indirect):	0.05
Relative Productivity With Foregone Reproduction	
Year	PV Bird-Years/pole
2014	0.04898
2015	0.04756
2016	0.04617
2017	0.04483
2018	0.04352
2019	0.04225
2020	0.04102
2021	0.03983
2022	0.03867
2023	0.03754
2024	0.03645
2025	0.03539
2026	0.03436
2027	0.03336
2028	0.03238
2029	0.03144
2030	0.03053
2031	0.02964
2032	0.02877
2033	0.02793
2034	0.02712
2035	0.02633
2036	0.02556
2037	0.02482
2038	0.02410
2039	0.02339
2040	0.02271
2041	0.02205
2042	0.02141
2043	0.02079
Total PV Bird-Years	0.98891

Note: Assumes 30 years of avoided loss per retrofitted pole.

Based on the estimated mean annual fatality rates for the two take scenarios of 0.28 and 0.40 eagles/year, approximately 19 and 26 power poles, respectively, would need to be retrofitted and maintained for 30 years to achieve no net loss to golden eagles during the five-year take period (Table 13).

Table 13. Resource equivalency mitigation cost with foregone reproduction for two take scenarios: 0.28 eagles/year and 0.40 eagles/year.

Credit for a 5-Year Permitted Take of Golden Eagle (assuming 30 years of avoided loss from retrofitted poles)			
	0.28 eagles/yr	0.40 eagles/yr	Description
Total Debit	17.97	25.67	PV bird-years
+ Relative Productivity of lethal Electric Pole Retrofitting	0.99	0.99	Avoided loss of PV bird-years/pole
= Credit	18.17	25.96	Poles to be retrofitted to achieve no net loss of golden eagle

9.2 Upfront Compensatory Mitigation for Eagles

Proponent agrees to contribute compensatory mitigation funds upfront that are sufficient to offset eagle mortality for the first five years of the Project, assuming an average of 0.4 eagle fatalities a year. Compensatory mitigation will be based on funding derived from a fee structure for retrofitting power poles. The USFWS, through NFWF, has a fund in place for retrofitting of power poles. Based on the models, and a conservative assumption regarding take from predictions, Proponent will contribute \$13,000 to the fund for retrofitting of power poles, which is based on the following assumption:

- Approximately 13 retrofitted power poles per eagle killed by collision with a wind turbine (REA; see Section 9.1)
- 2.0 eagles killed during the first five years of the Project
- \$2,500 cost per retrofitted pole with assumed life of 30 years, based on conversations with companies familiar with the cost to retrofit power poles..

Any credits earned due to exceedance of compensatory mitigation levels (less fatality than compensated for) will be used for mitigation of future operating years at the project or at other projects in this eagle management area (i.e., the Sonoran and Mohave Deserts BCR).

Besides retrofitting utility transmission poles identified in the ECPG, currently no forms of compensatory mitigation have been approved by the USFWS to provide for issuance of an ETP. In the event that retrofitting power poles is not a viable mitigation option, examples of other potential compensatory mitigation strategies that could be employed include:

- Assisting in the rehabilitation of injured golden eagles
- Assisting in removal of road-side animal carcass to reduce potential for vehicle collision
- Education and outreach
- Contribution to research that would lead to enhanced management actions
- Contribution to lead reduction efforts or rehabilitation that would reduce lead poisoning in eagles
- Conducting off-site habitat acquisition or enhancement activities to increase eagle productivity

Additionally, efforts such as funding research on eagle population dynamics and habitat relationships or regional eagle population studies could be implemented if deemed acceptable by USFWS.

Furthermore, it is understood that the Service is attempting to identify a process for granting eagle permits under the forthcoming Desert Renewable Energy Conservation Plan, and in the future it may be possible to pool resources across the industry to provide maximum benefits of a compensatory mitigation approach. Proponent could contribute to such an effort if implemented in the future.

10 POST-CONSTRUCTION MONITORING

10.1 Avian and Bat Fatality Monitoring

Post-construction fatality monitoring is a critical component of this Plan. The primary objective of the monitoring study is to estimate avian and bat mortality at the RTWEP and to determine whether the estimated mortality is lower, similar to, or higher than the average mortality observed at other regional projects, and consistent with the low levels of mortality predicted during the pre-construction risk assessments (see Section 7). The mean raptor fatality rate at existing wind energy facilities in the western U.S. that are also considered to have low pre-construction raptor use is 0.08 raptors/MW/year, with a range of zero to 0.21 raptors/MW/year. Among these facilities is Phase II-V of the Alta Wind Energy Center (Alta II-V) located adjacent to the RTWEP, which had an estimated diurnal raptor fatality rate of 0.05 raptors/MW/year during the initial year of post-construction monitoring (Chatfield et al. 2012b). Given the proximity of the RTWEP to Alta II-V, as well as similar topographic and vegetation characteristics, raptor mortality at the RTWEP is expected to be similar to that documented at Alta II-V. Fatality rates for other species (i.e., non-raptor large birds, small birds, and bats) are also expected to be similar to those documented at Alta II-V (0.27 large birds/MW/year, 1.39 small birds/MW/year, and 0.08 bats/MW/year), and lower than the upper quartile (75th percentile) for fatality rates observed at other existing facilities in the western US, described in Section 11.2 below. Consultation triggers, based on fatality rates at other western facilities, were developed to help identify potentially significant effects to state and federally-protected and sensitive birds and bats (see Section 11.2).

The fatality monitoring study will begin with the next survey season after the RTWEP commences commercial operations. The study will be conducted for three years. Following the third year of monitoring, the Proponent will coordinate with the USFWS and the CDFW to determine if additional years of monitoring are warranted. At the completion of the detailed monitoring study, the Proponent's corporate Wildlife Incident Reporting System (WIRS) will be implemented to monitor and report avian and bat mortality through the life of the facility (see Section 10.2).

The proposed fatality monitoring study design will be consistent with the recommendations for operations monitoring outlined in the California Wind Energy Guidelines (CEC and CDFG 2007). Additionally, the scope and duration of the fatality monitoring study will be developed to be

consistent with and within the range of monitoring programs that have been conducted at other wind projects in the western United States, and in the Tehachapi WRA in particular. The proposed avian and bat mortality monitoring will conform to the industry standard in the western US, provide accurate and less variable estimates of avian and bat mortality, and provide the USFWS and CDFW with good baseline data on avian and bat fatality rates at the RTWEP that can be used in association with site-specific pre-construction avian studies conducted at the project to aid in assessing the effects of wind energy development in this region and the RTWEP in particular.

The avian fatality monitoring study will include the following components:

- 1) Standardized carcass searches of a sample of turbines in rectangular plots centered on turbines;
- 2) Searcher efficiency trials to estimate the percentage of carcasses found by searchers; and
- 3) Carcass removal trials to estimate the length of time that a carcass remains in the field for possible detection.

10.1.1 Carcass Searches

The objective of the standardized carcass searches is to systematically search turbine locations for avian and bat casualties that are attributable to collision with project facilities. At least 30% of the turbines at the RTWEP will be searched every two weeks over the first year of monitoring. Turbines will be selected for sampling using a constrained random sample, such that the search effort is distributed throughout the facility and all habitats and topographies are represented.. Searches will be conducted within an area that is twice the width of the turbine tip height (280-m by 280-m [919-ft by 919-ft] square) survey area centered on each sampled turbine. Surveyors, trained in proper search techniques, will walk parallel transects set approximately six meters (about 20 ft) apart within each search plot, with the orientation of the transects based on the topography surrounding the turbines.

When a fatality is discovered, information about the type of bird, type of injury, condition of carcass, location (GPS coordinates), distance and bearing from nearest turbine or met tower, distance to nearest road or other facility structure, and vegetation/cover type characteristics will be recorded on a standard datasheet. All casualties located will be photographed as found and plotted on a detailed map of the study area, showing the location of the wind turbines and associated facilities, such as overhead power lines and met towers. All carcasses found will be flagged in the field to avoid double counting during future monitoring efforts. However, carcasses will not be collected.

Standardized searches of the sampled turbines will be conducted a minimum of approximately once every 2-week (14-day) period for a total of 26 searches per turbine over the first year of monitoring. Searches may be conducted more or less frequently if pilot carcass removal trials

indicate relatively high or low levels of carcass removal. In this case, data from other wind projects in the Tehachapi region show that a two-week search interval has been adequate.

In addition to carcasses, all injured birds and bats observed in search plots or elsewhere in the RTWEP will be recorded and treated as a fatality for analysis purposes. Any injured native birds found within the RTWEP will be immediately reported to the nearest wildlife rehabilitation center or veterinary clinic.

10.1.2 Searcher Efficiency Trials

The objective of the searcher efficiency trials will be to estimate the percentage of casualties which are found by searchers. Searcher efficiency trials will be conducted for each searcher, as well as for each season to account for varying field conditions. Searcher efficiency will be estimated by size of carcass (small and large), and season (winter, spring, summer, and fall). Estimates of searcher efficiency will be used to adjust the total number of carcasses found for those missed by searchers, thereby correcting for detection bias.

Searcher efficiency trials will begin when standardized carcass searching begins. Personnel conducting carcass searches will not know when trials are conducted or the location of the trial carcasses. Trials will be conducted at least once per season with approximately 20 carcasses of small-sized birds and 20 carcasses of medium to large-sized birds used during each season, for a total of at least 160 trial carcasses throughout the year. Species such as house sparrows (*Passer domesticus*), European starlings (*Sturnus vulgaris*), or commercially raised quail (e.g. *Coturnix* spp.) will be used to represent small-sized birds. Species such as rock pigeons, commercially raised hen mallards (*Anas platyrhynchos*) or hen pheasants (*Phasianus colchicus*) will be used to represent medium to large-sized birds. More or fewer searcher efficiency carcasses may be used depending on site conditions and the number of searchers at the RTWEP.

All searcher efficiency carcasses will be placed at random locations within areas being searched prior to the carcass search on the same day; however, no more than three carcasses will be placed at a single turbine. Trial carcasses will be placed by a biologist who is not conducting standardized carcass searches. Carcasses will be dropped from waist-high or higher and allowed to land in a random posture. Each trial carcass will be discreetly marked prior to dropping so that it can be identified as a study carcass after it is found. The number and location of the detection carcasses found during the carcass search will be recorded. The number of carcasses available for detection during each trial will be determined immediately after the trial by the person responsible for distributing the carcasses.

