

DRAFT ENVIRONMENTAL IMPACT REPORT

MODIFICATIONS TO EXISTING (YEAR 2005) CONDITIONAL USE PERMITS – ALTAMONT WINDS INC. (AWI)

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Acronyms and Abbreviations

µg/m ³	micrograms per cubic meter
AB 32	Assembly Bill 32, the California Global Warming Solutions Act of 2006
ABAG	Association of Bay Area Governments
ACFD	Alameda County Fire Department
AMMs	avoidance and minimization measures
APWRA	Altamont Pass Wind Resource Area
ARB	Air Resources Board
Assembly Bill 1807	Toxic Air Contaminant Identification and Control Act
Assembly Bill 2588	Air Toxics Hot Spots Information and Assessment Act of 1987
AWI	Altamont Winds Inc.
AWPPS	Avian Wildlife Protection Program and Schedule
BAAQMD	Bay Area Air Quality Management District
BGEPA	Bald and Golden Eagle Protection Act
BMPs	best management practices
BO	biological opinion
CAA	Clean Air Act
CAAA	Clean Air Act amendments
CAAQS	California Ambient Air Quality Standards
CalEPA	California Environmental Protection Agency
Cal-IPC	California Invasive Plant Council
Cal-OSHA	California Division of Occupational Safety and Health
Caltrans	Department of Transportation
CAP	Clean Air Plan
CCAA	California Clean Air Act
CCAs	Community Choice Aggregations
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act

CH ₄	methane
CNDDDB	California Natural Diversity Database
CNEL	community noise equivalent level
CNPPA	California Native Plant Protection Act
CNPS	California Native Plant Society
CO	carbon monoxide
CO ₂	carbon dioxide
CO ₂ e	carbon dioxide equivalent
CPUC	California Public Utilities Commission
CUP	conditional use permits
CWA	Clean Water Act
dB	decibel
dBA	A-Weighted Decibel
DPM	diesel particulate matter
EACCS	East Alameda County Conservation Strategy
EACP	East County Area Plan
EBZA	East County Board of Zoning Adjustments
ECAP	East County Area Plan
EIR	environmental impact report
EPA	Federal Environmental Protection Agency
ESA	federal Endangered Species Act
ESPs	energy service providers
FR	Federal Register
FY	fiscal year
GHGs	greenhouse gases
GWP	global warming potential
HCP	habitat conservation plan
HFC	hydrofluorocarbons
HRA	Health Risk Assessment
Hz	Hertz
I-580	Interstate 580
IOU	investor-owned utilities

IPCC	Intergovernmental Panel on Climate Change
kilowatts	kW
kW	kilowatt
L _{dn}	day-night sound level
L _{eq}	equivalent sound level
L _{max}	maximum sound levels
L _{min}	minimum sound levels
LPA	Large Parcel Agriculture
LSAA	Lake and Streambed Alteration Agreement
Lxx	percentile-exceeded sound levels
MBTA	Migratory Bird Treaty Act
MET	meteorological
mg/m ³	milligrams per cubic meter
mph	miles per hour
MT	monitoring team
MT CO _{2e}	metric tons of carbon dioxide equivalent
MW	megawatt
MWh	megawatt hour
N ₂ O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NO	nitric oxide
NO ₂	nitrogen dioxide
NOI	Notice of Intent
NOP	notice of preparation
NO _x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
O&M	Operation and maintenance
OHWM	ordinary high water mark
Pb	lead
Peak Velocity	Peak Particle Velocity
PFC	perfluorinated carbons
PG&E	Pacific Gas & Electric Company

PM	particulate matter
PM10	PM 10 microns in diameter or less
PM2.5	PM 2.5 microns in diameter or less
ppb	parts per billion
pphm	parts per hundred million
ppm	parts per million
ppt	parts per trillion
PPV	Peak Particle Velocity
PRC	California Public Resources Code
Reporting Rule	Greenhouse Gas Reporting Rule
ROG	reactive organic gases
RPS	Renewable Portfolio Standard
RWQCB	Regional Water Quality Control Board
SB	Senate Bills
SF ₆	sulfur hexafluoride
SFBAAB	San Francisco Bay Area Air Basin
SIP	state implementation plan
SO ₂	sulfur dioxide
SRA	State Responsibility Area
SRC	Scientific Review Committee
SWPPP	Stormwater Pollution Prevention Plan
TACs	toxic air contaminants
TCMs	traffic control measures
U.S.	United States
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VOCs	volatile organic compounds
WDRs	waste discharge requirements
Williamson Act	California Land Conservation Act
WSSD	Winter Seasonal Shutdown
WTGS	Wind Turbine Generation Systems

ES.1 Introduction

The County of Alameda (County) is preparing this Environmental Impact Report (EIR) to examine the environmental effects of proposed modifications to existing Altamont Winds Inc. conditional use permits (CUPs) in the Altamont Pass Wind Resource Area (APWRA). The proposed project consists of an Altamont Winds, Inc. (the Applicant) request for CUP modifications related to operational schedules for 85.8 MW of existing wind turbines in the Alameda County portion of the APWRA.

This EIR analyzes the environmental effects of the proposed project, recommends measures to reduce or avoid potential environmental damage resulting from the project, and identifies alternatives to the proposed project. This EIR also describes any significant environmental effects that cannot be avoided, growth-inducing effects, effects found not to be significant, and cumulative impacts.

The EIR will be used by the East County Board of Zoning Adjustments in its consideration of approval of the proposed CUP modifications.

ES.2 Description of Project

AWI is requesting modification of the existing CUPs to alter the schedule for permanent shutdown of existing wind turbines in the APWRA. The proposed project comprises continued operation of 85.8 MW of existing turbines on the existing wind energy facility site through December 2015, removal of the winter seasonal shutdown requirement, and decommissioning of the existing turbines and AWI's share of related APWRA infrastructure. Decommissioning consists of removing turbines and associated infrastructure, and reclamation of their sites. The proposed project involves no physical changes to existing turbines or related infrastructure prior to decommissioning activities.

Under the present CUPs, AWI is required to permanently cease operations and remove a predetermined percentage of turbines on a specified, phased schedule. The first phase of decommissioning took place in 2009, at which time AWI was required to remove 10% of its 920 turbines. The existing CUPs require AWI to remove another 25% of the original 920 turbines (for a cumulative total of 35%) by September 30, 2013, an additional 50% of original turbines (for a cumulative total of 85%) by September 30, 2015, and the remaining 15% of turbines by September 30, 2018. The existing CUPs for AWI's facilities direct that, in addition to the phased decommissioning and winter seasonal shutdown, AWI permanently cease operations of all remaining turbines and remove them by September 30, 2018.

The proposed CUP modifications would alter these requirements, allowing AWI's existing turbines, excluding the 10% already shut down in accordance with Exhibit G-2 of the CUPs, to continue to operate through December 31, 2015, at which point all turbines would permanently cease operations. Decommissioning (the process of permanent removal and reclamation) would commence in 2016 and likely end in 2017.

Under the existing CUPs, AWI is required to shut down all wind turbines between November 1 and February 15 of each year. This requirement is intended to reduce documented avian mortality effects in the APWRA related to wintertime migratory patterns of protected bird species. AWI asserts that measures it has implemented have substantially reduced avian impacts and is requesting modification of the existing CUPs to lift the requirements to shut down turbines during the winter months. AWI is seeking the modifications to the CUPs in order to achieve the specific and basic project objectives of additional operation of its turbines for greater efficiency, renewable energy output to help meet the state's goals for renewable energy (33% from renewable energy sources by 2020), reduced emissions of carbon dioxide and other greenhouse gases that result from conventional energy production, and sustainable company revenue. A condition of the CUPs is the requirement that the permittee sponsor the preparation of an EIR to evaluate the environmental impacts of a repowering program (the replacement of older turbines with substantially fewer but larger turbines with the same overall output) and to also evaluate continued operation of existing turbine facilities and their progressive removal or phased decommissioning.

This EIR addresses continued operation and decommissioning of facilities for the proposed project (permit modification), without phased shutdown and decommissioning, except as the No Project Alternative and one other alternative. The EIR does not address repowering because AWI does not have a repowering proposal at present. At the time that AWI proposes repowering, a separate project EIR will be required. A separate, combined program-project EIR is being prepared on behalf of a consortium of wind farm operators, including AWI, to address overall repowering of the Alameda County portion of the APWRA on a program level, and some specific repowering projects that have been proposed.

ES.2.1 Alternatives

Alternatives that would avoid or substantially lessen significant effects of the project and that would feasibly attain most of the basic project objectives are discussed below.

No Project Alternative

Under the No Project Alternative, the proposed project would not be implemented and the existing CUPs would continue to be enforced. Seasonal shutdowns of all wind turbines would continue yearly between November 1 and February 15. Phased decommissioning would continue. The first phase of decommissioning took place in 2009, at which time AWI was required to remove 10% of its 920 turbines. The existing CUPs require AWI to remove a total of 35% of the original 920 turbines by September 30, 2013, 85% of the original turbines by September 30, 2015, and the remaining 15% of turbines by September 30, 2018.

Alternative 1 – Continue Seasonal Shutdown, No Phased Decommissioning, Permanent Shutdown in 2015

Alternative 1 is similar to the proposed project in that it would include modification to existing CUPs, but to eliminate only the requirements for phased decommissioning (excluding the 10% already shut down in 2009). Complete shutdown of wind turbines would occur by October 31, 2015 with removal commencing the following year and continuing for up to 2 years. Unlike the proposed project, Alternative 1 would retain the existing CUP requirement for seasonal shutdown of wind turbines between November 1 and February 15 each year.

Alternative 2 – Continue Seasonal Shutdown, No Phased Decommissioning, Permanent Shutdown in 2016

Under this alternative, seasonal shutdowns would continue as per the existing CUPs, but the phased decommissioning would not. AWI would continue to operate 828 wind turbines until October 31, 2016, when all wind turbines would be permanently shut down. Decommissioning activities would commence in 2017 and continue for up to 2 years.

Alternative 3 – Continue Seasonal Shutdown, No Phased Decommissioning, Permanent Shutdown in 2018

Alternative 3 is similar to the proposed project in that it would include modification to existing CUPs that would remove the requirement for phased shutdown and decommissioning (excluding the 10% already shut down in 2009). In addition, permanent shutdown of wind turbines would occur by October 31, 2018 with decommissioning activities commencing the following year.

Chapter 4, *Alternatives Analysis*, presents a description of the alternatives and compares the impacts of the alternatives with those of the proposed project.

Environmentally Superior Alternative

Alternative 1 would have less-severe impacts than the proposed project or other alternatives on both avian wildlife and noise associated with increased wind turbine operation. Although this alternative would generate approximately 60% less energy than the proposed project, the most critical issue revolves around the number of avian deaths in relation to wind turbine operation. Based on a quantitative analysis of impacts presented in this document, it can be determined that Alternative 1 would have the fewest environmental impacts and would therefore be considered the environmentally superior alternative.

ES.3 Impacts and Mitigation Measures

This EIR discusses the project's potential environmental effects, and provides mitigation measures to reduce any significant impacts to less-than-significant levels, where feasible. Environmental topic areas and resources considered and dismissed from further evaluation are distinguished from those considered in detail. Sections 3.1 through 3.4 provide comprehensive discussions of the environmental setting for the environmental resources affected by the project, and identify project impacts and mitigation measures designed to reduce significant impacts to less-than-significant levels, if feasible. Table ES-1, *Summary of Impacts and Mitigation Measures*, summarizes the proposed project's impacts and mitigation measures.

ES.3.1 Resources Dismissed from Further Consideration

As discussed in Chapter 3.0, the County determined that the proposed project would have no impact on the following resources, which are therefore not analyzed in detail in this EIR.

- Aesthetics
- Agriculture and Forest Resources
- Cultural Resources
- Geology and Soils

- Hydrology and Water Quality
- Land Use and Planning
- Mineral Resources
- Population and Housing
- Public Services
- Recreation
- Transportation
- Utilities

ES.3.2 Impacts Analyzed in the Environmental Impact Report

Chapter 3 of this EIR discusses the project's potential environmental effects and mitigation measures in detail. Specifically, Sections 3.1 through 3.4 provide a full discussion of the environmental setting, project impacts, and mitigation measures designed to reduce significant impacts to less-than-significant levels, if feasible. Table ES-1, *Summary of Impacts and Mitigation Measures*, summarizes the proposed project's impacts, mitigation measures, and residual impacts. Impacts associated with the following topics or resources are evaluated in detail in this EIR and are discussed further below.

- Air Quality and Greenhouse Gases
- Biological Resources
- Noise
- Hazards and Hazardous Materials

ES.3.2.1 No Impact

The analysis of project impacts indicates that for the following topic areas or resources, there would be no impact on one or more specific, focused issues or considerations.

Air Quality and Greenhouse Gases

- Impact AQ-1: Conflict with or obstruct implementation of the applicable air quality plan.

Biological Resources

- Impact BIO-5: Conflict with any local policies or ordinances protecting biological resources
- Impact BIO-7: Result in the conversion of oak woodlands that will have a significant effect on the environment

ES.3.2.2 Less than Significant

The analysis of project impacts indicates that the following resources would have less-than-significant impacts on one or more issues.

Air Quality and Greenhouse Gases

- Impact AQ-2: Violate any air quality standard or contribute substantially to an existing or projected air quality violation
- Impact AQ-3: Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is a nonattainment area for an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)
- Impact AQ-4: Expose sensitive receptors to substantial pollutant concentrations
- Impact AQ-5: Create objectionable odors affecting a substantial number of people
- Impact AQ-6: Generation of greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment
- Impact AQ-7: Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases

Biological Resources

- Impact BIO-4: Potential to interfere substantially with the movement of native resident wildlife species or impede the use of native wildlife nursery sites
- Impact BIO-6: Potential to conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan

Hazards and Hazardous Materials

- Impact HAZ-1: Result in a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials
- Impact HAZ-2: Result in the exposure of people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands

ES.3.2.3 Significant

The analysis of project impacts indicates that significant impacts on the following resources would be less than significant after mitigation is implemented.

Biological Resources

- Impact BIO-1: Potential to cause a substantial adverse effect, either directly or through habitat modifications, on non-avian special-status species
- Impact BIO-2: Potential substantial adverse effects on riparian habitat and other sensitive natural communities.
- Impact BIO-3: Potential substantial adverse effects on state or federally protected wetlands through direct removal, filling, hydrological interruption, or other means.

Noise

- Impact NOISE-1: Exposure of residences to increased wind turbine noise

- Impact NOISE-2: Exposure of residences to noise during decommissioning activities

ES.3.2.4 Significant and Unavoidable

Section 15126.2(b) of the State CEQA Guidelines requires that the EIR describe any significant impacts, including those that can be mitigated but not reduced to less-than-significant levels. The following environmental impacts, also summarized in Table ES-1, were determined to be significant and unavoidable.

Biological Resources

- Impact BIO-1: Potential to cause a substantial adverse effect, either directly or through habitat modifications, on special-status avian species

ES.4 Areas of Known Controversy and Unresolved Issues

ES.4.1 Areas of Controversy

Areas of controversy were identified through written agency and public comments received during the project scoping period. Public comments received during the scoping period are provided in Appendix A. The following issues were identified during scoping and are addressed in the appropriate sections of Chapter 3.

- Fire hazards
- Turbine noise
- Visual impacts from neglected turbines
- Trespassing on private property
- Road maintenance
- Blade shadow or flicker
- Security
- Biological resources

ES.4.2 Issues to be Resolved

Section 15123(b)(3) of the CEQA Guidelines requires that an EIR contain issues to be resolved, which includes the choice among alternatives and whether or how to mitigate significant impacts. The County of Alameda East County Board of Zoning Adjustments (EBZA), which is required to certify the EIR prior to approving or denying the application to modify the CUPs, will need to determine whether:

- The EIR adequately describes the project's environmental impacts.
- The EIR's recommended mitigation measures should be adopted or modified.
- Additional mitigation measures should be employed.

Table ES-1. Summary of Impacts and Mitigation Measures

Impact	Level of Significance	Proposed Mitigation Measure(s)	Level of Significance after Mitigation
Air Quality and Greenhouse Gases			
Impact AQ-1: Conflict with or obstruct implementation of the applicable air quality plan	No Impact	None required	
Impact AQ-2: Violate any air quality standard or contribute substantially to an existing or projected air quality violation	Less Than Significant	None required	
Impact AQ-3: Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is a nonattainment area for an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)	Less Than Significant	None required	
Impact AQ-4: Expose sensitive receptors to substantial pollutant concentrations	Less Than Significant	None required	
Impact AQ-5: Create objectionable odors affecting a substantial number of people	Less Than Significant	None required	
Impact AQ-6: Generation of greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment	Less Than Significant	None required	
Impact AQ-7: Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases	Less Than Significant	None required	
Biological Resources			
Impact BIO-1: Potential to cause a substantial adverse effect, either directly or through habitat modifications, on a special-status species.	Significant; Significant and Unavoidable for Avian Species	<p>Mitigation Measure BIO-1: Implement General Protection Measures to Avoid and Minimize Impacts on Sensitive Biological Resources</p> <p>Mitigation Measure BIO-2: Restore Disturbed Annual Grasslands</p> <p>Mitigation Measure BIO-3: Conduct Preconstruction Surveys for Potentially Sensitive Habitat</p>	Less than Significant; Significant for Avian Species

Table ES-1. Continued

Impact	Level of Significance	Proposed Mitigation Measure(s)	Level of Significance after Mitigation
		<p>Mitigation Measure BIO-4: Install Temporary Flagging or Barrier Fencing to Protect Sensitive Biological Resources Adjacent to the Work Area</p>	
		<p>Mitigation Measure BIO-5: Retain a Biological Monitor during Ground Disturbing Activities within Environmentally-Sensitive Habitat Areas</p>	
		<p>Mitigation Measure BIO-6: Retain Qualified Botanists to Conduct Floristic Surveys for Special-Status Plants during Appropriate Identification Periods</p>	
		<p>Mitigation Measure BIO-7: Avoid and Minimize Potential Impacts on Special-Status Plants</p>	
		<p>Mitigation Measure BIO-8: Avoid Disturbance of Vernal Pool Fairy Shrimp and Longhorn Fairy Shrimp</p>	
		<p>Mitigation Measure BIO-9: Avoid Disturbance of California Tiger Salamander, California Red-legged Frog, and Foothill Yellow-legged Frog.</p>	
		<p>Mitigation Measure BIO-10: Avoid Disturbance of Alameda Whipsnake</p>	
		<p>Mitigation Measure BIO-11: Avoid Disturbance of Coast Horned Lizard, San Joaquin Whipsnake, and Western Pond Turtle</p>	
		<p>Mitigation Measure BIO-12: Avoid Disturbance of San Joaquin Kit Fox</p>	
		<p>Mitigation Measure BIO-13: Avoid Disturbance of American Badger</p>	
		<p>Mitigation Measure BIO-14: Avoid Disturbance of Burrowing Owl</p>	
		<p>Mitigation Measure BIO-15: Avoid Disturbance of Nesting Migratory Birds and Raptors</p>	

Table ES-1. Continued

Impact	Level of Significance	Proposed Mitigation Measure(s)	Level of Significance after Mitigation
Impact BIO-2: Potential substantial adverse effects on any riparian habitat or other sensitive natural communities.	Significant	<p>Mitigation Measure BIO-16: Implement Seasonal Shutdowns to Reduce Avian Fatalities</p> <p>Mitigation Measure BIO-17: Mitigate for the Loss of Individual Golden Eagles by Retrofitting Offsite Electrical Facilities</p> <p>Mitigation Measure BIO-1: Implement General Protection Measures to Avoid and Minimize Impacts on Sensitive Biological Resources</p> <p>Mitigation Measure BIO-4: Install Temporary Flagging or Barrier Fencing to Protect Sensitive Biological Resources Adjacent to the Work Area</p>	Less Than Significant
Impact BIO-3: Potential substantial adverse effect on state or federally protected wetlands through direct removal, filling, hydrological interruption, or other means.	Significant	<p>Mitigation Measure BIO-1: Implement General Protection Measures to Avoid and Minimize Impacts on Sensitive Biological Resources</p> <p>Mitigation Measure BIO-4: Install Temporary Flagging or Barrier Fencing to Protect Sensitive Biological Resources Adjacent to the Work Area</p> <p>Mitigation Measure BIO-5: Retain a Biological Monitor during Ground Disturbing Activities within Environmentally-Sensitive Habitat Areas</p>	Less Than Significant
Impact BIO-4: Potential to interfere substantially with the movement of any native resident or migratory fish or wildlife species or impede the use of native wildlife nursery sites.	Less Than Significant	None required	
Impact BIO-5: Conflict with any local policies or ordinances protecting biological resources.	No Impact	None required	
Impact BIO-6: Potential to conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.	Less Than Significant	None required	
Impact BIO-7: Result in the conversion of oak woodlands that will have a significant effect on the environment.	No Impact	None required	

Table ES-1. Continued

Impact	Level of Significance	Proposed Mitigation Measure(s)	Level of Significance after Mitigation
Noise			
Impact NOISE-1: Exposure of residences to increased wind turbine noise	Significant	Mitigation Measure NOISE-1: Repair or remove turbines that are determined to increase the daily L_{dn} value at a residence by more than 5 dB	Less Than Significant
Impact NOISE-2: Exposure of residences to noise during decommissioning activities	Significant	Mitigation Measure NOISE-2: Employ Noise-Reducing Practices during Decommissioning	Less Than Significant
Hazards and Hazardous Materials			
Impact HAZ-1: Result in a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials	Less Than Significant	None required	
Impact HAZ-1: Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands	Less Than Significant	None required	

1.1 Purpose of the Environmental Impact Report

This environmental impact report (EIR) has been prepared pursuant to the California Environmental Quality Act (CEQA) and the State CEQA Guidelines (14 California Code of Regulations [CCR] 15000 et seq.). CEQA requires that state and local government agencies consider the environmental consequences of projects over which they have discretionary authority before taking action on those projects (California Public Resources Code [PRC] 21000 et seq.).

An EIR is an informational document used in state, regional, and local planning and decision-making processes to meet the requirements of CEQA. The purpose of this EIR is to analyze the environmental impacts of the proposed project, to indicate ways to reduce or avoid potential environmental damage of the proposed project, and to identify feasible alternatives. CEQA requires that each public agency mitigate or avoid the significant environmental effects of projects it approves or implements whenever feasible. It is not the purpose of the EIR to recommend either approval or denial of a project. The EIR must disclose environmental effects, including those that cannot be avoided; growth-inducing effects; effects found not to be significant; and significant cumulative impacts of all past, present, and reasonably anticipated future projects.

1.2 Type of Environmental Impact Report

CEQA identifies various types of EIRs, the most common of which is the project EIR. A project EIR, per CEQA Guidelines Section 15161, examines the environmental impacts of a specific development project. It examines all phases of the project, including planning, construction, and operation. This document is a project EIR that examines the effects of proposed modification to the requirements of existing conditional use permits (CUPs) rather than any additions to existing infrastructure.

A notice of preparation (NOP) was prepared for the proposed project and published for a 30-day public review and comment period beginning May 31, 2012 (ICF 2012) (Appendix A). As indicated in the NOP, this EIR examines the environmental impacts of the requested CUP modifications, focusing primarily on the changes in the environment that would result from the proposed modifications to the wind farm's operational schedule and projected decommissioning activities. Based on the project description and the County's understanding of the environmental issues associated with the project, only the topics of Air Quality, Biological Resources, Noise, and Hazards and Hazardous Materials will be analyzed in detail within the draft EIR (Chapter 3, *Environmental Analysis*).

1.3 Public Review and CEQA Process

CEQA does not require formal hearings at any stage of the environmental review process (State CEQA Guidelines Section 15202[a]). However, it does encourage "wide public involvement, formal and informal...in order to receive and evaluate public reactions to environmental issues" (State

CEQA Guidelines Section 15201) and requires the lead agency to provide the public with the opportunity to provide comments. As indicated above, the County, as lead agency, circulated an NOP of a draft EIR (SCH # 2012062060) for the proposed project on May 31, 2012. The NOP was distributed for a 30-day comment period that was extended to July 2, 2012. In addition, the County held a public scoping meeting on June 21, 2012, to solicit input on the scope and focus of the EIR. Comments received on the NOP and during the public scoping meeting were considered in the preparation of the EIR. Appendix A contains the NOP, written comments received on the NOP, and a transcript of the public scoping meeting.

The County has prepared a Draft EIR incorporating public and agency responses to the NOP. Like the NOP, the draft EIR is being circulated for review and comment by appropriate agencies, as well as organizations and individuals who have requested notification. In accordance with Section 15205(d) of the CEQA Guidelines, the County has scheduled a 45-day public review period for the Draft EIR, ending on April 19, 2013 at 5:00 p.m. Within that 45-day period, the County will hold one public hearing to request comments on the Draft EIR, at the following time and place:

Thursday, March 28, 2013, 1:30 p.m.
Meeting of the East County Board of Zoning Adjustments
City of Pleasanton Council Chambers,
200 Old Bernal Avenue, Pleasanton

This Draft EIR is available for review at the Alameda County website (www.acgov.org/cda/planning—select “Pending Land Use Projects” and “Current Development Projects”), and at the website of the Altamont Pass Scientific Review Committee (www.altamontsrc.org). Copies will also be available during normal business hours (8:30 a.m. to 5:00 p.m.), Monday through Friday, at the Alameda County Community Development Agency, Planning Department, located at 224 West Winton Avenue, Room 111, Hayward, California, 94544. Comments on the Draft EIR may be submitted to the Planning Department at that address, to the attention of Sandra Rivera, Assistant Planning Director.

Following the close of the public review period for the Draft EIR, the County will consider the comments it receives. The County will prepare a Final EIR, incorporating all comments received during the public comment period, for consideration by the East County Board of Zoning Adjustments (EBZA), tentatively scheduled for Thursday, June 27, 2013. As required by CEQA (Section 21092.5), the Final EIR, including written responses to the comments submitted by public agencies, will be available at least 10 days prior to certification. The EBZA will consider the Final EIR and the project, as well as the entire administrative record, before deciding whether to approve the applicant’s requested CUP modifications.

1.4 EIR Organization

The EIR is organized in the following chapters.

- Chapter 1, *Introduction*, explains the purpose of this EIR, and discusses the environmental review process.
- Chapter 2, *Project Description*, describes the project.
- Chapter 3, *Environmental Analysis*, is devoted to resource topics. The topics and respective sections are listed in the introduction to this chapter.

- Chapter 4, *Alternatives Analysis*, identifies the alternatives that are being considered to eliminate or reduce significant impacts and provides an evaluation of each.
- Chapter 5, *Required CEQA Analyses*, presents the analysis of the proposed project's cumulative and growth-inducing impacts. Significant and irreversible environmental changes are also indicated in this chapter.
- Chapter 6, *List of Preparers*, lists the EIR authors, technical specialists and members of the production team, and other key individuals who assisted in the preparation and review of this EIR.
- Chapter 7, *References*, lists documents and persons consulted in the preparation of this EIR.

This chapter describes the operational and physical changes that would occur if the requested modifications to Altamont Winds Inc.'s (AWI's) existing Conditional Use Permits (CUPs) are approved. These CUPs currently regulate operation of AWI's 828 existing wind turbines located within the Alameda County portion of the Altamont Pass Wind Resource Area (APWRA) in northern California, on numerous large parcels that total approximately 14,196 acres in area, or about 22 square miles of the much larger APWRA (over 75 square miles in area).

This chapter defines the goals and objectives of the proposed CUP modifications, identifies the project's regional location, outlines AWI's existing project facilities and operations, and identifies how the proposed revision relates to the existing facilities and operations. Finally, this chapter outlines the cumulative development conditions in the APWRA, as presently anticipated.

2.1 Proposed Changes to the Altamont Wind Project Conditional Use Permits

This section describes the key components of the project. The project would consist of the continued operation of existing turbines with a combined generation capacity of 85.8 MW on the existing wind energy facility site through December 31, 2015, after which existing wind turbines would be decommissioned and removed. Specifically, the project would comprise the following components and activities.

2.1.1 Removal of Requirement for Phased Decommissioning

AWI is requesting modification of the existing CUPs to alter the schedule for permanent shutdown of existing wind turbines. Under the present CUPs, AWI is required to remove a predetermined percentage of turbines on a specified, phased schedule. The first phase of decommissioning took place in 2009, at which time AWI was required to remove 10% of its 920 turbines. The existing CUPs require AWI to remove an additional 25% of the original 920 turbines by September 30, 2013 (for a cumulative total of 35%), an additional 50% of the original turbines by September 30, 2015 (for a cumulative total of 85%), and the remaining 15% of turbines by September 30, 2018.

The proposed CUP modifications would remove these phasing requirements, allowing AWI's existing turbines, excluding the 10% already shut down in accordance with Exhibit G-2 of the CUPs, to continue to operate through December 31, 2015, at which point all turbines would permanently cease operations and be removed.

2.1.2 Removal of Seasonal Shutdown Requirements

Under the existing CUPs, AWI is required to shut down all wind turbines from November 1 through February 14 of each year. This action is intended to reduce documented avian mortality effects in the APWRA. AWI asserts that measures it has implemented have substantially reduced avian

impacts and is requesting modification of the existing CUPs to remove the requirements to shut down turbines during the winter months.

2.1.3 Decommission All AWI Project Turbines after December 31, 2015

The existing CUPs for AWI's facilities require that, in addition to the phased decommissioning and winter seasonal shutdown, AWI permanently cease operations of all remaining operating turbines and remove all 828 of the existing turbines and 920 foundations, in the phases described in section 2.1. above, by September 30, 2018. AWI is requesting the CUPs be modified to change the decommissioning date to December 31, 2015. The date of decommissioning refers to the date the wind turbines are shut off and their blades locked into place to prevent spinning. Following decommissioning, the wind turbines and associated infrastructure would be dismantled and removed from the site, over the course of 2016 and likely into part of 2017, as discussed below.

2.1.3.1 Decommissioning Activities

Following cessation of turbine operations, project facilities would be dismantled and removed. For the purposes of this assessment, it is assumed that the various components will be dismantled and removed as described herein. However, there is a possibility that due to other regulatory requirements, some of the components will be abandoned in place and not removed. For example, it may be determined by regulatory agencies that removal of turbine foundations or reclamations of roads is less desirable than abandoning them in place. Though abandonment in place is a small possibility, the impacts assessment in this document is based on full removal of the project facilities including turbine foundations roads etc. Further, the reader should understand that the wind turbines can be decommissioned and removed from their foundations and hauled away without subsurface ground disturbance and thus may take place during the wet season. Activities requiring subsurface ground disturbance will be conducted during dry weather only.

Decommissioning of existing project facilities would include removal of turbines, foundations, and AWI's share of related APWRA infrastructure (Table 2-1).

Decommissioning activities associated with AWI's turbines would include the dismantling and removal of turbines and support towers, as well as the chipping and burial of foundations with 3 feet of cover. The nacelle and blades of each turbine would be removed from the tower and placed on skids in preparation for immediate transport offsite by truck. The dismantled tower and down tower cabinets would be stacked and consolidated on previously disturbed soil at the end of each turbine string and transported offsite within 1 week of dismantling. Concrete footings would be chipped by excavator to a depth of 3 feet or, where possible, covered in place to a depth of 3 feet. The sites would be graded with native topsoil to match local ground contours. Roads not proposed for continued use by property owners or other wind facility operators would also be reclaimed. All reclaimed sites and roads would be re-seeded with an appropriate grass mixture, although in order to minimize grading and ground disturbance, roadbeds would not be regraded to match surrounding contours.

A total of approximately 1,570 square feet of ground disturbance is expected at each wind turbine location. This includes the area around the tower foundation and the graveled connecting pad between the access road and wind turbine site. All transportation of workers, equipment, and decommissioned structures would take place on existing roads.

In addition to turbines and their foundations, decommissioning would entail the removal of AWI's share—approximately 25%—of jointly owned ancillary windfarm components in the APWRA. These components include AWI's share of the power collection system, aboveground power lines and poles, underground transmission and communication lines, meteorological (MET) towers, and small sheds. AWI's share of aboveground power lines and poles would be removed, but underground transmission and collection lines would be left in place because they are more than 3 feet below the surface. Pad mount transformers would be drained of oil and any metal components recycled, if possible. Their foundations would be removed to a depth of 3 feet below existing grade. Meteorological towers would be taken down and recycled, and their foundations removed to a depth of 3 feet below existing grade.

All materials removed from the project area would be transported offsite by truck, using existing access roads and public roadways. These materials would be recycled, properly disposed of, or stored in AWI's offsite storage yards for reuse or resale. No changes to project area access roads would be necessary to accommodate this traffic.

Ideally, turbine dismantling and removal would occur within 1 year of decommissioning, as required by the current CUP. However, restrictions limit removal activities to dry days, and it is estimated that within an average year, 185 dry days would be available for wind turbine removal activities. Assuming that approximately four wind turbines would be removed per working day, removal would require slightly more than 1 year to complete. Site restoration would take no longer than 2 years, in accordance with agreements between landowners and AWI.

2.1.3.2 Equipment for Decommissioning Activities

Decommissioning and removal would require specific types and quantities of equipment. The quantities and types of equipment necessary for one work crew to complete removal and restoration activities are listed below.

Wind Turbine Removal Equipment

For each work crew, removing wind turbines would require the use of one small mobile crane with a 30-ton boom, one forklift, one flatbed truck for equipment transport, and one pickup truck for tooling and personnel transport. These items would be used daily throughout turbine removal activities.

Footing Removal and Site Reclamation Equipment

For each work crew involved in foundation removal and site reclamation activities, one excavator equipped with a jackhammer and bucket would be used for chipping and on-site foundation burial. One pickup truck per crew would be used for tooling and personnel transport.

It is estimated that one crew can dismantle and remove one wind turbine in 1 day. Using up to four crews for each working day (185 per year), it is estimated that all 828 wind turbines would be removed within 1 year and 2 months of decommissioning.

Table 2-1. Maximum Potential Area of Disturbance for AWI's Share of Existing APWRA Wind Energy Facilities to be Decommissioned

Facilities	Potential Area of Disturbance per Facility	Number of Units	Total Area (approx. acres)
Existing turbine tower foundation areas ^a	1,570 square feet per tower	920 foundations	33
Substations ^b	0.75 acre	4 substations	3
Pad mount transformers	100 square feet per unit	58 transformers	0.1
Access roads ^c	25 square feet disturbed area per linear foot of road	96,250 linear feet	55
Meteorological towers	0.01 acre per tower	17 towers	0.2
Total Area of Decommissioning Activities			91

^a This includes the 825 existing turbine towers. The existing tower foundation area includes the area between the access roads and the turbines, the turbine foundations, and the disturbed area under and around the turbines.

^b Substations are shared with other APWRA wind facility operators and AWI may not be entirely responsible for reclamation.

^c Reclamation of access roads will be at the discretion of the landowner. Therefore, it is possible that not all of the access roads will be reclaimed.

The number of units and acreage in the table for pad mount transformers, access roads, and MET towers represent the estimated number of jointly-owned and shared units for which AWI is likely to be responsible, approximately 25% of the total. For access roads, the figures above are based on a total of 385,000 total linear feet of road. For transformers, the figures are based on 230 total transformers. For MET towers, the figures are based on 67 total shared MET towers.

2.2 Project Need, Goals, and Objectives

2.2.1 Project Need

The project is needed to meet the ever-increasing demand of society and consumers for electricity from clean, renewable, and economically viable power sources. Specifically, the project will assist California in meeting its legislated Renewable Portfolio Standard criteria for the generation of renewable energy in the state. This standard requires electric utilities and providers to procure 33% of their supply of electricity from renewable energy sources, such as wind, by 2020. In addition, this project will assist California in meeting its legislated global warming solutions criteria requiring reductions in carbon dioxide and other greenhouse gas emissions to 1990 levels by 2020.

2.2.2 Project Goal

The goal of the project is to maximize electricity generation from an existing windfarm with year-round operations, without further phased decommissioning, and to effectively eliminate limited operations between 2015 and 2018 in exchange for full (uninterrupted and undiminished) operations between 2012 and 2015, and enhance economic opportunity and efficiency for potential repowering of the applicant's turbine assets.

2.2.3 Project Objectives

AWI proposes to continue operating existing wind turbines and delivering clean, renewable wind-generated electrical energy to the Pacific Gas & Electric Company (PG&E) through existing transmission infrastructure as productively as possible in the short term.

Specific objectives include the following.

- Continue to operate the existing AWI project using existing turbines, transmission lines, and other infrastructure to meet regional energy needs in an efficient, reliable, and environmentally-sound manner.
- Continue to provide clean, renewable energy in the most cost-effective way.
- Operate existing wind power facilities more productively in the short term .
- Contribute to domestic energy security and California's Renewable Energy Resources Program, which requires that all retail electricity providers serve 33 percent of their load with renewable sources by 2020, by continuing to reduce California's reliance on fossil fuels through utilization of APWRA's renewable wind resources (California Energy Commission 2012).
- Provide significant benefits to human health, wildlife, and climate by reducing climate change/global warming-causing pollutants, reducing water usage, and by displacing toxic emissions produced by fossil fuel-fired power plants.
- Continue to contribute substantially to Alameda County's economy by preserving long-term skilled employment to operate and maintain the project and through expenditures on materials, tools, supplies, and equipment purchases.