10.1.3 Carcass Removal Trials

The objective of carcass removal trials is to estimate the likelihood that carcasses were removed by scavengers as a function of the time (measured in days) since the trial carcasses were placed in the field. Estimates of carcass removal will be used to adjust the total number of carcasses found for those removed from the study area, thereby correcting for removal bias.

Carcass removal studies will be conducted seasonally, concurrent with searcher efficiency trials. Approximately 20 carcasses of small birds and 20 carcasses of medium to large birds will be randomly placed throughout the RTWEP during each season, for a total of approximately 160 trial carcasses over the entire year. Species as described for the searcher efficiency trials will be used in the carcass removal trials. Carcasses will be placed on a minimum of three dates during each season, spreading the trials throughout the year to incorporate the effects of varying climatic conditions, scavenger densities, and scavenger behavior. Spreading out the trial carcasses in space and time will be done in an effort to avoid scavenger swamping (i.e., placing more carcasses than vertebrate scavengers are able to remove).

Approximately one-half of the trial carcasses will be placed within 120 m of turbines that are not included in the set of sampled turbines, while the other half will be placed within 120 m of project roads or in other locations outside the search plots to allow for comparisons of carcass-removal rates at the turbines and away from the turbines. Carcasses will be dropped from waist-high or higher and allowed to land in a random posture. Each trial carcass will be discreetly marked prior to dropping so that it can be identified as a study carcass if it is found by other searchers or wind facility personnel. Whenever feasible, fresh bird and bat fatalities encountered during the study will be monitored as trial carcasses.

Personnel conducting carcass searches will monitor the trial birds over a 28-day period according to the following schedule as closely as possible. Carcasses will be checked at one, two, three, four, seven, 10, 14, 21, and 28 days following placement; however, this schedule may vary slightly depending on weather and coordination with the other survey work. At each visit the observer will note the condition of the carcass (e.g., intact, scavenged, feather spot [more than 10 feathers], or absent [less than 10 feathers]). At the end of the 28-day period any evidence of the carcasses that remains will be removed.

10.2 Long Term Monitoring

In addition to the 3-year post-construction fatality monitoring study described above, the Proponent will implement their corporate WIRS at the start of operations and it will remain active for the life of the RTWEP. The purpose of the WIRS is to standardize the actions taken by site personnel in response to wildlife incidents encountered in the RTWEP and to fulfill the obligations of the Proponent in reporting wildlife incidents. The WIRS will be utilized by site operations and maintenance personnel who encounter dead or injured birds or bats incidentally while conducting general wind facility or transmission line maintenance activities. The WIRS is designed to provide a means of recording fatalities in the RTWEP to increase the understanding of wind turbine and wildlife interactions. Additionally, any native bird found injured within the RTWEP will be reported immediately to the nearest appropriate wildlife rehabilitation facility, as directed in the WIRS. Any incident involving a state or federally listed threatened or endangered species, or a bald or golden eagle will be reported to the USFWS and the CDFW within 24 hours of identification. The Proponent maintains an ongoing commitment to investigate wildlife incidents involving company facilities and to work cooperatively with federal and state agencies in an effort to prevent and mitigate future bird and wildlife fatalities. It is the responsibility of the

Proponent's employees and subcontractors to report all avian and bat incidents to their immediate supervisor.

Project O&M staff will conduct semiannual and annual maintenance visits to each turbine as well as incidental visits for unanticipated maintenance needs. This frequency equates to approximately six to 10 individual turbines visited each week for each year during operations (approximately 40% to 67% of the 60 project turbines each month). Any bird carcass will be identified to the best of the technician's ability, and a biologist will be consulted for species identification. Any special status birds as identified by the federal or California Endangered Species Act, or identified as a USFWS Bird of Conservation Concern will be reported to USFWS within 48 hours of identification by a biologist.

O&M staff will be trained to monitor for dead or injured golden eagles and California condors during their work activities. A data sheet that describes how Project personnel can recognize an injured or dead golden eagle or California condor will be posted in the maintenance facility. The data sheet will include instructions and the procedures that personnel shall take in the event an injured or dead golden eagle or California condor is discovered onsite, including whom to notify and what actions shall be taken. USFWS will be notified within 24 hours upon positive identification of a golden eagle or California condor injury or fatality.

10.3 Reporting

An annual report will be completed following each year of the three-year fatality monitoring study and submitted to the Kern County Planning Department, the USFWS, and the CDFW within three months of completion of surveys for that year. Each report will detail the results of mortality surveys, as well as the results of searcher efficiency and carcass removal trials. Fatality rates will be estimated following the most recent and acceptable methods (e.g., Huso 2011). Annual reports will also include a validation of risk assessment, comparing the results of pre- and post-construction avian use data with the actual avian effects as determined by the fatality monitoring.

Long-term fatality monitoring data will be maintained by the onsite Operations Manager as part of the WIRS.

11 ADAPTIVE MANAGEMENT STRATEGY

Adaptive management is an important dimension of the design, development, and operation of the RTWEP. Adaptive management is integral to this Plan as an iterative process that will improve decisions for avoiding, minimizing and/or mitigating effects to avian and bat species throughout all phases of the RTWEP. In adaptive management an agreement is made to adjust management and/or mitigation measures if monitoring indicates that goals are not being met. For the RTWEP, adaptive management will consist of assessing various management options and designing and implementing the management option determined to be the most appropriate for the situation. The management action will be assessed through monitoring and evaluation to

determine if the desired results are being met, or if adjustments to the management action are warranted.

Adaptive management focuses on learning and adapting, allowing for flexibility in decision-making as new information is gathered. With an acknowledgement that uncertainties exist, adaptive management provides resource managers the latitude to change the direction of monitoring or mitigation to achieve a desired outcome. Adaptive management at the RTWEP is based on learning and adapting in response to the ongoing results of long-term monitoring of effects to birds and bats from the Project. The findings of long-term monitoring could indicate the need for modification of operations and management strategies. The Proponent intends to work cooperatively with the USFWS and the CDFW to develop appropriate actions or mitigation measures to address issues or concerns identified during the post-construction monitoring phase.

Depending on the results of the post-construction monitoring studies, no further action may be needed if effects are determined to be minimal. If effects are determined to be higher than anticipated, an assessment of why effects are occurring will be conducted to aid in developing appropriate mitigation actions. If causation of effects is unknown, further monitoring efforts may be implemented to help understand effects. Once the mitigation measures are put into place, additional monitoring to determine the effectiveness of the mitigation measures may be conducted, and, depending on the results, further remedial measures may or may not be warranted.

11.1 Advanced Conservation Practices to Reduce Risk to Eagles

The adaptive management strategy put forth in Table 14 was developed to ensure that golden eagle mortality remain within the authorized take limits of any incidental take permit received by Proponent by increasing the management actions that are undertaken as actual take approaches the maximum allotted. Triggers/ thresholds are presented as a tiered progression of potential levels of take that approach the level of take to be permitted at the RTWEP. Each progressive level warrants increased concern and potential mitigation as the rate of take approaches that which may lead to exceedance of the total permitted take over the long term. Even if the rate of take (e.g., one eagle in a single year) may exceed the average rate permitted and warrants elevated concern, the total amount of take would be considered to be fully mitigated so long as the total number of fatalities does not exceed that of the permit. These triggers/thresholds would be reviewed every five years to determine if any changes are warranted.

Advanced Conservation Practices (ACPs) are defined in 50 CFR 22.3 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.”

Currently, most ACPs are considered “experimental” because they have not yet been implemented at a scale that can be scientifically evaluated. As an example, implementing

operational adjustment practices at a subset of project turbines would be difficult to evaluate in terms of effectiveness due to the low volume of mortalities anticipated (i.e. sample size) at the Project. Generally, a robust sample size should include many data points, however in the case of the RTWEP, the number of years expected to obtain data on even 10 individual mortalities would be at least 35 years (assuming 0.2844 fatalities/year). Since the project is expected to apply for a 30-year ETP, such an approach would be difficult unless a clear risk pattern was observed.

Nevertheless, an adaptive management strategy that adjusts to results of fatality monitoring, new technologies, and new ecological information is a key component of the stepwise approach and will help ensure that impacts are minimized to the greatest extent feasible. Table 14 outlines the RTWEP stepwise approach to mitigation.

Table 14. Rising Tree Wind Energy Project stepwise mitigation approach.

Step	Advanced Conservation Practice	Threshold or Trigger
Step I	This mortality would be within permitted take levels and would be already mitigated for pursuant to upfront compensatory mitigation described in Section 9.0. Adaptive management efforts would be undertaken to attempt to understand the conditions under which take occurred. Initiate consultation with Kern County, USFWS, and CDFW to determine an appropriate monitoring strategy that may identify practical additional avoidance measures. Mortality monitoring and observation studies of a subset of turbines within 1-km of the incident will occur for one year in addition to the fatality monitoring presented in Section 10.1 to define seasonal and spatial flight patterns within the project area. If the fatality occurs in the northern portion of the project, this monitoring could potentially entail studying the interaction of wind uplift along that area during specific seasons.	One eagle taken within 2.5 years of start of operations or start of subsequent 5 year review period
Step II	This mortality may be within permitted take levels pending fatality monitoring results of future years, although timing of fatality could indicate an inaccurate take prediction. Work with Kern County, USFWS, and CDFW and the Project biological consultants to identify a list of current technological avoidance or deterrence strategies as well as an indication of costs of implementation. If costs can be estimated below \$50,000 ¹ per year, or \$250,000 over five years, develop a strategy for testing technology to prove effectiveness. One additional year of fatality monitoring will occur within the subset of turbines to determine effectiveness.	One eagle taken within 1 year of a previous fatality under Step I.

Step III	Work with Kern County, USFWS, and CDFW and the Project biological consultants to review effectiveness of technology implemented in Step II above. If demonstrated to effectively reduce impacts, implement technology on a broader scale. An operational adjustment strategy for the Project, if determined feasible, would be limited to 1% of available turbine-hours, which would likely correspond to a larger reduction of risk since it would be targeted to the highest risk time periods.	One eagle taken within 1 year of a previous fatality under Step II.
----------	---	---

¹ Pursuant to the ECPG, "Because the ACPs would be experimental, the Service recommends that they be subject to a cost cap that the Service and the project developer or operator would establish as part of the initial agreement before issuance of an eagle permit. This would provide financial certainty as to what maximum costs of such measures might be. The amount of the cap should be proportional to overall risk."

11.2 Avian (Non-Eagle) and Bat Mortality Consultation Triggers

The results of the post-construction monitoring efforts will be evaluated to determine if potentially significant effects have been identified to non-eagle avian species and bats. Avian and bat mortality consultation triggers have been developed to aid in identification of potentially significant effects.

For this Plan, species for which avian and bat consultation triggers have been designated are provided protection by federal and/or state ESA/CESA regulations, which protect against unlawful take, as well as for BLM sensitive species and USFWS BCC species in Bird Conservation Region (BCR) 33. Consultation triggers for eagles are identified in Table 14 above. Changes in federal listing status or state status of avian and bat species occurring within the project area may result in the addition, removal, or reclassification of species with consultation triggers. These triggers do not permit take but have been developed to ensure any potential population effects to identified species are addressed. If consultation triggers are exceeded, voluntary mitigation will be considered as described in Section 11.3 below. Consultation triggers for federal or state ESA/CESA listed species will not have searcher efficiency or scavenger rate correction factors applied.

Consultation triggers for BLM sensitive and USFWS BCC species were developed to aid in an assessment of whether the results of the post-construction fatality monitoring exceed what has been observed at other existing facilities in the western US. Similar to the approach taken in the Ocotillo Avian and Bat Protection Plan (ABPP), all publicly-available studies in the western US are used because there are a very limited number of studies in the region available for comparison. The first step in determining the consultation triggers was to estimate the 75th percentile of observed fatality rates at existing facilities in the western US. A list of the studies from existing facilities in the western US is included in Appendix E. Using the observed fatality rates in the western US, a probability density function for regional fatality rates (for all birds, small birds, large birds, and bats) was generated using kernel density estimation (Parzen 1962). Kernel density estimation is a non-parametric data smoothing process used to interpolate population distributions from finite samples. Regional fatality data were log transformed to provide support across all real numbers and then fit to a probability density function using R-

statistical software (R Development Core Team 2011). The 75th percentile of the resulting density function was calculated and provides a population level estimate for fatality rates exceeding the upper quartile of observed data (Table 15).

Table 15. Upper quartile (75th percentile) for fatality rates observed at other existing facilities in the western US.

Category	Upper quartile (75th percentile)¹
All Birds	3.91
Small Birds ²	3.19
Large Birds ³	0.42
Bats	2.41

¹ Metric is fatalities/MW/year.

² For the purpose of this Plan, small birds include any ESA listed (federal or state) and BLM sensitive or BCC species in the following bird types: passerines (excluding large corvids), swifts/hummingbirds, most woodpeckers, and some cuckoos.

³ For the purpose of this Plan, large birds include any ESA listed (federal or state) and BLM sensitive or BCC species in the following bird types: waterbirds, waterfowl, rails and coots, gulls and terns, shorebirds, diurnal raptors (non-eagles), owls, vultures, upland game birds, doves/pigeons, large corvids (e.g., ravens, magpies, and crows), large cuckoos (e.g., greater roadrunner), goatsuckers, kingfisher, and large woodpeckers (e.g., northern flicker).

To calculate consultation triggers for BLM sensitive and USFWS BCC species with potential for occurrence within the RTWRA (species listed in Table 1), the proportions of the respective BLM sensitive and BCC species (birds [small and large] and bats) observed as fatalities out of all known fatalities at existing wind energy facilities in the western US were multiplied by the estimated 75th percentile (3.19 birds/MW/study period for small birds; 0.42 for large birds, and 2.41 for bats; Tables 15 and 16). In the event that no BLM sensitive or BCC species were found in the fatality database for a given class (i.e., small birds, large birds, or bats), one observed fatality was assumed. The reason fatalities per MW is used as the consultation metric is to capture a major avoidance effort that has been factored in to wind turbine design. Given the recognized need for expanded renewable energy production, it is incumbent on the industry to reduce fatalities per unit of energy generation (MW) to the greatest extent possible. Although reducing fatalities per turbine should also be considered, this would have no meaning if many more turbines – and thus greater land area – would be required per unit of energy generation.

Table 16. Three-year average mortality consultation triggers.

Consultation Trigger Categories	Trigger Value ^{1,2}		
	Large Birds ³	Small Birds ⁴	Bats
Federal or State ESA/CESA listed species	1	1	1
BLM sensitive or BCC species (refer to Table 1)	Exceeds adjusted average of 0.02 per MW per year over 3-year period	Exceeds adjusted average of 0.04 per MW per year over 3-year period	Greater than 1 ⁵

¹ The triggers for federal or state ESA/CESA listed species and sensitive bats are unadjusted.

² For BLM sensitive and USFWS BCC species triggers (excluding ESA listed species), fatality estimates will be determined by estimating the proportion of observed BLM sensitive or USFWS BCC species fatalities out of all observed fatalities and multiplying that proportion by the overall adjusted fatality estimate for the large or small category.

³ For the purpose of this Plan, large birds include any ESA listed (federal or state) or BLM sensitive or BCC species in the following bird types: waterbirds, waterfowl, rails and coots, gulls and terns, shorebirds, diurnal raptors (non-eagles), owls, vultures, upland game birds, doves/pigeons, large corvids (e.g., ravens, magpies, and crows), goatsuckers, kingfisher, and large woodpeckers (e.g., flickers).

⁴ For the purpose of this Plan, small birds include any ESA listed (federal or state) and BLM sensitive or BCC species in the following bird types: passerines (excluding large corvids, cuckoo, and woodpeckers), swifts/hummingbirds, some woodpeckers, and most cuckoos.

⁵ No BLM sensitive bat species with potential for occurrence in the RTWRA have been observed as fatalities in the western US and as such the approach used would result in less than one fatality at the RTWEP over three years of monitoring. Due to the level of sensitivity associated with BLM sensitive species, the threshold level was modified to be greater than one individual during the three years of post-construction monitoring.

11.3 Voluntary (Non-Eagle) Mitigation Measures

The determination of how to implement voluntary mitigation measures will be determined in consultation with the USFWS. A voluntary mitigation measure would be applied each time a consultation trigger (shown in Table 14) is exceeded for either a bird or bat species, depending on recommendations from the agencies. During the first three years of fatality monitoring, if a consultation trigger for a group (i.e., birds or bats) is exceeded, an additional one year of fatality monitoring will take place, and one of the voluntary mitigation measures described below would be implemented not to exceed \$50,000, to be determined in consultation with the USFWS. If an additional year of avian monitoring identifies additional impacts to sensitive species, an additional year of fatality monitoring will occur and an additional voluntary mitigation measure will be implemented. This will occur up to a fourth and final mitigation measure. If three voluntary mitigation measures have been applied and consultation triggers continue to be exceeded, at the decision of the Proponent, either a final habitat compensation may be made or the Proponent will work with the USFWS to determine additional reasonable phases of voluntary mitigation. The final voluntary mitigation measure would be triggered the fourth time a bird consultation trigger is met, the fourth time a bat consultation trigger is met, or a combination of four bird and bat consultation triggers are exceeded. Implementation of on-site voluntary mitigation measures would include monitoring to evaluate their effectiveness at protecting birds and bats. Unless technically and economically feasible, the Proponent will not be responsible for monitoring the effectiveness of off-site mitigation. Examples of voluntary mitigation measures that could be funded through this program include:

Potential On-Site Measures

- Additional on-site studies (e.g., more intensive area use studies through observation or telemetry, prey base studies);
- Addition or modification of anti-perching, anti-nesting, or electrocution protection devices on “problem” project facilities;
- Additional onsite hazard reduction techniques, including operational adjustments not to exceed 1% of available turbine-hours in combination with operational adjustment for eagles, if such efforts are demonstrated to be cost-effective relative to other avoidance or mitigation measures;
- Prey-base management through habitat alteration; and
- Experimentation with visual and/or auditory bird flight diverters (e.g., pylons at the end of turbine rows).

Potential Off-Site Measures

- Fund raptor behavior studies (toward better understanding and reducing risk);
- Fund research on Antelope Valley Swainson’s hawk population dynamics and habitat relationships (ideally in partnership with other organizations in the region);
- Fund Mojave desert conservation programs in California (e.g., The Nature Conservancy, The Peregrine Fund);
- Contribute funding to support research and evaluation of new technologies that could help reduce turbine-related mortality as well as research to increase the understanding of bird-turbine interactions;
- Habitat restoration (e.g., noxious weed eradication and native plant restoration); and
- Fund research on sensitive avian species for which little data exists.
- Contribute funding to raptor rehabilitation. Funding would only be provided to rehabilitation centers that possess valid USFWS MBTA rehabilitation permits or to organizations, such as the UC Davis Raptor Center or Bat Conservation International;
- Other measures will be developed based on input from CDFW and USFWS.

12 CONCLUSIONS

This Plan was written to provide guidance for avoiding, minimizing, and monitoring potential effects to avian and bat species prior to, during, and after construction of the RTWEP. The measures described in this document are intended to help protect and reduce effects to avian and bat species during the construction phase of the Project, as well as to monitor potential effects to avian and bat species following implementation of the RTWEP. Further, it is anticipated that this Plan will facilitate adaptive management at the RTWEP based on information gathered following construction of the Project.