2.3 Description of Regional Setting and Project Area

2.3.1 Altamont Pass Wind Resource Area

The APWRA comprises approximately 50,000 acres and is located north and south of Interstate 580 (I-580) in the Altamont Hills of eastern Alameda and Contra Costa Counties, near their boundaries with San Joaquin County and at the geographical interface between the coastal mountains and the Central Valley (Figure 2-1). The Altamont Pass area sustains a strong and predictable wind resource due mainly to the funneling of cool marine winds from the Pacific Ocean eastward through the pass to replace the rising hot summer air of the Central Valley. The APWRA was designated first by the state and subsequently by Alameda and Contra Costa Counties as well-suited for the capture and utilization of energy from the wind.

2.3.2 Description of Project Area

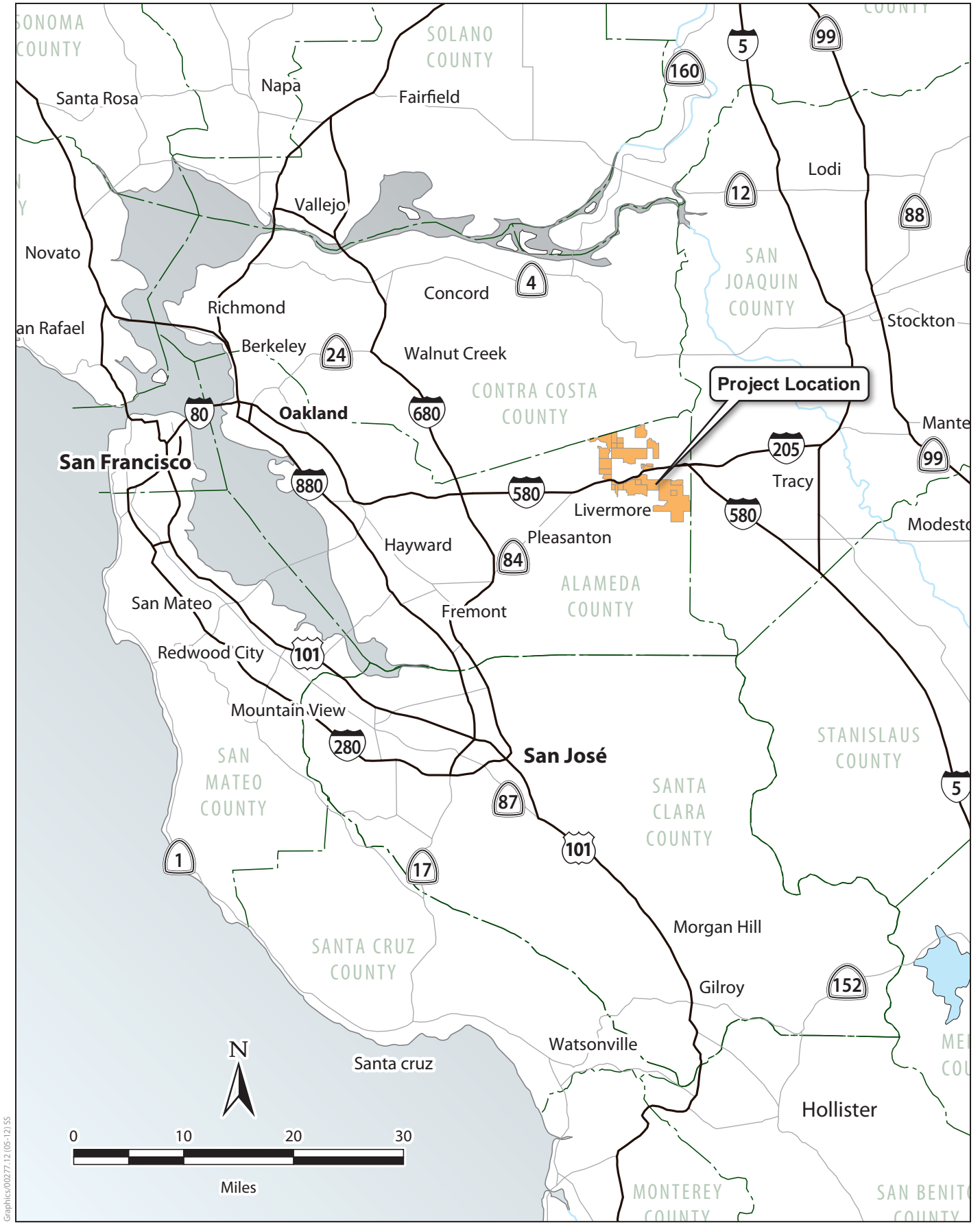
The project is located within the APWRA, east of the San Francisco Bay Area in northern California.

The project area extends over approximately 14,196 acres of grassland in Alameda County and consists of cattle-grazed land on which operating wind turbines are currently, or previously have been, installed. The region is generally characterized by rolling foothills of annual grassland. The project area is mostly treeless with relatively steep terrain on the west and gently rolling hills on the east, toward the floor of the Central Valley. Major project area features include the wind turbines

and ancillary facilities, an extensive grid of high voltage power transmission lines, substations, microwave towers, a landfill site, I-580, railroad tracks, and ranch houses.

The project area is subject to Alameda County's East County Area Plan (ECAP), adopted in 1994 and amended substantially in November 2000 by the voter-approved Ordinance/Initiative Measure D. The ECAP designates the project area as Large Parcel Agriculture (LPA). Subject to the provisions, policies and programs of the ECAP, the LPA designation permits one single-family residence per parcel, agricultural uses, agricultural processing facilities, public and quasi-public uses, quarries, landfills and related facilities, windfarms and related facilities, utility corridors, and similar uses compatible with agriculture. Lands in the project area are zoned A-BE 160 and A-BE-320 (Agriculture, Minimum Building Site Area 160 and 320 acres, respectively). Permitted uses in areas zoned A-BE 160 and A-BE 320 include a variety of agricultural and agricultural support uses, including crop, vine and tree farms, animal husbandry, wineries, fish hatcheries, trails, and, on qualified building sites, single-family and secondary dwelling units. Conditionally permitted uses include privately-owned wind electric generators.

The project is constructed entirely on private land, leased under long-term agreements with the landowners. Table 2-2 shows the landowner(s), assessor's parcel number(s), and acreage associated with each CUP in the project area.



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Figure 2-1
Project Location

Table 2-2. Existing Project Area Conditional Use Permits, Landowners, APNs and Acreage

CUP No.	Landowner	Assessor's Parcel Numbers	Approximate Acres
C-8036	Frick/Costa	99B-5680-15	207.12
C-8037	Pombo	99B-6300-2-1, 99B-6300-2-2, 99B-6425-1-6, 99B-6325-2-4 and 99B-6400-1-7	224.26
C-8134	Rooney	99B-6125-2	160.21
C-8137	Mulqueeney	99B-7900-1-5, 99B-7900-1-7, 99B-7890-2-4, 99B-7890-2-5, 99B-7890-2-6, 99B-7925-2-4, 99B-7925-2-1, 99B-7925-2-5, 99B-7950-2, 99B-7975-1, 99B-7980-1, 99B-7985-1-6, 99B-7985-1-4, 99B-7985-1-3, 99B-7985-1-5, 99A-1800-2-4, 99A-1800-2-3 and 99B-8050-1	4,447.50
C-8191	Mulqueeney	99B-7910-1-1	592.84
C-8243	ACWMA	99A-1780-1-4, 99A-1770-2-1, 99A-1770-2-2, 99A-1770-2-3, 99A-1810-1 and 99A-1790-3	1,324.83
C-8216	ACWMA	99A-1810-1	240.81 (parcel acreage included in C-8243)
C-8231*	Altamont Landfill	99B-6225-1, 99B-6250-1, 99B-6275-1-1	1,547.80
C-8232	Egan	99B-6125-3	160.47
C-8233	Elliott	99B-6125-4	157.54
C-8235	Corbett	99B-5650-1-4 and 99A-1785-1-14	284.96
C-8236	Dunton	99B-5680-1	330.46
C-8237	Valhalla (Devincenzi)	99B-5610-1 and 99B-6075-3	665.98
C-8238	Ralph (north)	99B-7300-1-5 and 99B-7375-1-7	766.57
C-8239*	Jackson	99B-6125-5	325.59
C-8241	Walker	99B-6100-2-10, 99B-6100-2-11, 99B-6100-2-12, 99B-6100-3-10, 99B-6100-3-15, 99B-6100-3-11	1,314.55
C-8242	Gomes (north)	99B-6150-4-10, 99B-6150-3 and 99B-6150-2-7	635.48
C-8244	Gomes (south)	99B-6425-2-3, 99A-1790-2 and 99A-1795-1	1,049.48
TOTAL ACREAGE			14,195.64

* CUPs C-8231 and C-8239 are not currently granted to AWI or its affiliates.

Many of the windfarms in the APWRA overlap, with separate permits issued to different wind energy facility operating companies on a single parcel of land. Therefore, other wind companies beside AWI currently operate windfarms within the project area described above; the AWI facilities do not comprise the sole project within this boundary.

2.4 Existing Project Components

2.4.1 Existing Conditional Use Permits

The project facilities are presently permitted under 16 existing CUPs issued by the County of Alameda. Some CUPs apply solely to AWI, while others are shared among multiple windfarm operators. The existing CUPs are due to expire in 2018. Table 2-2 lists the existing CUPs that would be modified under the proposed project.

In response to concerns raised over the impacts of wind power facilities on certain avian species, the County has required specific operational conditions in the APWRA, including a seasonal shutdown of wind turbine facilities and incremental removal of existing turbines that will conclude with complete removal of existing facilities by September 30, 2018. The existing physical and operational conditions, as well as those proposed under the requested CUP modifications, are described below.

2.4.2 Existing Physical Components

This section describes the existing physical components of the AWI facilities: wind turbines and foundations, access roads, the power collection system, communication facilities, meteorological towers, and other facilities. Acreage occupied by these facilities is presented in Table 2-3.

2.4.2.1 Wind Turbines

AWI owns and operates, by and through its affiliates, four existing windfarms with an original total installed generation capacity of 95 MW and a present operating capacity of 85.8 MW in the project area. These windfarms currently consist of 828 operable turbines, generally sited in strings along ridgelines, on lattice and tubular towers 60, 80, or 82 feet in height (Figure 2-2). The types of turbines include 808 operable U.S. Windpower/Kenotech KCS56 (100 kW) and 20 WEG (250 kW) wind turbines. Other equipment, facilities, and infrastructure associated with these turbines include the following major components.

2.4.2.2 Turbine Foundations

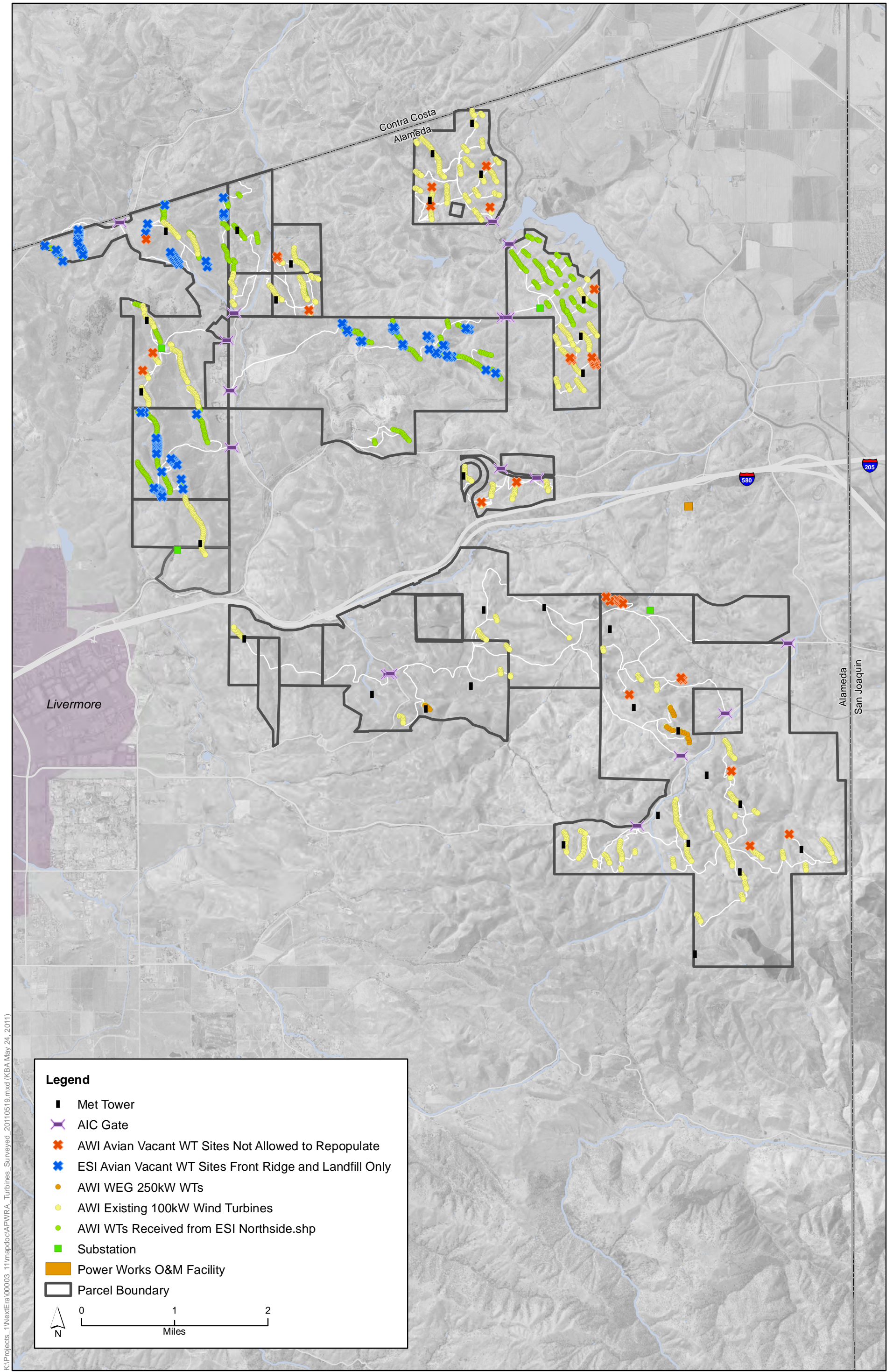
AWI's existing wind turbines are bolted to concrete foundations that secure the turbine towers to the ground. The turbine foundations consist of either a single spread footing, used underneath tubular towers, or pier footings, used underneath each leg of lattice towers.

2.4.2.3 Access Roads

Access to the windfarm turbine sites is gained through locked gates from County-maintained roads in the project area, including Dyer Road, Altamont Pass Road, Vasco Road, North Flynn Road, and Patterson Pass Road. On-site access roads are typically between 12 and 20 feet wide and graveled to a depth of approximately six inches. Spur roads run from the access roads to turbine strings and then to individual turbines and to other facilities.

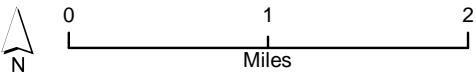
2.4.2.4 Power Collection System

Electrical power is collected from each turbine and transmitted to the Dyer, Frick, Ralph and Midway substations, where its voltage is increased for interconnection with PG&E's transmission



Legend

- Met Tower
- ✕ AIC Gate
- ✕ AWI Avian Vacant WT Sites Not Allowed to Repopulate
- ✕ ESI Avian Vacant WT Sites Front Ridge and Landfill Only
- AWI WEG 250kW WTs
- AWI Existing 100kW Wind Turbines
- AWI WTs Received from ESI Northside.shp
- Substation
- Power Works O&M Facility
- ▭ Parcel Boundary



K:\Projects_1\NextEra\00003_11\mapdoc\APWRA_Turbines_Surveyed_20110519.mxd (KBA May 24, 2011)



Figure 2-2
Project Site and Facilities

lines (Figure 2-2). The collection system consists of pad-mounted transformers, underground cables, overhead cables on poles, an assortment of circuit breakers and switches, electrical metering/protection devices, and the substations themselves.

2.4.2.5 Communication Lines

Turbine control and monitoring systems utilize communication lines that generally run parallel with the collection system lines.

2.4.2.6 Meteorological Towers

Thirty-two meteorological towers, 60 feet to 100 feet in height, are located at strategic points throughout the project area (Figure 2-2). These towers monitor and record meteorological data for use in control of the turbines and windfarm operations.

2.4.2.7 Other Facilities

Throughout the project area, various other facilities house maintenance equipment, spare parts inventories, and collection/communication systems equipment. Certain facilities are located outside the project area, including AWI's windfarm offices and main service yard near Tracy, and the main windfarm control center in Livermore, shared with other windfarm operators.

Table 2-3. Existing Project Facilities and Components

Facilities	Area of Each Facility/Component	Number of Units	Total Area (approx. acres)
Existing turbine tower foundation areas ^a	1,570 square feet per tower	920 foundations	33
Substations	0.75 acre	4 substations	3
Access roads ^b	25 square feet per linear foot of road	344,000 linear feet	197
Meteorological towers	0.01 acre per tower	32 towers	0.3
Total			233

^a The existing tower foundation area includes the area between the access roads and the turbines, the turbine foundations, all the disturbed area under and around the turbines, and the areas around the nearby transformers.

^b Total area of APWRA roads AWI may need to use during project implementation and operation.

2.4.3 Existing Operational Components

This section describes the existing operational and maintenance components of the AWI facilities under the current CUPs. Operational components include both scheduled and unscheduled maintenance/repair activities, as described below.

2.4.3.1 Existing Operation and Maintenance Activities

AWI's existing windfarm facilities are currently, and will continue to be, operated and maintained by PowerWorks LLC, an affiliate of AWI. Operation and maintenance (O&M) activities are conducted year-round, with operation, monitoring, and control of the wind turbines performed continuously

on a 24/7 basis in order to optimize energy production based on available wind resources and to manage equipment operating issues. The turbines are fitted with control systems located at the turbine tower, which are in communication with a remote, centralized control center. These systems monitor and control turbine parameters such as blade angle, power output, generator speed, and PG&E grid interconnection. The systems also start up the turbines when winds increase and shut them down when unacceptable operating conditions exist, such as during periods of very high or low winds, and when malfunctions of individual turbine components occur.

Maintenance activities involve scheduled preventive and unscheduled repair work, both of which utilize fully-equipped trucks (pickups, flat beds, and crane trucks). Preventive maintenance includes activities such as inspections, lubrication of parts, replacement of parts, tightening of bolts, and readjustments. Unscheduled maintenance includes troubleshooting of operational alarms, major overhauls or component replacements, and rebuilding of worn subassemblies and parts. Mobile crane trucks are regularly used for unscheduled maintenance. Project O&M utilizes approximately 35 permanent full-time employees, including skilled wind technicians, administrative, accounting, engineering, and management personnel.

2.4.3.2 Existing Seasonal Shutdown Activities

AWI participates in the annual Winter Seasonal Shutdown (WSSD), a period when all turbines are shut down. The shut-down requirements are a result of the implementation of the Avian Wildlife Protection Program the County adopted when CUPs were approved in 2005. This program was developed, in part, due to indications from research conducted over several years that shutting down turbines during certain times of the year, especially when avian migration peaks in the winter months, would reduce avian mortality rates.

The WSSD was first implemented in the winter of 2005/2006, requiring that 50% of non-repowered APWRA turbines in a defined region be shut down from November 1 through December 31. The remaining 50% of non-repowered turbines were shut down from January 1 through February 28, 2006. The order of the shut-down reversed the following winter with 50% of non-repowered turbines shut down from November 1, 2006 through December 31, 2006 and the remaining 50% shut down from January 1, 2007 through February 28, 2007. A 2-month APWRA-wide shut-down was implemented in the winter of 2007/2008, beginning November 1, and the shut-down period was extended to 3 months in 2008/2009, and then finally extended to 3.5 months beginning in 2009/2010, which is the duration still in effect.

2.4.3.3 Existing Decommissioning and Reclamation Requirements

As discussed in Section 2.2.1, AWI's current CUPs require phased decommissioning of existing turbines, in increments, through September 30, 2018. In accordance with the existing CUPs, AWI has permanently shut down 92 wind turbines, representing 10% of its original 920 turbines. The existing CUPs require AWI to continue this course, permanently shutting down and removing a cumulative 35% of its original 920 turbines by September 30, 2013 (a total of 322, of which 92—10 percent—have already been shut down), 85% by September 30, 2015 (460 additional turbines, for a total of 782), and the remaining 15% (138 turbines) removed by September 30, 2018.

Decommissioning activities include the permanent shut-down and removal of wind turbines, and site reclamation, in compliance with the requirements of the existing CUPs. Site reclamation activities consist of returning lands disturbed by project facilities to specific conditions approved by

the Planning Director. Exceptions to returning a site to pre-installation conditions may be made, upon approval of the Planning Director, if such reclamation activities would or could create water quality issues (e.g., erosion) or if the activities may adversely affect special-status species (e.g., burrowing owl burrow complexes, upland habitat for California red-legged frog or California tiger salamander). Reclamation of individual turbine sites involves burying foundations under a minimum of 3 feet of topsoil, and disking gravel roads that landowners do not want to retain. If necessary, individual reclamation sites are contour graded, using the existing soil, for consistency with the adjacent terrain. Finally, the reclaimed sites are re-seeded with an appropriate seed mixture.

Existing Requirements for Removal of Hazardous Turbines

The APWRA has been producing wind-generated electricity since the early 1980s. At its peak, the Altamont Pass contained over 5,000 turbines with an operating capacity of approximately 580 MW. Of that number, AWI has operated 920 turbines consisting of 900 KCS56 (100 kW) turbines and 20 WEG (250 kW) turbines, operating at a total generation capacity of 95 MW. Since 2005, in response to the County's required avian wildlife protection program, AWI has permanently shut down and removed 92 turbines, representing 9.2 MWs of generation potential or 10% of its total fleet in the Altamont Pass. The details of these removals are discussed below.

The term "hazardous turbines" is used in the CUP conditions, and more particularly in the avian wildlife protection program established by the CUPs (Exhibit G-2), to describe individual APWRA turbines specifically identified in a series of studies published by the California Energy Commission as those most lethal to avian species. AWI's CUPs require that it remove and/or relocate all "Tier 1 hazardous turbines" by October 31, 2005, followed by removals of one quarter of "Tier 2" turbines each year over a subsequent four-year period ending September 30, 2010. Tier classifications, numbered 1 through 6, were established in a June 2005 report (Smallwood and Spiegel 2005c), with Tier 1 turbines considered the most hazardous.

The Tier Classification system was replaced in 2007 with the SRC's High Risk Turbine classification system (HRT), which ranked turbines on a scale of 1 to 10, with 10 representing the most hazardous turbines. AWI shut down six HRT 10 turbines in lieu of the five Tier 2 turbines required to be shut down under Exhibit G-2 by September 30, 2009. Four Tier 2 turbines were shut down on September 16, 2010.

AWI's CUPs also require the removal of "derelict and non-operating turbines." AWI removed twelve of what it considered "derelict" wind turbines. Additional turbines AWI believed were "derelict" were subsequently removed during 2007, 2008, and 2009.

In September 30, 2009, the County recommended that "derelict and non-operating turbines" be defined to mean (a) turbines that have remained non-operational for 12 consecutive months and (b) turbine sites with towers only. The County also recommended that all of AWI's "derelict and non-operating" turbines that had been inoperative for 12 months or more as of September 30, 2009 be removed by February 28, 2010. All of AWI's "derelict and non-operating" turbines were removed as of January 26, 2010.

In 2009, AWI identified 19 additional sites it deemed high risk based on avian fatality data, and relocated those turbines to other existing tower locations posing substantially lower avian risks. Overall, including turbines originally classified as Tier 1 and 2 hazardous turbines, other turbines classified as HRT 10, 9 and some as 8.5, derelict and non-operating turbines, and other turbines, by

September 30, 2009, AWI had complied with the CUPs required shutdown of 10% of its existing turbines.

2.5 Project Baseline

CEQA Guidelines Section 15125 provides direction on the baseline conditions to which a project must be compared in an EIR. In accordance with this direction, baseline often represents conditions at the time of the project's NOP circulation (in this case, May 31, 2012); however, CEQA Guidelines Section 15125 also authorizes the lead agency to choose a baseline that most accurately reflects actual conditions, in cases where choosing the existing physical conditions at a single point in time would be misleading or would misrepresent a proposed project's potential impacts.

For the purposes of this document, the County has determined that the baseline is most accurately represented by the No Project Alternative, under which the existing CUP requirements would continue to be imposed, including seasonal turbine shutdowns between November 1 and February 15, and the next phases of decommissioning – 230 additional turbines permanently shut down by September 30, 2013, to reach a cumulative 35% shutdown of the original 920 turbines, and 460 turbine shutdowns by September 30, 2015. As a result, comparing the proposed project – the elimination of seasonal shutdowns and the postponement of decommissioning – to conditions at a single point in time (e.g., the operation of 828 turbines in mid-2012) would provide no contrast or difference between the baseline and the project.

For the resource areas of Avian Biology and Air Quality in particular, a baseline driven by a single point in time (i.e., existing conditions) does not enable the lead agency to characterize the change that would be reflected by the project. This is because the existing CUPs allow the existing windfarm to continue in operation for a specific period of time during which it will be removed in phases with attendant reductions in operational scale. In contrast, the proposed project involves allowing operations to continue for a different period until the windfarm is to be removed entirely, without phased reductions. Comparing the proposed project (the future operation of 828 wind turbines) to a single point in time (the present, or very recent past, with operation of 828 turbines), does not recognize the vitally important temporal aspect of the existing CUPs, the proposed project and their comparative, expected effects on birds and air quality.

In summary, it is the County's determination that relying entirely on the physical conditions present at the time of NOP publication for the project baseline would be misleading. The physical conditions at the time of NOP publication consisted of 828 existing turbines operating full time for 8.5 months of the year, but which would be greatly stepped down by the year 2018. The operation of 828 turbines through 2018 does not represent permitted activities and would often indicate a 'baseline' of more severe impacts than the proposed project.

2.6 Permitting and Regulatory Requirements

Proposed Discretionary Actions/Required Approvals

Implementation of the proposed project may require the following discretionary actions and approvals.

Alameda County

- Consideration and Certification of a Final Environmental Impact Report with appropriate Findings of Fact and Mitigation Monitoring and Reporting Program, if applicable, and approval of the CUPs by the Alameda County East County Board of Zoning Adjustment.
- Issuance of a grading permit by the Grading Section of the Alameda County Public Works Agency.
- Minor roadway encroachment permits from the Alameda County Public Works Agency for transporting large pieces of equipment.

Other Responsible Agencies

- The U.S. Fish and Wildlife Service (USFWS) will require Endangered Species Act (ESA) Section 7 consultation for threatened and endangered species.
- Consultation/approval from the California Department of Fish and Wildlife regarding California Fish and Game Code Section 2081 of the California Endangered Species Act.
- The State Water Resources Control Board will require a Construction Stormwater General Permit for management of storm water during decommissioning and restoration activities, and a Notice of Intent as required under Section 401.
- California Highway Patrol may require a Notification of Transportation of Oversize/Overweight Loads.
- California Department of Transportation may require a Single-Trip Transportation Permit; and/or a Right-of-Way Encroachment Permit.

2.7 Planned Cumulative Wind Power Development in the APWRA

The State CEQA Guidelines require that EIRs consider cumulative impacts as well as the environmental effects of a proposed project (CEQA Guidelines Section 15130). Cumulative impacts refer to two or more individual effects that, considered together, are considerable or that compound or increase other environmental impacts (CEQA Guidelines Section 15355). Cumulative impacts can result from individually minor, but collectively significant, projects taking place over a period of time (CEQA Guidelines Section 15355). An EIR should include all related past, present, or probable future projects, including recently approved projects, projects with pending applications, projects

under construction, and reasonably foreseeable projects that could yield a related or cumulative impact when considered together with the proposed project.

For the purposes of this EIR, projects that meet these criteria and provide a regional context for future land use conditions in the proposed project area include three individual repowering projects and an overall Repowering Program for the APWRA. The three individual projects include: Golden Hills Project, Patterson Pass Project, and the FloDesign Wind Turbines Research Project. Table 2-4 lists these and other related projects for the cumulative development impact context for the proposed permit modification project. Cumulative impacts associated with the proposed project are analyzed for each specific resource area or key environmental consideration in Chapter 5, *Required CEQA Analyses*.

Table 2-4. Related Projects in the Area

No.	Project /Name Type	Description/Proposed Use	Location	Status
1	Vasco Winds Repowering	Repowering Program	APWRA – Contra Costa County	Completed Summer 2012
2	Altamont Pass Repowering	Repowering Program for the Altamont Pass Wind Resource Area (APWRA)	APWRA – Alameda County	Pending
	Golden Hills Project (NextEra Energy Resources) (part of Altamont Pass Repowering)	Repowering Program	APWRA	Pending
	Patterson Pass Project (enXco) (part of Altamont Pass Repowering)	Repowering Program	APWRA	Pending
	FloDesign Wind Turbines Research Project	Repowering with special technology	APWRA	Research Project Pending
3	Mariposa Energy Center	Natural Gas Peaker Plant	Mountain House Area	Under Construction
4	Cool Earth Solar Energy Facility	Utility-Scale Solar Energy Farm	Mountain House Area	Approved

3.1 Air Quality and Greenhouse Gases

This section describes the environmental setting and regulatory setting for air quality and greenhouse gases (GHGs). It also describes the impacts on air quality and greenhouse gases that would result from implementing the project, and mitigation measures that would reduce these impacts.

3.1.1 Environmental Setting

This section discusses the existing conditions related to air quality in the project area. Information below is drawn from the Bay Area Air Quality Management District (BAAQMD), the California Air Resources Board (ARB), and the U.S. Environmental Protection Agency (EPA).

3.1.1.1 Regional Climate and Meteorology

The BAAQMD's CEQA Guidelines provide information on climate and topography for each of the 11 climatological sub-regions in the San Francisco Bay Area Air Basin (SFBAAB). The nearest sub-region to the proposed project is the Livermore Valley.

The Livermore Valley is a sheltered inland valley near the eastern border of the SFBAAB. The western side of the valley is bordered by 1,000–1,500-foot hills with two gaps connecting the valley to the central SFBAAB—the Hayward Pass and Niles Canyon. The eastern side of the valley also is bordered by 1,000–1,500-foot hills, with one major passage to the San Joaquin Valley called the Altamont Pass and several secondary passages. To the north lie the Black Hills and Mount Diablo. A northwest to southeast channel connects the Diablo Valley to the Livermore Valley. The south side of the Livermore Valley is bordered by mountains approximately 3,000–3,500 feet high.

Maximum summer temperatures in the Livermore Valley range from the high 80s to the low 90s, with extremes in the 100s. During the summer months, when there is a strong inversion with a low ceiling, air movement is weak and pollutants become trapped and concentrated. At other times in the summer, a strong Pacific high pressure cell from the west, coupled with hot inland temperatures, causes a strong onshore pressure gradient that produces a strong afternoon wind. With a weak temperature inversion, air moves easily over the hills, dispersing pollutants.

Average winter maximum temperatures range from the high 50s to the low 60s, while minimum temperatures are from the mid- to high 30s, with extremes in the high teens and low 20s. In the winter, with the exception of an occasional storm moving through the area, air movement is often dictated by local conditions. At night and early morning, especially under clear, calm, and cold conditions, gravity drives cold air downward. The cold air drains off the hills and moves into the gaps and passes. On the eastern side of the valley, the prevailing winds blow from the north, northeast, and east out of the Altamont Pass. Winds are light during the late night and early morning hours. Winter daytime winds sometimes flow from the south through the Altamont Pass to the San Joaquin Valley.

Air pollution potential is high in the Livermore Valley, especially for photochemical pollutants in the summer and fall (see description of ozone and photochemical reactions below). High temperatures increase the potential for ozone to build up. The valley not only traps locally generated pollutants but can be the receptor of ozone and ozone precursors from San Francisco, Alameda, Contra Costa

and Santa Clara Counties. On northeasterly wind flow days, most common in the early fall, ozone may be carried west from the San Joaquin Valley to the Livermore Valley.

During the winter, the sheltering effect of the valley, its distance from moderating water bodies, and the presence of a strong high pressure system contribute to the development of strong, surface-based temperature inversions. Pollutants such as carbon monoxide and particulate matter generated by motor vehicles, fireplaces, and agricultural burning, can become concentrated. Air pollution problems could intensify because of population growth and increased commuting to and through the subregion.

3.1.1.2 Background Information on Criteria Pollutants

The federal and state governments have established national ambient air quality standards (NAAQS) and California ambient air quality standards (CAAQS), respectively, for six criteria pollutants: ozone, carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), and particulate matter (PM), which consists of PM 10 microns in diameter or less (PM10) and PM 2.5 microns in diameter or less (PM2.5).

Ozone and NO₂ are considered regional pollutants because they (or their precursors) affect air quality on a regional scale. NO₂ reacts photochemically with reactive organic gases (ROGs) to form ozone, and this reaction occurs at some distance downwind of the source of pollutants. Pollutants such as CO, SO₂, and Pb are considered to be local pollutants that tend to accumulate in the air locally. PM is considered to be a local as well as a regional pollutant.

The primary pollutants of concern in the project area are ozone (including nitrogen oxides [NO_x]), CO, and PM. Principal characteristics of these pollutants are discussed below. Toxic air contaminants (TACs) are also discussed, although no air quality standards exist for these pollutants.

Description of Pollutants

Ozone

Ozone is a respiratory irritant that can cause severe ear, nose, and throat irritation and increases susceptibility to respiratory infections. It is also an oxidant that causes extensive damage to plants through leaf discoloration and cell damage. It can cause substantial damage to other materials as well, such as synthetic rubber and textiles.

Ozone is not emitted directly into the air but is formed by a photochemical reaction in the atmosphere. Ozone precursors—reactive organic gases (ROGs) and NO_x—react in the atmosphere in the presence of sunlight to form ozone. Because photochemical reaction rates depend on the intensity of ultraviolet light and air temperature, ozone is primarily a summer air pollution problem. The ozone precursors, ROG and NO_x, are mainly emitted by mobile sources and by stationary combustion equipment.

Reactive Organic Gases and Volatile Organic Compounds

Hydrocarbons are organic gases that are made up of hydrogen and carbon atoms. There are several subsets of organic gases, including ROGs and volatile organic compounds (VOCs). ROGs are defined by state rules and regulations; VOCs are defined by federal rules and regulations. For the purposes of this assessment, hydrocarbons are classified and referred to as ROGs. Both ROGs and VOCs are emitted from the incomplete combustion of hydrocarbons or other carbon-based fuels, or as a

product of chemical processes. The major sources of hydrocarbons are combustion engine exhaust, oil refineries, and oil-fueled power plants; other common sources are petroleum fuels, solvents, dry-cleaning solutions, and paint (through evaporation).

The health effects of hydrocarbons result from the formation of ozone. High levels of hydrocarbons in the atmosphere can interfere with oxygen intake by reducing the amount of available oxygen through displacement. Carcinogenic forms of hydrocarbons are considered TACs. There are no separate health standards for ROG, although some are also toxic; an example is benzene, which is both an ROG and a carcinogen.

Nitrogen Oxides

Nitrogen oxides (NO) are a family of highly reactive gases that are a primary precursor to the formation of ground-level ozone, and react in the atmosphere to form acid rain. Nitrogen dioxide (NO₂), often used interchangeably with NO_x, is a brownish, highly reactive gas present in all urban environments. The major human sources of NO₂ are combustion devices, such as boilers, gas turbines, and mobile and stationary reciprocating internal combustion engines. Combustion devices emit primarily nitric oxide (NO), which reacts through oxidation in the atmosphere to form NO₂ (U.S. Environmental Protection Agency 2010). The combined emissions of NO and NO₂ are referred to as NO_x and reported as equivalent NO₂. Because NO₂ is formed and depleted by reactions associated with ozone, the NO₂ concentration in a particular geographical area may not be representative of local NO_x emission sources.

Inhalation is the most common route of exposure to NO₂. Because NO₂ has relatively low solubility in water, the principal site of toxicity is in the lower respiratory tract. The severity of adverse health effects primarily depends on the concentration inhaled rather than the duration of exposure. An individual may experience a variety of acute symptoms, such as coughing, difficulty breathing, vomiting, headache, and eye irritation during or shortly after exposure. After a period of approximately 4–12 hours, an exposed individual may experience chemical pneumonitis or pulmonary edema with breathing abnormalities, cough, cyanosis, chest pain, and rapid heartbeat. Severe symptomatic NO₂ intoxication after acute exposure has been linked to prolonged respiratory impairment, with such symptoms as chronic bronchitis and decreased lung function (U.S. Environmental Protection Agency 2010).

Carbon Monoxide

Carbon monoxide (CO) has little effect on plants and materials, but it can have significant effects on human health. CO is a public health concern because it combines readily with hemoglobin and thus reduces the amount of oxygen transported in the bloodstream. Effects range from slight headaches to nausea to death.

Motor vehicles are the primary source of CO emissions in most areas. In the project area, high CO levels are of greatest concern during the winter, when periods of light winds coincide with the formation of ground-level temperature inversions from evening through early morning. These conditions trap pollutants near the ground, reducing the dispersion of vehicle emissions. Moreover, motor vehicles exhibit increased CO emission rates at low air temperatures. Dramatic reductions in CO levels across California, including a 50% decrease in statewide peak CO levels between 1980 and 2004, have occurred during the past several decades. These reductions are primarily a result of ARB requirements for cleaner vehicles, equipment, and fuels (California Air Resources Board 2004:1).

Inhalable Particulate Matter

Particulate matter (PM) pollution consists of very small liquid and solid particles floating in the air, which can include smoke, soot, dust, salts, acids, and metals. Particulate matter also forms when gases emitted from industries and motor vehicles undergo chemical reactions in the atmosphere. Particulate matter less than 10 microns in diameter, about 1/7 the thickness of a human hair, is referred to as PM10. Particulate matter of 2.5 microns or less in diameter, roughly 1/28 the diameter of a human hair, is referred to as PM2.5. Major sources of PM10 include motor vehicles; wood burning stoves and fireplaces; dust from construction, landfills, and agriculture; wildfires and brush/waste burning; industrial sources; windblown dust from open lands; and atmospheric chemical and photochemical reactions. PM2.5 results from fuel combustion (from motor vehicles, power generation, and industrial facilities), residential fireplaces, and wood stoves. In addition, PM10 and PM2.5 can be formed in the atmosphere from gases such as SO₂, NO_x, and VOCs.

PM10 and PM2.5 pose a greater health risk than larger-size particles. When inhaled, these tiny particles can penetrate the human respiratory system's natural defenses and damage the respiratory tract. PM10 and PM2.5 can increase the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections. Very small particles of selected substances, such as lead, sulfates, and nitrates, can cause lung damage directly. These substances can be absorbed into the blood stream and cause damage elsewhere in the body; they can also transport absorbed gases such as chlorides or ammonium into the lungs and cause injury. Whereas particles 2.5 to 10 microns in diameter tend to collect in the upper portion of the respiratory system, particles 2.5 microns or less are so tiny that they can penetrate deeper into the lungs and damage lung tissues. Suspended particulates also damage and discolor surfaces on which they settle, contribute to haze, and reduce regional visibility. A recent study analyzing the human health benefits of Altamont Pass wind power found that the combined 580 MW APWRA windfarms offset 617 tons of PM2.5 over the 20 year period from 1987–2006 (McCubbin and Sovacool 2011).

Toxic Air Contaminants

Toxic air contaminants (TACs) are pollutants that may result in an increase in mortality or serious illness, or that may pose a present or potential hazard to human health. Health effects of TACs include cancer, birth defects, neurological damage, damage to the body's natural defense system, and diseases that lead to death. In 1998, following a 10-year scientific assessment process, the ARB identified PM from diesel-fueled engines—commonly called diesel particulate matter (DPM)—as a TAC. Compared to other air toxics ARB has identified, DPM emissions are estimated to be responsible for about 70% of the total ambient air toxics risk (California Air Resources Board 2000:1).

3.1.1.3 Background Information on Climate Change and Greenhouse Gas Emissions

The phenomenon known as the *greenhouse effect* keeps the atmosphere near the Earth's surface warm enough for the successful habitation of humans and other life forms. Present in the Earth's lower atmosphere, greenhouse gases (GHGs) play a critical role in maintaining the planet's temperature. GHGs trap some of the long-wave infrared radiation emitted from the Earth's surface that would otherwise escape to space. As regulated by AB 32, *California's Global Warming Solutions Act*, GHGs include the following gases: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O),

perfluorinated carbons (PFCs), sulfur hexafluoride (SF₆), and hydrofluorocarbons (HFCs). State CEQA Guidelines (§15364.5) also identify these six gases as GHGs.

Visible sunlight passes through the atmosphere without being absorbed. Some of the sunlight striking the Earth is absorbed and converted to heat, which warms the surface. The surface emits infrared radiation to the atmosphere, where some of it is absorbed by GHGs and re-emitted toward the surface; some of the heat is not trapped by GHGs and escapes into space. Human activities that emit additional GHGs to the atmosphere increase the amount of infrared radiation that gets absorbed before escaping into space, thus enhancing the greenhouse effect and amplifying the warming of the Earth (Center for Climate and Energy Solutions 2011.)

Increases in fossil fuel combustion and deforestation have exponentially increased concentrations of GHGs in the atmosphere since the Industrial Revolution. Rising atmospheric concentrations of GHGs in excess of natural levels enhance the greenhouse effect, which contributes to global warming of the Earth's lower atmosphere and induces large-scale changes in ocean circulation patterns, precipitation patterns, global ice cover, biological distributions, and other changes to the Earth's system that are collectively referred to as "climate change."

The Intergovernmental Panel on Climate Change (IPCC) has been established by the World Meteorological Organization and United Nations Environment Programme to assess scientific, technical, and socioeconomic information relevant to the understanding of climate change, its potential impacts, and options for adaptation and mitigation. The IPCC estimates that the average global temperature rise between the years 2000 and 2100 could range from 1.1° Celsius, with no increase in GHG emissions above year 2000 levels, to 6.4° Celsius, with substantial increase in GHG emissions (Intergovernmental Panel on Climate Change 2007a:97-115). Large increases in global temperatures could have substantial adverse effects on the natural and human environments on the planet and in California.

Description of Greenhouse Gases

The four primary GHGs that are typically of the most concern are CO₂, CH₄, N₂O, and SF₆. Each of these gases is discussed in detail below. Note that PFCs and HFCs are not discussed, as these gases are primarily generated by industrial processes and are not relevant to the proposed project.

To simplify reporting and analysis, methods have been set forth to describe emissions of GHGs in terms of a single gas. The most commonly accepted method to compare GHG emissions is the global warming potential (GWP) methodology defined by the IPCC (Intergovernmental Panel on Climate Change 1996, 2001:241–280). The IPCC defines the GWP of various GHG emissions on a normalized scale that recasts all GHG emissions in terms of CO₂ equivalent (CO₂e), which compares the gas in question to that of the same mass of CO₂ (CO₂ has a global warming potential of 1 by definition).

Table 3.1-1 on the following page lists the global warming potential of CO₂, CH₄, N₂O, and SF₆; their lifetimes; and abundances in the atmosphere.

Carbon Dioxide

Carbon dioxide (CO₂) is the most important anthropogenic (human-caused) GHG and accounts for more than 75% of all GHG emissions caused by humans. Its atmospheric lifetime of 50–200 years ensures that atmospheric concentrations of CO₂ will remain elevated for decades even after mitigation efforts to reduce GHG concentrations are promulgated (Intergovernmental Panel on Climate Change 2007a).

Atmospheric CO₂ has increased from a pre-industrial concentration of 280 ppm to 379 ppm in 2005 (Intergovernmental Panel on Climate Change 2007b). The primary sources of anthropogenic CO₂ in the atmosphere include the burning of fossil fuels (including motor vehicles), gas flaring, cement production, and land use changes (e.g., deforestation, oxidation of elemental carbon). CO₂ can be removed from the atmosphere by photosynthetic organisms.

Table 3.1-1. Residence Time, Global Warming Potentials, and Abundances of Significant GHGs

Greenhouse Gases	Global Warming Potential (100 years)	Lifetime (years)	2005 Atmospheric Abundance
CO ₂ (ppm) ^a	1	50-200	379
CH ₄ (ppb)	21	9-15	1,774
N ₂ O (ppb)	310	120	319
SF ₆ (ppt) ^a	23,900	5.6	5.6

Sources: Intergovernmental Panel on Climate Change 1996, 2001:388-390.

ppm = parts per million.

ppb = parts per billion.

ppt = parts per trillion.

Methane

Methane (CH₄) is the second most abundant GHG and is 21 times more potent as a greenhouse gas than CO₂. (Intergovernmental Panel on Climate Change 1996). Atmospheric CH₄ has increased from a pre-industrial concentration of 715 ppb to 1,774 ppb in 2005 (Intergovernmental Panel on Climate Change 2007b). Anthropogenic emissions of CH₄ are the result of growing rice, raising cattle, combusting natural gas, and mining coal (National Oceanic and Atmospheric Administration 2005). The decomposition of waste in landfills, although not a large source worldwide, can be significant at local levels.

Nitrous Oxide

Nitrous oxide (N₂O) is a powerful GHG, with a GWP of 310 (Intergovernmental Panel on Climate Change 1996). Anthropogenic sources of N₂O include agricultural processes (e.g., fertilizer application), nylon production, fuel-fired power plants, nitric acid production, and vehicle emissions. N₂O also is used in rocket engines, racecars, and as an aerosol spray propellant. Natural processes, such as nitrification and denitrification, can also produce N₂O, which can be released to the atmosphere by diffusion. In the United States (U.S.) more than 70% of N₂O emissions are related to agricultural soil management practices, particularly fertilizer application.

Sulfur Hexafluoride

Sulfur hexafluoride (SF₆), another human-made chemical, is used as an electrical insulating fluid for power distribution equipment, in the magnesium industry, and in semiconductor manufacturing. It also is used as a trace chemical for the study of oceanic and atmospheric processes (U.S. Environmental Protection Agency 2012a). In 2005, atmospheric concentrations of SF₆ were 5.6 parts per trillion (ppt) and steadily increasing. SF₆ is the most powerful of all GHGs listed in IPCC studies, with a GWP of 23,900 (Intergovernmental Panel on Climate Change 1996).

3.1.2 Regulatory Setting

This section summarizes federal, state, and local regulations that apply to air quality and greenhouse gases. The air quality management agencies of direct importance in the County are the EPA, the ARB, and the BAAQMD. EPA has established federal air quality standards for which the ARB and BAAQMD have primary implementation responsibility. The ARB and BAAQMD are also responsible for ensuring that state air quality standards are met. Failure by projects to conform to these standards, plans and regulations may represent significant adverse effects on air quality.

3.1.2.1 Federal Regulations

Criteria Pollutants

Clean Air Act and National Ambient Air Quality Standards

The federal Clean Air Act (CAA), promulgated in 1963 and amended several times thereafter, including the 1990 Clean Air Act amendments (CAAA), establishes the framework for modern air pollution control. The CAA directs the EPA to establish National Ambient Air Quality Standards (NAAQS) for the six criteria pollutants (discussed in Section 3.1.1.2). The NAAQS are divided into primary and secondary standards; the former are set to protect human health with an adequate margin of safety, and the latter to protect environmental values, such as plant and animal life. Table 3.1-2 summarizes the NAAQS.

The CAA requires states to submit a state implementation plan (SIP) for areas in nonattainment for federal standards. The SIP, which is reviewed and approved by EPA, must demonstrate how the federal standards would be achieved. Failing to submit a plan or secure approval can lead to denial of federal funding and permits. In cases where the SIP is submitted by the state but fails to demonstrate achievement of the standards, EPA is directed to prepare a federal implementation plan.

Greenhouse Gases

Only recently has climate change and the role of GHGs been widely recognized as posing an imminent threat to the natural environment, people, and economy. Potential severe effects of climate change include increases in drought (reduced snow pack in critical watersheds), heat waves (and related health impacts), more severe weather (greater precipitation and possibly more severe tornadoes and hurricanes), and rising sea levels and risk of coastal inundation. However, while it is clear that specific types of emissions categorized as GHGs have authentic effects on climate, some of the relationships or potential effects are not clearly understood (National Aeronautics and Space Administration n.d.). Accordingly, the federal regulatory setting, as it pertains to GHG emissions and climate change, is complex and evolving. The proposed project is not subject to any federal GHG emissions regulations. However, while there is currently no federal overarching law or policy related to climate change or the emissions of GHGs, recent activity suggests that federal regulation of GHG emissions may be forthcoming. EPA would likely play a critical role in upcoming regulations related to GHGs, although it is not clear at this time to what extent EPA will regulate GHGs without congressional action.

Table 3.1-2. National and State Ambient Air Quality Standards

Criteria Pollutant	Average Time	California Standards	National Standards ^a	
			Primary	Secondary
Ozone	1-hour	0.09 ppm	None	None
	8-hour	0.070 ppm	0.075 ppm	0.075 ppm
Particulate Matter (PM10)	24-hour	50 µg/m ³	150 µg/m ³	150 µg/m ³
	Annual mean	20 µg/m ³	None	None
Fine Particulate Matter (PM2.5)	24-hour	None	35 µg/m ³	35 µg/m ³
	Annual mean	12 µg/m ³	15 µg/m ³	15 µg/m ³
Carbon Monoxide	8-hour	9.0 ppm	9 ppm	None
	1-hour	20 ppm	35 ppm	None
Nitrogen Dioxide	Annual mean	0.030 ppm	0.053 ppm	0.053 ppm
	1-hour	0.18 ppm	0.100 ppm	None
Sulfur Dioxide ^e	Annual mean	None	0.030 ppm	None
	24-hour	0.04 ppm	0.14 ppm	None
	3-hour	None	None	0.5 ppm
	1-hour	0.25 ppm	0.075 ppm	None
Lead	30-day Average	1.5 µg/m ³	None	None
	Calendar quarter	None	1.5 µg/m ³	1.5 µg/m ³
	3-month average	None	0.15 µg/m ³	0.15 µg/m ³
Sulfates	24-hour	25 µg/m ³	None	None
Hydrogen Sulfide	1-hour	0.03 ppm	None	None
Vinyl Chloride	24-hour	0.01 ppm	None	None

Sources: California Air Resources Board 2012a

µg/m³ = micrograms per cubic meter

ppm = parts per million

^a. National standards are divided into primary and secondary standards. Primary standards are intended to protect public health, whereas secondary standards are intended to protect public welfare and the environment.

Mandatory Greenhouse Gas Reporting Rule (2009)

On September 22, 2009, EPA released its final Greenhouse Gas Reporting Rule (Reporting Rule). The Reporting Rule is a response to the fiscal year (FY) 2008 Consolidated Appropriations Act (H.R. 2764; Public Law 110-161), which required EPA to develop “mandatory reporting of greenhouse gasses above appropriate thresholds in all sectors of the economy...” The Reporting Rule would apply to most entities that emit 25,000 metric tons of CO₂e (MT CO₂e) (described in section 3.1.1.3) or more per year. Starting in 2010, facility owners are required to submit an annual GHG emissions report with detailed calculations of facility GHG emissions. Facilities considered major emitters include utilities, refineries, and other types of industrial uses. For example, California has 157 power plants that are subject to EPA’s Reporting Rule, as of this writing (U.S Environmental Protection Agency 2012b). The Reporting Rule also would mandate recordkeeping and administrative requirements in order for EPA to verify the annual GHG emissions reports.

3.1.2.2 State Regulations

Criteria Pollutants

California Clean Air Act and California Ambient Air Quality Standards

In 1988, the state legislature adopted the California Clean Air Act (CCAA), which established a statewide air pollution control program. CCAA requires all air districts in the state to endeavor to meet the California Ambient Air Quality Standards (CAAQS) by the earliest practical date. Unlike the federal CAA, the CCAA does not set precise attainment deadlines. Instead, the CCAA establishes increasingly stringent requirements for areas that will require more time to achieve the standards. CAAQS are generally more stringent than the NAAQS and incorporate additional standards for sulfate particles (SO₄), hydrogen sulfide (H₂S), vinyl chloride (C₂H₃Cl), and visibility-reducing particles. The CAAQS and NAAQS are listed together in Table 3.1-2.

ARB and local air districts bear responsibility for achieving California's air quality standards, which are to be achieved through district-level air quality management plans that would be incorporated into the SIP. In California, EPA has delegated authority to prepare SIPs to ARB, which, in turn, has delegated that authority to individual air districts. ARB traditionally has established state air quality standards, maintaining oversight authority in air quality planning, developing programs for reducing emissions from motor vehicles, developing air emission inventories, collecting air quality and meteorological data, and approving SIPs.

The CCAA substantially adds to the authority and responsibilities of air districts. The CCAA designates air districts as lead air quality planning agencies, requires air districts to prepare air quality plans, and grants air districts authority to implement transportation control measures. The CCAA also emphasizes the control of indirect and area-wide sources of air pollutant emissions. The CCAA gives local air pollution control districts explicit authority to regulate indirect sources of air pollution and to establish traffic control measures (TCMs). An indirect source of air pollution subject to air district control is one that requires an air district permit; direct sources of air pollution not subject to local air district control include most motor vehicles, which are regulated by the ARB through its determination of maximum allowable emissions of pollutants.

Toxic Air Contaminant Regulation

California regulates TACs primarily through the Tanner Air Toxics Act (AB 1807) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588). In the early 1980s, the ARB established a statewide comprehensive program to reduce exposure to air toxics. The Toxic Air Contaminant Identification and Control Act (AB 1807) created California's program to reduce exposure to air toxics. The Air Toxics "Hot Spots" Information and Assessment Act (AB 2588) supplements the AB 1807 program by requiring a statewide air toxics inventory, notification of people exposed to a significant health risk, and facility plans to reduce these risks.

In August 1998, the ARB identified particulate emissions from diesel-fueled engines as TACs. In September 2000, the ARB approved a comprehensive diesel risk reduction plan to reduce emissions from both new and existing diesel-fueled engines and vehicles (California Air Resources Board 2000). The goal of the plan is to reduce diesel PM₁₀ (respirable particulate matter) emissions and the associated health risk by 75% by 2010 and by 85% by 2020. The plan identifies 14 measures that target new and existing on-road vehicles (e.g., heavy-duty trucks and buses), off-road equipment (e.g., graders, tractors, forklifts, sweepers, and boats), portable equipment (e.g., pumps),

and stationary engines (e.g., stand-by power generators). ARB will implement the plan over the next several years. Because the ARB measures are enacted before any phase of construction, the proposed project would be required to comply with applicable diesel control measures.

The Tanner Act sets forth a formal procedure for the ARB to designate substances as TACs. This includes research, public participation, and scientific peer review before the ARB designates a substance as a TAC. To date, the ARB has identified 21 TACs, and has also adopted the EPA's list of Hazardous Air Pollutants as TACs. In August 1998, DPM was added to the ARB list of TACs (California Air Resources Board 1998).

The Hot Spots Act requires that existing facilities that emit toxic substances above specified levels complete the following.

- Prepare a toxic emissions inventory.
- Prepare a risk assessment if emissions are significant (i.e., 10 tons per year or on District's Health Risk Assessment [HRA] list).
- Notify the public of significant risk levels.
- Prepare and implement risk reduction measures.

Greenhouse Gases

Executive Order S-3-05 (2005)

Signed by Governor Arnold Schwarzenegger on June 1, 2005, Executive Order S-3-05 asserts that California is vulnerable to the effects of climate change. To combat this concern, Executive Order S-3-05 established the following GHG emissions reduction targets for state agencies.

- By 2010, reduce GHG emissions to 2000 levels.
- By 2020, reduce GHG emissions to 1990 levels.
- By 2050, reduce GHG emissions to 80% below 1990 levels.

Executive orders are binding only on state agencies. Accordingly, EO S-03-05 will guide state agencies' efforts to control and regulate GHG emissions but will have no direct binding effect on local government or private actions. The Secretary of the California Environmental Protection Agency (CalEPA) is required to report to the Governor and state legislature biannually on the impacts of global warming on California, mitigation and adaptation plans, and progress made toward reducing GHG emissions to meet the targets established in this executive order.

Senate Bills 1078/107/2 and Executive Order S-14-08—Renewable Portfolio Standard (2002, 2006, 2011)

Senate Bills (SB) 1078 and 107, California's Renewable Portfolio Standard (RPS) adopted respectively in 2002 and updated in 2006, obligated investor-owned utilities (IOUs), energy service providers (ESPs), and Community Choice Aggregations (CCAs) to procure an additional 1% of retail sales per year from eligible renewable sources until 20% is reached, no later than 2010. The California Public Utilities Commission (CPUC) and California Energy Commission (CEC) are jointly responsible for implementing the program. EO S-14-08 set forth a longer-range target of procuring 33% of retail sales by 2020. SB 2 (2011) now requires an RPS of 33% by 2020. Electricity generated by wind energy facilities is eligible for inclusion in RPS target figures.

Assembly Bill 32, California Global Warming Solutions Act (2006)

In September 2006, the California State Legislature adopted Assembly Bill 32, the *California Global Warming Solutions Act of 2006* (AB 32). AB 32 establishes a cap on statewide GHG emissions and sets forth the regulatory framework to achieve the corresponding reduction in statewide emission levels. Under AB 32, ARB is required to take the following actions.

- Adopt early action measures to reduce GHGs.
- Establish a statewide GHG emissions cap for 2020 based on 1990 emissions.
- Adopt mandatory reporting rules for significant GHG sources.
- Adopt a scoping plan indicating how emission reductions would be achieved through regulations, market mechanisms, and other actions.
- Adopt regulations needed to achieve the maximum technologically feasible and cost-effective reductions in GHGs.

Greenhouse Gas Cap-and-Trade Program

On October 20, 2011, ARB adopted the final cap-and-trade program for California. The California cap-and-trade program will create a market-based system with an overall emissions limit for affected sectors. The program is currently proposed to regulate more than 85% of California's emissions and will stagger compliance requirements according to the following schedule: (1) electricity generation and large industrial sources (2012); (2) fuel combustion and transportation (2015). The first auction of cap and trade credits under the program took place in November 2012.

State CEQA Guidelines

The State CEQA Guidelines (14 California Code of Regulations 15000, et seq.) require lead agencies to describe, calculate, or estimate the amount of GHG emissions that would result from a project. Moreover, the State CEQA Guidelines emphasize the necessity to determine potential climate change effects of the project and propose mitigation as necessary. The State CEQA Guidelines confirm the discretion of lead agencies to determine appropriate significance thresholds, but require the preparation of an EIR if "there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding compliance with adopted regulations or requirements" (Section 15064.4).

State CEQA Guidelines Section 15126.4 includes considerations for lead agencies related to feasible mitigation measures to reduce GHG emissions, which may include, among others, measures in an existing plan or mitigation program for the reduction of emissions that are required as part of the lead agency's decision; implementation of project features, project design, or other measures which are incorporated into the project to substantially reduce energy consumption or GHG emissions; offsite measures, including offsets that are not otherwise required, to mitigate a project's emissions; and measures that sequester carbon or carbon-equivalent emissions.

3.1.2.3 Local

Criteria Pollutants

BAAQMD has local air quality jurisdiction over projects in Alameda County. Responsibilities of BAAQMD include overseeing stationary-source emissions, approving permits, maintaining

emissions inventories, maintaining air quality stations, overseeing agricultural burning permits, and reviewing air quality-related sections of environmental documents required by CEQA. The air quality districts are also responsible for establishing and enforcing local air quality rules and regulations that address the requirements of federal and state air quality laws and for ensuring that NAAQS and CAAQS are met. Another key responsibility of BAAQMD is to adopt and maintain air quality basin plans.

The Bay Area is subject to the Bay Area Clean Air Plan, first adopted in 1991 by BAAQMD, and updated periodically since then. Two air quality plans are currently in effect, the 2005 Ozone Strategy, and the 2010 Bay Area Clean Air Plan (CAP). These plans provide measures to reduce air pollutant emissions from industrial facilities, commercial processes, motor vehicles and other sources, and in general seek to meet state and federal air quality standards. The CCAA requires such plans to work towards achieving and maintaining the state ambient air quality standards. The 2010 CAP provides new pollution control strategies to reduce ozone, PM, TACs, and GHGs in a single, integrated plan, and assesses the region's progress towards improved air quality. Other programs established by BAAQMD include the Community Air Risk Evaluation program to evaluate and reduce health risk from TACs, measures aimed at climate protection through reduction of GHGs, and review of local general plans and major development projects that may significantly harm air quality.

The BAAQMD (2011) has adopted advisory emission thresholds to assist CEQA lead agencies in determining the level of significance of a project's emissions, which are outlined in its *California Environmental Quality Act Air Quality Guidelines* (CEQA Guidelines). BAAQMD has also adopted air quality plans to improve air quality, protect public health, and protect the climate. The Bay Area 2001 Ozone Attainment Plan was adopted to reduce ozone and achieve the NAAQS ozone standard. BAAQMD also adopted a resignation plan for carbon monoxide (CO) in 1994. The resignation plan includes strategies to ensure the continuing attainment of the NAAQS for CO in the SFBAAB.

The action alternatives (described in detail in Chapter 4, *Alternatives Analysis*) may be subject to the following district rules. This list of rules may not be all-encompassing, as additional BAAQMD rules may apply to the action alternatives as specific components are identified.

- Regulation 2, Rule 2 (New Source Review): This regulation contains requirements for Best Available Control Technology and emission offsets.
- Regulation 2, Rule 5 (New Source Review of Toxic Air Contaminants). This regulation outlines guidance for evaluating TAC emissions and their potential health risks.
- Regulation 6, Rule 1 (Particulate Matter). This regulation restricts emissions of PM darker than No. 1 on the Ringlemann Chart to less than 3 minutes in any 1 hour.
- Regulation 7 (Odorous Substances): This regulation establishes general odor limitations on odorous substances and specific emission limitations on certain odorous compounds.
- Regulation 9, Rule 8 (Stationary Internal Combustion Engines). This regulation limits emissions of NO_x and CO from stationary internal combustion engines of more than 50 horsepower.

Greenhouse Gases

BAAQMD previously adopted recommended significance thresholds for operational GHG emissions from land-use development and stationary-source projects based on CO_{2e}. These thresholds were intended to help evaluate the significance of GHG emissions from major contributors within the air district. However, due to ongoing litigation over its guidelines, BAAQMD currently does not

recommend a GHG emissions threshold for construction, but encourages the implementation of best management practices (BMPs) (Bay Area Air Quality Management District 2011).

3.1.3 Sensitive Receptors

BAAQMD generally defines a *sensitive receptor* as a facility or land use that houses or attracts members of the population who are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. They may also include individual homes and residential neighborhoods. Sensitive receptors located in the immediate vicinity of the project site include an elementary school that is approximately 2.3 miles east of the project boundary, east of Bethany Reservoir on Mountain House Road; a single-family residence located within approximately 0.75 mile of the southwest boundary of the project area, along I-580; a single-family residence, several elementary schools, and a child care center that are located approximately 2.5 miles east of the project area, south of Byron Road; scattered residences that surround the project area, and residences within the project area.

3.1.4 Local Air Quality Conditions

Existing air quality conditions in the project area can be characterized by monitoring data collected in the region. The air quality monitoring station closest to the project area is the Livermore Rincon Avenue station, which is located approximately 5 miles to the southwest. The Livermore station monitors for ozone, CO, PM_{2.5}, and NO₂, but does not monitor for PM₁₀. Recent air quality monitoring results from the Livermore Rincon Avenue station are summarized in Table 3.1-3. The data represent air quality monitoring for the last 3 years for which a complete dataset is available (2009–2011).

3.1.4.1 Monitoring Data**Table 3.1-3. Ambient Air Quality Monitoring Data from Livermore, 793 Rincon Avenue Station**

Pollutant Standards	2009	2010	2011
Ozone (O₃)			
Maximum 1-hour concentration (ppm)	0.113	0.150	0.115
Maximum 8-hour concentration (ppm)	0.086	0.097	0.084
Number of days standard exceeded ^a			
CAAQS 1-hour (>0.09 ppm)	8	3	3
CAAQS 8-hour (>0.070 ppm)	8	6	9
NAAQS 8-hour (>0.075 ppm)	6	3	2
Carbon Monoxide (CO)			
Maximum 8-hour concentration (ppm)	1.31	-	-
Maximum 1-hour concentration (ppm)	2.4	-	-
Number of days standard exceeded ^a			
NAAQS 8-hour (≥9 ppm)	0	0	0
CAAQS 8-hour (≥9.0 ppm)	0	0	0
NAAQS 1-hour (≥35 ppm)	0	-	-
CAAQS 1-hour (≥20 ppm)	-	-	-
Nitrogen Dioxide (NO₂)			
State maximum 1-hour concentration (ppm)	0.052	0.058	0.057
State second-highest 1-hour concentration (ppm)	0.048	0.056	0.053
Annual average concentration (ppm)	0.012	0.011	0.011
Number of days standard exceeded			
CAAQS 1-hour (0.18 ppm)	0	0	0
Particulate Matter (PM_{2.5})			
National ^b maximum 24-hour concentration (µg/m ³)	45.7	34.7	23.6
National ^b second-highest 24-hour concentration (µg/m ³)	38.2	31.2	23.2
State ^e maximum 24-hour concentration (µg/m ³)	45.7	34.7	23.6
State ^e second-highest 24-hour concentration (µg/m ³)	38.2	31.2	23.2
National annual average concentration (µg/m ³)	9.1	7.6	-
State annual average concentration (µg/m ³) ^f	9.2	7.6	-
Number of days standard exceeded ^a			
NAAQS 24-hour (>35 µg/m ³)	4.0	0.0	-

Source: California Air Resources Board 2012b; U.S. Environmental Protection Agency 2012c.

Notes:

ppm = parts per million

NAAQS = National Ambient Air Quality Standards

CAAQS = California Ambient Air Quality Standards

µg/m³ = micrograms per cubic metermg/m³ = milligrams per cubic meter

- = data not available

^a An exceedance is not necessarily a violation.^b National statistics are based on standard conditions data. In addition, national statistics are based on samplers using federal reference or equivalent methods.^c State statistics are based on local conditions data, except in the South Coast Air Basin, for which statistics are based on standard conditions data. In addition, State statistics are based on California approved samplers.^d Measurements usually are collected every 6 days.^e State criteria for ensuring that data are sufficiently complete for calculating valid annual averages are more stringent than the national criteria.^f Mathematical estimate of how many days concentrations would have been measured as higher than the level of the standard had each day been monitored. Values have been rounded.

3.1.4.2 Air Quality Standards and Attainment Status

Areas are classified as in attainment or in nonattainment with respect to NAAQS and CAAQS. These classifications are made by comparing actual monitored air pollutant concentrations with state and federal standards (Table 3.1-2). If a pollutant concentration is lower than the state or federal standard, the area is considered to be in attainment of the standard for that pollutant. If pollutant levels exceed a standard, the area is considered a nonattainment area. If data are insufficient to determine whether a pollutant is violating the standard, the area is designated as unclassified. This typically occurs in non-urbanized areas, where pollutant levels may be less closely monitored. Table 3.1-4 summarizes the attainment status of Alameda County with regard to the NAAQS and CAAQS.

Table 3.1-4. Federal and State Attainment Status for Alameda County

Criteria Pollutant	Federal Designation	State Designation
O ₃ (1-hour)	– ^a	Serious Nonattainment
O ₃ (8-hour)	Marginal Nonattainment	Nonattainment
CO	Maintenance	Attainment
PM10	Attainment	Nonattainment
PM2.5	Nonattainment	Nonattainment
NO ₂	Attainment	Attainment
SO ₂	Attainment	Attainment
Lead	Attainment	Attainment
Sulfates	(No Federal standard)	Attainment
Hydrogen Sulfide	(No Federal standard)	Unclassified
Visibility	(No Federal standard)	Unclassified

Source: California Air Resources Board 2012c; U.S. Environmental Protection Agency 2012d.

CO = carbon monoxide

PM10 = particulate matter less than or equal to 10 microns

PM2.5 = particulate matter less than or equal to 2.5 microns

NO₂ = nitrogen dioxide

SO₂ = sulfur dioxide

^a The Federal 1-hour standard of 12 parts per hundred million (pphm) was in effect from 1979 through June 15, 2005. The revoked standard is referenced here because it was employed for such a long period and because this benchmark is addressed in the State Implementation Plans.

3.1.5 Environmental Impacts

This section describes the impact analysis relating to air quality and greenhouse gases for the proposed project. It describes the methods used to determine the project's impacts and lists the thresholds used to conclude whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts accompany each impact discussion, if appropriate.

3.1.5.1 Criteria Pollutants

Daily emissions associated with removal of the turbines and associated infrastructure are expected to be identical under all alternatives (described in detail in Chapter 4, *Alternatives Analysis*). For the

criteria pollutant modeling analysis, it was assumed that there would be no difference in daily activities and associated emissions between phased decommissioning and immediate decommissioning because the number of daily crews working and activity would be the same. Consequently, the discussion of criteria pollutant impacts that follows applies to all alternatives, as the decommissioning activities, either phased or immediate, would occur under all scenarios.

3.1.5.2 Greenhouse Gases

As discussed above, the number of daily crews working and the daily activity associated with decommissioning and infrastructure removal would be identical for all alternatives. However, because each alternative entails a specific yearly decommissioning schedule and associated activity schedule (i.e., number of days of activity per year), yearly GHG emissions are anticipated to differ among the various alternatives. A full discussion of the alternatives and their schedules and decommissioning dates is included in Chapter 4.

No impacts would result from operation of the turbines, because the operation of wind turbines results in the offsetting (reduction) of GHG emissions by replacing electricity that would otherwise be produced by conventional nonrenewable sources, such as coal or natural gas power plants. Conventional power plants are a source of GHG emissions, while wind power is a renewable energy source that does not emit GHGs.

The proposed project and the project alternatives would result in offset (reduced) GHG emissions. The amount of GHG emissions offset varies among the project alternatives, because the amount of electricity produced depends on the annual operational schedule and the decommissioning schedule. In general, the decommissioning activities would be particularly offset by the operation of the wind turbines. The specific GHG emissions offsets associated with each alternative are discussed below.

3.1.5.3 Thresholds of Significance

The following analysis of impacts pertaining to air quality and GHGs anticipated from operation of the proposed project and decommissioning activities is based on professional practice and State CEQA Guidelines Appendix G (14 CCR 15000 et seq.). Based on the Guidelines, a significant impact would occur if the analyses indicate the project would:

- Conflict with or obstruct implementation of the applicable air quality plan.
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation.
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is a nonattainment area for an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors).
- Expose sensitive receptors to substantial pollutant concentrations.
- Create objectionable odors affecting a substantial number of people.
- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

According to the State CEQA Guidelines, the significance criteria established by the applicable air quality management or air pollution control district may be relied on to make determinations of significance for potential impacts on environmental resources. As discussed above, the BAAQMD is responsible for ensuring that state and federal ambient air quality standards are not violated within the SFBAAB. Analysis requirements for construction- and operational-related pollutant emissions are contained in the BAAQMD's CEQA Guidelines (Bay Area Air Quality Management District 2011). The BAAQMD's Air Quality Guidelines (BAAQMD 2011) had provided a significance threshold of 10,000 MT CO₂e for stationary-source projects and 1,100 MT CO₂e per year for non-stationary source projects. As indicated by the BAAQMD, because climate change is cumulative in nature, these thresholds are both project-level and cumulative thresholds of significance. Thresholds of significance for criteria pollutant emissions are discussed below.

In March 2012, an Alameda County Superior Court ruled that BAAQMD needed to comply with CEQA prior to adopting their 2010 Air Quality CEQA Guidelines, which included significance thresholds for criteria air pollutants and GHGs. The Superior Court did not determine whether the thresholds were valid on the merits, but found that the adoption of the thresholds was a project under CEQA. The court issued a writ of mandate ordering the BAAQMD to set aside the thresholds and cease dissemination of them until BAAQMD complied with CEQA. In May 2012, the BAAQMD filed an appeal with the Court of Appeal, First Appellate District, and the plaintiff filed a cross-appeal shortly thereafter.

Pending the outcome of the appeal, the BAAQMD is no longer recommending its significance thresholds for use by local agencies. However, the County has independently reviewed the BAAQMD-proposed thresholds and determined that they are supported by substantial evidence and are appropriate for use to determine significance in the environmental review of this project. Specifically, the County has determined that the BAAQMD-proposed thresholds are well-grounded on air quality regulations, scientific evidence, and scientific reasoning concerning air quality and GHG emissions. Using these thresholds for the project also allows a rigorous standardized approach to determining whether the project will cause a significant air quality impact.

GHG emissions from construction are evaluated on a case-by-case basis, taking into consideration construction GHG emissions and best management practices (BMPs). Construction emissions make up a small portion of overall emissions in the Bay Area, statewide, and globally, and are temporary in nature. Thus, the significance of construction GHG emissions is evaluated by determining whether or not the project has incorporated feasible reduction measures that can be applied during the construction period. BAAQMD's draft operational GHG threshold was based on an analysis of future development potential in the land use sector, an estimate of the effectiveness of state-adopted GHG reduction measures, and identification of the amount of reductions needed in the Bay Area in the land use sector to promote overall GHG reductions consistent with AB 32, the Global Warming Solutions Act. Therefore, the draft operational GHG threshold was based on consideration of the size of projects that would need to provide meaningful GHG reductions in order to promote overall GHG reductions consistent with AB 32.

3.1.5.4 Methodology

Criteria pollutant emissions are reported in pounds per day, while GHG emissions are reported in metric tons per year to be consistent with the BAAQMD's CEQA Guidelines and to facilitate comparison to their thresholds of significance, which are in pounds per day for criteria pollutants and metric tons per year for GHGs.

Criteria Pollutants

In addition to operation of the wind turbines for additional months but fewer years, an important component of the project would involve removing and disposing of wind turbines at an offsite location. For this aspect of the project, emissions would result from the operation of off-road heavy-duty construction equipment used for turbine removal and loading, and light and heavy-duty trucks transporting the turbines offsite and construction workers to and from the project site.

Emissions associated with heavy-duty off-road construction equipment were estimated based on construction equipment emission factors and default horsepower ratings found in Appendix D of the California Emissions Estimator Model (CalEEMod) Users Guide (ENVIRON 2011), Carl Moyer off-road diesel engine default load factors (California Air Resources Board 2011), information from a manufacturer's equipment brochure (Caterpillar n.d.), and daily and equipment activity data obtained from the project applicant (Table 3.1-5).