13 KEY RESOURCES

Key avian resource personnel involved with the RTWEP include the following:

- EDPR Regional Environmental Manager: Jon VanDerZee
 - Office: 503-535-1516
 - Cell: 303-887-7595
 - Email: jon.vanderzee@edpr.com
- U. S. Fish and Wildlife Service: Jessica Rempel
 - Office: (805) 644-1766 x370
 - Email: jessica_rempel@fws.gov
- U. S. Fish and Wildlife Service: Rob Doster
 - Office: (916) 414-6721
 - Email: rob_doster@fws.gov
- California Department of Fish and Game: David Hacker
 - Office: 805-594-6152
 - Email: dhacker@dfg.ca.gov

14 REFERENCES

- Altamont Pass Avian Monitoring Team. 2008. Altamont Pass Wind Resource Area Bird Fatality Study. Altamont Pass Wind Resource Area Monitoring Team (APWRA-MT). Report ICF J&S 61119.06. Prepared for Alameda County Community Development Agency, Hayward, California. Report prepared by the Altamont Pass Avian Monitoring Team: ICF Jones & Stokes, Portland, Oregon; West Bioacoustics; BioResource Consultants; and the University of California at Santa Cruz Predatory Bird Research Group. July, 2008. Available online at: http://www.altamontsrc.org/alt_doc/m30_apwra_monitoring_report_exec_sum.pdf
- Anderson, R. L., D. Strickland, J. Tom, N. Neumann, W. Erickson, J. Cleckler, G. Mayorga, G. Nuhn, A. Leuders, J. Schneider, L. Backus, P. Becker, and N. Flagg. 2000. Avian Monitoring and Risk Assessment at Tehachapi Pass and San Geronio Pass Wind Resource Areas, California: Phase 1 Preliminary Results. *In*: Proceedings of the National AvianWind Power Planning Meeting III (PNAWPPM-III), May 1998, San Diego, California. National Wind Coordinating Collaborative (NWCC)/RESOLVE, Washington, D.C. Pp 31-46.
- Associated Press. 2009. "Golden Eagle Killed by Washington Wind Turbines". The Seattle Times. Originally published May 19, 2009, corrected May 21, 2009. Available online at: http://seattletimes.nwsources.com/html/localnews/2009237912_apwawindturbineeagle1stldwritethru.html
- Avian Power Line Interaction Committee (APLIC). 2006. Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006. Public Interest Energy Research Program (PIER) Final Project Report CEC-500-2006-022. Edison Electric Institute, APLIC, and the California Energy Commission. Washington D.C. and Sacramento, California.

- Barclay, R. M. R., E. F. Baerwald, and J. Gruver. 2007. Variation in Bat and Bird Fatalities at Wind Energy Facilities: Assessing the Effects of Rotor Size and Tower Height. *Canadian Journal of Zoology* 85: 381-387. <http://www.bio.ucalgary.ca/contact/faculty/pdf/Barclay07Tur.pdf>
- Barrios, L. and A. Rodríguez. 2004. Behavioural and Environmental Correlates of Soaring-Bird Mortality at on-Shore Wind Turbines. *Journal of Applied Ecology* 41: 72-81.
- Bohrer, G., D. Brandes, J.T. Mandel, K.L. Bildstein, T.A. Miller, M. Lanzone, T. Katzner, C. Mainsonueve, and J.A. Tremblay. 2012. Estimating updraft velocity components over large spatial scales: contrasting migration strategies of golden eagles and turkey vultures. *Ecology Letters* 15:96-103.
- Bureau of Land Management (BLM). 2006. Final Environmental Impact Statement for the Proposed Cottler Wind Power Project and Proposed Resource Management Plan Amendment. FES 06-07. Serial No. IDI-33676. Prepared for the US Department of the Interior (USDOI), BLM, Twin Falls District, Burley Field Office, Cassia County, Idaho, on behalf of Windland, Inc., Boise, Idaho, and Shell WindEnergy Inc., Houston, Texas. March 2006.
- California Burrowing Owl Consortium (CBOC). 1997. Burrowing Owl Survey Protocol and Mitigation Guidelines.
- California Department of Fish and Game (CDFG). 2009. California Wildlife Habitat Relationships (CWHR) Life History Accounts and Range Maps. <http://www.dfg.ca.gov/biogeodata/cwhr/cawildlife.aspx>
- California Department of Fish and Game (CDFG). 2011a. Special Animals (898 Taxa). State of California Natural Resources Agency, Biogeographic Data Branch, California Natural Diversity Database (CNDDDB). January 2011. <http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/SPAnimals.pdf>
- California Department of Fish and Game (CDFG). 2011b. State and Federally Listed Endangered and Threatened Animals of California. State of California, Natural Resources Agency, Department of Fish and Game Biogeographic Data Branch, California Natural Diversity Database (CNDDDB). January 2011.
- California Department of Water Resources. 2014. Bear Peak - Accumulated Precipitation from January 1, 2001 through January 1, 2014. Provisional data. California Data Exchange Center (CDEC), California Department of Water Resources. Accessed January 10, 2014. Available online at: http://cdec.water.ca.gov/cgi-progs/selectQuery?station_id=BRP&dur_code=H&sensor_num=2&start_date=01/01/2001+00:00&end_date=01/01/2014+00:00
- California Energy Commission (CEC) and California Department of Fish and Game (CDFG). 2007. California Guidelines for Reducing Impacts to Birds and Bats from Wind Energy Development. . Commission Final Report. CEC, Renewables Committee, and Energy Facilities Siting Division, and CDFG, Resources Management and Policy Division. CEC-700-2007-008-CMF.
- California Environmental Quality Act (CEQA). 1970. California Public Resource Code 21100-21177 and California Code of Regulations, Title 14, Division 6, Chapter 3, §§ 15000-15387. Information available online at: <http://www.ceres.ca.gov/ceqa/> and <http://www.califaep.org/resources/Documents/2009%20CEQA%20Statute%20and%20Guidelines3.pdf>
- California Natural Diversity Database (CNDDDB). 2011. Rarefind 3 Application. California Department of Fish and Game (CDFG), Planning Policy, Biogeographic Data Branch, Sacramento, California. <http://www.dfg.ca.gov/biogeodata/cnddb/rarefind.asp>

- Chatfield, A., W. P. Erickson, and K. Bay. 2010a. Baseline Avian Studies at the Sun Creek Wind Resource Area Kern County, California. Final Report: May 2009 - May 2010. Prepared for CH2M HILL, Oakland, California. Prepared by Western EcoSystems Technology, Inc., Cheyenne, Wyoming.
- Chatfield, A., W. P. Erickson, and K. Bay. 2010b. Final Report: Avian and Bat Fatality Study at the Alite Wind-Energy Facility, Kern County, California. Final Report: June 15, 2009 – June 15, 2010. Prepared by Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming. Prepared for CH2M HILL, Oakland, California.
- Chatfield, A., W.P. Erickson, and K. Bay. 2010c. Baseline Avian Studies at the Sun Creek Wind Resource Area Kern County, California. Final Report: May 2009 - May 2010. Prepared for CH2M HILL, Oakland, California. Prepared by Western EcoSystems Technology, Inc., Cheyenne, Wyoming.
- Chatfield, A., W.P. Erickson, and K. Bay. 2011a. Avian Baseline Studies for the Alta East Wind Resource Area, Kern County, California. Draft Final Report: July 10, 2010 – June 1, 2011. Prepared for CH2M HILL, Oakland, California. Prepared by Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming.
- Chatfield, A., W. Erickson, and K. Bay. 2011b. Avian Baseline Studies for the Wildflower Green Energy Farm, Los Angeles County, California. Technical Report: March 18, 2010 – September 8, 2011. Prepared for Element Power, Portland, Oregon. Prepared by Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming.
- Chatfield, A., W. P. Erickson, and K. Bay. 2012a. In press. Baseline Avian Studies for the Rising Tree Wind Resource Area, Kern County, California. Technical report prepared for Rising Tree Wind Farm LLC, Portland, Oregon. Prepared by Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming.
- Chatfield, A., M. Sonnenberg, and K. Bay. 2012b. Avian and Bat Mortality Monitoring at the Alta-Oak Creek Mojave Project, Kern County, California. Final Report for the First Year of Operation March 22, 2011 – June 15, 2012. Prepared for Alta Windpower Development, LLC, Mojave, California. Prepared by Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming. September 12, 2012.
- Cogan, C. B. 2009. California Condor Activity in the Tejon Ranch Region. Center for Biological Diversity Report. San Francisco, California.
- Cooper, B. A., R. H. Day, R. J. Ritchie, and C. L. Cranor. 1991. An Improved Marine Radar System for Studies of Bird Migration. *Journal of Field Ornithology* 62(3): 367-377.
- de Lucas, M., G. F. E. Janss, and M. Ferrer, eds. 2007. *Birds and Wind Farms: Risk Assessment and Mitigation*. Quercus. 275 pp.
- de Lucas, M., G. F. E. Janss, 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, doi: 1610.1111/j.1365-2664.2008.01549.x.
- DeLorme. 2013. Topo North America. Digital Topographic Map Data. DeLorme, Yarmouth, Maine.
- Derby, C., K. Bay, and J. Ritzert. 2009. Bird Use Monitoring, Grand Ridge Wind Resource Area, La Salle County, Illinois. Year One Final Report, March 2008 - February 2009. Prepared for Grand Ridge Energy LLC, Chicago, Illinois. Prepared by Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming. July 29, 2009.

- Downes, S. and R. Gritski. 2012. White Creek Wind I Wildlife Monitoring Report: November 2007 - November 2011. Prepared for White Creek Wind I, LLC, Roosevelt, Washington. Prepared by Northwest Wildlife Consultants, Inc., Pendleton, Oregon May 1, 2012.
- Enk, T., K. Bay, M. Sonnenberg, J. Baker, M. Kesterke, J. R. Boehrs, and A. Palochak. 2010. Biglow Canyon Wind Farm Phase I Post-Construction Avian and Bat Monitoring Second Annual Report, Sherman County, Oregon. January 26, 2009 - December 11, 2009. Prepared for Portland General Electric Company, Portland, Oregon. Prepared by Western EcoSystems Technology, Inc.(WEST) Cheyenne, Wyoming, and Walla Walla, Washington. April 2010.
- Enk, T., K. Bay, M. Sonnenberg, and J. R. Boehrs. 2012. Year 2 Avian and Bat Monitoring Report: Biglow Canyon Wind Farm Phase II, Sherman County, Oregon. September 13, 2010 - September 12, 2011. Prepared for Portland General Electric Company, Portland, Oregon. Prepared by Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming, and Walla Walla, Washington. April 23, 2012.
- Enk, T., K. Bay, M. Sonnenberg, J. Flaig, J. R. Boehrs, and A. Palochak. 2011a. Year 1 Post-Construction Avian and Bat Monitoring Report: Biglow Canyon Wind Farm Phase II, Sherman County, Oregon. September 10, 2009 - September 12, 2010. Prepared for Portland General Electric Company, Portland, Oregon. Prepared by Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming, and Walla Walla, Washington. January 7, 2011.
- Enk, T., W. P. Erickson, K. Bay, M. Sonnenberg, J. R. Boehrs, and A. Palochak. 2011b. Post-Construction Avian Use Studies, Elkhorn Valley Wind Farm, Union County, Oregon: March 2010 - February 2011. Prepared for Horizon Wind Energy, Houston, Texas. Prepared by Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming.
- Enz, T. and K. Bay. 2010. Post-Construction Avian and Bat Fatality Monitoring Study, Tuolumne Wind Project, Klickitat County, Washington. Final Report: April 20, 2009 - April 7, 2010. Prepared for Turlock Irrigation District, Turlock, California. Prepared by Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming. July 6, 2010.
- Enz, T., K. Bay, S. Nomani, and M. Kesterke. 2011. Bird and Bat Fatality Monitoring Study, Windy Flats and Windy Point II Wind Energy Projects, Klickitat County, Washington. Final Report: February 1, 2010 - January 14, 2011. Prepared for Windy Flats Partners, LLC, Goldendale, Washington. Prepared by Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming. August 19, 2011.
- Enz, T., K. Bay, M. Sonnenberg, and A. Palochak. 2012. Post-Construction Monitoring Studies for the Combine Hills Turbine Ranch, Umatilla County, Oregon. Final Report: January 7 - December 2, 2011. Prepared for Eurus Energy America Corporation, San Diego, California. Prepared by Western EcoSystems Technology, Inc. (WEST), Walla Walla, Washington.
- Erickson, W. P., A. Chatfield, and K. Bay. 2009. Baseline Avian Studies for the Alta-Oak Creek Mojave Wind-Energy Project, Kern County, California. Final Report: February 4, 2009 - June 30, 2009. Draft report prepared for CH2M HILL by Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming. August 15, 2009.
- Erickson, W. P., J. Jeffrey, K. Kronner, and K. Bay. 2003a. Stateline Wind Project Wildlife Monitoring Annual Report, Results for the Period July 2001 - December 2002. Technical report submitted to FPL Energy, the Oregon Office of Energy, and the Stateline Technical Advisory Committee. Western EcoSystems Technology, Inc., Cheyenne, Wyoming. May 2003.

- Erickson, W. P., J. Jeffrey, K. Kronner, and K. Bay. 2004. Stateline Wind Project Wildlife Monitoring Annual Report. July 2001 - December 2003. Technical report peer-reviewed by and submitted to FPL Energy, the Oregon Energy Facility Siting Council, and the Stateline Technical Advisory Committee. Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming, and Northwest Wildlife Consultants, Inc. (NWC), Pendleton, Oregon. December 2004.
- Erickson, W. P., J. Jeffrey, and V. K. Poulton. 2008. Avian and Bat Monitoring: Year 1 Report. Puget Sound Energy Wild Horse Wind Project, Kittitas County, Washington. Prepared for Puget Sound Energy, Ellensburg, Washington, by Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming. January 2008.
- Erickson, W. P., J. Jeffrey, D. P. Young, K. Bay, R. Good, K. Sernka, and K. Kronner. 2003b. Wildlife Baseline Study for the Kittitas Valley Wind Project: Summary of Results from 2002 Wildlife Surveys. Final Report February 2002– November 2002. Prepared for Zilkha Renewable Energy, Portland, Oregon, by Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming, and Northwest Wildlife Consultants, Inc. (NWC), Pendleton, Oregon. January 2003.
- Erickson, W. P., G. D. Johnson, K. Bay, and K. Kronner. 2002a. Ecological Baseline Study for the Zintel Canyon Wind Project. Final Report April 2001 – June 2002. Technical report prepared for Energy Northwest. Prepared for Energy Northwest by Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming, and Northwest Wildlife Consultants, Inc. (NWC), Pendleton, Oregon. June 2002.
- Erickson, W. P., G. D. Johnson, M. D. Strickland, and K. Kronner. 2000. Avian and Bat Mortality Associated with the Vansycle Wind Project, Umatilla County, Oregon: 1999 Study Year. Final report prepared for Umatilla County Department of Resource Services and Development, Pendleton, Oregon. February 7, 2000.
- Erickson, W. P., G. D. Johnson, D. P. Young, D. Strickland, R. Good, M. Bourassa, K. Bay, and K. Sernka. 2002b. Synthesis and Comparison of Baseline Avian and Bat Use, Raptor Nesting and Mortality Information from Proposed and Existing Wind Developments. Technical report prepared for Bonneville Power Administration, Portland, Oregon by WEST, Inc., Cheyenne, Wyoming. December 2002. [http://www.bpa.gov/Power/pgc/wind/Avian and Bat Study 12-2002.pdf](http://www.bpa.gov/Power/pgc/wind/Avian%20and%20Bat%20Study%2012-2002.pdf)
- Erickson, W. P., K. Kronner, and K. J. Bay. 2007. Stateline 2 Wind Project Wildlife Monitoring Report, January - December 2006. Technical report submitted to FPL Energy, the Oregon Energy Facility Siting Council, and the Stateline Technical Advisory Committee.
- Erickson, W. P., K. Kronner, and R. Gritski. 2003c. Nine Canyon Wind Power Project Avian and Bat Monitoring Report. September 2002 – August 2003. Prepared for the Nine Canyon Technical Advisory Committee and Energy Northwest by Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming, and Northwest Wildlife Consultants (NWC), Pendleton, Oregon. October 2003. http://www.west-inc.com/reports/nine_canyon_monitoring_final.pdf
- Erickson, W. P., E. Lack, M. Bourassa, K. Sernka, and K. Kronner. 2001. Wildlife Baseline Study for the Nine Canyon Wind Project, Final Report May 2000-October 2001. Technical report prepared for Energy Northwest, Richland, Washington. Prepared by Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming, and Northwest Wildlife Consultants, Inc. (NWC), Pendleton, Oregon.

- Erickson, W. P., D. P. Young, G. Johnson, J. Jeffrey, K. Bay, R. Good, and H. Sawyer. 2003d. Wildlife Baseline Study for the Wild Horse Wind Project. Summary of Results from 2002-2003 Wildlife Surveys May 10, 2002- May 22, 2003. Draft report prepared for Zilkha Renewable Energy, Portland, Oregon. Prepared by Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming. November 2003.
- ESRI. 2013, 2014. Geographic Information System (GIS) Online Topographic Base Map. ESRI, producers of ArcGIS software. Redlands, California.
- Good, R. E., M. Ritzert, and K. Bay. 2010. Wildlife Baseline Studies for the Timber Road Phase II Wind Resource Area, Paulding County, Ohio. Final Report: September 2, 2008 - August 19, 2009. Prepared for Horizon Wind Energy, Houston, Texas. Prepared by Western EcoSystems Technology, Inc. (WEST), Bloomington, Indiana. April 28, 2010.
- Gritski, R., S. Downes, and K. Kronner. 2010. Klondike III (Phase 1) Wind Power Project Wildlife Monitoring: October 2007-October 2009. Prepared for Iberdrola Renewables, Inc. (IRI), Portland, Oregon, for Klondike Wind Power III LLC. Prepared by Northwest Wildlife Consultants, Inc. (NWC), Pendleton, Oregon. April 21, 2010 (Updated September 2010). Available online at: <http://www.oregon.gov/energy/Siting/docs/KWP/KWPWildlifeReport091210.pdf>
- Gritski, R., S. Downes, and K. Kronner. 2011. Klondike IIIa (Phase 2) Wind Power Project Wildlife Monitoring: August 2008 - August 2010. Updated Final. Prepared for Iberdrola Renewables, Inc. (IRI), Portland, Oregon, for Klondike Wind Power III LLC. Prepared by Northwest Wildlife Consultants, Inc. (NWC), Pendleton, Oregon. Updated April 2011. Available online at: <http://www.oregon.gov/energy/Siting/docs/KWP/KWPWildlifeReport042711.pdf>
- Gritski, R., K. Kronner, and S. Downes. 2008. Leaning Juniper Wind Power Project, 2006 – 2008. Wildlife Monitoring Final Report. Prepared for PacifiCorp Energy, Portland, Oregon. Prepared by Northwest Wildlife Consultants, Inc. (NWC), Pendleton, Oregon. December 30, 2008.
- Harmata, A. R., K. M. Podruzny, J. R. Zelenak, and M. L. Morrison. 1999. Using Marine Surveillance Radar to Study Bird Movements and Impact Assessment. *Wildlife Society Bulletin* 27(1): 44-52.
- Hoover, S. L. and M. L. Morrison. 2005. Behavior of Red-Tailed Hawks in a Wind Turbine Development. *Journal of Wildlife Management* 69(1): 150-159.
- Hunt, W. G. 2002. Golden Eagles in a Perilous Landscape: Predicting the Effects of Mitigation for Wind Turbine Bladestrike Mortality. California Energy Commission (CEC) Consultant Report P500-02-043F, CEC Sacramento, California. July 2002. Prepared for CEC, Public Interest Energy Research (PIER), Sacramento, California, by University of California, Santa Cruz, California. http://www.energy.ca.gov/reports/2002-11-04_500-02-043F.PDF
- Huso, M. M. P. 2011. An Estimator of Mortality from Observed Carcasses. *Environmetrics* 21(3): 318-329. doi: 10.1002/env.1052.
- i-cubed. 2011. Digital data and mapping. i-cubed, Fort Collins, Colorado.
- Jeffrey, J. D., K. Bay, W. P. Erickson, M. Sonneberg, J. Baker, M. Kesterke, J. R. Boehrs, and A. Palochak. 2009a. Portland General Electric Biglow Canyon Wind Farm Phase I Post-Construction Avian and Bat Monitoring First Annual Report, Sherman County, Oregon. January 2008 - December 2008. Technical report prepared for Portland General Electric Company, Portland, Oregon. Prepared by Western EcoSystems Technology (WEST) Inc., Cheyenne, Wyoming, and Walla Walla, Washington. April 29, 2009.