Table 3.1-5. Daily Equipment and Vehicle Activity Provided by the Project Applicant

Equipment		Number per Day	Hours per Day Each	HP Rating/ Travel Speed (mph) and daily distance traveled (miles)
Off-Road Equipment	Crane	1	3	208 hp
	Forklift	1	5	149 hp
	Excavator	1	6	101 hp
On-Road Motor Vehicles	Flatbed Truck	1	2	25 mph (30 miles)
	Pickup truck	3	1	25 mph (30 miles)

Emissions associated with on-road motor vehicle travel were estimated based on a combination of vehicle emission rates from the EMFAC 2011 web tool and daily vehicle activity data obtained from the project applicant. Emissions associated with flat-bed truck travel were based on emission rates associated the EMFAC2011 "T7 Tractor" vehicle category, which is the vehicle category for flat-bed type vehicles. Based on feedback from the project applicant, it was assumed that one flat-bed truck would travel at an average speed of 25 miles per hour (mph) for a total duration of 2 hours per day and a distance of approximately 30 miles within Alameda County. The construction assumptions and calculations are presented in Appendix A.

Turbine removal and disposal was assumed to begin in 2016, as provided by the project applicant. Unmitigated emissions were estimated for a single crew, which are presented in Table 3.1-6, and emissions associated with multiple crews operating concurrently were calculated by multiplying emissions for the single crew by four, which is the maximum number of crews anticipated to operate on a given day.

Table 3.1-6. Daily Unmitigated Emissions Associated with Decommissioning and Infrastructure Removal Activities for One Crew (pounds per day)

Equipment Type	ROG	NO _x	CO	PM10 exhaust	PM2.5 exhaust	CO ₂	Other CO ₂ e	Total CO ₂ e
Crane	0.18	1.22	0.53	0.03	0.03	226.72	0.02	226.74
Forklift	0.44	2.27	2.53	0.12	0.12	373.36	0.04	373.40
Excavator	0.25	1.35	1.71	0.05	0.05	288.51	0.02	288.54
Total Off-Road Equipment Emissions	0.86	4.84	4.77	0.20	0.20	888.60	0.08	888.67
Flatbed Truck	0.01	0.02	0.18	0.00	0.00	34.20	1.80	36.00
Pickup Truck	0.06	1.72	0.23	0.02	0.02	398.05	20.95	419.00
Total On-Road Vehicle Emissions	0.07	1.74	0.41	0.02	0.02	432.25	22.75	455.00
Total Emissions from one crew	0.93	6.57	5.18	0.22	0.22	1,320.85	22.83	1,343.67

Greenhouse Gases

Decommissioning and Infrastructure Removal Activities

GHG emissions associated with decommissioning and infrastructure removal activities were determined by multiplying the daily GHG emissions from one crew by the maximum number of crews that may be operating concurrently (four) and the number of construction (facility removal) days per year. The analysis assumed that the proposed project and Alternatives 1, 2, and 3 would each require 207 total days of construction activity (828 turbines/4 turbines removed per day). Since it is assumed that there will be 185 allowed working days per year, most of the turbines could be removed in the first year of removal activities. Table 3.1-7 lists the decommissioning schedule for the proposed project and Alternatives 1, 2, and 3.

Table 3.1-7. Assumed Decommissioning Schedule for the Proposed Project and Alternatives 1, 2, and 3

Proposed Project, Alternatives 1, 2, and 3	Year 1	Year 2
Turbines Removed per year (828 Total)	740	88
Construction Days (four turbines removed per day)	185	22

Offset GHG Emissions Analysis

Decommissioning will result in GHG emissions from construction activities. At the same time, the project proposes to intensify turbine operations in comparison to the phased decommissioning that would occur under the existing CUPs (No Project Alternative). Increased power production from more intense turbine operations reduces the amount of electricity that would otherwise need to be generated from fossil fuel-burning power plants. The following analyzes the extent to which GHGs emitted during decommissioning activities are offset by the reduction in prospective GHG emissions from power plants that would result from running turbines on the site more intensively under proposed project conditions and the alternatives.

The number of turbines operating per year under the No Project Alternative was determined using the phased decommissioning schedule. Under this schedule, the amount of turbines will be gradually

reduced until 2018, when all remaining turbines will be removed. For each year, the number of turbines of each turbine type, 100 kilowatt (kW) nameplate capacity and 250 kW nameplate capacity, was multiplied by the corresponding capacity (100 or 250). For instance, the number of 250 kW turbines operating in 2014 was multiplied by 250 kW to determine the total capacity in 2014. To determine the electricity produced, the capacity in 2014 was multiplied by the estimated number of active hours. The number of active hours for each year was estimated by multiplying the total number of hours in each month by capacity factors that correspond to each month, which were provided by the Project Applicant. The capacity factors take into account that wind does not blow continuously during any given month. For example, the total number of hours in a 31-day month (24 hours per day * 31 days = 744 total hours) would be multiplied by a capacity factor that corresponds to that month (40%, for example) to determine the amount of hours that a turbine is active (744 total hours * 40% = 298 active hours). The numbers of active hours in each month were then summed and multiplied by the total capacity to determine the number of annual kW hours of electricity produced (the capacity was adjusted for the five 30-day months and for the 28-day February). The electricity amounts for all years were summed to find the total electricity produced under the No Project Alternative between 2013 and 2018.

Similarly, for the proposed project and alternatives, the total numbers of turbines operating annually in each scenario were multiplied by the nameplate capacities. The total capacities were then multiplied by the number of active hours in each year for each alternative to determine electricity production.

It is important to note that capacity factors were received from the project applicant and represent wind activity in 2012. These monthly capacity factors were assumed to remain constant between 2013 and 2020. In reality, the wind activity in future years will not be identical to the wind activity in 2012. However, in the absence of future-year capacity factors, assuming constant capacity factors from 2012 is the most viable approach.

The electricity generated by the wind turbines under any of the alternatives would offset electricity that Pacific Gas & Electric (PG&E) would need to produce in the absence of the turbines. This would result in net reductions of GHG emissions, because non-emitting wind turbines would be reducing the need for conventional, GHG-emitting electricity generation (i.e., wind turbines would be replacing the need for electricity derived from fossil fuels, which are a source of GHG emissions). The GHG emissions reductions of all alternatives were quantified using the most recent (year 2008) carbon-intensity emission factor associated with PG&E's electricity generation operations (California Climate Action Registry 2012). This value is 641.35 pounds of CO₂ per megawatt hour (MWh). The emission factor relates the amount of CO₂ emitted per unit of electricity generated. Similarly, the amounts of methane and nitrous oxide emissions reduced were quantified using default California-region emission factors from the Climate Registry and the global warming potentials of methane and nitrous oxide, 21 and 310, respectively. These factors are 0.036 pounds of methane per MWh and 0.008 pounds of nitrous oxide per MWh (The Climate Registry 2008). Table 3.1-8 presents the electricity production by each alternative. The GHGs offset from the electricity production shown in Table 3.1-6 are included and discussed in Impacts AQ-6 and AQ-7.

Table 3.1-8. Electricity Production by Alternative 2013–2018 (kW hours)

Alternative	2013	2014	2015	2016 ^a	2017	2018	Total (2013–2018)
No Project	7,242,096	127,533,235	122,228,515	34,127,280	34,117,171	34,117,171	359,365,469
Proposed Project	16,098,826	184,347,821	184,347,821	-	-	-	384,794,467
Alternative 1	9,894,456	174,241,267	174,241,267	-	-	-	358,376,990
Alternative 2	9,894,456	174,241,267	174,241,267	174,292,894	-	-	532,669,885
Alternative 3	9,894,456	174,241,267	174,241,267	174,292,894	174,241,267	174,241,267	881,152,419

^a 2016 is a leap year, so electricity production is slightly higher than adjacent years with identical schedules.

3.1.5.5 CEQA Thresholds

Criteria Pollutants

The BAAQMD has established daily construction-related and daily and annual operational-related criteria pollutant threshold levels. The construction-related thresholds are presented in Table 3.1-9. The BAAQMD has established numeric thresholds for ROG, NO_x, PM10, and PM2.5.

Table 3.1-9. BAAQMD Project-Level Criteria Pollutant Emissions Thresholds

Pollutant	Threshold
ROG	54 lbs/day
NO _x	54 lbs/day
CO	-
PM10 (exhaust)	82 lbs/day
PM2.5 (exhaust)	54 lbs/day
PM10 /PM2.5 (fugitive dust)	Best management practices (BMPs)

Source: Bay Area Air Quality Management District 2011.

Greenhouse Gases

BAAQMD proposed significance thresholds for operational GHG emissions from land-use development and stationary source projects (the BAAQMD proposed a threshold of 10,000 MT CO_{2e} per year for stationary sources). These thresholds are intended to reduce GHG emissions from major contributors within the air district, consistent with AB 32 requirements; a project that exceeds these thresholds would be identified as having a significant impact towards climate change, as it would not be consistent with the amount of emission reductions required to ensure AB 32 consistency. BAAQMD currently does not recommend a GHG emissions threshold for construction, but it encourages the implementation of BMPs. These BMPs could include utilizing alternative fuels in construction vehicles, and recycling or reusing at least 50% of construction waste (Bay Area Air Quality Management District 2011). As discussed above, there is substantial evidence that the proposed BAAQMD thresholds have a reasonable basis. Therefore, although they are not adopted thresholds of the BAAQMD, the county had chosen to use them for this project.

3.1.5.6 Impacts

Impact AQ-1: Conflict with or obstruct implementation of the applicable air quality plan (No Impact)

A project is deemed inconsistent with an air quality plan if it would result in population or employment growth that exceeds the growth estimates in the applicable air quality plan, thus generating emissions not accounted for in the applicable air quality plan's emissions budget. Consequently, proposed projects need to be evaluated to determine whether they would generate population and employment growth and, if so, whether that growth would exceed the growth rate included in the relevant air quality plan.

Construction of the proposed project would not result in permanent population or employment growth. Therefore, the proposed project would not conflict with or obstruct the implementation of an applicable SIP and Air Quality Attainment Plan. There would be no impact.

Impact AQ-2: Violate any air quality standard or contribute substantially to an existing or projected air quality violation (Less than significant)

Decommissioning and infrastructure removal activities are expected to take place a maximum of 185 days per year, with a maximum of four construction crews active each day. It was assumed that all four construction crews would be working simultaneously. The emissions associated with the on-road trucks and off-road equipment from all four crews are shown in Table 3.1-10. The estimated emissions associated with the decommissioning and infrastructure removal activities would not exceed the BAAQMD significance thresholds for these pollutants (Table 3.1-9). Therefore, this impact is considered less than significant.

Table 3.1-10. Daily Criteria Pollutant Emissions Associated with Decommissioning and Infrastructure Removal Activities for Four Crews Operating Concurrently (pounds per day).

Equipment Type	ROG	NO _x	CO	PM10 exhaust	PM2.5 exhaust
Crane	0.71	6.09	2.13	0.21	0.21
Forklift	1.74	11.34	10.12	0.88	0.88
Excavator	1.00	6.75	6.84	0.36	0.36
Total Off-Road Equipment Emissions	3.45	24.18	19.08	1.45	1.45
Flatbed Truck	0.02	0.07	0.73	0.00	0.00
Pickup Truck	0.25	6.87	0.92	0.07	0.06
Total On-Road Vehicle Emissions	0.28	6.94	1.65	0.07	0.06
Total Emissions	3.72	31.12	20.73	1.52	1.52
BAAQMD Emissions threshold (lbs/day)	54	54	–	82	82
Do emissions exceed threshold?	No	No	No	No	No

Impact AQ-3: Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is a nonattainment area for an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors) (Less than significant)

Decommissioning and infrastructure removal activities associated with the proposed project and other alternatives would result in a low level of emissions each day that the activities will occur (a maximum of 185 days per year). As indicated in Table 3.1-10, construction-related criteria pollutant emissions associated with the aforementioned activities will be below the BAAQMD significance thresholds for all pollutants. The BAAQMD's CEQA Guidelines indicate that their thresholds of significance represent both project-level and cumulative thresholds. So, if a project exceeds a threshold, it would result in a project-level impact, as well as a cumulatively considerable increase that would be significant. Accordingly, because the proposed project would not exceed any BAAQMD threshold, it would not result in a cumulatively considerable net increase of any criteria pollutant, and the impact would be less than significant.

Impact AQ-4: Expose sensitive receptors to substantial pollutant concentrations (Less than significant)

Diesel Particulate Matter is identified as a TAC with potential human health impacts. Construction of the project would require the use of diesel-powered equipment, which would generate DPM emissions. The assessment of health risks associated with exposure to diesel exhaust typically is associated with chronic exposure, in which a 70-year exposure period is often assumed. As stated above, the decommissioning and infrastructure removal activities would take place over a maximum period of 185 days per year, and construction activities would be relatively limited. Pollutant concentrations would be short-term relative to the 70-year exposure period and would most likely dissipate before reaching the nearest sensitive receptor, which is located approximately 0.75 miles from the southwest boundary of the project area. Consequently, this impact is considered less than significant.

Impact AQ-5: Create objectionable odors affecting a substantial number of people (Less than significant)

Diesel exhaust from construction activities may generate temporary odors. Once construction activities are completed, these odors would cease. Because the proposed project is located in a rural setting with scattered residences near the project boundary, the diesel exhaust and construction odors generated from inside the proposed project's boundaries would likely dissipate before affecting a substantial number of people. Therefore, this impact is considered less than significant.

Impact AQ-6: Generation of greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment (Less than significant)

Decommissioning and infrastructure removal activities would generate short-term emissions of GHGs. The maximum annual emissions associated with these activities are shown in Table 3.1-11. The annual GHG emissions are identical for the proposed project and Alternatives 1, 2, and 3, because all of these alternatives will follow a 185 day-per-year, unphased decommissioning schedule. By comparison, the annual GHG emissions under the No Project Alternative are less than either the proposed project or the alternatives, because the No Project Alternative entails a phased decommissioning schedule. The direct contribution of the project would be GHG emissions of 451.02 MT CO₂e from decommissioning and infrastructure removal activities, an increase of 170.66 MT

CO₂e relative to the No Project Alternative (the same under the proposed project and under Alternatives 1, 2, or 3) (Table 3.1-11).

Table 3.1-11. Maximum Annual GHG Emissions from Decommissioning and Infrastructure Removal Activities (Metric Tons CO₂ equivalents per Year)

Alternative	CO ₂	Other CO ₂ e	Total CO ₂ e
No Project Alternative	275.60	4.76	280.36
Proposed Project, Alternatives 1, 2, and 3	443.36	7.66	451.02
Project Alternatives <i>minus</i> No Project Alternative	167.76	2.9	170.66

However, these emissions would be more than offset by the GHG emissions avoided because the proposed project (or Alternatives 1, 2, or 3) would replace electricity produced by fossil-fueled power plants with electricity from non-emitting wind turbines. The GHGs offset under any of the alternatives (Table 3.1-12) would be multiple orders of magnitude greater than the emissions created by decommissioning and infrastructure removal activities shown in Table 3.1-11.

Because of variations in annual operations schedules and decommissioning dates, each alternative would generate a different amount of electricity. The electricity produced by the wind turbines for each alternative between 2013 and 2018 is shown in Table 3.1-8. Table 3.1-12 provides the corresponding GHG emissions that would be offset by this electricity production each year, and total offsets achieved by 2018, for the same alternatives. Comparison of Table 3.1-8 and 3.1-12 shows that the quantity of GHG emissions offset is directly proportional to the level of electricity produced under each alternative. The project would offset 7,435 MT CO₂e more than the No Project Alternative. Alternatives 2 and 3 would offset substantial amounts of GHG emissions more than the No Project Alternative, while Alternative 1 would offset 289 MT CO₂e less than the No Project Alternative.

Table 3.1-12. Offset GHGs by Alternative (Metric Tons CO₂ equivalents)

Alternative	2013	2014	2015	2016	2017	2018	Total Offset GHGs (2013–2018)	Comparison to No Project ^a
No Project	2,117	37,288	35,737	9,978	9,975	9,975	105,072	-
Proposed Project	4,707	53,900	53,900	-	-	-	112,507	7,435
Alternative 1	2,893	50,945	50,945	-	-	-	104,783	-289
Alternative 2	2,893	50,945	50,945	50,960	-	-	155,743	50,671
Alternative 3	2,893	50,945	50,945	50,960	50,945	50,945	257,633	152,561

^a This column shows GHG Emissions that are offset relative to the No Project Alternative. A positive value indicates that the alternative offsets more GHGs than the No Project Alternative, and a negative value indicates that the alternative offsets less GHGs than the No Project Alternative.

As shown by comparing Tables 3.1-12 and 3.1-13, the GHGs offset under any of the alternatives would substantially exceed the increase in emissions associated with decommissioning and infrastructure removal activities. The net effect of the project (GHG emissions created versus GHG emissions avoided from fossil fuel power plants as a result of increased wind-generated electricity) would be a net decrease in GHG emissions. Accordingly, the proposed project or Alternatives 1, 2, and 3 would result in a less-than-significant impact. Table 3.1-12 indicates Alternative 1 would

result in less emission offsets (289 MT CO₂e) relative to the No Project Alternative, meaning Alternative 1 would result in fewer offsets beyond those that would otherwise occur under the No Project Alternative. When construction emissions are considered with operational emissions associated with Alternative 1, the net effect would be an increase of approximately 460 MT CO₂e (170.66 + 289). However, this increase in emissions is below the BAAQMD's threshold of 10,000 MT CO₂e for stationary sources. Consequently, Alternative 1 is also considered less than significant.

Impact AQ-7: Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases (Less than significant)

The proposed project would generate short-term GHG emissions caused by construction activities associated with decommissioning and infrastructure removal. Due to the short duration of these emissions (a maximum of 185 days per year in the first year of construction and less than 30 days in the following year), neither the proposed project nor any of the alternatives would conflict with an applicable plan, policy, or regulation.

As discussed in Impact AQ-6, the proposed project and all alternatives, including the no project alternative, would result in offset GHG emissions. Therefore, the proposed project and all alternatives would not conflict with but, rather, would be compatible with existing plans, policies and regulations that mandate or encourage reductions of GHGs. Accordingly, the impact would be less than significant.

3.2 Biological Resources

This section describes the regulatory setting and environmental setting for biological resources. For the purpose of this EIR, biological resources comprise vegetation; wildlife (including avian species); waters of the United States (including wetlands); and waters of the state. Potential biological resource impacts associated with the project components are analyzed at a programmatic level in this section. Potential impacts associated with each of these project components are described at a qualitative level in Section 3.2.3, *Environmental Impacts*. This section also identifies specific and detailed measures from the East Alameda County Conservation Strategy (EACCS) to avoid, minimize, or compensate for potentially significant impacts on biological resources, where necessary.

For the purposes of this analysis, the biological resources study area is defined as the approximately 14,196-acre project area where existing AWI project facilities are located (Figure 2-2).

3.2.1 Regulatory Setting

An overview of the laws and regulations that influence the management of biological resources in the study area is provided below. Although some of these regulations may not apply to the proposed project if the sensitive resource (e.g., waters of the United States) can be avoided, they are discussed here to provide context for determining which biological resources are considered sensitive for the purposes of the proposed project and to discuss the potential impacts of the proposed project on these resources.

3.2.1.1 Federal

Federal Endangered Species Act

The U.S. Fish and Wildlife Service (USFWS) has jurisdiction over species listed as threatened or endangered under the Endangered Species Act (ESA) Section 9. ESA protects listed species from harm, or *take*, which is broadly defined as to “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct.” For any project involving a federal agency in which a listed species could be affected, the federal agency must consult with USFWS in accordance with Section 7 of ESA. USFWS issues a biological opinion (BO) and, if the project does not jeopardize the continued existence of the listed species, issues an incidental take permit. When no federal context is present, proponents of a project affecting a listed species must consult with USFWS and apply for an incidental take permit under ESA Section 10. Section 10 requires an applicant to submit a habitat conservation plan (HCP) that specifies project impacts and mitigation measures. Several federally listed species, including vernal pool fairy shrimp, longhorn fairy shrimp, California tiger salamander, California red-legged frog, Alameda whipsnake, and San Joaquin kit fox, may have the potential to be affected by decommissioning activities associated with the proposed project, which would then require consultation with USFWS.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (16 USC 703) enacts the provisions of treaties between the United States, Great Britain, Mexico, Japan, and Russia and authorizes the U.S. Secretary of the Interior to protect and regulate the taking of migratory birds. It establishes seasons and bag limits

for hunted species and protects migratory birds, their occupied nests, and their eggs (16 USC 703; 50 CFR 21; 50 CFR 10). USFWS is responsible for overseeing compliance with MBTA, and the U.S. Department of Agriculture's Animal Damage Control Officer makes recommendations on related animal protection issues. The proposed project, including both operation and remediation activities, has the potential to adversely affect migratory birds regulated by the MBTA.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (BGEPA) (16 United States Code [USC] 668) prohibits take and disturbance of individuals and nests. Take permits for birds or body parts are limited to religious, scientific, or falconry pursuits. However, the BGEPA was amended in 1978 to allow mining developers to apply to USFWS for permits to remove inactive golden eagle (*Aquila chrysaetos*) nests in the course of "resource development or recovery" operations. With the 2007 removal of bald eagle from the ESA list of threatened and endangered species, USFWS issued new regulations to authorize the limited take of bald eagles and golden eagles under the BGEPA, where the take to be authorized is associated with otherwise lawful activities. A final Eagle Permit Rule was published on September 11, 2009 (74 FR 46836-46879; 50 CFR 22.26).

The permits will authorize limited, non-purposeful take of bald eagles and golden eagles, authorizing individuals, companies, government agencies (including tribal governments), and other organizations to disturb or otherwise take eagles in the course of conducting lawful activities, such as operating utilities and airports. Under BGEPA, "take" is defined as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, destroy, molest or disturb." "Disturb" is defined in the regulations as "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available: (1) injury to an eagle; (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior; or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior." Most permits issued under the new regulations would authorize disturbance. In limited cases, a permit may authorize the physical take of eagles, but only if every precaution is taken first to avoid physical take.

In January 2011, USFWS issued the Draft Eagle Conservation Plan Guidance (Eagle Guidance) intended to assist parties to avoid, minimize, and mitigate adverse effects on bald and golden eagles. The Eagle Guidance calls for scientifically rigorous surveys, monitoring, assessment, and research designs proportionate to the risk to eagles. The draft Guidance describes a process by which wind energy developers can collect and analyze information that could lead to a programmatic permit to authorize unintentional take of eagles at wind energy facilities. USFWS recommends that eagle conservation plans be developed in five stages. Each stage builds on the prior stage, such that together the process is a progressive, increasingly intensive look at likely effects of the development and operation of a particular site and configuration on eagles. Additional refinements to the Eagle Guidance are expected at some point in the future. To date, no programmatic eagle take permits have been issued by the USFWS.

Operation of AWI's wind turbines in the APWRA has the potential to adversely affect golden eagles under the proposed operational changes. Additionally, if no operational changes are approved, AWI's wind turbines still have the potential to adversely affect golden eagles.

Clean Water Act

The Clean Water Act (CWA) was enacted as an amendment to the Federal Water Pollution Control Act of 1972, which outlined the basic structure for regulating discharges of pollutants to waters of the United States. The CWA serves as the primary federal law protecting the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands. The CWA is implemented by the EPA and U.S. Army Corps of Engineers (USACE).

The CWA empowers the EPA to set national water quality standards and effluent limitations and includes programs addressing both point-source and nonpoint-source pollution. Point-source pollution is pollution that originates or enters surface waters at a single, discrete location, such as an outfall structure or an excavation or construction site. Nonpoint-source pollution originates over a broader area and includes urban contaminants in stormwater runoff and sediment loading from upstream areas. The CWA operates on the principle that all discharges into the nation's waters are unlawful unless specifically authorized by a permit; permit review is the CWA's primary regulatory tool. The following sections provide additional details on specific sections of the CWA.

Water Quality Certification (Section 401)

Under CWA Section 401, applicants for a federal license or permit to conduct activities that may result in the discharge of a pollutant into waters of the United States must obtain certification from the state in which the discharge would originate or, if appropriate, from the interstate water pollution control agency with jurisdiction over affected waters at the point where the discharge would originate. Therefore, all projects that have a federal component and may affect state water quality (including projects that require federal agency approval, such as issuance of a Section 404 permit) must also comply with CWA Section 401. Decommissioning activities have the potential to result in a discharge of pollutants into waters of the United States; therefore, Water Quality Certification may be required for the proposed project.

Permits for Stormwater Discharge (Section 402)

CWA Section 402 regulates construction-related stormwater discharges to surface waters through the National Pollutant Discharge Elimination System (NPDES) program, administered by EPA. In California, the State Water Board is authorized by EPA to oversee the NPDES program through the Regional Water Quality Control Boards (RWQCBs; see the related discussion under "Porter-Cologne Water Quality Control Act").

NPDES permits are required for projects that disturb more than 1 acre of land. Because the proposed project will disturb more than 1 acre of land, a NPDES permit will be required. The NPDES permitting process requires the applicant to file a public Notice of Intent (NOI) to discharge stormwater, and to prepare and implement a Stormwater Pollution Prevention Plan (SWPPP). The SWPPP includes a site map and a description of proposed construction activities. In addition, it describes the best management practices (BMPs) that would be implemented to prevent soil erosion and discharge of other construction-related pollutants (e.g., petroleum products, solvents, paints, cement) that could contaminate nearby water resources. Permittees are required to conduct annual monitoring and reporting to ensure that BMPs are correctly implemented and effective in controlling the discharge of stormwater-related pollutants.

Permits for Fill Placement in Waters and Wetlands (Section 404)

CWA Section 404 regulates the discharge of dredged and fill materials into waters of the United States, which are oceans, bays, rivers, streams, lakes, ponds, and wetlands, including any or all of the following.

- Areas within the ordinary high water mark (OHWM) of a stream, including seasonal streams with a defined bed and bank and any stream channel that conveys natural runoff, even if it has been realigned.
- Seasonal and perennial wetlands, including coastal wetlands.

Applicants must obtain a permit from USACE for all discharges of dredged or fill material into waters of the United States, including adjacent wetlands, before proceeding with a proposed activity. USACE may issue either an individual permit evaluated on a case-by-case basis or a general permit evaluated at a program level for a series of related activities. General permits are preauthorized and are issued to cover multiple instances of similar activities expected to cause only minimal adverse environmental effects. The nationwide permits are a type of general permit issued to cover particular fill activities. Each nationwide permit specifies particular conditions that must be met for the nationwide permit to apply to a particular project.

Compliance with CWA Section 404 requires compliance with several other environmental laws and regulations. USACE cannot issue an individual permit or verify the use of a general permit until the requirements of the National Environmental Policy Act, the ESA, and the National Historic Preservation Act have been met. In addition, USACE cannot issue or verify any permit until a water quality certification or a waiver of certification has been issued pursuant to CWA Section 401. Decommissioning activities have the potential to result in a discharge of fill material into waters of the United States; therefore, a Section 404 CWA permit may be required for the proposed project.

3.2.1.2 State**California Environmental Quality Act**

The California Environmental Quality Act (CEQA) is the regulatory framework by which California public agencies identify and mitigate significant environmental impacts. A project normally has a significant environmental impact on biological resources if it substantially affects a rare or endangered species or the habitat of that species, substantially interferes with the movement of resident or migratory fish or wildlife, or substantially diminishes habitat for fish, wildlife, or plants. The State CEQA Guidelines define rare, threatened, and endangered species as those listed under the ESA and the CESA and any other species that meet the criteria of the resource agencies or local agencies (e.g., species of special concern, as designated by the California Department of Fish and Wildlife [CDFW]). The guidelines state that the lead agency preparing an EIR must consult with and receive written findings from CDFW concerning project impacts on species listed as endangered or threatened. The effects of a proposed project on these resources are important in determining whether the project has significant environmental impacts under CEQA.

California Endangered Species Act

The California Endangered Species Act (CESA) was implemented in 1984 to prohibit the take of species that are listed as endangered and threatened. Section 86 of the California Department of Fish and Wildlife Code defines "take" as to "hunt, pursue, catch, capture, or kill, or attempt to hunt,

pursue, catch, capture, or kill.” CDFW administers CESA and authorizes take through either Section 2080.1 (for species listed under ESA and CESA) or Section 2081 agreements (except for species designated as fully protected). Regarding rare plant species, CESA defers to the California Native Plant Protection Act (CNPPA) (described below).

California Department of Fish and Wildlife Code

Fully Protected Species

The California Department of Fish and Wildlife Code provides protection from take for a variety of species, referred to as “fully protected species.” Section 5050 lists fully protected amphibians and reptiles, Section 3515 lists fully protected fish, Section 3511 lists fully protected birds, and Section 4700 lists fully protected mammals. The California Department of Fish and Wildlife Code defines take as “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.” Except for take related to scientific research or authorized pursuant to an approved Natural Community Conservation Plan, all take of fully protected species is prohibited, and CDFW cannot issue take permits for fully protected species.

Protection of Birds and Raptors

Section 3503 of the California Department of Fish and Wildlife Code prohibits the killing of birds and/or the destruction of bird nests. Section 3503.5 prohibits the killing of raptor species and/or the destruction of raptor nests. Typical violations include destruction of active bird and raptor nests as a result of tree removal, and failure of nesting attempts (loss of eggs and/or young) as a result of disturbance of nesting pairs caused by nearby human activity. The proposed project, including both operation and reclamation activities, has the potential to adversely affect birds and raptors protected under the California Department of Fish and Wildlife Code.

Lake and Streambed Alteration

CDFW regulates activities that would interfere with the natural flow of, or substantially alter the channel, bed, or bank of, a lake, river, or stream, including disturbance of riparian vegetation under CDFW Code Sections 1600–1616. CDFW requires a Lake and Streambed Alteration Agreement (LSAA) permit for these activities. Requirements to protect the integrity of biological resources and water quality are often conditions of streambed alteration agreements. CDFW may establish conditions that include avoidance or minimization of vegetation removal, use of standard erosion control measures, limitations on the use of heavy equipment, limitations on work periods to avoid impacts on fisheries and wildlife resources, and requirements to restore degraded sites or compensate for permanent habitat losses. Several drainages are crossed by access roads within the study area and decommissioning activities have the potential to modify the bed, bank, or channel through removal of existing culverts. Therefore, an LSAA may be required for the proposed project.

California Native Plant Protection Act

The CNPPA of 1977 prohibits importation of rare and endangered plants into California, take of rare and endangered plants, and sale of rare and endangered plants. The CESA defers to the CNPPA, which ensures that state-listed plant species are protected when state agencies are involved in projects subject to CEQA. In this case, plants listed as rare under the CNPPA are not protected under CESA but rather under CEQA. Several rare and endangered plants have potential to occur within the

study area and could be adversely affected by decommissioning activities. Therefore, this EIR addresses potential impacts on these species.

Porter-Cologne Water Quality Control Act

California Water Code Section 13260 requires “any person discharging waste, or proposing to discharge waste, in any region that could affect the waters of the state to file a report of discharge (an application for waste discharge requirements [WDRs]).” Under the Porter-Cologne Water Quality Control Act definition, waters of the state are “any surface water or groundwater, including saline waters, within the boundaries of the state.” Although all waters of the United States that are within the borders of California are also waters of the state, the reverse is not true. Therefore, California retains authority to regulate discharges of waste into any waters of the state, regardless of whether USACE has concurrent jurisdiction under CWA Section 404. If USACE determines that a wetland is not subject to regulation under Section 404, CWA Section 401 Water Quality Certification is not required. However, RWQCB may impose WDRs if fill material is placed into waters of the state. Waters of the state could be directly or indirectly affected during reclamation activities associated with decommissioning.

3.2.1.3 Local

East Alameda County Conservation Strategy

The EACCS is a collaborative effort among several local, state, and federal agencies intended to provide an effective voluntary framework to protect, enhance, and restore natural resources in eastern Alameda County, while improving and streamlining the environmental permitting process for impacts resulting from infrastructure and development projects. The EACCS is intended to focus on impacts on biological resources such as endangered and other special-status species, and on sensitive habitat types (e.g., wetlands, riparian corridors, rare upland communities). The EACCS will ultimately enable local projects to comply with state and federal regulatory requirements within a framework of comprehensive conservation goals and objectives, and be implemented using consistent and standardized mitigation requirements. By implementing the EACCS, local agencies will be able to more easily address the legal requirements relevant to these species.

The EACCS study area encompasses 271,485 acres, or approximately 52% of Alameda County, including the cities of Dublin, Livermore, and Pleasanton. The western boundary of the EACCS study area runs along the Alameda Creek watershed, and the northern, southern, and eastern boundaries follow the Alameda County line with its adjacent counties. The EACCS study area includes the proposed project study area.

A final draft of the EACCS was completed in October 2010 and released to the public in March 2011. On May 31, 2012, the USFWS issued a Programmatic Biological Opinion under Section 7 of the ESA for USACE-permitted projects utilizing the EACCS that may affect federally listed species in East Alameda County, California (reference No. 08ESMFOO-2012-F-0092-1), hereinafter referred to as the Programmatic BO. Wind energy projects, including installation, operation, and maintenance, are identified as covered infrastructure projects within the Programmatic BO. However, avian and bat effects associated with these types of projects are not covered under the Programmatic BO. Individual projects may be appended to the Programmatic BO if they are consistent with the EACCS, occur within the EACCS study area, and are a covered activity. The Programmatic BO does not provide incidental take authorization; therefore, individual projects appended to the Programmatic

BO will be granted individual take coverage as part of the project's Section 7 consultation process. Because the EACCS is designed to be an adaptive management process, the Programmatic BO may be amended in the future or a new BO may be written if there are substantive changes to the EACCS.

For projects where USACE is not the federal lead agency for Section 7 consultation, consistency with the Programmatic BO will enable other federal agencies to streamline their individual ESA consultations by utilizing preapproved mitigation standards and focusing mitigation in conservation priority areas.

EACCS development included input and review by CDFW to address impacts on state-listed species. Consistency with the EACCS will also aid in streamlining CESA permit compliance for project impacts on state-listed species.

Although participation in the EACCS by applicants is voluntary, Alameda County participates in the strategy and considers it to be the best available information when considering the impacts of the proposed project on the full range of protected wildlife, plant species and habitats.

3.2.2 Environmental Setting

This section discusses the existing conditions related to biological resources in the study area. The following descriptions of biological resources are derived from existing data and reports prepared for other projects in the study area and surrounding area. The following sources were consulted.

- California Natural Diversity Database (CNDDDB) query for special-status species occurrence records for the Clifton Court Forebay, Byron Hot Springs, Altamont, and Midway U.S. Geological Survey (USGS) 7.5-minute quadrangles (CDFW 2012).
- California Native Plant Society's (CNPS's) online *Inventory of Rare and Endangered Plants of California* (2012).
- USFWS species lists for Clifton Court Forebay, Byron Hot Springs, Altamont, and Midway USGS 7.5-minute quadrangles.
- *East Alameda County Conservation Strategy* (ICF 2010).
- *Altamont Pass Wind Resource Area Bird Fatality Study, Bird Years 2005–2010* (ICF 2012).
- *Nesting Burrowing Owl Distribution and Abundance in the Altamont Pass Wind Resource Area, California* (Smallwood et. al. 2011a).
- *Monitoring Burrow Use of Wintering Burrowing Owls* (Smallwood et. al. 2011b).
- *Map-Based Repowering and Reorganization of a Wind Resource Area to Minimize Burrowing Owl and Other Bird Fatalities* (Smallwood et. al. 2009).
- *Bird Risk Behaviors and Fatalities at the Altamont Pass Wind Resource Area, Period of Performance: March 1998–December 2000* (Thelander et. al. 2003).

3.2.2.1 Study Area

The study area for biological resources covers the entire approximately 14,196-acre project area where existing AWI project facilities are located (Figure 2-2). A total of 828 permitted wind turbines and associated infrastructure are operated by AWI from mid-February through October in accordance with their existing CUPs.

The study area is within the Altamont Pass Wind Resource Area (APWRA), which encompasses approximately 50,000 acres in eastern Alameda and Contra Costa Counties. The APWRA includes all utility-scale wind turbines currently in operation within Alameda and Contra Costa Counties. Although the impact analysis focuses on the proposed project, the description of biological resources in the study area and the analysis of impacts of the proposed project and alternatives are based upon studies of the larger APWRA as a whole, primarily because the APWRA as a whole has been intensively studied for the last 15 years, and this information is directly applicable to the proposed project.

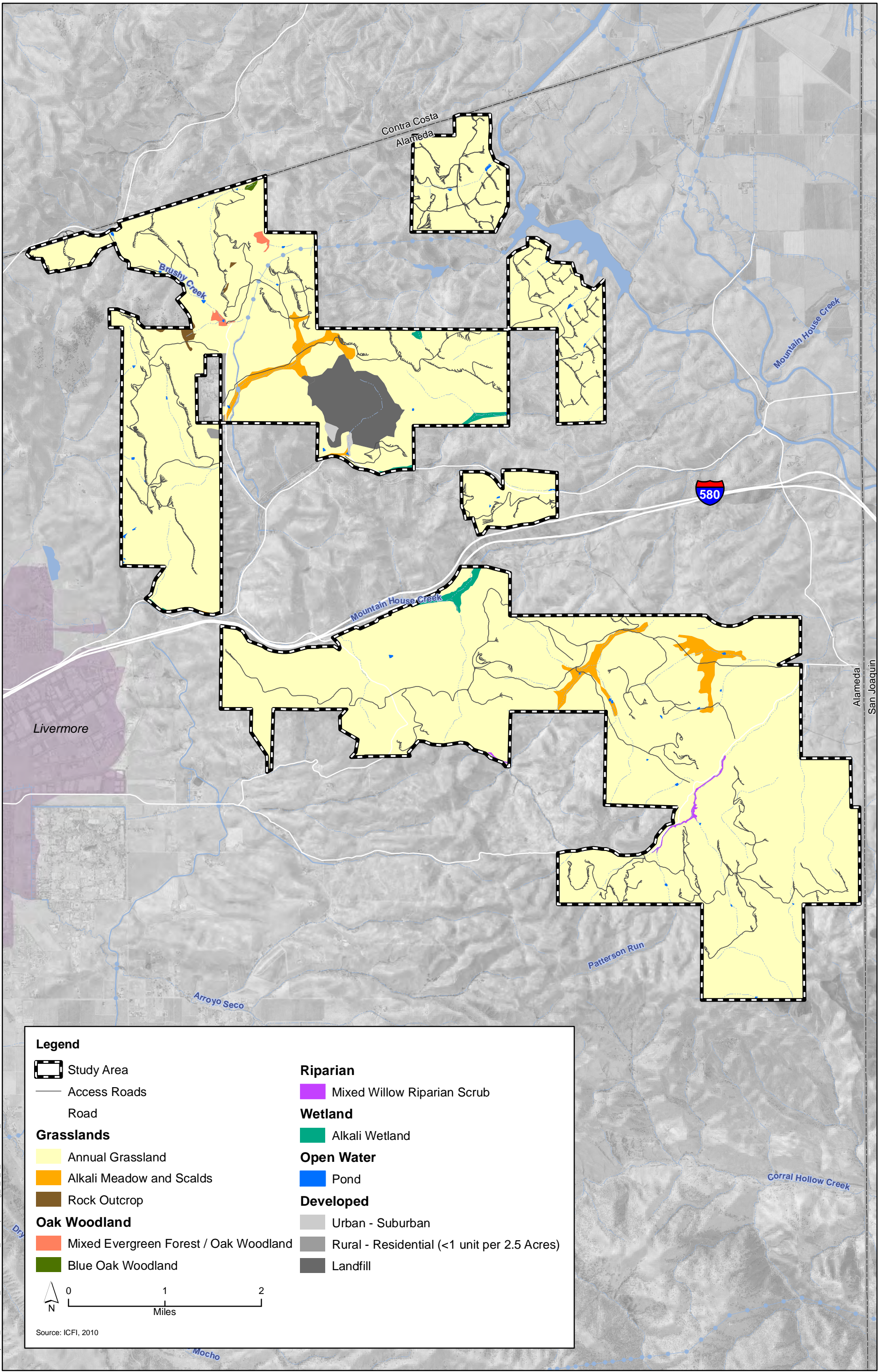
The APWRA is characterized by rolling hills with elevations ranging from 256 feet to 1,542 feet above mean sea level. The APWRA predominantly supports nonnative annual grassland with interspersed stock ponds, small seasonal wetlands, alkali grasslands, and marshes. Seasonal streams run through many of the valleys between ridges. Along with windfarm operations, livestock grazing and, to a lesser extent, dry-land farming (grain crops) are the primary land uses within the APWRA.

3.2.2.2 Land Cover Types

The study area supports six major land cover types (grassland, oak woodland, riparian, wetland, open water, and developed) that were previously mapped as part of the EACCS. Mapping resources used for the EACCS included digital orthophotography from 2005 and 2007, previously mapped wetlands from 2001, USFWS wetlands inventory data layer, and field verification surveys (ICF 2010). Figure 3.2-1 depicts land cover types and associated vegetation communities within the study area and is meant to provide a general representation of habitat rather than precise habitat boundaries. In addition to these land cover types, many seasonal streams occur throughout the study area, especially in the draws between hills. A formal wetland delineation has not been conducted for the study area. Brief descriptions of land cover types in the study area are provided below.

Grassland

The grassland cover type consists of the nonnative annual grassland, alkali meadow and scalds, and rock outcrops. The predominant vegetation community is nonnative annual grassland dominated by mostly nonnative grasses from the Mediterranean basin, such as soft chess (*Bromus hordeaceus*), red brome (*Bromus madritensis* ssp. *rubens*), wild oats (*Avena* spp.), ripgut brome (*Bromus diandrus*), and fescue (*Vulpia* spp.). Small and isolated patches of native grasses are also sometimes present, primarily needlegrass (*Nasella* spp.). In the spring, many of the annual grasslands are interspersed with a variety of native wildflowers typical of the inner Coast Ranges. Commonly found species of wildflowers in these grasslands include lupine (*Lupinus* spp.), fiddleneck (*Amsinckia* spp.), popcornflower (*Plagiobothrys* spp.), California poppy (*Eschscholzia californica*), owl's clover (*Castilleja* spp.), and clarkia (*Clarkia* spp.) (ICF 2010). In some areas, nonnative weedy vegetation, such as thistles, mustards, and a variety of other weedy forbs are also common. Alkali meadows occur in three distinct areas in the northwestern and southeastern portions of the study area (Figure 3.2-1). Rock outcrops could occur throughout the study area, primarily within annual grassland habitat. One distinctive area of rock outcrops was mapped in the northwestern portion of the study area (Figure 3.2-1).



Legend

Study Area	Riparian
Access Roads	Mixed Willow Riparian Scrub
Road	Wetland
Grasslands	Alkali Wetland
Annual Grassland	Open Water
Alkali Meadow and Scalds	Pond
Rock Outcrop	Developed
Oak Woodland	Urban - Suburban
Mixed Evergreen Forest / Oak Woodland	Rural - Residential (<1 unit per 2.5 Acres)
Blue Oak Woodland	Landfill

0 1 2
Miles

Source: ICFI, 2010

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Figure 3.2-1
Land Cover Types in the AWI Study Area

Oak Woodland

The oak woodland cover type includes blue oak woodland and mixed evergreen forest/oak woodland communities (Figure 3.2-1). Blue oak woodland is dominated by blue oak (*Quercus douglasii*) and occurs in one small area along the northern boundary of the study area. Mixed evergreen forest/oak woodland occurs in two separate areas along the same seasonal drainage in the northwestern portion of the study area. This vegetation community is characterized by a diverse overstory that often includes coast live oak, (*Quercus agrifolia*), blue oak, and valley oak (*Quercus lobata*). Associated trees and shrubs include California bay (*Umbellularia californica*), madrone (*Arbutus menziesii*), California buckeye (*Aesculus californica*), black oak (*Quercus kelloggii*), toyon (*Heteromeles arbutifolia*), scrub oak (*Quercus berberidifolia*), and poison oak (*Toxicodendron diversilobum*).

Riparian

Within the study area, previously mapped riparian habitat is restricted to one location in the southeastern portion of the area (Figure 3.2-1). This habitat is located along a seasonal stream adjacent to County Road 2063 that supports mixed willow riparian scrub. Dominant species in this type of habitat include yellow willow (*Salix lutea*), red willow (*Salix laevigata*), arroyo willow (*Salix lasiolepis*), and narrowleaf willow (*Salix exigua*). Small patches of riparian habitat may also occur along other streams within the study area.

Wetland

One wetland cover type (alkali wetland) has been previously mapped within the study area (Figure 3.2-1). Alkali wetlands within the study area generally occur along seasonal streams in the central portion of the study area. Additional smaller alkali wetlands are likely to occur in depressional areas within grasslands and seasonal streams throughout the study area. Vegetation within alkali wetlands is composed of halophytic plant species adapted to wetland conditions and high salinity levels, including salt grass (*Distichlis spicata*), alkali heath (*Frankenia* spp.), and spikeweeds (*Centromadia* spp.).

Open Water

The primary open water cover type in the study area is associated with stock ponds. Although not natural features, stock ponds often function as seasonal or perennial wetlands. They often impound streams and are artificial depressions originally constructed as a water source for grazing cattle. Numerous stock ponds are scattered throughout the study area (Figure 3.2-1). The density and diversity of vegetation associated with stock ponds can be highly variable, depending on the degree of grazing activity. Heavily used stock ponds can be mostly unvegetated, while other ponds can support a variety of wetland vegetation, including willows, cattails, bulrushes, sedges, rushes, watercress, and water primrose.

Developed Lands

Within the study area, developed areas are primarily restricted to existing paved roadways, the wind turbine sites, and the Vasco Road Landfill (Figure 3.2-1).

3.2.2.3 Special-Status Species

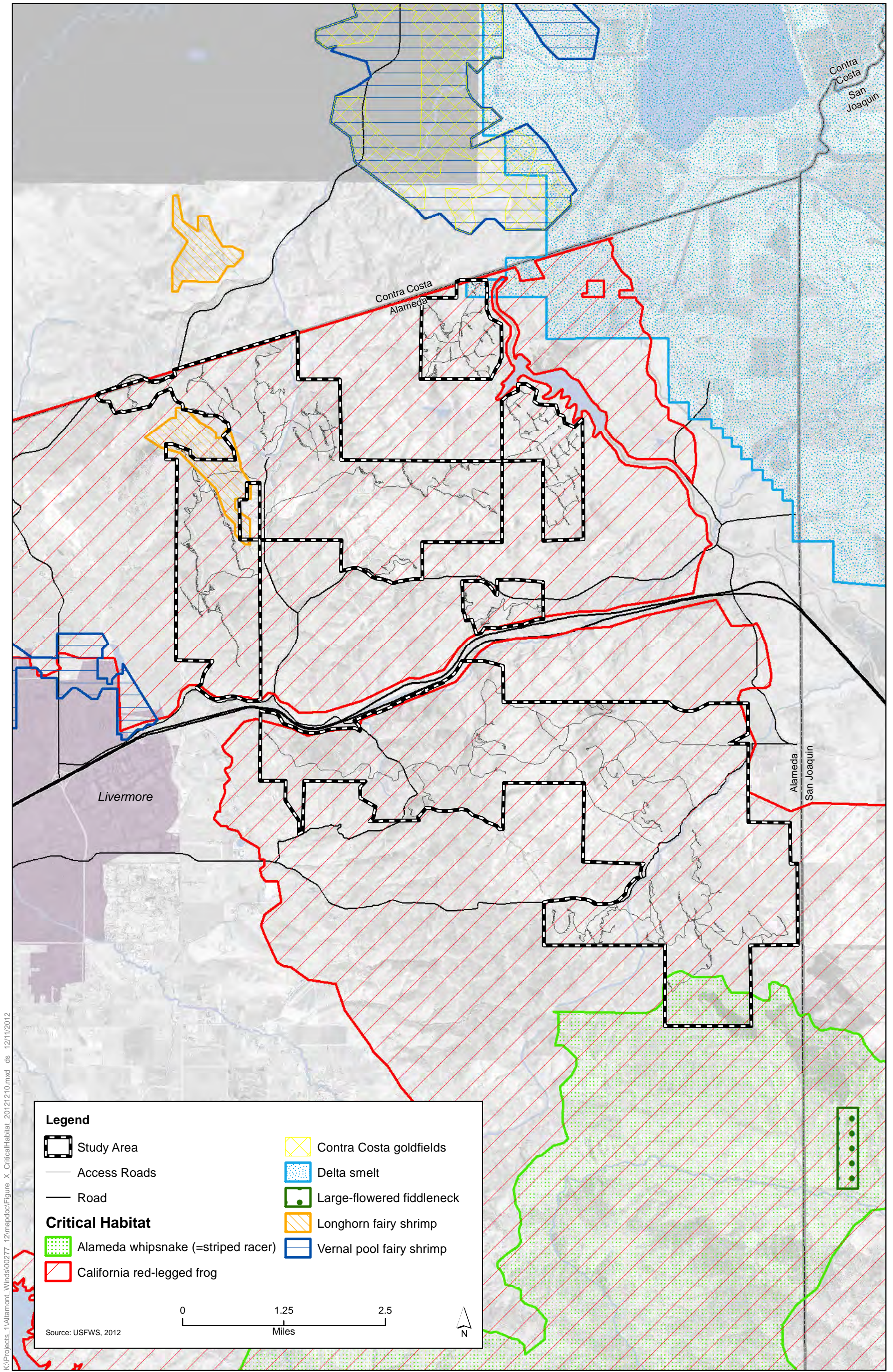
Special-status species are plants, animals, and fish that are legally protected under the federal ESA, CESA, or other regulations; and species that are considered sufficiently rare by the scientific community to qualify for such listing. Special-status plants, animals, and fish fall into the following categories.

- Species listed or proposed for listing as threatened or endangered under the ESA (50 CFR 17.11 [listed animals]; 50 CFR 17.12 [listed plants]; and various notices in the Federal Register [FR] [proposed species]).
- Species that are candidates for possible future listing as threatened or endangered under the ESA (75 FR 69222, November 10, 2010).
- Species listed or proposed for listing by the State of California as threatened or endangered under CESA (14 CCR 670.5).
- Species that meet the definitions of rare or endangered under CEQA (CEQA Guidelines Section 15380).
- Plants listed as rare under the CNPPA (California Department of Fish and Wildlife Commission 1900 et seq).
- Plants considered by CNPS to be “rare, threatened, or endangered in California” (California Native Plant Society 2012).
- Plants listed by CNPS as plants about which more information is needed to determine their status and plants of limited distribution, which may be included as special-status species on the basis of local significance or recent biological information (California Native Plant Society 2012).
- Animal species of special concern to the CDFW (Shuford 2008 [birds]; Williams 1986 [mammals]; and Jennings and Hayes 1994 [amphibians and reptiles]).
- Animals fully protected in California (California Department of Fish and Wildlife Commission 3511 [birds], 4700 [mammals], 5050 [amphibians and reptiles], and 5515 [fish]).

Special-Status Plants

A review of available information resulted in the identification of 27 special-status plants that have potential to occur in the study area based on the presence of suitable habitat (land cover types) (Figure 3.2-1). The listing status, geographic range, habitat preferences, and likelihood of occurrence within the study area for all potentially occurring special-status plant species are provided in Table 3.2-1. The likelihood of occurrence within the study area was assessed based on the presence of suitable habitat within the study area, which in turn was based on known land cover types and known occurrences within the project region (California Department of Fish and Game 2012). Specific and comprehensive surveys for special-status plants have not been conducted. Previously documented special-status plants within the study area include brittlescale (*Atriplex depressa*), Congdon’s tarplant (*Hemizonia parryi* ssp. *congdonii*), and round-leaved filaree (*California macrophylla*).

No critical habitat for special-status plants has been designated in the study area; however critical habitat has been designated for Contra Costa goldfields and large-flowered fiddleneck within 1 to 2 miles from the study area (Figure 3.2-2).



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Figure 3.2-2
Designated Critical Habitat

Special-Status Wildlife

A review of existing information, including the CNDDDB and USFWS species lists for the geographic region, resulted in the identification of 34 special-status wildlife species (Table 3.2-2) with potential to occur in the study area. Based on the presence of suitable habitat (land cover types), 23 of the 34 species listed in Table 3.2-2 were determined to have a low-to-high likelihood of occurring within the study area. The remaining 11 species were determined to have no potential to occur in the project area because there are no suitable habitats present for them.

Terrestrial Species

No focused species surveys were conducted as part of this EIR for the proposed project. Surveys conducted for previous projects (including previously prepared EIRs and other studies) within and adjacent to the proposed project have identified numerous special-status wildlife occurrences throughout the 14,196-acre study area (California Department of Fish and Game 2012). Six special-status wildlife species have been previously documented within the study area: California tiger salamander, California red-legged frog, western pond turtle, burrowing owl, American badger, and San Joaquin kit fox (California Department of Fish and Game 2012). The study area also overlaps designated critical habitat for four species: California red-legged frog, longhorn fairy shrimp, Alameda whipsnake, and Delta smelt (Figure 3.2-2). The listing status, geographic range, habitat preferences, and likelihood for occurrence within the study area for all potentially occurring special-status wildlife species are provided in Table 3.2-2. Table 3.2-2 also includes information on known occurrences and designated critical habitat for applicable species.

Avian and Bat Species

The APWRA supports a broad diversity of resident, migratory, and wintering bird species that regularly move through the wind turbine area (Orloff and Flannery 1992). In particular, diurnal raptors (eagles and hawks) use the prevailing winds and updrafts for soaring and gliding during daily travel, foraging, and migration. Birds passing through the rotor plane of operating wind turbines are at risk of being injured or killed. Multiple studies of avian fatality in the APWRA show that substantial numbers of golden eagles, red-tailed hawks, American kestrels, burrowing owls, barn owls, and a diverse mix of non-raptor species are killed each year in turbine-related incidents (Howell and DiDonato 1991; Orloff and Flannery 1992; Howell 1997; Smallwood and Thelander 2004). Concerns over the number of birds killed annually in turbine-related incidents have led to significant controversy.

APWRA Studies and Activities to Reduce Bird Kills

As a result of the controversy surrounding avian fatalities in the APWRA, and an appeal to the Alameda County Board of Supervisors of the approvals in 2003 and 2004 of 29 conditional use permits for the continued operation of wind power projects in the APWRA, in September 2005 the Board denied the appeal in part and approved the use permits, but attached substantially amended conditions of approval, including those CUPs for AWI's turbines. These conditions for approval were aimed at achieving major reductions in avian fatalities, and included the establishment of an Avian Wildlife Protection Program and Schedule (AWPPS), the formation of a Scientific Review Committee (SRC), and the formation of a monitoring team (MT) to monitor avian fatalities and report on the effectiveness of management actions taken to reduce fatalities.

The AWPPS included two major management actions to reduce avian fatalities: the identification and removal of high risk or hazardous turbines and the shutdown of turbines during the winter period when raptor use is highest. These actions are described in detail below.

The SRC provides independent review and expertise on research related to wind energy production and avian behavior and safety. To this end, the goals of the group are to provide a neutral forum for open dialogue among experts in the field with different perspectives, reach agreement on analysis and interpretation of data, and ensure sound and objective scientific review of avian safety strategies. To date the SRC has advised Alameda County and the wind power companies on actions to reduce turbine-related avian fatalities; these have included identification of hazardous turbines for removal or relocation and recommendations for the timing and duration of seasonal shutdowns. In addition, the SRC has directed the MT on study design, set study priorities, suggested analyses, and reviewed and commented on reports.

The MT implements the avian fatality monitoring program, analyzes data collected, and reports results in line with recommendations made by the SRC.

Seasonal Shutdown of Turbines

During the first 2 years of the monitoring program implemented in 2005, a crossover experiment was implemented to assess the effectiveness of shutting down turbines during the winter season as a means of reducing turbine-related avian fatalities. A *crossover design* is a sampling approach whereby a stratification of sampling units each receives the experimental treatment in sequence; such an approach is useful in cases with no suitable control groups. In this case, the APWRA was divided into north and south treatment units. Turbines in each unit were shut down for 2 months during the winter period in the 2005 bird year. (Results of the current monitoring program are presented on the basis of a “bird year” rather than a calendar year. A bird year is defined as the period October 1 through September 30 of the following year. Accordingly, the 2005 bird year is the period October 1, 2005 through September 30, 2006). Turbines in the northern treatment unit were shut down from November 1 to December 31, 2005, while turbines in the southern unit remained operational. Turbines in the southern treatment unit were shut down from January 1 to February 28, 2006, while turbines in the northern unit remained operational. The order of the shutdown was reversed during the winter of the 2006 bird year.

The SRC questioned the effectiveness of this sampling design, and the experiment was discontinued in February 2007. Information available at the time indicated that management strategies in place at that time would be insufficient to achieve a substantial reduction in avian mortality; as a result, the SRC recommended a 4-month seasonal shutdown.

However, at that time, the power companies would only agree to a 2-month APWRA-wide winter period turbine shutdown, which was implemented beginning in November 2007 (the 2007 bird year). Non-monitored turbines were shut down on November 1, 2007, and reactivated on January 1, 2008, while monitored turbines were shut down and reactivated in phase with the fatality sampling schedule to help associate fatalities with the correct treatment category—in other words, each monitored string of turbines was shut down immediately following its last search prior to the shutdown period. The shutdown of monitored turbines began on October 29, 2007, and was completed on November 29, 2007. Reactivation of monitored turbines began on January 10, 2008, and was completed on February 16, 2008.

The seasonal shutdown was extended to 3 months in the 2008 bird year. Non-monitored turbines were shut down on November 1, 2008, and reactivated on February 1, 2009. The shutdown of monitored turbines began on October 31, 2008, and was completed on December 2, 2008. Reactivation of monitored turbines began on February 2, 2009, and was completed on February 24, 2009.

The 3-month shutdown was extended to 3.5 months during the 2009 bird year, but the shutdown of all turbines was completed simultaneously so that the entire APWRA would experience as complete a shutdown as possible (i.e. the shutdown was not phased). Thus all turbines were shut down from November 1 through February 14. This procedure was repeated in the 2010 and 2011 bird years.

Identification and Removal of High Risk and Hazardous Turbines

Two major efforts have been made to identify turbines whose permanent shutdown, removal, or relocation would reduce turbine-related avian fatalities. Smallwood and Spiegel (2005a, 2005b, and 2005c) examined associations among the location of turbine-related avian fatalities, environmental variables, and various physical attributes of specific turbines to assess the collision threat posed by those turbines. Only those turbines in the APWRA with the requisite data (i.e., those studied in the baseline study by Smallwood and Thelander [2004]) were evaluated. Based on these associations, turbines were ranked based on their perceived risk to birds, from 1 (highest risk) to 5. Smallwood and Spiegel concluded that the permanent shutdown of turbines ranked 1–3 would significantly reduce avian fatalities. This subset of turbines consisted of 152 turbines with a total capacity of 15.23 MW.

At the request of Alameda County and the power companies, in December 2007 the SRC conducted a field review of turbines in strings with relatively high numbers of turbine-related avian fatalities (APWRA Scientific Review Committee 2007). Based on the configuration and environmental settings of these turbines, the SRC ranked them from 2.5 to 10 in increments of 0.5 based on their perceived hazard to birds, with 10 being the most hazardous. Based on this work, the SRC recommended the removal of 331 turbines ranked 8–10 with a combined generation capacity of 24.9 MW (APWRA Scientific Review Committee 2008).

Settlement Agreement for APWRA Areas Outside of AWI

In 2007, the CUPs and more specifically the AWPPS was modified by a Settlement Agreement to end litigation initiated by environmental groups against Alameda County. This Agreement included a goal to reduce, by November 1, 2009, turbine-related fatalities for American kestrel, burrowing owl, golden eagle, and red-tailed hawk by 50% from an estimate of annual raptor fatalities based on the work of Smallwood and Thelander (2004: Table 3-11). However, although AWI was part of the discussions leading to the Settlement Agreement, it did not agree to its terms and therefore was not a Settling Party, and its turbines are not subject to the amended CUPs or the AWPPS, including the goal of reducing avian mortality by 50%.

The baseline estimate of 1,300 raptors used in the Settlement Agreement was an estimate of APWRA-wide annual fatalities for all raptors—not specific to the four focal species associated with the 50% reduction in the Settlement Agreement (i.e., American kestrel, burrowing owl, golden eagle, and red-tailed hawk). The corresponding value for the four focal species would have been 1,130 fatalities per year.

The latest findings of the MT were released in November of 2012. The MT presented various measures of the reduction in avian fatalities over time, including one measure that indicated a 51% reduction in fatalities of the four focal species combined over an “alternative baseline” that was developed to deal with numerous issues associated with the original baseline. In December 2012, the SRC voted 3 to 2 to recommend that the Planning Director affirm to the County Board of Supervisors that the 50% reduction goal had been achieved.

3.2.3 Environmental Impacts

This section describes the methods and assumptions used to determine the direct and indirect impacts of the proposed project and identifies the thresholds used to conclude whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts accompany each impact discussion, where appropriate.

3.2.3.1 Impacts Methods

This biological impact analysis is based on professional standards and information cited throughout the section.

The key effects were identified and evaluated qualitatively and quantitatively based on the environmental characteristics of the study area and the magnitude, intensity, and duration of activities related to operation and decommissioning activities associated with the proposed project.

For decommissioning existing AWI facilities, the potential for direct and indirect impacts on sensitive biological resources (i.e., special-status species, waters of the United States, waters of the state, and sensitive natural communities) was qualitatively evaluated based on the species or habitats known to occur within the study area. Although the proposed project would only affect a maximum of 91 acres of previously disturbed land within the 14,196-acre study area, site-specific information on the facilities to be removed and the sequence of removal are not known at this time. Therefore, a general analysis was conducted for impacts on biological resources associated with these decommissioning activities.

As discussed in Chapter 2, a key assumption when considering the effects of the project is the baseline conditions. CEQA Guidelines Section 15125 authorizes the lead agency to choose a baseline that most accurately reflects actual conditions, in cases where choosing the existing physical conditions at a single point in time would be misleading or misrepresent the potential impacts of the proposed project. For avian impacts, as for most resource areas in this document, the County has determined that the baseline is most accurately represented by the No Project Alternative, which would result in substantially reduced wind turbine operations compared to existing conditions. In the majority of studies conducted to date of turbine-related avian fatalities in the APWRA, the magnitude of avian impacts is assumed to be proportional to the installed capacity of the turbines. That is, the more the turbines are generating energy, the greater the number of turbine-related avian fatalities. Utilizing a baseline that reflects the current permitted parameters and conditions will allow the best and clearest comparison between the proposed project, the No Project Alternative, and the other alternatives.

The County has determined not to use the physical conditions that existed as of the time the NOP was published for the project (May 31, 2012) for its baseline for avian impacts because that baseline would be misleading. Choosing the baseline that reflected the physical conditions at the time the NOP was published would assume that all 828 existing turbines would be operating full time for 8.5

months of the year through the year 2018. This would dramatically overstate the currently permitted activities and would thus result in a baseline estimate of avian fatalities that would be much higher than is truly representative of the project's impact. More specifically, currently permitted turbines (the No Project Alternative) would have an aggregate total installed generation capacity rating of 116.5 MW over their 5-year life, accounting for seasonal shutdowns and phased decommissioning. By comparison, a baseline derived from the physical conditions at the time the NOP was published, applied over the same 5-year period, would have an aggregate total nameplate capacity of 311.0 MW.

Thus, avian impacts and the resulting significance conclusions are determined on the basis of the No Project Alternative as the baseline. For operational changes associated with the proposed project, the avian impact analysis is based on the most recent published results of avian fatality studies conducted within the APWRA during bird years 2005–2010 as well as a 3-year average from 2008–2010 (ICF 2012 and ICF file information), and the resulting per-MW avian impact estimates that have been derived.

3.2.3.2 Thresholds of Significance

Based on professional practice, the County of Alameda Environmental Checklist, and State CEQA Guidelines, Appendix G (14 CCR 15000 et seq.), the analysis that follows serves to reach determinations whether the proposed project would:

- Have a substantial adverse effect, either directly or through habitat modifications, including designated critical habitat, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS, including substantially reducing the number or restricting the range of an endangered, rare, or threatened species.
- Have a substantial adverse effect on any sensitive natural community identified in local or regional plans, policies, or regulations, or by CDFW or USFWS.
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA, including marsh, vernal pool, and coastal wetlands, through direct removal, filling, hydrological interruption, or other means.
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of wildlife nursery sites.
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
- Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.

The thresholds of significance used are also based on professional practice and state and federal guidelines on adverse effects on biological and wildlife resources. As defined by Section 15064.7 of the CEQA Guidelines, such thresholds are “an identifiable quantitative, qualitative or performance level of a particular environmental effect, non-compliance with which means the effect will normally be determined to be significant by the agency and compliance with which means the effect normally will be determined to be less than significant.”

3.2.3.3 Impact Assumptions

Impacts on biological resources are based on the following project assumptions.

- Operational changes would result in increased avian fatalities due to operation schedule modifications that would alter the timing and duration of wind turbine operations.
- Ground disturbing activities associated with the project are limited to decommissioning activities, which are expected to occur over a 1- to 2-year period.
- All ground disturbing activities would occur during dry weather.
- All impacts associated with decommissioning would be temporary.
- The estimated duration of ground disturbance at each turbine foundation site would be 1 day.
- Existing access roads used for maintenance of AWI facilities will be used during dismantling activities and no improvements on those existing roads are planned.
- No new access roads would be constructed.
- Existing facilities and proposed work areas are limited to upland habitat; no activities will occur within aquatic habitat.
- No suitable habitat for special-status fish species (including green sturgeon, Delta smelt, central California coastal steelhead, and Central Valley steelhead) or designated critical habitat occurs in the study area. Therefore, potential impacts on these species and critical habitat are not discussed in this impact analysis.
- Avian fatalities are directly proportional to the operational period of wind turbines, calculated as the cumulative installed generation capacity.

3.2.3.4 Impact Mechanism

Biological resources could be directly or indirectly affected during decommissioning and reclamation activities associated with the proposed project. Impacts on biological resources fall into the three categories: temporary, short-term, and long-term.

- A *temporary* impact would occur only during decommissioning or subsequent restoration.
- A *short-term* impact would last from the time decommissioning ceases to 3 years after decommissioning or subsequent restoration.
- A *long-term* impact would last longer than 3 years after decommissioning or subsequent restoration. In some cases, a long-term impact could be considered a permanent impact.

Some activities that could cause impacts on biological resources are listed below.

- Increasing cumulative turbine operation time, particularly during the winter period.
- Excavation to support removal of turbine foundations, transformer pads, and substations.
- Temporary stockpiling and side-casting of soil, construction materials, or other construction wastes.
- Use of existing dirt and gravel access roads.
- Short-term decommissioning-related noise from equipment.

These impact mechanisms were used to assess project-related impacts on biological resources in the project area.

3.2.3.5 Impacts and Mitigation Measures

Project impacts on biological resources could occur as a result of operational changes (for avian species) and during decommissioning activities in cases where special status species and/or sensitive habitats occur within the decommissioning work areas. Decommissioning would largely entail reclaiming and restoring areas that are generally already compacted, graveled, or contain impervious surfaces (i.e. concrete foundations) to a pre-project state, which could result in some impacts on species and habitats, but is expected to have an overall benefit to habitats in the project area. While in general, many of the areas that would be disturbed from reclamation activities are previously disturbed, the disturbance occurred many years ago when the turbines were originally installed, and thus the land has largely reverted to a “natural” state, with habitat for special-status species located immediately adjacent to the turbine foundations in some cases. Additionally, removal of the existing project facilities, for example roads, may also require some grading just outside the graveled or compacted area. Potential impacts are discussed separately below, along with proposed mitigation to reduce potential impacts to a less-than-significant level.

The mitigation measures described below for potential impacts on special-status plants and wildlife are limited to avoidance and minimization measures (AMMs) designed to avoid direct impacts and avoid and/or minimize indirect impacts on these species. Because the proposed project would not result in permanent removal of species’ habitats, and should result in a net increase in suitable habitat through the reclamation of roads and other compacted surfaces, no compensatory mitigation is proposed. The mitigation measures provided in this section are generally consistent with the AMMs identified in the EACCS. AWI will contact agencies as part of the environmental compliance process to determine if other mitigation measures for potential impacts on state- and federally listed species and habitats supporting special-status species are necessary. Additional mitigation measures may be necessary as conditions of permits (e.g., ESA Section 7 Incidental Take Statement, CESA Section 2081 Incidental Take Permit), if obtained by the applicant.

Table 3.2-3 provides an estimate of the maximum acreages of impact associated with activities that would result in ground disturbance at each project facility. Reclamation of roads will largely be left to the discretion of individual landowners, and although some have apparently expressed an interest in leaving roads in place to facilitate ranching or other activities, the exact location and number of roads to be left in place remains unknown at this time. Therefore, for the purposes of impact assessment, it is assumed that all roads would be reclaimed as shown in the following table.

Table 3.2-3. Summary of Impact Acreages Associated with Removal of Project Facilities

Facilities	Required Work Area	Number of Units	Total Area (approx. acres)
Existing turbine tower foundation areas ^a	1,570 square feet per tower	920 foundations	33.0
Substations ^b	0.75 acre	4 substations	3.0
Pad mount transformers	100 square feet per unit	58 transformers	0.1
Access roads ^c	25 square feet disturbed area per linear foot of road	96,250 linear feet	55.0
Meteorological towers	0.01 acre per tower	17 towers	0.2
Total			91.3

^a The existing tower foundation area includes the area between the access roads and the turbines, the turbine foundations, and the disturbed area under and around the turbines.

^b Substations are shared with other APWRA wind facility operators and reclamation may not be the entire responsibility of AWI.

^c Reclamation of access roads will be at the discretion of the landowner and some landowners have expressed a desire to leave roads in place. Therefore, it is expected that total acreage of disturbance may be less than the estimates shown.

Impact BIO-1: Potential to cause a substantial adverse effect, either directly or through habitat modifications, on special-status species (Significant; Significant and unavoidable for avian species)

Decommissioning Activities

Following cessation of turbine operations, the reclamation and removal of existing AWI facilities (i.e., turbine towers, foundations, substations, transformers, meteorological towers, and access roads) would result in ground disturbance of up to 91 acres within the 14,196-acre study area. These activities could result in direct and indirect impacts on special-status plants and wildlife that occur or could occur within the study area (Tables 3.2-1 and 3.2-2). The overall magnitude of impacts on special-status species would be small because the majority of the 91 acres of potential area of disturbance is made up of roadways, some of which could be left in place at individual landowner request. The actual area disturbed during decommissioning would be limited to the individual 1,570-square-foot footprints associated with each turbine tower and within previously disturbed areas along ridgelines. These impacts would be short term (up to 2 years) and in many cases would be limited to 1 day for a particular work area (i.e., foundation removal and reclamation).

Reclamation of habitats at existing facilities is expected to include removing concrete footings to a 3-foot depth, removing gravel, filling any holes or trenches with native soil, and reseeding. Reclamation of the site would restore the existing area to a more natural state, which would have an overall benefit to both plant and wildlife species. However, if a special-status species is present within the designated work area, the species could be adversely affected (individual plants could be removed or wildlife species harmed or killed).

Special-Status Plants

The proposed project would not result in the permanent removal of habitat. Temporary disturbance associated with excavation and grading activities could remove special-status plants if they are present within the decommissioning work area. Loss of special-status plant species may be considered significant under CEQA and regulated by CDFW if the loss is substantial and could affect the long-term survival of the affected population. Suitable habitat for 27 special-status plants occurs throughout the study area (Table 3.2-1). Three special-status plants have been previously identified within the study area (brittlescale, Congdon's tarplant, and round-leaved filaree). Because the study area (14,196 acres) is larger than the maximum impact area (91 acres) and because the precise locations of facilities to be decommissioned (removed) are not known at this time, blooming-period surveys have not yet been conducted for special-status plant species with potential to occur in the study area. While a net increase in habitat is expected from road removal and other reclamation, the extent of any special-status plants in the decommissioning work areas is unknown, and loss of special-status plants would be a potentially significant impact. Implementing Mitigation Measures BIO-1 through BIO-7 would avoid and minimize impacts on special-status plants and reduce this impact to a less-than-significant level.

Special-Status Wildlife

Suitable habitat for 23 special-status wildlife species occurs throughout the APWRA (Table 3.2-2). Six of the 23 wildlife species have been previously identified within the APWRA (California tiger salamander, California red-legged frog, western pond turtle, western burrowing owl, American badger, and San Joaquin kit fox). Many of the species identified in Table 3.2-2 have potential to occur in annual grassland habitat, which is the dominant habitat type present in the APWRA where existing facilities are located. It is likely that decommissioning work areas are adjacent to and/or may overlap with habitats that could be used by special-status wildlife, either as residents or during migration/movement through the open grassland landscape. Although the proposed project would not result in the permanent removal of habitat, excavation and grading activities could result in the temporary disturbance or direct mortality of special-status wildlife (including longhorn fairy shrimp, vernal pool fairy shrimp, California red-legged frog, California tiger salamander, western pond turtle, coast horned lizard, San Joaquin whipsnake, Alameda whipsnake, western burrowing owl, northern harrier, American badger, and San Joaquin kit fox) if they are present within, move through, or are adjacent to the decommissioning work area. Loss of special-status wildlife species may be considered significant under CEQA if the loss is substantial and could affect the long-term survival of the affected population. Because the presence and extent of any special-status wildlife in the decommissioning work area are unknown, this would be a potentially significant impact. Project impacts that result in take of federally and state-listed species would also violate the ESA and CESA. Implementing Mitigation Measures BIO-1 through BIO-5 and BIO-8 through BIO-15 would avoid and minimize impacts on special-status wildlife and reduce impacts associated with decommissioning to a less-than-significant level.

Mitigation Measure BIO-1: Implement General Protection Measures to Avoid and Minimize Impacts on Sensitive Biological Resources

The following EACCS general AMMs will be implemented prior to, during, and following decommissioning and reclamation activities to ensure that sensitive biological resources (i.e., special-status species, waters of the United States, waters of the state, and sensitive natural communities) are not adversely affected by project implementation.