- Jeffrey, J. D., W. P. Erickson, K. Bay, M. Sonneberg, J. Baker, J. R. Boehrs, and A. Palochak. 2009b. Horizon Wind Energy, Elkhorn Valley Wind Project, Post-Construction Avian and Bat Monitoring, First Annual Report, January-December 2008. Technical report prepared for Telocaset Wind Power Partners, a subsidiary of Horizon Wind Energy, Portland, Oregon. Prepared by Western EcoSystems Technology, Inc., Cheyenne, Wyoming, and Walla Walla, Washington. May 4, 2009.
- Jeffrey, J. D., W. P. Erickson, K. J. Bay, V. K. Poulton, W. L. Tidhar, and J. E. Baker. 2008. Wildlife Baseline Studies for the Golden Hills Wind Resource Area, Sherman County, Oregon. Final Report May 2006 – October 2007. Prepared for BP Alternative Energy North America Inc., Houston, Texas, by Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming.
- Johnson, G. D., K. Bay, and J. Eddy. 2009a. Wildlife Baseline Studies for the Dunlap Ranch Wind Resource Area, Carbon and Albany Counties, Wyoming. June 4, 2008 - May 27, 2009. Prepared for CH2M HILL, Englewood, Colorado. Prepared by Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming.
- Johnson, G. D., K. Bay, and J. Eddy. 2009b. Wildlife Baseline Studies for the High Plains Wind Resource Area, Carbon and Albany Counties, Wyoming. Prepared for CH2M HILL. Prepared by Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming.
- Johnson, G. D., K. Bay, J. Eddy, and T. Rintz. 2008a. Wildlife Baseline Studies for the Glenrock Wind Resource Area, Converse County, Wyoming. Prepared for CH2M HILL. Prepared by Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming.
- Johnson, G. D., J. Eddy, K. Bay, and A. Chatfield. 2008b. Wildlife Baseline Studies for the Seven Mile Hill Wind Resource Area, Carbon County, Wyoming: April 30 - November 15, 2007. Prepared for CH2M HILL, Englewood, Colorado. Prepared by Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming.
- Johnson, G. D. and W. P. Erickson. 2004. Analysis of Potential Wildlife/Wind Plant Interactions, Bighorn Site, Klickitat County, Washington. Prepared for CH2M HILL, Portland, Oregon by WEST, Inc., Cheyenne, Wyoming. August 2004.
- Johnson, G. D., W. P. Erickson, K. Bay, and K. Kronner. 2002. Baseline Ecological Studies for the Klondike Wind Project, Sherman County, Oregon. Final report prepared for Northwestern Wind Power, Goldendale, Washington, by Western EcoSystems Technology, Inc. (WEST) Cheyenne, Wyoming, and Northwest Wildlife Consultants, Inc. (NWC), Pendleton, Oregon. May 29, 2002.
- Johnson, G. D., W. P. Erickson, K. Bay, C. Nations, J. Kerns, E. Riley, and P. Bloom. 2007a. Baseline Avian Use and Risk Assessment for the Homestead Wind Energy Project, Kern County, California. 2005 – 2006. Unpublished report prepared for Horizon Wind Energy. Prepared by Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming. April 19, 2007.
- Johnson, G. D., W. P. Erickson, and J. D. Jeffrey. 2006. Analysis of Potential Wildlife Impacts from the Windy Point Wind Energy Project, Klickitat County, Washington. Unpublished report prepared by Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming. February 3, 2006.
- Johnson, G. D., W. P. Erickson, M. D. Strickland, M. F. Shepherd, and D. A. Shepherd. 2000a. Avian Monitoring Studies at the Buffalo Ridge Wind Resource Area, Minnesota: Results of a 4-Year Study. Final report prepared for Northern States Power Company, Minneapolis, Minnesota, by Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming. September 22, 2000. 212 pp. <http://www.west-inc.com>

- Johnson, G. D., W. P. Erickson, and J. White. 2003. Avian and Bat Mortality During the First Year of Operation at the Klondike Phase I Wind Project, Sherman County, Oregon. Technical report prepared for Northwestern Wind Power, Goldendale, Washington, by Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming. March 2003. <http://www.west-inc.com>
- Johnson, G. D., J. Jeffrey, J. Baker, and K. Bay. 2007b. Baseline Avian Studies for the Windy Flats Wind Energy Project, Klickitat County, Washington. Prepared for Windy Point Partners, LLC., by Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming. May 29, 2007.
- Johnson, G. D., D. P. Young, W. P. Erickson, C. E. Derby, M. D. Strickland, R. E. Good, and J. W. Kern. 2000b. Wildlife Monitoring Studies, Seawest Windpower Plant, Carbon County, Wyoming, 1995-1999. Final report prepared for SeaWest Energy Corporation, San Diego, California, and the Bureau of Land Management, Rawlins, Wyoming, by Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming. August 9, 2000.
- Katzner, T., P. Turk, A. Duerr, D. Brandes, T. Miller, and M. Lanzone. 2012a. Golden Eagle Home Range, Habitat Use, Demography and Renewable Energy Development in the California Desert. An interim report submitted to the Bureau of Land Management, California State Office. Prepared by West Virginia University. December 4, 2012.
- Katzner, T., D. Brandes, T. Miller, M. Lanzone, C. Maisonnueve, J. A. Tremblay, R. Mulvihill, and J. T. Merovich, Jr. 2012b. Topography drives migratory flight altitude of golden eagles: implications for on-shore wind energy development. *Journal of Applied Ecology* 49(5): 1178-1186.
- Kerlinger, P., L. Culp, and R. Curry. 2005. Post-Construction Avian Monitoring Study for the High Winds Wind Power Project, Solano County, California. Year One Report. Prepared for High Winds, LLC and FPL Energy.
- Kerlinger, P., R. Curry, L. Culp, A. Jain, C. Wilkerson, B. Fischer, and A. Hasch. 2006. Post-Construction Avian and Bat Fatality Monitoring for the High Winds Wind Power Project, Solano County, California: Two Year Report. Prepared for High Winds LLC, FPL Energy by Curry and Kerlinger, LLC. April 2006.
- Kronner, K., B. Gritski, J. Baker, V. Marr, G. D. Johnson, and K. Bay. 2005a. Wildlife Baseline Study for the Leaning Juniper Wind Power Project, Gilliam County, Oregon. Prepared for PPM Energy, Portland, Oregon and CH2MHILL, Portland, Oregon by NWC, Pendleton, Oregon, and WEST, Inc., Cheyenne, Wyoming. November 3, 2005.
- Kronner, K., R. Gritski, J. Baker, V. Marr, G. Johnson, and K. Bay. 2005b. Wildlife Baseline Study for the Leaning Juniper Wind Power Project, Gilliam County, Oregon. Prepared by Northwest Wildlife Consultants, Inc. (NWC) and Western Ecosystems Technology, Inc. (WEST). Prepared for PPM Energy, Portland, Oregon and CH2M HILL, Portland, Oregon by NWC, Pendleton, Oregon, and WEST, Cheyenne, Wyoming. November 3, 2005.
- Kronner, K., R. Gritski, and S. Downes. 2008. Big Horn Wind Power Project Wildlife Fatality Monitoring Study: 2006-2007. Final report prepared for PPM Energy and the Big Horn Wind Project Technical Advisory Committee by Northwest Wildlife Consultants, Inc. (NWC), Mid-Columbia Field Office, Goldendale, Washington. June 1, 2008.
- Loss, S. R., T. Will, and P. P. Marra. 2013. Estimates of bird collision mortality at wind facilities in the contiguous United States. *Biological Conservation* 168(2013)201-209.
- M.H. Wolfe and Associates Environmental Consulting (MHWA). 2009. Biota Report for the Cpc East Subarea of the Alta-Oak Creek Mojave Wind Project, Kern County, California. Volume I.

- Manly, B. F. J. 1991. Randomization and Monte Carlo Methods in Biology. Chapman and Hall, London, United Kingdom.
- Millsap, B. A. and G. T. Allen. 2006. Effects of Falconry Harvest on Wild Raptor Populations in the United States: Theoretical Considerations and Management Recommendations. *Wildlife Society Bulletin* 34: 1392-1400.
- National Geographic Society (National Geographic). 2011, 2013. TOPO! Digital Topographic Map.
- North American Bird Conservation Initiative (NABCI). 2010. Bird Conservation Regions (Bcr) Map. US NABCI webpage: <http://www.nabci-us.org/>; NABCI Bird Conservation Regions (BCR): <http://www.nabci-us.org/map.html>
- Northwest Wildlife Consultants, Inc. (NWC) and Western Ecosystems Technology, Inc. (WEST). 2004. Ecological Baseline Studies for the Roosevelt Wind Project, Klickitat County, Washington. Final Report. Prepared by NWC, Pendleton, Oregon, and WEST, Inc., Cheyenne, Wyoming. September 2004
- Northwest Wildlife Consultants, Inc. (NWC) and Western Ecosystems Technology, Inc. (WEST). 2005a. Ecological Baseline Studies and Wildlife Impact Assessment for the White Creek Wind Power Project, Klickitat County, Washington. Prepared for Last Mile Electric Cooperative, Goldendale, Washington, by Northwest Wildlife Consultants, Inc., Goldendale, Washington, and Western Ecosystems Technology, Inc. (WEST), Cheyenne, Wyoming. January 12, 2005.
- Northwest Wildlife Consultants, Inc. (NWC) and Western Ecosystems Technology, Inc. (WEST). 2007. Avian and Bat Monitoring Report for the Klondike II Wind Power Project. Sherman County, Oregon. Prepared for PPM Energy, Portland, Oregon. Managed and conducted by NWC, Pendleton, Oregon. Analysis conducted by WEST, Cheyenne, Wyoming. July 17, 2007.
- Northwest Wildlife Consultants, Inc. (NWC), and Western Ecosystems Technology, Inc. (WEST). 2005b. Ecological Baseline Studies and Wildlife Impact Assessment for the White Creek Wind Power Project, Klickitat County, Washington. Prepared for Last Mile Electric Cooperative, Goldendale, Washington. Prepared by K. Kronner, R. Gritski, and J. Baker, NWC, Goldendale, Washington, and G.D. Johnson, K. Bay, R. Good, and E. Lack, WEST, Cheyenne Wyoming. January 12, 2005.
- Nygård, T., K. Bevanger, E. L. Dahl, Ø. Flagstad, A. Follestad, P. L. Hoel, R. May, and O. Reitan. 2010. A Study of White-Tailed Eagle *Haliaeetus albicilla* Movements and Mortality at a Wind Farm in Norway. BOU Proceedings-Climate Change and Birds. 4 pp. Available online from: <http://www.bou.org.uk/bouprocnet/climate-change-and-birds/>
- Orloff, S. and A. Flannery. 1992. Wind Turbine Effects on Avian Activity, Habitat Use, and Mortality in Altamont Pass and Solano County Wind Resource Areas, 1989-1991. Final Report P700-92-001 to Alameda, Contra Costa, and Solano Counties, and the California Energy Commission, Sacramento, California, by Biosystems Analysis, Inc., Tiburon, California. March 1992.
- 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. US Fish and Wildlife Service (USFWS). February 2010. Available online at: http://steinadlerschutz.lbv.de/fileadmin/www.steinadlerschutz.de/terimGoldenEagleTechnicalGuidanceProtocols25March2010_1.pdf
- Parzen, E. 1962. On the Estimation of Probability Density and Mode. *Annals of Mathematical Statistics* 27: 1065-1076.