- Employees and contractors performing decommissioning and reclamation activities will receive environmental sensitivity training. Training will include review of environmental laws and AMMs that must be followed by all personnel to reduce or avoid effects on covered species during construction activities.
- Environmental tailboard trainings will take place on an as-needed basis in the field. These trainings will include a brief review of the biology of the covered species and guidelines that must be followed by all personnel to reduce or avoid negative effects on these species during decommissioning and reclamation activities. Directors, managers, superintendents, and the crew leaders will be responsible for ensuring that crewmembers comply with the guidelines.
- Contracts with contractors, construction management firms, and subcontractors will obligate them to comply with these requirements and AMMs.
- The following will not be allowed at or near work sites for covered activities: trash dumping, firearms, open fires (such as barbecues) not required by the activity, hunting, and pets (except for safety in remote locations).
- Vehicles and equipment will be parked on pavement, existing roads, and previously disturbed areas to the extent practicable.
- Offroad vehicle travel will be avoided.
- Vehicles will not exceed a speed limit of 15 mph on unpaved roads within natural land cover types, or during offroad travel.
- Vehicles or equipment will not be refueled within 100 feet of a wetland, stream, or other waterway unless a bermed and lined refueling area (i.e., a created berm made of sandbags or other removable material) is constructed.
- Vehicles will be washed only at approved areas. No washing of vehicles will occur at job sites.
- To discourage the introduction and establishment of invasive plant species, seed mixtures and straw used within natural vegetation will be either rice straw or weed-free straw.
- Pipes, culverts, and similar materials greater than 4 inches in diameter will be stored so as to prevent wildlife species from using these as temporary refuges, and these materials will be inspected each morning for the presence of animals prior to being moved.
- Erosion control measures will be implemented to reduce sedimentation in nearby aquatic habitat when activities are the source of potential erosion. Plastic monofilament netting (erosion control matting) or similar material containing netting will not be used at the project. Acceptable substitutes include coconut coir matting or tackified hydroseeding compounds.
- Material will be stockpiled only in areas that do not support special-status species or sensitive habitats.
- Grading will be restricted to the minimum area necessary around each turbine to accomplish the restoration goals.

- Prior to ground-disturbing activities in sensitive habitats, decommissioning and reclamation activity boundaries and access areas will be flagged and temporarily fenced during those activities to reduce the potential for vehicles and equipment to stray into adjacent habitats.
- Trenches and pits will be backfilled as soon as possible. Trenches that are left open overnight will be searched each day prior to decommissioning and reclamation activities to ensure no covered species are trapped. Earthen escape ramps will be installed at intervals prescribed by a qualified biologist. Work will not continue until trapped animals have moved out of open trenches.
- These measures will be incorporated into contract specifications and implemented by the program contractor. In addition, AWI will ensure that the contractor incorporates all permit conditions into construction specifications.

Mitigation Measure BIO-2: Restore Disturbed Annual Grasslands

Prior to any ground disturbance, a qualified biologist will prepare a Grassland Restoration Plan in coordination with CDFW, to ensure that temporarily disturbed annual grasslands and areas planned for the removal of permanent roads and turbine pad areas are restored to pre-project conditions. The Grassland Restoration Plan will include measures for temporary topsoil stockpiling where appropriate, seeding with native species (hydroseeding is acceptable), and if recommended based on site-specific conditions, seeding with annual or sterile cover crops to ensure erosion control. The species used will include native grasses and species not listed on the California Invasive Plant Council's (Cal-IPC's) *Invasive Plants of California's Wildlands*.

The plan will include a requirement to monitor restoration areas annually (between March and May) in years 1–3 following the year of restoration. At the end of 3 years, the restoration will be considered successful if no bare areas larger than 250 square feet are present, the site contains a mixture of native and non-native plant species, and no invasive species (unless they are already present in the surrounding area) are present. Remedial measures included in the plan will include supplemental seeding, weed control, etc. as determined necessary to achieve the long term success criteria. Monitoring may be extended for 2 additional years if necessary to achieve the success criteria. Other performance standards may also be required as they relate to special-status species habitat; these will be identified in coordination with CDFW and included in the plan. AWI will provide evidence that CDFW has reviewed and approved of the Grassland Restoration Plan. Additionally, AWI will provide annual monitoring reports to the County by August 1 of each year, summarizing the monitoring results and any remedial measures implemented (if any are necessary).

Mitigation Measure BIO-3: Conduct Preconstruction Surveys for Potentially Sensitive Habitat

Prior to ground disturbing decommissioning activities, a qualified biologist (as determined by Alameda County) will conduct field surveys within decommissioning work areas and the immediately adjacent areas to determine the potential presence of habitat for special-status plant and wildlife species. AWI will submit a report documenting the survey results to Alameda County for review and approval, prior to conducting any decommissioning activities. The report will include the location and description of all proposed work areas (such as whether or not landowners have chosen to retain roads on their lands), the location and description of all suitable habitat for special-status plant and wildlife species, and the location and description of

other sensitive habitats (e.g., vernal pools or wetlands). Additionally, the report will outline where additional species and/or habitat-specific mitigation measures (as required under Mitigation Measures BIO-4 through BIO-15) are required.

Mitigation Measure BIO-4: Install Temporary Flagging or Barrier Fencing to Protect Sensitive Biological Resources Adjacent to the Work Area

If required pursuant to Mitigation Measure BIO-3, a qualified biologist (as determined by Alameda County) will identify and flag or fence sensitive biological habitat onsite to ensure it is avoided during decommissioning and reclamation activities. Sensitive resources that occur in and adjacent to the decommissioning and reclamation area may include sensitive natural communities, aquatic resources (which also provide suitable habitat for federally listed invertebrates and amphibians), special-status species populations, burrows that could be used by special-status wildlife, special-status plants, and active bird or raptor nests.

Mitigation Measure BIO-5: Retain a Biological Monitor during Ground Disturbing Activities within Environmentally-Sensitive Habitat Areas

If required pursuant to Mitigation Measure BIO-3, AWI will retain a qualified biologist (as determined by Alameda County) to conduct periodic monitoring of decommissioning and reclamation activities that occur adjacent to sensitive biological resources (e.g., special-status species, sensitive vegetation communities, wetlands). The biologist will assist the crew, as needed, to comply with all project implementation restrictions and guidelines. In addition, the biologist will be responsible for ensuring that AWI or its contractors maintain exclusion areas adjacent to sensitive biological resources, and for documenting compliance with all biological resources-related mitigation measures.

Mitigation Measure BIO-6 Retain Qualified Botanists to Conduct Floristic Surveys for Special-Status Plants during Appropriate Identification Periods

If required pursuant to Mitigation Measure BIO-3, and prior to ground disturbance associated with decommissioning activities, qualified botanists (i.e., botanists with prior experience conducting floristic surveys and approved by Alameda County) will survey areas proposed for ground disturbance and an additional 100 feet surrounding the areas proposed for ground disturbance, to document the presence of special-status plants. In the event that reclamation of one or more foundation sites does not include removal of tower foundations or other ground-disturbing activities, no floristic surveys will be necessary for those individual sites. The botanists will conduct floristic surveys that follow the CDFW botanical survey guidelines (California Department of Fish and Game 2009). All plant species observed will be identified to the level necessary to determine whether they qualify as special-status plants or are plant species with unusual or significant range extensions. The field surveys are to be conducted when special-status plants that could occur in the area are evident and identifiable, generally during the blooming period. To account for different special-status plant identification periods, one or more series of field surveys will be required in spring and summer preceding decommissioning activities.

If any special-status plants are identified during the surveys, the botanist will photograph and map locations of the plants, document the location and extent of the special-status plant population on a CNDDDB Survey Form, and submit the completed survey form to the CNDDDB.

Mitigation Measures BIO-1 (general protection measures), BIO-2 (restoration of annual grassland), BIO-4 (exclusion zones), BIO-5 (biological monitoring), and BIO-7 (avoid special-status plants) will be implemented as necessary to avoid and minimize impacts on special-status plants.

Mitigation Measure BIO-7: Avoid and Minimize Potential Impacts on Special-Status Plants

If necessary pursuant to the results of surveys conducted under Mitigation Measure BIO-6, AWI will modify the work area to the extent feasible to avoid indirect or direct impacts on special-status plants. If complete avoidance of special-status plants is not feasible, disturbance within the work area will be limited to the minimum area necessary to perform required activities and a qualified biologist will monitor decommissioning and reclamation activities to ensure that the contractor is implementing general protection measures (Mitigation Measure BIO-1), restoration of annual grassland (Mitigation Measure BIO-2), and maintaining exclusion zones (Mitigation Measure BIO-4) to minimize impacts on the species.

Mitigation Measure BIO-8: Avoid Disturbance of Vernal Pool Fairy Shrimp and Longhorn Fairy Shrimp

If required pursuant to Mitigation Measure BIO-3, and where suitable habitat for vernal pool fairy shrimp and/or longhorn fairy shrimp is identified near proposed work areas, the following AMMs will be implemented to ensure that the proposed project does not have an adverse impact on vernal pool fairy shrimp and longhorn fairy shrimp.

- Ground disturbance will be avoided from the first day of the first significant rain (1 inch or greater) until June 1, or until pools remain dry for 72 hours and no significant rain is forecast on the day of such ground disturbance.
- If vernal pools, clay flats, alkaline pools, ephemeral stock tanks, sandstone pools, or roadside ditches are present within the work area or within 250 feet of the work area, a qualified biologist will stake and flag an exclusion zone prior to decommissioning and reclamation activities. The exclusion zone will be fenced with orange construction and erosion control fencing.
- The exclusion zone will encompass the maximum practicable distance from the worksite and at least 250 feet from the aquatic feature wet or dry.
- No herbicide will be applied within 100 feet of exclusion zones, except when applied to cut stumps or frilled stems or injected into stems. No broadcast applications will be applied.
- Avoid modifying or changing the hydrology of the habitat.

Mitigation Measure BIO-9: Avoid Disturbance of California Tiger Salamander, California Red-Legged Frog, and Foothill Yellow-Legged Frog.

If required pursuant to Mitigation Measure BIO-3, and where suitable habitat for California tiger salamander, California red-legged frog, and/or foothill yellow-legged frog is identified near proposed work areas, the following AMMs will be implemented to ensure that the proposed project does not have an adverse impact on California tiger salamander, California red-legged frog, and/or foothill yellow-legged frog.

- A qualified biologist will conduct preconstruction surveys prior to ground-disturbing activities associated with decommissioning. If individuals are found, work will not begin until they are moved out of the decommissioning and reclamation activities zone to a USFWS/CDFW-approved relocation site.
- Where applicable, barrier fencing will be installed around the worksite to prevent amphibians from entering the work area. Barrier fencing will be removed within 72 hours of completion of work.
- No monofilament plastic will be used for erosion control.
- Work crews or onsite biological monitor will inspect open trenches in the morning and evening for trapped amphibians.
- A qualified biologist possessing a valid ESA Section 10(a)(1)(A) permit or who is USFWS-approved under an active biological opinion, will be contracted to trap and to move California tiger salamanders or California red-legged frogs to nearby suitable habitat if individuals of these species are found onsite (including animals trapped in a trench) and cannot or do not move offsite on their own.
- Work will be avoided within suitable habitat during rain events or within 48 hours following a rain event (defined as more than 0.25 inch of rain within a 24 hour period)

Mitigation Measure BIO-10: Avoid Disturbance of Alameda Whipsnake

If required pursuant to Mitigation Measure BIO-3, and in areas determined by the preconstruction surveys as likely to contain suitable habitat for Alameda whipsnake near proposed work areas, the following AMMs will be implemented to ensure that the proposed project does not have an adverse impact on Alameda whipsnake.

- No monofilament plastic will be used for erosion control.
- Where applicable, barrier fencing will be used to exclude snakes from the work area. Barrier fencing will be removed within 72 hours of completion of work.
- Work crews or on-site biological monitor will inspect open trenches in the morning and evening for trapped reptiles.
- Ground disturbance in suitable habitat will be minimized.
- A qualified biologist possessing a valid ESA Section 10(a)(1)(A) permit or who is USFWS-approved under an active biological opinion, and approved by CDFW will be contracted to trap and to move Alameda whipsnake to nearby suitable habitat if individuals of the species are found onsite (including animals trapped in a trench) and cannot or do not move offsite on their own.

Mitigation Measure BIO-11: Avoid Disturbance of Coast Horned Lizard, San Joaquin Whipsnake, and Western Pond Turtle

If required pursuant to Mitigation Measure BIO-3, any reptile found within the active work area will be avoided and allowed to passively move out of the active decommissioning and reclamation zone. Implementing general protection measures (Mitigation Measure BIO-1) and AMMs for Alameda whipsnake (Mitigation Measure BIO-10) will ensure that the proposed

project does not result in adverse impacts on coast horned lizard, San Joaquin whipsnake, and western pond turtle.

Mitigation Measure BIO-12: Avoid Disturbance of San Joaquin Kit Fox

If required pursuant to Mitigation Measure BIO-3, and in areas determined by the preconstruction surveys as likely to contain suitable habitat for San Joaquin kit fox near proposed work areas, the following AMMs will be implemented to ensure that the proposed project does not have an adverse impact on San Joaquin kit fox.

- A qualified USFWS- and CDFW-approved biologist will conduct a preconstruction survey no more than 30 days before the beginning of ground disturbance or any activity likely to impact San Joaquin kit fox. Written results of the surveys will be submitted to USFWS within 1 week of the completion of surveys and prior to the beginning of ground disturbance and/or decommissioning activities likely to affect San Joaquin kit fox. This measure will be implemented in all offroad work areas. The biologist will survey the proposed work area and a 200-foot buffer around the work area to identify suitable dens. The biologist will conduct den searches by systematically walking transects spaced 30–100 feet apart through the survey area. Transect distance should be determined based on the height of vegetation such that 100 percent visual coverage of the project area is achieved. If dens are found during the survey, the biologist will map the location of each den and record the size and shape of the den entrance; the presence of tracks, scat, and prey remains; and if the den was recently excavated. The biologist will also record information on prey availability (e.g., ground squirrel colonies). The status of the den as defined by USFWS should also be determined and recorded. Dens will be classified in one of the following four den status categories.
 - **Potential den:** Any subterranean hole within the species' range that has entrances of appropriate dimensions for which available evidence is sufficient to conclude that it is being used or has been used by a San Joaquin kit fox. Potential dens comprise: (1) any suitable subterranean hole; or (2) any den or burrow of another species (e.g., coyote, badger, red fox, or ground squirrel) that otherwise has appropriate characteristics for San Joaquin kit fox use.
 - **Known den:** Any existing natural den or artificial structure that is used or has been used at any time in the past by a San Joaquin kit fox. Evidence of use may include historical records; past or current radio telemetry or spotlighting data; San Joaquin kit fox signs such as tracks, scat, and/or prey remains; or other reasonable proof that a given den is being or has been used by a San Joaquin kit fox.
 - **Natal or pupping den:** Any den used by San Joaquin kit fox to whelp and/or rear their pups. Natal/pupping dens may be larger with more numerous entrances than dens occupied exclusively by adults. These dens typically have more San Joaquin kit fox tracks, scat, and prey remains in the vicinity of the den, and may have a broader apron of matted dirt and/or vegetation at one or more entrances. A natal den, defined as a den in which San Joaquin kit fox pups are actually whelped but not necessarily reared, is a more restrictive version of the pupping den. In practice, however, it is difficult to distinguish between the two; therefore, for purposes of this definition either term applies.

- **Atypical den:** Any artificial structure that has been or is being occupied by a San Joaquin kit fox. Atypical dens may include pipes, culverts, and diggings beneath concrete slabs and buildings.
- After preconstruction den searches and before the commencement of decommissioning and reclamation activities, exclusion zones will be established as measured in a radius outward from the entrance or cluster of entrances of each den. Decommissioning activities will be prohibited or greatly restricted within these exclusion zones. Only essential vehicular operation on existing roads and foot traffic should be permitted. All other decommissioning and reclamation activities, vehicle operation, material and equipment storage, and other surface-disturbing activities will be prohibited in the exclusion zones. Barrier fencing will be removed within 72 hours of completion of work. Exclusion zones will be established as follows:
 - **Potential and atypical dens:** A total of four or five flagged stakes will be placed 50 feet from the den entrance to identify the den location.
 - **Known den:** Orange construction barrier fencing will be installed between the decommissioning and reclamation work area and the known den site at a minimum distance of 100 feet from the den. The fencing will be maintained until all decommissioning- and reclamation-related disturbances have ceased. At that time, all fencing will be removed to avoid attracting subsequent attention to the den.
 - **Natal/pupping den:** USFWS will be contacted immediately if a natal or pupping den is discovered at or within 200 feet from the boundary of the decommissioning and reclamation area.
 - In cases where avoidance is not a reasonable alternative, limited destruction of potential San Joaquin kit fox dens will be allowed as follows. Potential dens can be removed by careful hand excavation by a USFWS-approved biologist or under the supervision of a USFWS-approved biologist, after the dens have been monitored for 3 days with tracking medium or a remote sensor camera and determined to be vacant of San Joaquin kit foxes. If, during excavation or monitoring, a potential den is determined to be currently or previously used (e.g., San Joaquin kit fox sign found inside) by San Joaquin kit fox, then destruction of the den or decommissioning and reclamation activities in that area will cease and USFWS will be notified immediately.
- Vehicle traffic will be restricted to established roads, decommissioning and reclamation areas, and other designated areas.
- Grading activities will be designed to minimize or eliminate effects on rodent burrows. Areas with high concentrations of burrows and large burrows suitable for San Joaquin kit fox dens will be avoided by grading activities to the maximum extent possible. In addition, when concentrations of burrows or large burrows are observed within the site, these areas will be staked and flagged to ensure work crew personnel are aware of their location and to make sure they avoid these areas.

Mitigation Measure BIO-13: Avoid Disturbance of American Badger

If required pursuant to Mitigation Measure BIO-3, and where suitable habitat for American badger is identified near proposed work areas, preconstruction surveys will be conducted in conjunction with the San Joaquin kit fox preconstruction surveys (Mitigation Measure BIO-12).

Any occupied or potentially occupied badger den will be avoided by establishing an exclusion zone consistent with a San Joaquin kit fox potential burrow (i.e., four or five flagged stakes will be placed 50 feet from the den entrance).

Mitigation Measure BIO-14: Avoid Disturbance of Burrowing Owl

If required pursuant to Mitigation Measure BIO-3, and in areas determined by the preconstruction surveys as likely to contain suitable habitat for burrowing owls near proposed work areas, the following AMMs will be implemented to ensure that the proposed project does not have an adverse impact on burrowing owls.

- A qualified biologist will conduct preconstruction nesting bird and raptor survey prior to ground-disturbing activities. The survey area should encompass a 500-foot buffer around the proposed work area.
- Avoid all occupied burrowing owl burrows.
- If an active burrow is identified near a proposed work area and work cannot be conducted outside of the nesting season (March 15 to September 1), a no-activity zone will be established by a qualified biologist. The no-activity zone will be large enough to avoid nest abandonment and will at a minimum cover a 250-foot radius from the burrow.
- If burrowing owls are present at the site during the non-breeding season (September 2 through March 14), a qualified biologist will establish a no-activity zone of at least 150 feet.
- If the designated no-activity zone for either breeding or non-breeding owls cannot be established, an experienced burrowing owl biologist will evaluate site-specific conditions to develop a minimum buffer that minimizes the potential to affect the reproductive success of the owls. The site-specific buffer will consider the type and extent of the proposed activity occurring near the occupied burrow, the duration and timing of the activity, the sensitivity and habituation of the owls, and the dissimilarity of the proposed activity to background activities.

For buffers that are less than the recommended no-activity zones, an experienced burrowing owl biologist will monitor work within the no-activity zone to ensure that owls do not exhibit stress that could cause them to abandon their burrow or affect their reproductive success. If the biologist determines that the birds are being stressed, activities within the no-activity zone will cease until juvenile owls have fledged and/or owls have moved out on their own.

Mitigation Measure BIO-15: Avoid Disturbance of Nesting Migratory Birds and Raptors

If required pursuant to Mitigation Measure BIO-3, and in areas determined by the preconstruction surveys as likely to contain tree- and ground-nesting migratory birds and raptors near proposed work areas, the following AMMs will be implemented to ensure that the proposed project does not have an adverse impact on nesting migratory birds and raptors, including special-status birds with potential to occur in the study area (Table 3.2-2).

- A qualified biologist will conduct a preconstruction nesting bird and raptor survey prior to ground-disturbing activities. The survey area should encompass a 500-foot buffer around the proposed work area.

- If an active nest is identified near a proposed work area and work cannot be conducted outside of the nesting season (February 1 to September 1), a no-activity zone will be established by a qualified biologist. The no-activity zone will be large enough to avoid nest abandonment and will at a minimum cover a 50-foot radius from the nest. To minimize the potential to affect the reproductive success of the nesting pair, the extent of the no-activity zone will be developed based on the type and extent of the proposed activity in proximity to the nest, the duration and timing of the activity, the sensitivity and habituation of the species nesting, and the dissimilarity of the proposed activity to background activities.

Operational Changes

Operational changes under the proposed project would have effects on both common and special-status avian species. Alameda County, with the assistance of the established SRC, and through the MT, has been monitoring a large number of turbines in the APWRA, including a subset of the AWI turbines, since 2005. Monitoring to date has involved carcass searches for fatalities around turbines, and field studies and statistical analyses designed to accurately estimate the avian fatality rates (number of birds killed per megawatt or turbine) and total number of avian fatalities APWRA-wide. This is accomplished by adjusting the estimates for the number of carcasses that are not detected either because they are missed by searchers (searcher efficiency) or they are removed from the search area before searches have the opportunity to detect them (carcass removal rate). The most recent monitoring report covering the bird years 2005–2010 was published in November 2012. Based on the fatality rates in this report for old generation turbines, the relative magnitudes of the various alternatives can be estimated fairly well, although estimates for specific species may not be accurate due to variability throughout the APWRA in topography, geography, and species distributions. In general, however, the monitoring results allow a comparison of the possible effects of the proposed project on avian species.

Since 2007, Alameda County and the SRC have been focused on reducing impacts from existing operations under the terms of the Settlement Agreement. The agreement included a goal to reduce turbine-related fatalities for four focal species: American kestrel, burrowing owl, golden eagle, and red-tailed hawk. The rationale for focusing on this group of species was that they had some of the highest reported fatality rates, and a reduction in fatalities to this group would also have benefits to other species. While AWI is not subject to the Settlement Agreement, it has been subject to certain conditions outlined in the Settlement Agreement, for example, seasonal shutdown requirements.

Table 3.2-4 provides the anticipated avian species impacts under the proposed project (cumulative estimated totals) as calculated from the APWRA-wide fatality rate estimates (standardized on a per-MW basis). Average fatality rates are presented for all available monitoring years (2005–2010) as well as for recent monitoring years (2008–2010). The rates for recent monitoring years are presented in order to consider years in which more intensive efforts have been made to reduce avian mortality within the APWRA. As outlined in the table, several special-status avian species have had fatalities in the APWRA, for example, Swainson's hawk, white-tailed kite, and brown pelican; however the reported fatalities have been relatively few, often reported from only 1 or 2 individuals during all monitoring years. Additionally, species reported in the table below as having a zero average fatality rate do not necessarily represent zero fatalities; the data may just not be reported out to enough significant digits. The data suggest, however, that fatalities to these species are low, and the corresponding potential for impacts on them from the AWI project is also low. For example, the estimated per-MW fatality rate for Swainson's hawk is 0.001 birds per MW per year based on an average of monitoring years 2005–2010, and 0.000 birds per MW per year based on an average of

monitoring years 2008–2010, which equates to zero to less than one bird (0.24 bird) for the remaining life of the proposed project.

Table 3.2-4. Adjusted Species Fatality Rates for the Proposed Project Based on an Average Fatality Rate (Fatalities per Megawatt per year)

Species/Category	Average Fatality Rate (based on 2005–2010 monitoring results)	Average Fatality Rate (based on 2008–2010 monitoring results)	Proposed Project (Range of Cumulative Totals)
American kestrel	0.496	0.443	85.5–95.8
burrowing owl ¹	0.721	0.425	82.1–139.2
golden eagle ^{2, 3}	0.085	0.061	11.7–16.4
red-tailed hawk	0.449	0.286	55.2–86.7
Total Focal Species	1.751	1.215	234.5–338.1
barn owl	0.223	0.175	33.7–43.0
ferruginous hawk	0.004	0.002	0.3–0.8
great-horned owl	0.056	0.052	10–10.8
northern harrier ¹	0.009	0.004	0.8–1.8
peregrine falcon	0.003	0.000	0–0.5
prairie falcon	0.012	0.013	2.3–2.5
red-shouldered hawk	0.002	0.000	0–0.5
Swainson's hawk ⁴	0.001	0.000	0–0.2
turkey vulture	0.015	0.008	1.6–2.9
white-tailed kite ³	0.003	0.007	0.7–1.3
Total Raptors	0.329	0.261	50.4–63.5
American avocet	0.003	0.006	0.6–1.2
American coot	0.012	0.021	2.4–4.0
American crow	0.014	0.007	1.4–2.6
American pipit	0.019	0.015	2.9–3.7
barn swallow	0.016	0.020	3.1–3.9
black-necked stilt	0.002	0.000	0–0.3
Bonaparte's gull	0.001	0.000	0–0.3
Brewers blackbird	0.078	0.057	10.9–15.0
brown pelican ³	0.001	0.001	0.1–0.3
brown-headed cowbird	0.004	0.000	0–0.7
California gull	0.027	0.033	5.3–6.3
cliff swallow	0.027	0.017	3.3–5.1
common goldeneye	0.002	0.003	0.3–0.6
common poorwill	0.003	0.000	0–0.5
common raven	0.091	0.086	16.6–17.7
dark-eyed junco	0.004	0.008	0.8–1.6
European starling	2.213	2.303	427.3–444.8
golden-crowned sparrow	0.004	0.000	0–0.8
great blue heron	0.001	0.000	0–0.2
great egret	0.001	0.000	0–0.3
Hammonds flycatcher	0.011	0.000	0–2.2
horned lark	0.250	0.198	38.2–48.2

Species/Category	Average Fatality Rate (based on 2005–2010 monitoring results)	Average Fatality Rate (based on 2008-2010 monitoring results)	Proposed Project (Range of Cumulative Totals)
house finch	0.006	0.000	0–1.1
house sparrow	0.004	0.000	0–0.8
house wren	0.011	0.010	1.9–2.1
killdeer	0.021	0.022	4.1–4.3
lesser goldfinch	0.006	0.013	1.2–2.5
Lincolns sparrow	0.006	0.000	0–1.1
loggerhead shrike ¹	0.137	0.113	21.8–26.4
mallard	0.059	0.060	11.4–11.6
mountain bluebird	0.028	0.007	1.3–5.3
mourning dove	0.282	0.261	50.4–54.5
northern flicker	0.027	0.038	5.2–7.3
northern mockingbird	0.010	0.000	0–2.0
orange-crowned warbler	0.005	0.000	0–1.0
pied-billed grebe	0.003	0.000	0–0.5
red-winged blackbird	0.102	0.051	9.8–19.7
ring-billed gull	0.001	0.002	0.2–0.4
rock pigeon	2.198	2.383	424.5–460.2
rock wren	0.015	0.000	0–2.9
sandhill crane ^{2,3}	0.001	0.000	0–0.1
savannah sparrow	0.032	0.064	6.2–12.4
Says phoebe	0.008	0.007	1.4–1.5
spotted towhee	0.004	0.000	0–0.8
Swainson's thrush	0.013	0.008	1.5–2.5
Townsend's warbler	0.005	0.000	0–0.9
tricolored blackbird ¹	0.006	0.006	1.2–1.2
unidentified empidonax	0.001	0.000	0–0.2
unidentified warbler	0.002	0.000	0–0.5
violet-green swallow	0.003	0.000	0–0.6
warbling vireo	0.004	0.000	0–0.9
western gull	0.001	0.000	0–0.2
western meadowlark	1.998	1.753	338.6–385.9
western scrub-jay	0.006	0.000	0–1.2
western tanager	0.012	0.007	1.4–2.2
white-throated swift	0.006	0.000	0–1.2
wild turkey	0.002	0.000	0–0.3
Wilson's warbler	0.010	0.009	1.8–1.9
Total Non-raptors	7.818	7.592	1,466.1–1,509.6
Total All Birds	9.897	9.068	1,750.9–1,911.2

¹ California species of special concern² Protected under the Bald and Golden Eagle Protection Act and fully protected in California³ Fully protected in California⁴ Listed under the California Endangered Species Act⁵ Listed under the Federal Endangered Species Act

Under the No Project Alternative (i.e., the avian baseline condition), the project would continue to operate (albeit while reducing operations over time) and would continue to affect avian species until existing facility operations cease. Under the proposed project, operational changes would result in additional energy generation by essentially operating for more hours (translated to more installed capacity over time). Since there is a direct correlation between avian impacts and operating hours, there is also a direct correlation between avian impacts and months of operation, which is assumed to be equal to installed capacity (i.e., that installed capacity will be in operation to the greatest extent possible). As outlined in Table 3.2-5, the proposed project would result in additional avian mortality beyond what would occur under the baseline scenario.

As indicated in Table 3.2-5, under the proposed project, approximately 60% more fatalities (of all species) would be expected to occur when compared to the baseline conditions. This would result in additional impacts on the focal species addressed by Alameda County under the terms of the Settlement Agreement, including an additional 34–38 American kestrel fatalities, 33–55 burrowing owl fatalities, 5–7 golden eagle fatalities, and 22–34 red-tailed hawk fatalities (based on per-MW estimates extrapolated from the APWRA-wide estimated fatality rates) beyond what could be expected under baseline conditions.

Table 3.2-5. Comparison of Adjusted Species Fatality Totals of Four Focal Species and All Birds, Based on an Average Fatality Rate (Fatalities per Megawatt per year)

Species	Average fatalities per MW (2005–2010/2008–2010)	Projected number of fatalities under the proposed project	Projected number of fatalities under baseline conditions	Difference in number of fatalities comparing baseline to proposed project	Number of fatalities of proposed project with seasonal shutdowns	Difference in number of fatalities comparing baseline to proposed project with seasonal shutdowns
American kestrel	0.496/0.443	85.5–95.8	51.6–57.8	33.9–38.0	57.0–63.8	5.4–6.0
burrowing owl	0.721/0.425	82.1–139.2	49.5–84.0	32.6–55.2	54.7–92.8	5.2–8.8
golden eagle	0.085/0.061	11.7–16.4	7.1–9.9	4.6–6.5	7.8–10.9	0.7–1.0
red-tailed hawk	0.449/0.286	55.2–86.7	33.3–52.3	21.9–34.4	36.8–57.8	3.5–5.5
All birds ¹	9.897/9.068	1,750.9–1,911.2	1,056.4–1,153.0	694.5–758.2	1,167.0–1,273.74	110.6–120.7

MW = megawatt
¹ Includes focal species

To date, the extensive efforts of the public, wind operators, and the County have focused on reducing avian fatalities within the APWRA, primarily for the focal species. While the proposed project has a relatively short remaining operational period of approximately 2 years, implementing the proposed project would result in an increase in avian fatalities, including protected species such as golden eagle. Considering this context and the CEQA significance criteria, the proposed project will result in significant impacts on special-status avian species regulated under state and/or federal law, or

considered by the County to be important for management (i.e., focal species). The County has been operating for many years under the assumption that impacts on avian species from APWRA operations are “substantial” and need to be reduced. Since the proposed project would result in an increase in avian fatalities beyond those already occurring (under the avian baseline), and which are already considered substantial by the County and state and federal agencies, impacts from the proposed project would also be considered substantial and therefore significant under CEQA.

Numerous mitigation strategies have been suggested as possible measures that could be implemented in the future to help reduce impacts on avian species (ICF in prep). However, these measures have mostly focused on repowering projects (i.e., removal of the existing turbines and replacement with fewer but much larger new turbines). Previously proposed measures included focused turbine siting in the least-sensitive areas (e.g., away from steep slopes, notches or dips in ridges, canyons, etc.), use of new turbine designs that are shown to reduce avian collisions, and the discouragement of prey species near turbines. While these measures are potential strategies to reduce avian impacts from new projects, for the most part they do not apply to this proposed project, which involves the continued operation of an older project with already-sited turbines.

In general, mitigation options for significant impacts at an existing facility are limited to either operational modifications (i.e., shutdowns, removals) or offsite mitigation. The SRC has recently determined that seasonal shutdowns (3.5 months during the winter period November 1–February 15) are an effective method to reduce avian fatalities for at least some of the focal species for existing turbines in the APWRA. However, the SRC also acknowledges that evidence also shows that the winter seasonal shutdown may have an adverse impact on burrowing owls. Although the evidence is entirely correlative and circumstantial, it appears that removal of high-risk or hazardous turbines may also contribute to the reduction in fatalities of some of the focal species, particularly golden eagle.

With respect to offsite mitigation (compensatory mitigation), for example, the USFWS has published its *Draft Eagle Conservation Plan Guidelines* (USFWS 2011), and associated technical appendices updates (USFWS 2012), which suggest offsite mitigation methods to mitigate the unavoidable take of golden eagles (i.e., when all other avoidance and minimization measures have been implemented). Possible measures include, but are not limited to, habitat enhancements (such as prey enhancements), lead abatement programs, utility pole retrofits, and removal of other collision hazards (vehicles, electrical wires, towers, etc.). Each of these measures has potential benefits; however, quantification of those benefits is difficult and estimates contain a high degree of uncertainty. To date, the method recommended by USFWS is utility pole retrofits (changing the configuration of hazardous electrical poles to discourage perching and subsequent electrocutions of golden eagles). This method may in fact mitigate for golden eagle fatalities, and would likely have benefits for other large raptors such as red-tailed hawk. It likely would not provide benefits for smaller birds such as American kestrel, burrowing owl, or other migratory songbirds, which are not susceptible to the same type of electrocution hazard. Thus, in this particular case, a mitigation approach that includes seasonal shutdowns and compensatory mitigation appears to be the most viable mitigation strategy to reduce impacts.

The following mitigation measures could reduce, but would not eliminate, the effects of the proposed project. Even after implementation of these mitigation measures, the impacts on avian species would remain **significant and unavoidable**.

Mitigation Measure BIO-16: Implement Seasonal Shutdowns to Reduce Avian Fatalities

In order to reduce the potential impacts of the proposed project on avian species, AWI will implement seasonal shutdowns on all turbines for the remaining operational period. Turbines will be turned off on November 1 each year and will remain off until February 15 of the following year. No operational modifications will occur during the February 16 to October 31 period. AWI will notify Alameda County each year when turbines have been shut down, and again when they have resumed operating.

Mitigation Measure BIO-17: Mitigate for the Loss of Individual Golden Eagles by Retrofitting Electrical Facilities

AWI will mitigate for the proposed project's additional contribution to golden eagle mortality by retrofitting hazardous electrical poles in an onsite location (if any hazardous poles are located onsite), or in an offsite location. The mitigation must occur within 160 miles of the proposed project, the area typically defined by the USFWS as the "local population." The proposed project, with implementation of mitigation measure BIO-16, (together identified as Alternative 1 in the analysis of project alternatives) is projected to result in the fatality of approximately one eagle (cumulatively, and statistically, 0.7–1.0) when compared to the existing avian baseline condition (the No Project Alternative) (Table 3.2-5). Although the baseline fatality rate is higher, this mitigation measure addresses the impacts of the proposed project (with mitigation), which is approximately one additional eagle fatality. Based on current published draft guidance from the USFWS (2012), and using a general example, a ratio of 29 utility pole retrofits for each eagle is suggested by the USFWS. AWI will therefore retrofit 29 utility poles as mitigation for the expected level of eagle fatality from the proposed project. AWI may contract directly with an electrical utility to fund this mitigation; however, a written agreement and evidence of the completion of the retrofits must be provided to the County. USFWS has estimated the cost of retrofits at \$7,500 per pole, and therefore AWI may contribute \$217,500 (\$7,500 x 29 poles) to a third party mitigation account (approved by Alameda County) instead of contracting directly with a utility. The third party mitigation account holder would have the responsibility of completing the mitigation or contracting for the mitigation to be completed. Evidence of completion of mitigation must be provided to the County within 1 year of approval of the proposed project.

Impact BIO-2: Potential substantial adverse effects on riparian habitat and other sensitive natural communities (Significant)

Ground disturbance associated with decommissioning activities of the proposed project is expected to result in the temporary disturbance of up to 91 acres of previously disturbed area. A majority of the area surrounding AWI's facilities is expected to be annual grassland, which is not considered a sensitive natural community. Areas supporting sensitive natural communities are scattered throughout the study area and include evergreen forest, oak woodland, willow riparian scrub, alkali meadow, and alkali wetland (Figure 3.2-1). Existing turbines, substations, and meteorological towers are not located within sensitive natural communities; however, some of the existing access roads may cross through these habitats. Access roads through sensitive natural communities could be reclaimed if requested by landowners, but these activities would generally be limited to the existing, disturbed gravel or dirt road bed and some immediately adjacent habitat.

Decommissioning Existing AWI Facilities

Although the proposed project (facility decommissioning) has the potential to temporarily disturb sensitive natural communities, this impact would be temporary and the reclaimed road corridor could revert back to the surrounding habitat, resulting in a net gain of sensitive natural communities. Moreover, it is anticipated that landowners may wish to retain some portion of the existing roads, and therefore, it is expected that the potential impacts may be less than the maximums outlined in this EIR. Mitigation Measure BIO-1 (general protection measures) and BIO-4 (exclusion zones) will be implemented as necessary to avoid and minimize impacts on sensitive natural communities adjacent to decommissioning and reclamation work areas. Implementing these mitigation measures would further ensure that the proposed project would not result in a substantial adverse effect on riparian habitat or other sensitive natural community and would reduce this impact to a less-than-significant level.

Impact BIO-3: Potential substantial adverse effects on state or federally protected wetlands through direct removal, filling, hydrological interruption, or other means (Significant)

Aquatic resources, including stock ponds, alkali wetlands, and seasonal drainages, occur throughout the APWRA (Figure 3.2-1). Existing AWI facilities, particularly the access roads, may cross or occur adjacent to these aquatic resources and decommissioning activities that result in ground disturbance (including temporary fill and removal of culverts) could directly or indirectly affect aquatic resources that may qualify as waters of the United States and waters of the state. Waters of the United States are regulated by USACE and waters of the state in California are regulated by the RWQCB. Wetlands are also considered sensitive communities.

Decommissioning Existing AWI Facilities

This impact would be temporary and decommissioning and reclamation activities would ultimately restore the existing crossing or habitat to a more natural state. In addition to direct impacts, reclamation activities could indirectly affect aquatic resources by causing increased erosion and sedimentation within resources located adjacent to the work area. Because the proposed project would not result in the permanent loss of waters of the United States or waters of the state, no compensatory mitigation is proposed. Implementing Mitigation Measures BIO-1 (general protection measures), BIO-4 (exclusion zones), BIO-5 (biological monitoring), BIO-18 (identify and delineate waters and wetlands), and BIO-19 (avoid waters and wetlands) would avoid and minimize impacts on waters of the United States and waters of the state. These measures would reduce this impact on state or federally protected wetlands to a less-than-significant level.

Mitigation Measure BIO-18: Identify and Delineate Waters of the United States and Waters of the State (including Wetlands).

Prior to decommissioning activities and siting of individual work areas, AWI will retain a qualified wetland ecologist (i.e., a wetland ecologist with previous experience conducting wetland delineations in the region) to identify areas that could qualify as waters of the United States and waters of the state, including wetlands, assuming such features exist within or adjacent to work areas identified for each project element. Wetlands will be identified using both the USACE and USFWS/CDFW definitions of wetlands. USACE jurisdictional wetlands will be delineated using the methods outlined in the 1987 Corps of Engineers *Wetlands Delineation Manual* (Environmental Laboratory 1987) and where appropriate, using the updated methods in the Arid West Supplement (USACE 2008) to the 1987 manual. The jurisdictional boundary of

other waters of the United States will be identified based on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding area (33 CFR 328.3[e]).

This information will be mapped and documented in a wetland delineation report and submitted to USACE. Mitigation Measures BIO-1 (general protection measures), BIO-3 (exclusion zones), BIO-4 (biological monitoring), and BIO-18 will be implemented during decommissioning and reclamation activities that could impact waters of the United States and state.

Mitigation Measure BIO-19: Avoid and Minimize Disturbance of Waters of the United States, including Wetland Communities.

To the extent possible, the applicant will avoid and minimize impacts on wetlands and other waters of the United States (creeks and streams) by implementing the following measures.

- Redesign or modify the location of work areas to avoid direct and indirect impacts on wetland habitats, if feasible.
- Protect wetland habitats that occur near the project site by installing fencing around the environmentally sensitive area at least 20 feet from the edge of the wetland. Depending on site-specific conditions and permit requirements, this buffer may be wider than 20 feet (e.g., 250 feet for seasonal wetlands considered special-status wildlife habitat). The location of the fencing will be marked in the field with stakes and flagging and shown on the construction drawings. The construction specifications will contain clear language that prohibits decommissioning- and reclamation-related activities, vehicle operation, material and equipment storage, and other surface-disturbing activities within the fenced environmentally sensitive area.
- Stabilize exposed slopes and streambanks immediately upon completion of decommissioning and reclamation activities. Other waters of the United States will be restored in a manner that encourages vegetation to re-establish to its pre-program condition and that reduces the effects of erosion on the drainage system.
- In highly erodible stream systems, stabilize banks using a non-vegetative material that will bind the soil initially and break down within a few years. If the project engineers determine that more-aggressive erosion control treatments are needed, use geotextile mats, excelsior blankets, or other soil stabilization products.
- During decommissioning and reclamation, remove trees, shrubs, debris, or soils that are inadvertently deposited below the OHWM of drainages in a manner that minimizes disturbance of the drainage bed and bank.

Operational Changes

Operational changes associated with the proposed project will not affect the physical environment within the study area; accordingly, no impacts on state or federally protected wetlands would occur as a result of operational changes.

Impact BIO-4: Potential to interfere substantially with the movement of native resident wildlife species or impede the use of native wildlife nursery sites (Less than significant)

Decommissioning activities are expected to occur over a period of up to 2 years over the entire study area.

Decommissioning Existing AWI Facilities

Although ground disturbance associated with these activities could temporarily impact the movement of resident or migratory wildlife through the study area, this impact would be limited to a small area associated with each facility (Table 3.2-3) and would be of short duration. Therefore, this impact is considered less than significant.

Operational Changes

Implementation of the proposed project would allow wind turbine operation during the existing WSSD period. As a result of existing CUPs for all wind turbine companies within the APWRA, there currently are no wind turbines operating within the APWRA during the WSSD. The operation of wind turbines during this period would adversely affect raptors, other birds, and bats migrating through and wintering in the APWRA because they could be injured or killed if they fly through the rotor plane of operating wind turbines. A large number of raptors, particularly red-tailed hawks, winter in the APWRA. Because this impact on the movement of resident or migratory birds would be short-term (turbine operation ending completely in 2015) and the proposed project would result in an overall shorter duration of turbine operation (termination in 2015 versus 2018), this impact is considered less than significant.

Impact BIO-5: Conflict with any local policies or ordinances protecting biological resources (No impact)***Decommissioning Existing AWI Facilities and Operational Changes***

The County has adopted the East County Area Plan (EACP), revised by Initiative in November 2000, which includes policies pertaining to the management of biological resources in the project area. The following policies (and associated programs where applicable) from the EACP are applicable to the proposed project.

- Policy 123: Where site-specific impacts on biological resources resulting from a proposed land use outside the Urban Growth Boundary are identified, the County shall encourage that mitigation is complementary to the goals and objectives of the EACP. To that end, the County shall recommend that mitigation efforts occur in areas designated as "Resource Management" or on lands adjacent to or otherwise contiguous with these lands in order to establish a continuous open space system in East County and to provide for long term protection of biological resources.
- Policy 124: The County shall encourage the maintenance of biological diversity in East County by including a variety of plant communities and animal habitats in areas designated for open space.
- Policy 125: The County shall encourage preservation of areas known to support special status species.
- Policy 126: The County shall encourage no net loss of riparian and seasonal wetlands.

- Policy 133: The County shall require that the impacts of wind turbine operations on bird populations are minimized.
- Policy 172: The County shall establish a mitigation program to minimize the impacts of wind turbine operations on bird populations.
 - Program 73: The County shall work with other agencies (federal, state, and local) to establish feasible mitigation for avian collisions with wind turbines. The County will take a lead role with windfarm operators and other agencies in developing and managing a Mitigation Monitoring Program in the Wind Resource Area.

The County has included measures in this document which are consistent with the goals of the EACCS, which is consistent with the ECAP, including requirements for species mitigation, and requirements to minimize the impacts of wind turbine operations. With inclusion of these measures, implementation of the proposed project would not conflict with any local policy or ordinance protecting biological resources within the study area; accordingly, the proposed project would have no impact on local policies or ordinances.

Impact BIO-6: Potential to conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan (Less than significant)

Decommissioning Existing AWI Facilities and Operational Changes

Implementation of the proposed project would not conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan because no approved plans overlap with the study area.

The study area does overlap with the EACCS, which, however, is not a formal habitat conservation plan prepared pursuant to Section 10 of the FESA. Avoidance and minimization measures pertaining to special-status plants and wildlife that are identified for the proposed project are consistent with the EACCS. One of the primary goals of the EACCS is to maintain or increase current populations of focal species within the EACCS study area at a level that allows for long-term viability without human intervention. Many of the species listed in Tables 3.2-1 and 3.2-2 are identified as focal species in the EACCS. Because proposed project impacts on these species are short term and temporary (turbine operation ending completely in December 2015 and decommissioning completed within approximately 2 years), this impact is considered less than significant.

Impact BIO-7: Result in the conversion of oak woodlands that will have a significant effect on the environment (No impact)

Decommissioning Existing AWI Facilities and Operational Changes

Oak woodland habitat occurs in the northwest corner of the study area (Figure 3.2-1). No existing AWI facilities are located within these areas and the only access road that goes through this habitat is an existing road to a residence and would not be reclaimed. Therefore no impacts on oak woodlands would occur as a result of project implementation.

3.3 Noise

This section describes the environmental setting and regulatory setting for noise. It also describes the noise impacts, if any, that would result from implementation of the project, and mitigation measures that would reduce these impacts. Noise-related cumulative and growth-inducing impacts are discussed in Chapter 5, *Required CEQA Analyses*.

3.3.1 Background Information on Noise

Noise is commonly defined as unwanted sound that annoys or disturbs people and potentially causes an adverse psychological or physiological effect on human health. Because noise is an environmental pollutant that can interfere with human activities, evaluation of noise is necessary when considering the environmental impacts of a proposed project.

Sound is mechanical energy (vibration) transmitted by pressure waves over a medium such as air or water, and noise is generally defined as unwanted sound that annoys or disturbs people. Sound is characterized by various parameters that include the rate of oscillation of sound waves (frequency), the speed of propagation, and the pressure level or energy content (amplitude). In particular, the sound pressure level is the most common descriptor used to characterize the loudness of an ambient (existing) sound level. Although the decibel (dB) scale, a logarithmic scale, is used to quantify sound intensity, it does not accurately describe how sound intensity is perceived by human hearing. The human ear is not equally sensitive to all frequencies in the entire spectrum, so noise measurements are weighted more heavily for frequencies to which humans are sensitive in a process called “A-weighting,” written as “dBA” and referred to as “A-weighted decibels”. Table 3.3-1 defines sound measurements and other terminology used in this chapter, and Table 3.3-2 summarizes typical A-weighted sound levels for different noise sources.

In general, human sound perception is such that a change in sound level of 1 dB cannot typically be perceived by the human ear, a change of 3 dB is just noticeable, a change of 5 dB is clearly noticeable, and a change of 10 dB is perceived as doubling or halving the sound level.

Different types of measurements are used to characterize the time-varying nature of sound. These measurements include the equivalent sound level (L_{eq}), the minimum and maximum sound levels (L_{min} and L_{max}), percentile-exceeded sound levels (such as L_{10} , L_{20}), the day-night sound level (L_{dn}), and the community noise equivalent level (CNEL). L_{dn} and CNEL values differ by less than 1 dB. As a matter of practice, L_{dn} and CNEL values are considered to be equivalent and are treated as such in this assessment.

For a point source such as a stationary compressor or construction equipment, sound attenuates based on geometry at rate of 6 dB per doubling of distance. For a line source such as free flowing traffic on a freeway, sound attenuates at a rate of 3 dB per doubling of distance (Caltrans 2009). Atmospheric conditions including wind, temperature gradients, and humidity can change how sound propagates over distance and can affect the level of sound received at a given location. The degree to which the ground surface absorbs acoustical energy also affects sound propagation. Sound that travels over an acoustically absorptive surface such as grass attenuates at a greater rate than sound that travels over a hard surface such as pavement. The increased attenuation is typically in

the range of 1 to 2 dB per doubling of distance. Barriers such as buildings and topography that block the line of sight between a source and receiver also increase the attenuation of sound over distance.

Table 3.3-1. Definition of Sound Measurements

Sound Measurements	Definition
Decibel (dB)	A unitless measure of sound on a logarithmic scale, which indicates the squared ratio of sound pressure amplitude to a reference sound pressure amplitude. The reference pressure is 20 micro-pascals.
A-Weighted Decibel (dBA)	An overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear.
C-Weighted Decibel (dBC)	The sound pressure level in decibels as measured using the C-weighting filter network. The C-weighting is very close to an unweighted or "flat" response. C-weighting is only used in special cases when low-frequency noise is of particular importance. A comparison of measured A and C weighted level gives an indication of low frequency content.
Maximum Sound Level (L_{max})	The maximum sound level measured during the measurement period.
Minimum Sound Level (L_{min})	The minimum sound level measured during the measurement period.
Equivalent Sound Level (L_{eq})	The equivalent steady state sound level that in a stated period of time would contain the same acoustical energy.
Percentile-Exceeded Sound Level (L_{xx})	The sound level exceeded "x" percent of a specific time period. L_{10} is the sound level exceeded 10 percent of the time. L_{90} is the sound level exceeded 90 percent of the time. L_{90} is often considered to be representative of the background noise level in a given area.
Day-Night Level (L_{dn})	The energy average of the A-weighted sound levels occurring during a 24-hour period, with 10 dB added to the A-weighted sound levels occurring during the period from 10:00 p.m. to 7:00 a.m.
Community Noise Equivalent Level (CNEL)	The energy average of the A-weighted sound levels occurring during a 24-hour period with 5 dB added to the A-weighted sound levels occurring during the period from 7:00 p.m. to 10:00 p.m. and 10 dB added to the A-weighted sound levels occurring during the period from 10:00 p.m. to 7:00 a.m.
Peak Particle Velocity (Peak Velocity or PPV)	A measurement of ground vibration defined as the maximum speed (measured in inches per second) at which a particle in the ground is moving relative to its inactive state. PPV is usually expressed in inches/sec.
Frequency: Hertz (Hz)	The number of complete pressure fluctuations per second above and below atmospheric pressure.

Table 3.3-2. Typical A-weighted Sound Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	110	Rock band
Jet flyover at 1,000 feet		
	100	
Gas lawnmower at 3 feet		
	90	
Diesel truck at 50 feet at 50 mph		Food blender at 3 feet
	80	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawnmower, 100 feet	70	Vacuum cleaner at 10 feet
Commercial area		Normal speech at 3 feet
Heavy traffic at 300 feet	60	
		Large business office
Quiet urban daytime	50	Dishwasher in next room
Quiet urban nighttime	40	Theater, large conference room (background)
Quiet suburban nighttime		
	30	Library
Quiet rural nighttime		Bedroom at night, concert hall (background)
	20	
		Broadcast/recording studio
	10	
	0	

Source: Caltrans 2009.

3.3.2 Regulatory Setting

3.3.2.1 Federal

Federal, state, and local agencies regulate different aspects of environmental noise. Generally, the federal government sets noise standards for transportation-related noise sources closely linked to interstate commerce. These include aircraft, locomotives, and trucks. The state government sets noise standards for transportation noise sources such as automobiles, light trucks, and motorcycles. Noise sources associated with industrial, commercial, and construction activities are generally subject to local control through noise ordinances and general plan policies. Local general plans identify general principles intended to guide and influence development plans.

3.3.2.2 State

Part 2, Title 24 of the California Code of Regulations “California Noise Insulation Standards” establishes minimum noise insulation standards to protect persons within new hotels, motels, dormitories, long-term care facilities, apartment houses, and dwellings other than single-family

residences. Under this regulation, interior noise levels attributable to exterior noise sources cannot exceed 45 L_{dn} in any habitable room. Where such residences are located in an environment where exterior noise is 60 L_{dn} or greater, an acoustical analysis is required to ensure that interior levels do not exceed the 45 L_{dn} interior standard.

The *State of California General Plan Guidelines* (OPR 2003) identifies guidelines for the noise elements of local general plans, including a sound level/land use compatibility chart that categorizes, by land use, outdoor L_{dn} ranges in up to four categories (normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable). For many land uses, the chart shows overlapping L_{dn} ranges for two or more compatibility categories.

The noise element guideline chart identifies the normally acceptable range of L_{dn} values for low-density residential uses as less than 60 dB and the conditionally acceptable range as 55–70 dB. The normally acceptable range for high-density residential uses is identified as L_{dn} values below 65 dB, and the conditionally acceptable range is identified as 60–70 dB. For educational and medical facilities, L_{dn} values below 70 dB are considered normally acceptable, and L_{dn} values of 60–70 dB are considered conditionally acceptable. For office and commercial land uses, L_{dn} values below 70 dB are considered normally acceptable, and L_{dn} values of 67.5–77.5 are categorized as conditionally acceptable. When noise levels are in the conditionally acceptable range new construction should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation requirements are included in the design.

These overlapping L_{dn} ranges are intended to indicate that local conditions (existing sound levels and community attitudes toward dominant sound sources) should be considered in evaluating land use compatibility at specific locations.

3.3.2.3 Local

General Plan Noise Element

The Alameda County General Plan Noise Element (Alameda County 1975) contains goals, objectives, and implementation programs for the entire County to provide its residents with an environment that is free from excessive noise and promotes compatibility of land uses with respect to noise. The Countywide Noise Element does not explicitly define the acceptable outdoor noise level for the backyards of single-family homes or common outdoor spaces of multi-family housing projects, but it recognizes the Federal Environmental Protection Agency (EPA) noise level standards for residential land uses. These standards are an exterior L_{dn} of 55 dBA and an interior L_{dn} of 45 dBA. (The L_{dn} measurement, which also includes a 10dB weighting for night-time sound, is approximately equal to the CNEL for most environmental settings.) The Noise Element also references noise and land use compatibility standards developed by an Association of Bay Area Governments (ABAG)-sponsored study.

East County Area Plan

Alameda County's *East County Area Plan* (ECAP; Alameda County 1994) contains the following goal, policies and implementation programs related to community noise and windfarms.

Goal: To minimize East County residents and workers exposure to excessive noise.

Policies

Policy 170: The County shall protect nearby existing uses from potential traffic, noise, dust, visual, and other impacts generated by the construction and operation of windfarm facilities.

Policy 288: The County shall endeavor to maintain acceptable noise levels throughout East County.

Policy 289: The County shall limit or appropriately mitigate new noise sensitive development in areas exposed to projected noise levels exceeding 60 dB based on the California Office of Noise Control Land Use Compatibility Guidelines.

Policy 290: The County shall require noise studies as part of development review for projects located in areas exposed to high noise levels and in areas adjacent to existing residential or other sensitive land uses. Where noise studies show that noise levels in areas of existing housing will exceed “normally acceptable” standards (as defined by the California Office of Noise Control Land Use Compatibility Guidelines), major development projects shall contribute their pro-rated share to the cost of noise mitigation measures such as those described in Program 104.

Implementation Programs

Program 74: The County shall amend the Zoning Ordinance to incorporate siting and design standards for wind turbines to mitigate biological, visual, noise, and other impacts generated by windfarm operations.

Program 104: The County shall require the use of noise reduction techniques (such as buffers, building design modifications, lot orientation, sound walls, earth berms, landscaping, building setbacks, and real estate disclosure notices) to mitigate noise impacts generated by transportation-related and stationary sources as specified in the California Office of Noise Control Land Use Compatibility Guidelines.

Noise Ordinance

Alameda County’s Noise Ordinance (County General Code, Chapter 6.60) allows higher noise exposure levels for commercial properties than for residential uses, schools, hospitals, churches, or libraries. These standards augment the state-mandated requirements of the Alameda County Building Code, which establishes standards for interior noise levels consistent with the noise insulation standards in the California State Building Code. Table 3.3-3 shows the number of cumulative minutes that a particular external noise level is permitted, as well as the maximum noise allowed under the Alameda County General Code.

Table 3.3-3. Alameda County Exterior Noise Standards

Cumulative Number of Minutes in any 1-hour Time Period Daytime	Daytime (7 A.M. to 10 P.M.)	Nighttime (10 P.M. to 7 A.M.)
Residential uses, schools, hospitals, churches, and libraries		
30	50 dBA	45 dBA
15	55 dBA	50 dBA
5	60 dBA	55 dBA
1	65 dBA	60 dBA
Maximum (0)	70 dBA	65 dBA
Commercial uses		
30	65 dBA	60 dBA
15	70 dBA	65 dBA
5	75 dBA	70 dBA
1	80 dBA	75 dBA
Maximum	85 dBA	80 dBA

The County Zoning Ordinance (County General Code, Chapter 17) restricts noise from commercial activities by prohibiting any use that would generate a noise or vibration that is discernible without instruments beyond the property line. This performance standard does not apply to transportation activities or temporary construction work.

The provisions of the ordinance do not apply to noise sources associated with construction, provided the activities do not take place before 7 a.m. or after 7 p.m. on any day except Saturday or Sunday, or before 8 a.m. or after 5 p.m. on Saturday or Sunday.

Conditional Use Permits

The County's Conditional Use Permits (CUPs) for the continued operation of the windfarms after 2005, regulated by Resolution Number R-2005-463, identifies the following specific conditions regarding noise.

21. Noise Standards: Wind turbines shall be operated so as to not exceed the County's noise standard of 55 dBA (L_{dn}) or 70 dBC (L_{dn}) as measured in both cases at the exterior of any dwelling unit. If the dwelling unit is on land under lease from the Permittee, the applicable standard shall be 65 dBA (L_{dn}) and 70 dBC (L_{dn}).
22. Noise Complaints: In the event a reasonable complaint is received by the Building Official alleging the presence of sound levels from a wind turbine or windfarm exceeding 55 dBA (L_{dn}) at a dwelling that was existing at the time this permit was issued (or 65 dBA (L_{dn}) if the dwelling is on land under lease for a windfarm), or 70 dBC (L_{dn}) as measured at the exterior of the dwelling:
 - a. The Building Official shall report this matter to the Permittee and to the Planning Director and upon receipt of such report, this matter shall be brought to hearing pursuant to Section 17.54.650 and may be considered as provided by Section 17.54.030 of the Alameda County Ordinance Code; and
 - b. Upon receipt of the report of the Building Official, the Planning Director shall commission a qualified firm to make a site specific study and furnish a report and recommendation on the circumstances, if any, which would render the project in conformance with all applicable noise conditions; the report shall also include a recommendation to the Board of Zoning

Adjustments who will make the final determination as to whether subsection (d) shall be imposed.

- c. For a minimum 30-day period from the date of notification, at the time and place as may be agreed upon by the parties involved, Permittee shall attempt in good faith to negotiate a resolution of this matter with the party making the allegation; any such resolution shall be reported to the Planning Director in a timely manner; and
- d. Following the review period as provided under subsection (c) and until the conclusion of the revocation procedures as provided by Section 17.54.030, up to one fourth of the wind turbines authorized by this permit to be constructed or maintained that are in closest proximity to the dwelling of the party making the allegation, shall be made inoperative.

Methods for measuring and reporting acoustic emissions from wind turbines and windfarms shall be equal to or exceed the minimum standards for precision described in AWEA Standard, AWEA 2.1 - 1989 titled *Procedures for the Measurement and Reporting of Acoustic Emissions from Wind Turbine Generation Systems (WTGS) Volume I: First Tier*.

The Planning Director, in consultation with the Alameda County Environmental Health Services Agency, shall establish criteria for noise samples and measurement parameters such as the duration of data collection, time of day, wind speed, atmospheric conditions and direction as set forth in the Wyle Research Report.

- 23. Noise Enforcement Deposits: The Permittee shall as condition of the continued operation of the Facility as approved under this Permit maintain a \$2,000.00 cash deposit for use in the investigation and evaluation of a noise complaint as provided in Condition 22 herein above. If all or any part of said cash deposit is depleted by such activities, the Permittee shall restore the balance of the deposit to the original \$2,000.00. In the course of the review of this permit on the third anniversary of its issuance, if warranted by the record, the requirement of this \$2,000.00 deposit may be deleted and funds paid by the Permittee may be returned to the Permittee.

The Resolution approving the CUPs for windfarm operations included a finding that as a land use, the wind energy use “is properly related to other land uses and transportation and service facilities in the vicinity, in that... d) Although some residents may object to the visual, noise, or other effects of the turbines, the County has determined that the wind energy projects are in compliance with the conditions of approval and are an acceptable use in the area.”

3.3.3 Environmental Setting

This section discusses existing land uses and the existing noise conditions in the project area.

3.3.3.1 Land Uses in the Project Area

The project area is located in the Altamont Pass Wind Resource Area (APWRA) within Alameda County. The area is designated as Large Parcel Agriculture under the County Zoning Ordinance and the East County Area Plan. General agriculture, single-family residences, grazing, and riding or hiking trails are allowed uses. Conditional uses that may be allowed through a Conditional Use Permit (CUP) granted by the County include outdoor recreation facilities, transmission facilities, solid waste landfills, windfarms and many other uses. CUPs are developed to be consistent with general plan policies and other land uses permitted by the County’s general plan.

Scattered single-family rural residences are located along the east and west sides of the project boundary, including homes on both very large parcels (over 100 acres) and comparatively small lots (under 5 or 10 acres). There are also several single-family rural residences within the project boundary along Flynn Road. Several residences on the east side are located within about 1,500 feet

of existing turbines. On the west side, existing residences outside the project boundary are at least 1,500 feet from the nearest turbines. Two residences along Flynn Road are located within about 800 feet of the existing turbines.

3.3.3.2 Existing Noise Conditions

Traffic on Interstate 580 (I-580) and wind turbine operations by AWI and the other APWRA operators are the predominant source of noise in the project area. Based on 2010 traffic noise projections, the 60 L_{dn} contour for traffic traveling on I-580 extends about 1,800 feet from the freeway (Alameda County 1994).

The types of turbines currently in use within the project area include 808 operable U.S. Windpower/Kenotech KCS56 (100 kW) and 20 WEG (250 kW) wind turbines. Although sound from operating turbines is audible adjacent to the existing turbines, the County has never conducted a formal noise study in response to complaints pursuant to Section 22 of the CUP. As such there is no documented evidence that noise standards in Section 22 of the CUP have been exceeded.

3.3.4 Environmental Impacts

This section describes the impact analysis relating to noise for the proposed project. It describes the methods used to determine the impacts of the project and lists the thresholds used to conclude whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts accompany the impact discussion.

3.3.4.1 Thresholds of Significance

For this analysis, a noise impact was considered significant under CEQA if it would result in any of the following environmental effects, which are based on professional practice and State CEQA Guidelines Appendix G (14 CCR 15000 et seq.).

- Exposure of residences to wind turbine noise in excess of 55 dBA (L_{dn}) where wind turbine noise is currently less than 55 dBA (L_{dn}). In the situation where the dwelling unit is on land under lease from the Permittee, 65 dBA (L_{dn}) is used.
- Exposure of residences to wind turbine noise in excess of 70 dBC (L_{dn}) where wind turbine noise is currently less than 70 dBC (L_{dn}).
- Exposure of residences to a daily increase in L_{dn} value of more than 5 dB from wind turbine noise.

3.3.4.2 Methodology

This project is distinctive in that it does not involve the addition of new wind turbines in the project area. Rather, implementation of the proposed project changes how turbines are phased out of operation. The change would allow wind turbines to operate during months when operation is currently prohibited (November 1–February 15) and would allow turbines to operate at times currently not allowed under the current CUPs. It would, however, discontinue operation of all turbines earlier than required under the current CUPs.

The County noise standard for wind turbines in the project area (per Condition 21 of the County CUPs) is 55 dBA (L_{dn}) or 70 dBC (L_{dn}) at residential uses, with the exception that dwelling units on

the same parcel being leased for windfarm use may be exposed to up to 65 dBA (L_{dn}). These are daily standards and are unrelated to the number of days or the season that a wind turbine operates. Noise impacts associated with the proposed project are evaluated based on how the project would change the daily noise level associated with wind turbine operations. The threshold of 5 dB is used because it is generally considered to be the lowest sound level change clearly noticeable by the human ear.

3.3.4.3 Impacts and Mitigation Measures

Impact NOISE-1: Exposure of residences to increased wind turbine noise (Significant)

Implementation of the proposed project would permit turbines to operate year-round, whereas under current limitations they are currently not allowed to operate between November 1 and February 15 of each year. In addition, the project would allow all of the existing permitted turbines (828 total) to operate through 2015, instead of phasing the removal of the turbines. Although 2015 is earlier than the October 2018 end date specified under the CUPs, the proposed project would allow more turbines to operate for longer than allowed under the current CUPs. Although the proposed project would have fewer operational days, it would result in many more turbines operating during this time than would operate under the longer CUP schedule.

As discussed above, there are no documented instances of wind turbines causing exceedance of noise standards in the CUPs. In addition, turbines operating on days when they are currently prohibited from operating would not generate more noise than on days where they are currently allowed to operate. In other words, baseline conditions (i.e., existing conditions) would not be exceeded by the continuous operation of the existing turbines. As such, the action of operating a turbine on a day that is currently not permitted would not result in a significant impact.

One possible exception to this is a situation where a turbine is allowed to operate longer than planned under the current CUPs and that turbine produces higher noise as a result of aging or a lack of maintenance. It is possible that substantial degradation of a wind turbine or group of wind turbines could lead to an increase of greater than 5 dB in the daily L_{dn} value. However, it is not possible to predict if and when this would occur. Because of the possibility that daily L_{dn} value caused by wind turbines could increase by more than 5 dB, this impact is considered to be potentially significant. Implementation of Mitigation Measure NOISE-1 would reduce this impact to a less-than-significant level.

Mitigation Measure NOISE-1: Repair or remove turbines that are determined to increase the daily L_{dn} value at a residence by more than 5 dB

Within 60 days of project approval, the applicant will retain a qualified acoustic consultant to conduct a noise monitoring survey to quantify existing noise conditions at residential receptors located within 500 feet of an operating turbine. This will include measurement of the daily A-weighted and C-weighted L_{dn} values over a 1-week period and concurrent logging of wind speeds at the nearest meteorological station. Not later than 2 months from the time of project approval, the applicant will submit a report documenting the results of the survey to the County for review and approval.

In the event that a resident at one of measured locations reports that wind turbine noise has substantially increased, the County will review the situation to determine if additional measurements are warranted. If they are, the applicant will conduct a similar 1-week

measurement at that location and report the measurement results to the County. If the County determines that the daily L_{dn} value has increased by more than 5 dB, the County will direct the applicant to repair or remove the turbines that are determined to be the cause of the increase.

Impact NOISE-2: Exposure of residences to noise during decommissioning activities (Significant)

Decommissioning of wind turbines will involve removing turbines and restoring each turbine support site.

- The removal of a single wind turbine will involve the use of the following equipment:
 - One small crane with a 30-ton boom
 - One forklift
 - One flatbed truck for equipment transport
 - One pickup truck for tooling and personnel transport.

It is estimated that one crew can dismantle and remove one wind turbine in 1 day. Using four crews for each working day (185 days per year), it is estimated that all 828 wind turbines would be removed within 1 year and 2 months.

- Removal of tower footings and site reclamation will involve the use of the following equipment:
 - One excavator equipped with a jackhammer and bucket
 - One pickup truck for tooling and personnel transport.

Table 3.3-4 summarizes typical noise levels produced by equipment anticipated to be used for decommissioning (FHA 2006). L_{max} sound levels at 50 feet are shown along with the typical acoustical use factors. The acoustical use factor is the percentage of time each piece of construction equipment is assumed to be operating at full power (i.e., its noisiest condition) during construction operation and is used to estimate L_{eq} values from L_{max} values. For example the L_{eq} value for a piece of equipment that operates at full power 50% of the time (acoustical use factor of 50) is 3 dB less than the L_{max} value.

Table 3.3-4. Typical Construction Equipment Noise Levels

Equipment	Typical L_{max} Noise Level at 50 Feet from Source, dBA	Acoustical Use Factor
Crane	81	16%
Excavator	81	40%
Flat Bed Truck	74	40%
Jackhammer	89	20%
Pickup Truck	75	40%
Fork Lift ^a	75	40%

Source: Federal Highway Administration 2006.

^a Assumed to be similar to a pickup truck.

The combined noise level of equipment to be used for turbine removal (crane, forklift, flatbed truck, and pickup truck) would be about 83 dBA at 50 feet. The combined noise level of equipment to be used for restoration (excavator, jackhammer, pickup truck) would be about 90 dBA at 50 feet. Based

on point source attenuation of 7.5 dB per doubling of distance (6 dB per doubling for geometry and 1.5 dB per doubling for ground absorption), potential construction noise levels at various distances for both turbine removal and restoration have been calculated relative to the Alameda County noise ordinance standards. Table 3.3-5 summarizes the results of this analysis and identifies distances within which Alameda County noise standards could be exceeded as a result of decommissioning activities.

Table 3.3-5. Decommissioning Noise Analysis

	Turbine Removal	Restoration
Distance to 70 dBA, L_{max}	170 feet	300 feet
Distance to 50 dBA (7:00 a.m. to 10:00 p.m.)	600 feet	1,000 feet
Distance to 45 dBA (10:00 p.m. to 7:00 a.m.)	1,000 feet	1,800 feet

In a number of instances, there are residences located within several hundred feet of where turbine removal and restoration activities could occur. The results in Table 3.3-5 indicate that decommissioning activities could result in noise that exceeds Alameda County noise ordinance standards during non-exempt hours. This impact is therefore considered to be significant. Implementation of Mitigation Measure NOISE-2 would reduce this impact to a less-than-significant level.

Mitigation Measure NOISE-2: Employ noise-reducing practices during decommissioning

The project applicant will employ a combination of the following noise-reducing construction practices so that construction noise does not exceed Alameda County property line noise ordinance standards. Measures that can be used to limit noise include, but are not limited to:

- Prohibit noise-generating decommissioning activities before 7 a.m. and after 7 p.m. on any day except Saturday or Sunday, and before 8 a.m. and after 5 p.m. on Saturday or Sunday.
- Locate equipment as far as practical from noise sensitive uses.
- Require that all construction equipment powered by gasoline or diesel engines have sound-control devices that are at least as effective as those originally provided by the manufacturer and that all equipment be operated and maintained to minimize noise generation.
- Use noise-reducing enclosures around noise-generating equipment where practicable.
- Implement other measures with demonstrated practicability in reducing decommissioning noise, upon prior approval by the County.

In no case will the applicant be allowed to use gasoline or diesel engines without muffled exhausts.

3.4 Hazards and Hazardous Materials

The proposed project consists of operational modifications to existing wind turbine CUPs and removal and restoration activities in the Alameda County portion of the APWRA and does not involve the transport or use of any additional hazardous materials. Project facilities are not located on a site considered hazardous pursuant to Government Code Section 65962.5. The project is not expected to create any new hazard to the public or the environment through reasonably foreseeable accidental release of hazardous materials into the environment. The proposed project is not expected to expose people to airport-related hazards, or to impair implementation of any adopted emergency response plan or emergency evacuation plan. There are no public or private K-12 schools within 0.25 mile of the proposed project. The nearest school is approximately 2 miles east of project facilities and it is unlikely that hazardous materials will be emitted or released within 0.25 mile of any schools. For that reason, those topics are not discussed further in this section.

As with most turbine installations, there is an existing potential for *blade throw*. This may occur if the connection between the blade and rotor fails during operation, leading to the release of the blade into the air. Blade throw is hazardous because the blade becomes a projectile that could hit anyone unfortunate enough to be within its path. Because no increase is proposed in the number of machines currently in operation on the site, the project would not increase the potential for blade throw beyond existing conditions. For that reason, this topic is not discussed further.

Some hazardous materials could be encountered during operation, decommissioning, and removal and reclamation; the potential for their accidental release into the environment is discussed below. Any potential for the proposed project to expose people or structures to a significant risk of loss, injury, or death involving wildland fires is also discussed below.

3.4.1 Regulatory Setting

3.4.1.1 Federal

There are no federal plans, policies, regulations, or laws related to public services, utilities, and energy that are applicable to the proposed project.

3.4.1.2 State of California

California hazardous materials and wastes regulations are equal to or more stringent than federal regulations. The EPA has granted the state primary oversight responsibility to administer and enforce hazardous waste management programs. State regulations require planning and management to ensure that hazardous materials are handled, stored, and disposed of properly to reduce risks to human health and the environment. Several key state laws pertaining to hazardous materials and wastes are discussed below.

Worker Safety

Occupational safety standards exist in federal and state laws to minimize worker safety risks from both physical and chemical hazards in the work place. The California Division of Occupational Safety

and Health (Cal-OSHA) and the federal Occupational Safety and Health Administration are the agencies responsible for assuring worker safety in the workplace.

Cal-OSHA assumes primary responsibility for developing and enforcing standards for safe workplaces and work practices within the state. At sites known to be contaminated, a site safety plan must be prepared to protect workers. The site safety plan establishes policies and procedures to protect workers and the public from exposure to potential hazards at the contaminated site.

Fire Protection

The California Public Resources Code includes fire safety regulations that apply to state responsibility areas during the time of year designated as having hazardous fire conditions. During the fire hazard season, these regulations: a) restrict the use of equipment that may produce a spark, flame, or fire; b) require the use of spark arrestors on equipment that has an internal combustion engine; c) specify requirements for the safe use of gasoline-powered tools in fire hazard areas; and d) specify fire-suppression equipment that must be provided onsite for various types of work in fire-prone areas.

3.4.1.3 Local

Alameda County General Plan

The *Safety Element of the Alameda County General Plan* (Alameda County 2013) contains a goal, policies, and actions the County might take related to fire hazards. Many of the principles and actions refer to new development. Those relating to the proposed project as an existing facility are listed below.

Goal 2: To reduce the risk of urban and wildland fire hazards.

P3: Development should generally be discouraged in areas of high wildland fire hazard where vegetation management programs, including the creation and maintenance of fuel breaks to separate urban uses would result in unacceptable impacts on open space, scenic and ecological conditions.

East County Area Plan

The *East County Area Plan* contains the following goals, policies, and implementation programs related to fire protection.

Police, Fire, and Emergency Medical Services

Goal: To ensure the prompt and efficient provision of police, fire, and emergency medical facility and service needs.

Policy 241: The County shall provide effective law enforcement, fire, and emergency medical services to unincorporated areas.

Policy 242: The County shall reserve adequate sites for sheriff, fire, and emergency medical facilities in unincorporated locations within East County.

Policy 245: The County shall adhere to the provisions of the Alameda County Fire Protection Master Plan.