- R Development Core Team. 2011. R: A Language and Environment for Statistical Computing. R Foundation for Statistical Computing, Vienna, Austria.
- Rautenstrauch, B. 2010. "Wind Farm Forum Draws 150," *The Observer*, June 24, 2010. Available online at: <http://www.lagrandeobserver.com/News/Local-News/Wind-farm-forum-draws-150> 2010.
- Reynolds, R. T., J. M. Scott, and R. A. Nussbaum. 1980. A Variable Circular-Plot Method for Estimating Bird Numbers. *Condor* 82(3): 309-313.
- Rivers, J. W., J. M. Johnson, S. M. Haig, C. J. Schwarz, J. W. Glendening, L. J. Burnett, D. George, and J. Grantham. 2014. Resource Selection by the California Condor (*Gymnogyps californianus*) Relative to Terrestrial-Based Habitats and Meteorological Conditions. *PLoS ONE* 9(2): e88430. doi:10.1371/journal.pone.0088430.
- Roy, R. D. and S. K. Pelletier. 2005. Fall 2004 Avian Migration Surveys at the Proposed Deerfield Wind/Searsburg Expansion Project in Searsburg and Readsboro, Vermont. Prepared for Deerfield Wind, LLC, and Vermont Environmental Research Associates. Prepared by Woodlot Alternatives, Inc. (Woodlot), Topsham, Maine. April 2005.
- Sapphos Environmental, Inc. 2006. Final Biological Resources Technical Report for the PdV Wind Energy Project, Kern County, California. Sapphos Environmental, Pasadena, California. August 25, 2006.
- Shuford, W. D. and T. Gardall, eds. 2008. California Bird Species of Special Concern. A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California. Studies of Western Birds No. 1. Published Jointly by Western Field Ornithologists and California Department of Fish and Game. Allen Press. Species of Special Concern Birds: <http://www.dfg.ca.gov/wildlife/nongame/ssc/birds.html>
- Smallwood, K. S. and B. Karas. 2009. Avian and Bat Fatality Rates at Old-Generation and Repowered Wind Turbines in California. *Journal of Wildlife Management* 73(7): 1062-1071.
- Smallwood, K. S., L. Rugge, and M. L. Morrison. 2009. Influence of Behavior on Bird Mortality in Wind Energy Developments. *Journal of Wildlife Management* 73(7): 1082-1098.
- Smallwood, K. S. and C. G. Thelander. 2004. Developing Methods to Reduce Bird Mortality in the Altamont Pass Wind Resource Area. Final report prepared by BioResource Consultants for the California Energy Commission, Public Interest Energy Research Program, Contract No. 500-01-019 (L. Spiegel, Project Manager). August 2004.
- Stantec Consulting Services, Inc. (Stantec Consulting Services). 2012. Post-Construction Monitoring, Summer 2011 - Spring 2012, Year 1 Annual Report: Kittitas Valley Wind Power Project, Cle Elum, Washington. Prepared for Sagebrush Power Partners, LLC, Houston, Texas. Prepared by Stantec, Salt Lake City, Utah.
- Sundance Biology, Inc. 2011. Mohave Ground Squirrel Trapping Results for the Proposed Rising Tree Wind Farm, Mojave, Kern County, California. Prepared for Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming. Prepared by Sundance Biology, Inc., Paso Robles, California. August 31, 2011.
- Taylor, K., W. P. Erickson, J. Thompson, and D. P. Young. 2010. Assessing Golden Eagle (*Aquila chrysaetos*) Use of Wind Resource Areas Using Observational Data. Poster presented at the National Wind Coordinating Collaborative (NWCC) Wind Wildlife Research Meeting VIII, October 19-21, 2010, Lakewood, Colorado.

- URS Corporation, Western EcoSystems Technology, Inc. (WEST), and Northwest Wildlife Consultants, Inc. (NWC). 2001. Avian Baseline Study for the Stateline Project. Prepared for FPL Energy Vansycle, LLC, Juno Beach, Florida.
- US Department of Agriculture (USDA). 2012. Imagery Programs - National Agriculture Imagery Program (NAIP). USDA - Farm Service Agency (FSA). Aerial Photography Field Office (APFO), Salt Lake City, Utah. Last updated July 3, 2012. <http://www.fsa.usda.gov/FSA/apfoapp?area=home&subject=landing&topic=landing>
- US Fish and Wildlife Service (USFWS). 2008. Birds of Conservation Concern 2008. December 2008. Division of Migratory Bird Management. Arlington, Virginia. <http://www.fws.gov/migratorybirds/NewReportsPublications/SpecialTopics/BCC2008/BCC2008.pdf>
- US Fish and Wildlife Service (USFWS). 2009. United States Fish and Wildlife Service, Department of the Interior. 50 CFR 13 and 22. Eagle Permits; Take Necessary to Protect Interests in Particular Localities. 74 Federal Register (FR) 46836-46879. September 11, 2009.
- US Fish and Wildlife Service (USFWS). 2011. USFWS Website. Last updated October 2011. USFWS Endangered Species Program homepage: <http://www.fws.gov/endangered/>; Environmental Conservation Online System (ECOS): <http://ecos.fws.gov/ecos/indexPublic.do>; Threatened and Endangered Species System (TESS) listings by state: http://ecos.fws.gov/tess_public/pub/stateListingAndOccurrence.jsp; Individual species profiles and status information available from the ECOS webpage.
- US Fish and Wildlife Service (USFWS). 2012. Final Land-Based Wind Energy Guidelines. March 23, 2012. 82 pp. Available online at: http://www.fws.gov/windenergy/docs/WEG_final.pdf
- US Fish and Wildlife Service (USFWS). 2013a. Eagle Conservation Plan Guidance. Module 1 - Land-Based Wind Energy. Version 2. Division of Migratory Bird Management, USFWS. April 2013. Available online at: http://www.fws.gov/migratorybirds/Eagle_Conservation_Plan_Guidance-Module%201.pdf
- US Fish and Wildlife Service (USFWS). 2013b. USFWS Website. Last updated March 22, 2013. USFWS Endangered Species Program homepage: <http://www.fws.gov/endangered/>; Environmental Conservation Online System (ECOS): <http://ecos.fws.gov/ecos/indexPublic.do>; Threatened and Endangered Species System (TESS) listings by state: http://ecos.fws.gov/tess_public/pub/stateListingAndOccurrence.jsp; Individual species profiles and status information available from the ECOS webpage.
- US Geological Survey (USGS). 2013, 2014. The National Map/US Topo. Homepage available at: <http://nationalmap.gov/ustopo/index.html>
- Ventus Environmental Solutions (Ventus). 2012. Vantage Wind Energy Center Avian and Bat Monitoring Study: March 2011- March 2012. Prepared for Vantage Wind Energy, LLC, Chicago, Illinois. Prepared by Ventus, Portland, Oregon. May 16, 2012.
- Western Ecosystems Technology, Inc. (WEST). 2005a. Ecological Baseline Study at the Elkhorn Wind Power Project. Exhibit A. Final report prepared for Zilkha Renewable Energy, LLC., Portland, Oregon, by WEST, Cheyenne, Wyoming. June 2005.
- Western EcoSystems Technology, Inc. (WEST). 2005b. Ecological Baseline Study for the Proposed Reardan Wind Project, Lincoln County, Washington. Draft Final Report. Prepared for Energy Northwest, Richland, Washington, by Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming. June 2005.

- Western EcoSystems Technology, Inc. (WEST). 2005c. Exhibit A: Ecological Baseline Study at the Elkhorn Wind Power Project. Draft final report prepared for Zilkha Renewable Energy, LLC, Portland, Oregon, by WEST, Cheyenne, Wyoming. June 2005.
- Western EcoSystems Technology, Inc. (WEST). 2005d. Wildlife and Habitat Baseline Study for the Proposed Biglow Canyon Wind Power Project, Sherman County, Oregon. March 2004 - August 2005. Prepared for Orion Energy LLC., Oakland, California. WEST, Cheyenne, Wyoming. October, 2005.
- Western EcoSystems Technology, Inc. (WEST). 2006. Diablo Winds Wildlife Monitoring Progress Report, March 2005 - February 2006. Technical report submitted to FPL Energy and Alameda County California. WEST. Cheyenne, Wyoming.
- Western EcoSystems Technology, Inc. (WEST). 2007. Wildlife and Habitat Baseline Study for the Vantage Wind Power Project, Kittitas County, Washington. Draft report prepared for Invenergy by Western EcoSystems Technology, Inc. (WEST), Cheyenne Wyoming and Walla Walla, Washington. June 2007.
- Western EcoSystems Technology, Inc. (WEST). 2008. Diablo Winds Wildlife Monitoring Progress Report: March 2005 – February 2007. Prepared by WEST, Cheyenne, Wyoming. August 2008.
- Western EcoSystems Technology, Inc. (WEST). 2009. Wildlife Baseline Studies for the Antelope Ridge Wind Resource Area, Union County, Oregon. August 28, 2008 - August 12, 2009. Draft final report prepared for Horizon Wind Energy, Houston, Texas. Prepared by WEST, Cheyenne, Wyoming.
- Western EcoSystems Technology, Inc. (WEST), the Colorado Plateau Research Station (CPRS), and the Ecological Monitoring and Assessment Program. 2006. Avian Studies for the Proposed Sunshine Wind Park, Coconino County, Arizona. Prepared for Sunshine Arizona Wind Energy, LLC., Flagstaff, Arizona, by WEST, Cheyenne, Wyoming, and the CPRS and the Ecological Monitoring and Assessment Program, Northern Arizona University, Flagstaff, Arizona. May 2006.
- Whitfield, D. P. 2009. Collision Avoidance of Golden Eagles at Wind Farms under the 'Band' Collision Risk Model. Report to Scottish National Heritage. March 2009.
- Woodward-Clyde International-Americas, (WCIA) and Western EcoSystems Technology, Inc. (WEST). 1997. Avian Baseline Study for the Vansycle Ridge Project - Vansycle Ridge, Oregon and Wildlife Mortality Studies, Vansycle Wind Project, Washington. Prepared for Esi Vansycle Partners, L.P., North Palm Beach, Florida.
- Young, D.P. Jr., W. P. Erickson, K. Bay, and R. Good. 2002. Baseline Avian Studies for the Proposed Maiden Wind Farm, Yakima and Benton Counties, Washington. Final Report, April 2001-April 2002. Prepared for Bonneville Power Administration, Portland, Oregon, by Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming, and Northwest Wildlife Consultants, Inc. (NWC), Pendleton, Oregon. November 20, 2002.
- Young, D.P. Jr., W. P. Erickson, K. Bay, J. Jeffrey, E. G. Lack, R. E. Good, and H. H. Sawyer. 2003a. Baseline Avian Studies for the Proposed Hopkins Ridge Wind Project, Columbia County, Washington. Final Report, March 2002 - March 2003. Prepared for RES North America, LLC., Portland, Oregon, by Western EcoSystems Technology, Inc.(WEST), Cheyenne, Wyoming. April 30, 2003.

- Young, D.P. Jr., W. P. Erickson, K. Bay, J. Jeffrey, E. G. Lack, and H. H. Sawyer. 2003b. Baseline Avian Studies for the Proposed Desert Claim Wind Power Project, Kittitas County, Washington. Final Report. Prepared for Desert Claim Wind Power, LLC, Ellensburg, Washington, by Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming. July 2003.
- Young, D.P. Jr., W. P. Erickson, J. Jeffrey, K. Bay, R. E. Good, and E. G. Lack. 2003c. Avian and Sensitive Species Baseline Study Plan and Final Report. Eurus Combine Hills Turbine Ranch, Umatilla County, Oregon. Technical report prepared for Eurus Energy America Corporation, San Diego, California and Aeropower Services, Inc., Portland, Oregon, by Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming. March 10, 2003.
- Young, D.P. Jr., W. P. Erickson, J. Jeffrey, and V. K. Poulton. 2007a. Puget Sound Energy Hopkins Ridge Wind Project Phase 1 Post-Construction Avian and Bat Monitoring First Annual Report, January - December 2006. Technical report for Puget Sound Energy, Dayton, Washington and Hopkins Ridge Wind Project Technical Advisory Committee, Columbia County, Washington. Western EcoSystems Technology, Inc. (WEST) Cheyenne, Wyoming, and Walla Walla, Washington. 25 pp.
- Young, D.P. Jr., W. P. Erickson, M. D. Strickland, R. E. Good, and K. J. Sernka. 2003d. Comparison of Avian Responses to UV-Light-Reflective Paint on Wind Turbines. Subcontract Report July 1999 – December 2000. NREL/SR-500-32840. Prepared for National Renewable Energy Laboratory, Golden, Colorado, by Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming. Foote Creek Rim Wind Plant, Carbon County, Wyoming. January 2003. <http://www.west-inc.com>
- Young, D.P. Jr., J. Jeffrey, W. P. Erickson, K. Bay, V. K. Poulton, K. Kronner, R. Gritski, and J. Baker. 2006. Eurus Combine Hills Turbine Ranch. Phase 1 Post Construction Wildlife Monitoring First Annual Report: February 2004 - February 2005. Technical report prepared for Eurus Energy America Corporation, San Diego, California, and the Combine Hills Technical Advisory Committee, Umatilla County, Oregon. Prepared by Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming, and Walla Walla Washington, and Northwest Wildlife Consultants, Inc. (NWC), Pendleton, Oregon. February 21, 2006.
- Young, D.P. Jr., J. D. Jeffrey, K. Bay, and W. P. Erickson. 2009. Puget Sound Energy Hopkins Ridge Wind Project, Phase 1, Columbia County, Washington. Post-Construction Avian and Bat Monitoring, Second Annual Report: January - December, 2008. Prepared for Puget Sound Energy, Dayton, Washington, and the Hopkins Ridge Wind Project Technical Advisory Committee, Columbia County, Washington. Prepared by Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming, and Walla Walla, Washington. May 20, 2009.
- Young, D.P. Jr., G. D. Johnson, V. K. Poulton, and K. Bay. 2007b. Ecological Baseline Studies for the Hatchet Ridge Wind Energy Project, Shasta County, California. Prepared for Hatchet Ridge Wind, LLC, Portland, Oregon by Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming. August 31, 2007. http://www.co.shasta.ca.us/Departments/Resourcegmt/drm/Hatchet%20Ridge/DEIR/App_C-1.pdf
- Young, D.P. Jr., V. K. Poulton, and K. Bay. 2007c. Ecological Baseline Studies Report. Proposed Dry Lake Wind Project, Navajo County, Arizona. Prepared for PPM Energy, Portland, Oregon, by Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming. July 1, 2007.

Acts, Rules, and Regulations

- 50 Code of Federal Regulations (CFR) 10. 1973. Title 50 - Wildlife and Fisheries; Chapter I -United States Fish and Wildlife Service, Department of the Interior; Subchapter B Taking, Possession, Transportation, Sale, Purchase, Barter, Exportation, and Importation of Wildlife and Plants; Part 10 - General Provisions; Subpart B - Definitions; Section (§)10.13. List of Migratory Birds. 50 CFR 10.13; 38 Federal Register (FR) 22015, August 15, 1973, as amended 50 FR 52889, December 26, 1985.
- 50 Code of Federal Regulations (CFR) 22. 1999. Title 50 - Wildlife and Fisheries, Chapter I -United States Fish and Wildlife Service, Department of the Interior, Subchapter B - Taking, Possession, Transportation, Sale, Purchase, Barter, Exportation, and Importation of Wildlife and Plants, Part 22 - Eagle Permits. Subparts a-D, §§ 22.1-22.32. 64 FR 50472, September 17, 1999, as amended at 73 FR 29083, May 20, 2008.
- 50 Code of Federal Regulations (CFR) 22. 2009a. Title 50 - Wildlife and Fisheries. Chapter I - United States Fish and Wildlife Service, Department of the Interior (Continued). Subchapter B - Taking, Possession, Transportation, Sale, Purchase, Barter, Exportation, and Importation of Wildlife and Plants (Continued). Part 22 - Eagle Permits. Subpart C - Eagle Permits: Permits for Eagle Take That Is Associated with, but Not the Purpose of, an Activity. 50 CFR § 22.26 (a)(2). October 1, 2009.
- 50 Code of Federal Regulations (CFR) 22. 2009b. Title 50 - Wildlife and Fisheries. Chapter I - United States Fish and Wildlife Service, Department of the Interior (Continued). Subchapter B - Taking, Possession, Transportation, Sale, Purchase, Barter, Exportation, and Importation of Wildlife and Plants (Continued). Part 22 - Eagle Permits. Subpart C - Eagle Permits: Removal of Eagle Nests. 50 CFR § 22.27 (a)(1). November 10, 2009.
- 50 Code of Federal Regulations (CFR) 10. 2010. Title 50 - Wildlife and Fisheries; Chapter I -United States Fish and Wildlife Service, Department of the Interior; Subchapter B Taking, Possession, Transportation, Sale, Purchase, Barter, Exportation, and Importation of Wildlife and Plants; Part 10 - General Provisions; Subpart B - Definitions; Section (§)10.12. Definitions. 50 CFR 10.12; 38 FR 22015, Aug. 15, 1973, as amended at 42 FR 32377, June 24, 1977; 42 FR 59358, Nov. 16, 1977; 45 FR 56673, Aug. 25, 1980; 50 FR 52889, Dec. 26, 1985; 72 FR 48445, Aug. 23, 2007.
- Bald and Golden Eagle Protection Act (BGEPA). 1940. 16 United States Code (USC) § 668-668d. Bald Eagle Protection Act of 1940, June 8, 1940, Chapter 278, § 2, 54 Statute (Stat.) 251; Expanded to include the related species of the golden eagle October 24, 1962, Public Law (P.L.) 87-884, 76 Stat. 1246. As amended: October 23, 1972, P.L. 92-535, § 2, 86 Stat. 1065; Nov. 8, 1978, P.L. 95-616, § 9, 92 Stat. 3114.
- California Endangered Species Act (CESA). 1984. Fish and Game Code § 2050 - 2115.5.
- Endangered Species Act (ESA). 1973. 16 United States Code (USC) § 1531-1544, Public Law (PL) 93-205, December 28, 1973, as amended, PL 100-478 [16 USC 1531 *et seq.*]; 50 Code of Federal Regulations (CFR) 402.
- Migratory Bird Treaty Act (MBTA). 1918. 16 United States Code (USC) § 703-712. July 13, 1918.
- Small Tracts Act. 1938. 36 Code of Federal Regulations (CFR) § 254, Subpart C.

**Appendix A. Results of the Baseline Surveys Conducted at the
Rising Tree Wind Resource Area in 2005 and 2006**

**Appendix B. Results of the Baseline Surveys Conducted at the
Rising Tree Wind Resource Area in 2010 and 2011**

**Appendix C. Results of the Acoustic Bat Surveys Conducted at the
Rising Tree Wind Resource Area from July 1, 2008 – August 13, 2009**

Appendix D. California Condor Risk Assessment

**Appendix E. Existing Facilities in the Western US Used to Determine
Upper Quartiles and Consultation Triggers**