Environmental Health and Safety

Program 117: The County shall work with the California Department of Forestry and Fire Protection to designate “very high fire hazard severity zones” in conformance with AB 337 (1992). The County shall ensure that all zones designated as such meet the standards and requirements contained in this legislation.

Program 118: The County shall prepare a comprehensive wildland fire prevention program including fuelbreaks, brush management, controlled burning, and access for fire suppression equipment.

Alameda County Construction and Debris Management Ordinance

The Alameda County Construction and Debris Management Ordinance specifies how project-related construction and demolition waste is handled. The ordinance covers any project requiring a demolition permit and specifies the minimum requirements for diversion or salvage of waste. Projects covered under this ordinance are required to submit a debris management plan to the Alameda County Building Department.

Best Management Practices

As discussed under Chapter 3, *Resources Dismissed from Further Consideration*, the project will require the development and implementation of a Stormwater Pollution Prevention Plan (SWPPP). This will include plans for erosion and sediment control and would adhere to the County’s grading ordinance and best management practices (BMPs).

Typical construction erosion control BMPs include the following.

- Perform clearing and earth moving activities only during dry weather.
- Limit construction access routes and stabilize designated access points.
- No cleaning, fueling, or maintaining vehicles onsite, except in a designated area where washwater is contained and treated.
- Properly store, handle, and dispose of construction materials/wastes to prevent contact with stormwater.
- Contractor will train and provide instruction to all employees/subcontractors on construction BMPs.
- Control and prevent the discharge of all potential pollutants, including pavement cutting wastes, paints, concrete, petroleum products, chemicals, washwater or sediments, rinse water from architectural copper, and non-stormwater discharges to storm drains and watercourses.

3.4.2 Environmental Setting

This section describes the existing public services and utilities and service systems that serve the project area and evaluates the proposed project’s potential effects on these public services, utilities, and services. This section covers fire safety.

3.4.2.1 Fire Protection

Fire protection for the project area is provided by Cal Fire because the project is located within a State Responsibility Area (SRA). SRAs include much of the wildlands in unincorporated Alameda County and the project area. According to Cal Fire, the proposed project is located in an area that has a moderate to high risk for wildland fire hazards within the SRA (CDF 2007). The closest Cal Fire station to the project area is the Castle Rock Station, located at 16502 Schulte Road in the city of Tracy, approximately 3 miles from the project. The Castle Rock Station is one of 12 state-funded fire stations and part of the Santa Clara Unit of Cal Fire. This is a seasonal station generally operating during fire season, which typically extends from the middle of May through the end of October.

The Alameda County Fire Department (ACFD) is a Consolidated Department serving the unincorporated areas of Alameda County; the cities of San Leandro, Dublin, Newark, Union City; the Lawrence Berkeley National Laboratory; and the Lawrence Livermore National Laboratory, with a total of 28 fire stations. Services include fire suppression, arson investigation, hazardous materials mitigation, paramedic services, urban search and rescue, fire prevention, and public education.

The closest ACFD station to the project site is Station 20, located at 7000 East Avenue in Livermore, approximately 3 miles from the project. Station 20 employs two crews comprised of eight firefighters, one Type III engine, two Type IV apparatus (patrols), a hazardous materials unit, and an ambulance.

Fire officials have cited five general categories of fire origin associated with wind generators. These are: hardware and conductor failures of power collection lines; dropping of collection lines; turbine malfunction or mechanical failure; construction-related accidents; and avian related incidents.

A common source of wildfires relates to power collection lines and malfunction or mechanical failure of turbines. Such incidents may include turbine overload, bearing overheating, or pendant cable failure, and occur primarily on older units. (A pendant cable is a collection of low-voltage and communication cables, which drop through the top of the turbine support structure and connect to a weather head or junction box at a lower level on the tower.) If not properly maintained, these cables may twist and bind or rub and cause an electrical short, emitting sparks or flames. On un-enclosed towers the sparks can escape the structure more easily.

Fire prevention is required as part of the CUPs. Exhibit C of the 2005 CUPs describes the Altamont Pass Wind Farms Fire Requirements. The main mechanism utilized for fire prevention is the maintenance of a 30-foot-wide firebreak around buildings and structures, including turbines, riser poles, and substations. Fire breaks around turbines may be implemented around a turbine string. Electrical lines require a 20-foot clearance of flammable vegetation. In the County, this is accomplished by application of herbicide in October or November. Another mechanism for fire prevention on turbines is the provision of a yaw damper or other approved method that prevents the over-twisting of pendant cables.

Due to the fire hazard zoning and the project's location within an area where fire protection is under state jurisdiction, the public safety requirements (such as California Public Resources Code regulations discussed above under Section 3.4.1.2) to minimize the risk of wildland fire would apply within the project area.

3.4.3 Environmental Impacts

This section describes the impact analysis relating to hazards and hazardous materials for the proposed project. It describes the methods used to determine the impacts of the project and lists the thresholds used to conclude whether an impact would be significant. If applicable, measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts accompany each impact discussion.

3.4.3.1 Thresholds of Significance

For this analysis, an impacts relating to hazards and hazardous materials would be considered significant under CEQA if it would result in any of the following environmental effects, which are based on professional practice and State CEQA Guidelines Appendix G (14 CCR 15000 et seq.).

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
- Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

3.4.3.2 Methodology

Existing conditions were determined from a review of published literature, examination of aerial photographs, and review of department internet sources.

3.4.3.3 Impacts and Mitigation Measures

Impact HAZ-1: Result in a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials (Less than significant)

The majority of hazardous materials to be used during operations, decommissioning, and removal and reclamation activities are of low toxicity and would consist of fuels, oils and lubricants. As these materials are required for operation of construction vehicles and equipment, BMPs (Section 3.4.1.3) would be implemented to reduce the potential for or exposure to accidental spills involving the use of hazardous materials.

A small percentage (fewer than 10%) of generators to be removed could contain small amounts of asbestos (i.e., the 11-inch wire lead connection insulation/covering is made from asbestos). Additionally, in accordance with industry standards in practice at the time the turbines were built, the towers and nacelle machine components were likely originally coated with galvanized zinc, which contains trace amounts of lead. Disturbance of these materials could cause their release into the environment or endanger worker safety and health. However, wind turbines will be carefully disassembled and removed in a manner consistent with reselling the units. This will help ensure that turbine components will not be damaged and release either lead or asbestos into the environment. The amount of lead and asbestos potentially encountered is very small and not likely to exceed lead or asbestos exposure in general construction regulations. Adherence to current BMPs designed to limit worker exposure to lead and/or asbestos will be implemented. These BMPs will be guided by OSHA's lead and asbestos standards as outlined in 29 CFR 1910.134 and 29 CFR 1926.1101.

Accordingly, the potential for significant hazards or hazardous materials to endanger the public or the environment is less than significant and no mitigation is required.

Impact HAZ-2: Result in the exposure of people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands (Less than significant)

The project area consists primarily of grassland and grazing land. Dry climate conditions create circumstances rich with fuels, although areas with active grazing, agricultural irrigation, and landscape irrigation provide some fuel reduction. Human activities are the primary reason wildfires start, although lightning strikes do occasionally occur. As discussed above, the most likely source of an ignition from the project would be from hardware and/or conductor failures of power collection lines; dropping of collection lines; turbine malfunction or mechanical failure; and avian related incidents.

The proposed project would remove the seasonal shutdown requirements, allowing wind turbine operations to continue from November 1 through February 15 of each year. The additional 3.5 months of operation would occur during the wetter winter months, lessening the risk of wildfire. However, decommissioning and removing wind turbines would require up to four work crews per day during removal activities, increasing the number of vehicles within the project area. Climate conditions together with the potential for vehicle-related ignitions make this a concern, especially during the summer months.

The potential for wildland fires already exists within the project area due to the presence of the wind energy facilities currently onsite. Because Cal Fire and the ACFD already provide fire protection services to the project area, the fire protection facilities and infrastructure required to protect the existing facilities are in place. The proposed project would not alter the Altamont Pass Wind Farms Fire Requirements as described in Exhibit C of the 2005 CUPs.

As a result, the potential for exposure of people or structures to a significant risk of loss, injury, or death involving wildland fires is less than significant and no mitigation is required.

4.1 Introduction and Overview

CEQA requires that an EIR describe a reasonable range of feasible alternatives to the project or project location that could substantially reduce one or more of the project's significant environmental impacts while meeting most or all of its objectives. The EIR is required to analyze the potential environmental impacts of each alternative, though not at the same level of detail as the project. There must be sufficient detail to be able to compare the respective merits of the alternatives. Key provisions of CEQA Guidelines Section 15126.6 that pertain to alternatives analyses are summarized below.

- The discussion of alternatives shall focus on alternatives to the project or project location that are feasible, would meet most or all of the project objectives, and would substantially reduce one or more of its significant impacts.
- The range of alternatives must include the No Project Alternative. The No Project analysis will discuss the existing conditions at the time the NOP was published, as well as conditions that would reasonably be expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services. The No Project Alternative is not required to be feasible, meet any of the project objectives, or reduce the project's expected impacts to any degree.
- The range of alternatives required is governed by a "rule of reason." The EIR must evaluate only those alternatives necessary to permit a reasoned choice. An EIR is not required to analyze every conceivable alternative to a project.
- An EIR does not need to consider an alternative that would not achieve the basic project objectives, for which effects cannot be reasonably ascertained, and for which implementation is remote and speculative.

4.2 Project Objectives

AWI proposes to continue operating existing wind turbines and delivering clean, renewable wind-generated electrical energy to the Pacific Gas & Electric Company (PG&E) through existing transmission infrastructure as productively as possible in the short term.

Specific objectives include:

- Continue to operate the existing AWI project using existing turbines, transmission lines, and other infrastructure to meet regional energy needs in an efficient, reliable, and environmentally-sound manner.
- Continue to provide clean, renewable energy in the most cost-effective way.
- Operate existing wind power facilities more productively in the short term.

- Contribute to domestic energy security and California's Renewable Energy Resources Program, which requires that all retail electricity providers serve 33% of their load with renewable sources by 2020, by continuing to reduce California's reliance on fossil fuels utilizing APWRA's renewable wind resources.
- Provide significant benefits to human health, wildlife, and climate by reducing climate change/global warming-causing pollutants, reducing water usage, and by displacing toxic emissions produced from fossil fuel-fired power plants.
- Continue to contribute substantially to Alameda County's economy by preserving long-term skilled employment to operate and maintain the project and through expenditures on materials, tools, supplies, and equipment purchases.

4.3 Significant Impacts

Alternatives should provide a means of reducing the level of impacts that would otherwise result from implementation of the project. The environmental issues associated with the proposed project are analyzed in detail in Chapter 3, *Environmental Analysis*. The following significant impacts would be associated with the proposed project. The list below identifies instances in which the proposed project would result in a significant and unavoidable impact, or those in which mitigation measures identified in the EIR would reduce significant impacts to a less-than-significant level.

- **Biological Resources**
 - Impacts on special-status plants, wildlife including avian species (Significant and unavoidable with mitigation incorporated)
 - Impacts on riparian habitat and other sensitive natural communities (Less than significant with mitigation incorporated)
 - Impacts on federally protected wetlands (Less than significant with mitigation incorporated)
- **Noise**
 - Exposure of residences to increased wind turbine noise (Less than significant with mitigation incorporated).
 - Exposure of residences to noise during decommissioning activities. (Less than significant with mitigation incorporated).

4.4 Methodology and Screening Criteria

A range of potential alternatives was developed and subjected to screening criteria. The EIR preparers considered several representative alternatives. There was no attempt to include every conceivable alternative. The following criteria were used to screen potential alternatives.

- Does the alternative meet most or all of the project objectives?
- Is the alternative potentially feasible?

- Would the alternative substantially reduce one or more of the significant impacts associated with the project?

Based on the State CEQA Guidelines, “feasible” is defined as “capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors” (CEQA Guidelines Section 15364). CEQA does not require that an EIR determine the ultimate feasibility of a selected alternative, but rather that an alternative be probably feasible. Accordingly, no economic studies have been prepared regarding the economic feasibility of the selected alternatives.

The significant effects of the project may include those that are significant and unavoidable, or that are less than significant with mitigation. The alternative should provide a means of reducing the level of impact that would otherwise result from implementation of the project.

Those alternatives that meet the project objectives, that are probably feasible, and that would reduce one or more project impacts are discussed in greater detail below.

4.5 Alternatives Development

The significant impacts listed above were evaluated to identify alternatives that could reduce one or more impacts to a less-than-significant level. Significant impacts included those found to be significant and unavoidable as well as those that could be reduced to a less-than-significant level with mitigation. Through this process, alternatives were either considered and rejected or analyzed further, as described below.

4.5.1 Alternatives Considered but Rejected

One alternative that was considered included the current CUP requirements for yearly seasonal shutdown between November 1 and February 15 and phased decommissioning requirements as per the existing CUPs. The difference however, was a more gradual phase-out of turbines. Specifically, starting with the existing conditions (the first phase of decommissioning took place in 2009, at which time AWI was required to remove 10% of its 920 turbines), AWI would shut down and remove a total of 15% of the original 920 wind turbines by September 30, 2015. The remaining turbines would be shut down by September 30, 2018.

This alternative, however, would not meet the same needs as the project nor would it sufficiently reduce impacts. The project objectives of increased productivity and cost effectiveness would be harder to achieve while continuing seasonal shutdown requirements. In addition, this alternative would not reduce impacts to the environment with the continued use of 85% of the wind turbines until 2018. Impacts relating to turbine noise and particularly avian deaths would likely be greater than the proposed project. Therefore, this alternative was rejected because a more gradual phased decommissioning, while potentially feasible, would not substantially reduce one or more of the significant impacts associated with the project. In addition, this alternative would not meet most of the project objectives related to efficiency and productivity.

4.5.2 Alternatives Analyzed

The No Project Alternative and three other alternatives are described below.

Table 4-1 compares the nameplate capacity for the proposed project and each alternative in megawatts.

Table 4-1. Nameplate capacity for the proposed project and each alternative^a

	Proposed Project	No Project Alternative	Alternative 1	Alternative 2	Alternative 3
MW	193.1	116.5	128.7	189.5	311.0
MW = megawatt					

The goal for developing a set of possible alternatives was to identify other means to attain the project objectives while substantially reducing or avoiding one or more of the potentially significant environmental impacts caused by the proposed project. The alternatives were compared to the proposed project and analyzed at the same level of detail. For the most part, comparisons are made qualitatively rather than quantitatively.

4.5.2.1 No Project Alternative

Under the No Project Alternative, the existing CUPs would continue to be enforced. Seasonal shutdown of all wind turbines would occur yearly between November 1 and February 15. Phased decommissioning would continue to occur. The first phase of decommissioning took place in 2009, at which time AWI was required to remove 10% of its 920 turbines. The existing CUPS require AWI to remove a total of 35% of the original 920 turbines by September 30, 2013, 85% of original turbines by September 30, 2015, and the remaining 15% of turbines by September 30, 2018. Under the No Project Alternative, turbines would be decommissioned according to the schedule in the CUPs.

Under this alternative, AWI would need to not only shut down, but remove, a precise number of turbines by the dates specified in the existing CUPs. For each phase, AWI would need to terminate operation of those turbines one by one throughout the year as they are prepared for removal. AWI would need to remove 230 turbines by September 30, 2013. At a rate of four turbines per day, removal would take approximately 57.5 days. By September 30, 2015, an additional 50% of the original 920 turbines, or 460 more turbines, would need to be removed. At a rate of four turbines per day, removal of 460 turbines is expected to take 115 work days. Finally, the remaining 15%, or 138 turbines, would need to be removed by September 30, 2018. Removal of those turbines by that date is expected to take 34.5 days.

Air Quality and Greenhouse Gases

Under the No Project Alternative, the turbines would operate on a seasonal shutdown, phased decommissioning schedule. As a result, the No Project Alternative would result in less electricity produced and fewer GHGs offset compared to the proposed project. However, the No Project Alternative would result in renewable energy production that would offset GHGs. While decommissioning activities would produce some GHGs, the GHGs offset by turbines are multiple orders of magnitude greater than the GHGs that would result from decommissioning activities. The

net result is a reduction in GHGs. Decommissioning activities would result in emissions of criteria pollutant emissions, but these emissions would be below the Bay Area Air Quality Management District's (BAAQMD's) daily thresholds. Because this alternative would not exceed the BAAQMD thresholds, the impact would be less than significant.

Biological Resources

The No Project Alternative would allow existing wind turbines within the APWRA to operate under approved CUPs, with eventual decommissioning on the already-planned schedule. Under this alternative, wind turbines would continue to operate for an additional 3 years, but the seasonal shutdown requirement would remain. Impacts on biological resources from decommissioning would be identical to those described for the proposed project, but would occur on a different schedule. In addition, the baseline condition for avian impacts is the same for the proposed project as it is for the No Project Alternative; therefore this alternative would have no additional impacts on avian species beyond those already expected. However, the seasonal shutdown requirement of the No Project Alternative would help reduce avian impacts compared to the proposed project.

Impact BIO-1: Potential to cause a substantial adverse effect, either directly or through habitat modifications, on special-status species (Significant; Significant and unavoidable for avian species)

Following cessation of turbine operations, the dismantling and removal of existing AWI facilities (i.e., turbine towers, foundations, substations, transformers, meteorological towers, and access roads) would result in ground disturbance of up to 91 acres of habitat (predominantly annual grassland) within the 14,196-acre study area. These activities could result in direct and indirect impacts on special-status plants and wildlife that occur or could occur within the study area (Tables 3.2-1 and 3.2-2). The overall magnitude of impacts on special-status species would be small because the majority of the 91 acres of potential area of disturbance is made up of roadways, some of which could be left in place at individual landowner request. The actual area disturbed during decommissioning would be limited to the individual 1,570-square-foot footprints associated with each turbine tower and within previously disturbed areas along ridgelines. These impacts would be short-term (1 year and 2 months) and in many cases would be limited to 1 day for a particular work area (i.e., foundation removal and reclamation).

Reclamation of habitats at existing facilities is expected to include removing concrete footings to a 3-foot depth, removing gravel, filling any holes or trenches with native soil, and reseeded. Reclamation of the site would restore the existing habitat to a more natural state, which would have an overall benefit to both plant and wildlife species. However, if a special-status species is present within the designated work area, the species could be adversely affected (individual plants could be removed or wildlife species harmed or killed).

Special-Status Plants

Suitable habitat for 27 special-status plants occurs throughout the study area (Table 3.2-1). Three special-status plants have been previously identified within the study area (brittlescale, Congdon's tarplant, and round-leaved filaree). Because the study area (14,196 acres) is substantially larger than the impact area (91 acres) and because the precise locations of facilities to be decommissioned (removed) are not known at this time, blooming-period surveys have not yet been conducted for special-status plant species with potential to occur in the study area. Although The No Project

Alternative would not result in the permanent removal of habitat, temporary disturbance associated with excavation and grading activities could remove special-status plants if they are present within the decommissioning and reclamation work area. Loss of special-status plant species may be considered significant under CEQA and regulated by CDFW if the loss is substantial and could affect the long-term survival of the affected population. Because the presence and extent of any special-status plants in the decommissioning and reclamation work area are unknown, this would be a potentially significant impact. Implementing Mitigation Measures BIO-1 through BIO-7 would avoid and minimize impacts on special-status plants and reduce this impact to a less-than-significant level.

Special-Status Wildlife

Suitable habitat for 23 special-status wildlife species occurs throughout the study area (Table 3.2-2). Six of the 23 wildlife species have been previously identified within the study area (California tiger salamander, California red-legged frog, western pond turtle, western burrowing owl, American badger, and San Joaquin kit fox). Many of the species identified in Table 3.2-2 have potential to occur in annual grassland habitat, which is the dominant habitat type present in the study area where existing facilities are located. It is likely that decommissioning and reclamation work areas will overlap with habitats that could be used by special-status wildlife, either as residents or during migration/movement through the open grassland landscape. Although The No Project Alternative would not result in the permanent removal of habitat, excavation and grading activities could result in the temporary disturbance or direct mortality of special-status wildlife (including longhorn fairy shrimp, vernal pool fairy shrimp, California red-legged frog, California tiger salamander, western pond turtle, coast horned lizard, San Joaquin whipsnake, Alameda whipsnake, western burrowing owl, northern harrier, American badger, and San Joaquin kit fox) if they are present within or adjacent to the decommissioning and reclamation work area. Loss of special-status wildlife species may be considered significant under CEQA if the loss is substantial and could affect the long-term survival of the affected population. Because the presence and extent of any special-status wildlife in the decommissioning and reclamation work area are unknown, this would be a potentially significant impact. Project impacts that result in take of federally and state-listed species would also violate the ESA and CESA. Implementing Mitigation Measures BIO-1 through BIO-5 and BIO-8 through BIO-15 would avoid and minimize impacts on special-status wildlife and reduce impacts associated with decommissioning to a less-than-significant level.

Impact BIO-2: Potential substantial adverse effects on riparian habitat and other sensitive natural communities (Significant)

Ground disturbance associated with decommissioning under the No Project Alternative, like the proposed project, is expected to result in the temporary disturbance of up to 91 acres of previously disturbed area. A majority of this area is expected to be annual grassland, which is not considered a sensitive natural community. Areas supporting sensitive natural communities are scattered throughout the study area and include evergreen forest, oak woodland, willow riparian scrub, alkali meadow, and alkali wetland (Figure 3.2-1). Existing turbines, substations, and meteorological towers are not located within sensitive natural communities; however, some of the existing access roads may cross through these habitats. Access roads through sensitive natural communities could be reclaimed but these activities would generally be limited to the existing, disturbed gravel or dirt road bed and some adjacent habitat.

Decommissioning Existing AWI Facilities

Although the No Project Alternative has the potential to temporarily disturb sensitive natural communities, this impact would be temporary and the reclaimed road corridor could revert back to the surrounding habitat, resulting in a net gain of sensitive natural communities. Mitigation Measures BIO-1 (general protection measures) and BIO-4 (exclusion zones) will be implemented as necessary to avoid and minimize impacts on sensitive natural communities adjacent to decommissioning and reclamation work areas and would reduce this impact to a less-than-significant level.

Impact BIO-3: Potential substantial adverse effects on state or federally protected wetlands through direct removal, filling, hydrological interruption, or other means (Significant)

Aquatic resources, including stock ponds, alkali wetlands, and seasonal drainages, occur throughout the study area (Figure 3.2-1). Existing AWI facilities may cross or occur adjacent to these aquatic resources and decommissioning activities that result in ground disturbance could directly or indirectly impact (including temporary fill and removal of culverts) aquatic resources that may qualify as waters of the United States and waters of the state. Waters of the United States are regulated by USACE and waters of the state in California are regulated by the RWQCB. Wetlands are also considered sensitive communities.

Decommissioning Existing AWI Facilities

This impact would be temporary and decommissioning and reclamation activities would ultimately restore existing crossings or habitat to a more natural state. In addition to direct impacts, reclamation activities could indirectly affect aquatic resources by causing increased erosion and sedimentation within resources located adjacent to the decommissioning and reclamation work area. Because The No Project Alternative would not result in the permanent loss of waters of the United States and state, no compensatory mitigation is proposed. Implementing Mitigation Measures BIO-1 (general protection measures), BIO-4 (exclusion zones), BIO-5 (biological monitoring), BIO-18 (identify and delineate waters of the United States and waters of the state [including wetlands]), and BIO-19 (avoid and minimize disturbance of waters of the United States, including wetland communities) would avoid and minimize impacts on waters of the United States and waters of the state, and would reduce this impact on state or federally protected wetlands to a less-than-significant level.

Noise

Under the No Project Alternative, turbines would be decommissioned according to the schedule in the CUPs. Turbines would operate less under this alternative than under the proposed project. However, the potential for increased wind turbine noise as a result of aging turbines or lack of maintenance would still be a significant impact. Implementing Mitigation Measure NOISE-1 would reduce this impact to a less-than-significant level.

As with the proposed project, decommissioning and reclamation activities under the No Project Alternative would involve the use of construction equipment and trucks. Noise from these activities would be the same as for the proposed project, and the exposure of residences to noise during decommissioning activities would be a significant impact. Implementing Mitigation Measure NOISE-2 would reduce this impact to a less-than-significant level.

Hazards and Hazardous Materials

Under the No Project Alternative, operations would continue to 2018 but seasonal shutdown of all wind turbines would occur. Regardless, fire protection facilities to support the existing operations are already in place. No new fire department facilities or resources would be needed to serve existing windfarm operations. The danger of exposure to hazardous materials and wildland fires as compared to the proposed project would neither increase nor decrease. Therefore, the potential for exposure to hazardous materials and wildland fires would be similar to the proposed project, and there would not be a substantial adverse physical impact.

4.5.2.2 Alternative 1—Continue Seasonal Shutdown, No Phased Decommissioning, Permanent Shutdown in 2015

Alternative 1 was chosen because it would reduce the impacts on avian wildlife (i.e., projected avian fatalities) as well as impacts associated with wind turbine noise. Alternative 1 is similar to the proposed project in that it would include modification to existing CUPs that would remove the phased decommissioning requirements (excluding the 10% already shut down in 2009). Instead of phasing it, complete shutdown of wind turbines (with the blades locked into place to prevent spinning) would occur by October 31, 2015. Decommissioning (removal) of all wind turbines would commence the following year (2016). Unlike the proposed project, Alternative 1 would retain the existing CUP requirement for seasonal shutdown of wind turbines between November 1 and February 15 each year.

Air Quality and Greenhouse Gases

Alternative 1 would end turbine operations in 2015, like the proposed project, but Alternative 1 would utilize a seasonal shutdown schedule. Because of the seasonal shutdown schedule, Alternative 1 would produce less electricity and offset fewer GHGs compared to the proposed project. The GHGs offset by the turbines are multiple orders of magnitude greater than the GHGs that would result from decommissioning activities, however. The net result is a reduction in GHGs. Decommissioning activities would result in emissions of criteria pollutant emissions, but these emissions would be below the BAAQMD's daily thresholds. The impact would be less than significant.

Biological Resources

Similar to all other alternatives, the project would be decommissioned on a certain schedule with all turbines removed by a certain future date. Impacts from decommissioning would therefore be similar to all other alternatives, with minor differences in timing. Impacts and mitigation measures associated with decommissioning are similar for all alternatives with the only difference being the year in which they would occur. Alternative 1 would allow more turbines to operate for a longer period than under current CUPs (i.e., no phased decommissioning), seasonal shutdown would continue, and turbines would be shut down completely by 2015.

An analysis of the potential avian impacts under Alternative 1 indicates that impacts could be expected to be lower than the proposed project (Table 4-2), but still slightly higher than the No Project Alternative (the avian baseline condition). Although the estimates are based on APWRA-wide per-MW mortality estimates, they provide a comparison of the expected impacts under each alternative. As indicated in Table 4-2, Alternative 1 could be expected to result in approximately 9%

higher levels of avian mortality in the focal species when compared to the avian baseline (with No Project/existing CUP requirements). It would have substantially less impact than the proposed project, however. Feasible mitigation to reduce avian impacts primarily includes seasonal shutdowns, which are already a component of Alternative 1.

Table 4-2. Adjusted Species Fatality Rates for Each Alternative, Based on an Average Fatality Rate (Fatalities per Megawatt per Year)

Species/Category	Average Fatality Rate (2005–2010)	Average Fatality Rate (2008–2010)	Proposed Project	No Project	Alt 1	Alt 2	Alt 3
American kestrel	0.496	0.443	85.5–95.8	51.6–57.8	57.0–63.8	83.9–94.0	137.8–154.2
burrowing owl	0.721	0.425	82.1–139.2	49.5–84.0	54.7–92.8	80.5–136.6	132.2–224.2
golden eagle	0.085	0.061	11.7–16.4	7.1–9.9	7.9–10.9	11.6–16.1	19.0–26.5
red-tailed hawk	0.449	0.286	55.2–86.7	33.3–52.3	36.8–57.8	54.2–85.1	139.7
Total All Birds ¹	9.897	9.068	1,750.9– 1,911.2	1,056.4– 1,153.0	1,167.1– 1,273.8	1,718.4– 1,875.5	2,820.1– 3,078.0

¹ Includes focal species.

Impact BIO-1: Potential to cause a substantial adverse effect, either directly or through habitat modifications, on special-status species (Significant; Significant and unavoidable for avian species)

Following cessation of turbine operations, the dismantling and removal of existing AWI facilities (i.e., turbine towers, foundations, substations, transformers, meteorological towers, and access roads) would result in ground disturbance of up to 91 acres of habitat (predominantly annual grassland) within the 14,196-acre study area. These activities could result in direct and indirect impacts on special-status plants and wildlife that occur or could occur within the study area (Tables 3.2-1 and 3.2-2). The overall magnitude of impacts on special-status species would be small because the majority of the 91 acres of potential area of disturbance is made up of roadways, some of which could be left in place at individual landowner request. The actual area disturbed during decommissioning would be limited to the individual 1,570-square-foot footprints associated with each turbine tower and within previously disturbed areas along ridgelines. These impacts would be short-term (1 year and 2 months) and in many cases would be limited to 1 day for a particular work area (i.e., foundation removal and reclamation).

Reclamation of habitat at existing facilities is expected to include removing concrete footings to a 3-foot depth, removing gravel, filling any holes or trenches with native soil, and reseeding. Reclamation of the site would restore the existing habitat to a more natural state, which would have an overall benefit to both plant and wildlife species. However, if a special-status species is present within the designated work area, the species could be adversely affected (individual plants could be removed or wildlife species harmed or killed).

Special-Status Plants

Suitable habitat for 27 special-status plants occurs throughout the study area (Table 3.2-1). Three special-status plants have been previously identified within the study area (brittlescale, Congdon's tarplant, and round-leaved filaree). Because the study area (14,196 acres) is substantially larger than the impact area (91 acres) and because the precise locations of facilities to be decommissioned

(removed) are not known at this time, blooming-period surveys have not yet been conducted for special-status plant species with potential to occur in the study area. Although Alternative 1 would not result in the permanent removal of habitat, temporary disturbance associated with excavation and grading activities could remove special-status plants if they are present within the decommissioning and reclamation work area. Loss of special-status plant species may be considered significant under CEQA and regulated by CDFW if the loss is substantial and could affect the long-term survival of the affected population. Because the presence and extent of any special-status plants in the decommissioning and reclamation work area are unknown, this would be a potentially significant impact. Implementing Mitigation Measures BIO-1 through BIO-7 would avoid and minimize impacts on special-status plants and reduce this impact to a less-than-significant level.

Special-Status Wildlife

Suitable habitat for 23 special-status wildlife species occurs throughout the study area (Table 3.2-2). Six of the 23 wildlife species have been previously identified within the study area (California tiger salamander, California red-legged frog, western pond turtle, western burrowing owl, American badger, San Joaquin kit fox). Many of the species identified in Table 3.2-2 have potential to occur in annual grassland habitat, which is the dominant habitat type present in the study area where existing facilities are located. It is likely that decommissioning and reclamation work areas will overlap with habitats that could be used by special-status wildlife, either as residents or during migration/movement through the open grassland landscape. Although Alternative 1 would not result in the permanent removal of habitat, temporary disturbance associated with excavation and grading activities could result in the temporary disturbance or direct mortality of special-status wildlife (including longhorn fairy shrimp, vernal pool fairy shrimp, California red-legged frog, California tiger salamander, western pond turtle, coast horned lizard, San Joaquin whipsnake, Alameda whipsnake, western burrowing owl, northern harrier, American badger, and San Joaquin kit fox) if they are present within or adjacent to the decommissioning and reclamation work area. Loss of special-status wildlife species may be considered significant under CEQA if the loss is substantial and could affect the long-term survival of the affected population. Because the presence and extent of any special-status wildlife in the decommissioning and reclamation work area are unknown, this would be a potentially significant impact. Project impacts that result in take of federally and state-listed species would also violate the ESA and CESA. Implementing Mitigation Measures BIO-1 through BIO-5 and BIO-8 through BIO-15 would avoid and minimize impacts on special-status wildlife and reduce impacts associated with decommissioning to a less-than-significant level.

Impact BIO-2: Potential substantial adverse effects on riparian habitat and other sensitive natural communities (Significant)

Ground disturbance associated with decommissioning activities under Alternative 1, like the proposed project, is expected to result in the temporary disturbance of up to 91 acres of previously disturbed area. A majority of this area is expected to be annual grassland, which is not considered a sensitive natural community. Areas supporting sensitive natural communities are scattered throughout the study area and include evergreen forest, oak woodland, willow riparian scrub, alkali meadow, and alkali wetland (Figure 3.2-1). Existing turbines, substations, and meteorological towers are not located within sensitive natural communities; however, some of the existing access roads may cross through these habitats. Access roads through sensitive natural communities could be reclaimed, but these activities would generally be limited to the existing, disturbed gravel or dirt road bed and some adjacent habitat.

Decommissioning Existing AWI Facilities

Although Alternative 1 has the potential to temporarily disturb sensitive natural communities, this impact would be temporary and the reclaimed road corridor could revert back to the surrounding habitat, resulting in a net gain of sensitive natural communities. Mitigation Measures BIO-1 (general protection measures) and BIO-4 (exclusion zones) will be implemented as necessary to avoid and minimize impacts on sensitive natural communities adjacent to decommissioning and reclamation work areas and would reduce this impact to a less-than-significant level.

Impact BIO-3: Potential substantial adverse effects on state or federally protected wetlands through direct removal, filling, hydrological interruption, or other means (Significant)

Aquatic resources, including stock ponds, alkali wetlands, and seasonal drainages, occur throughout the study area (Figure 3.2-1). Existing AWI facilities may cross or occur adjacent to these aquatic resources and decommissioning activities that result in ground disturbance could directly or indirectly impact (including temporary fill and removal of culverts) aquatic resources that may qualify as waters of the United States and waters of the state. Waters of the United States are regulated by USACE and waters of the state in California are regulated by the RWQCB. Wetlands are also considered sensitive communities.

Decommissioning Existing AWI Facilities

This impact would be temporary and decommissioning and reclamation activities would ultimately restore existing crossings or habitat to a more natural state. In addition to direct impacts, reclamation activities could indirectly affect aquatic resources by causing increased erosion and sedimentation within resources located adjacent to the decommissioning and reclamation work area. Because Alternative 1 would not result in the permanent loss of waters of the United States and state, no compensatory mitigation is proposed. Implementing Mitigation Measures BIO-1 (general protection measures), BIO-4 (exclusion zones), BIO-5 (biological monitoring), BIO-18 (identify and delineate waters of the United States and waters of the state [including wetlands]), and BIO-19 (avoid and minimize disturbance of waters of the United States, including wetland communities) would avoid and minimize impacts on waters of the United States and waters of the state. These measures would reduce this impact on state or federally protected wetlands to a less-than-significant level.

Noise

Under Alternative 1, seasonal shutdown would continue and all current turbines would continue to operate through October 2015. Potential for increased wind turbine noise as a result of aging turbines or lack of maintenance would be less under Alternative 1 relative to the proposed project because the turbines would operate less. Although the exposure of residences to increased wind turbine noise under Alternative 1 would be less than for the proposed project, it would still be a significant impact. Implementing Mitigation Measure NOISE-1 would reduce this impact to a less-than-significant level.

Decommissioning, including removal and reclamation activities, under Alternative 1 would involve the use of construction equipment and trucks. Noise from these activities would be the same as for the proposed project. Similar to the proposed project, the exposure of residences to noise during decommissioning activities would be a significant impact. Implementing Mitigation Measure NOISE-2 would reduce this impact to a less-than-significant level.

Hazards and Hazardous Materials

Alternative 1 would not increase any potential impacts associated with hazardous materials or wildland fires. In fact, it would slightly decrease the fire hazards due to the additional time wind turbines would be shut down (i.e., yearly seasonal shutdown). This decrease, however, would be negligible. Regardless of timing, fire protection facilities to support the existing operations are already in place. No new fire department facilities or resources would be needed to serve existing windfarm operations under this alternative. The danger of wildland fire as compared to the proposed project would neither increase nor decrease. Therefore, the risk of exposure to wildfires would be similar to the proposed project, and there would not be a substantial exposure of people or structures to a significant risk of loss, injury, or death involving wildland fires. The impact would be less than significant.

4.5.2.3 Alternative 2—Continue Seasonal Shutdown, No Phased Decommissioning, Permanent Shutdown in 2016

Under this alternative, seasonal shutdown would continue as per the existing CUPs, but the phased decommissioning requirement would be altered compared to the proposed project. Alternative 2 was chosen because it would reduce impacts on avian wildlife (i.e., projected avian fatalities) as well as impacts associated with wind turbine noise. AWI would continue to operate 828 wind turbines until October 31, 2016, when all wind turbines would be permanently shut down. Decommissioning, including the complete removal of the wind turbines, would commence the following year (2017). The total megawatts produced for this alternative would be slightly less than under the proposed project.

Air Quality and Greenhouse Gases

Despite maintaining the seasonal shutdown schedule, the permanent shutdown of all turbines by 2016 under Alternative 2 allows for greater electricity production than the year-round and 2015 permanent shutdown schedule under the proposed project. Alternative 2 would result in the second highest electricity production and offset GHGs. The GHGs offset by the turbines are multiple orders of magnitude greater than the GHGs that would result from decommissioning activities. As a result, the net result is a reduction in GHGs. Decommissioning activities would result in emissions of criteria pollutant emissions, but these emissions would be below the BAAQMD's daily thresholds. The impact would be less than significant.

Biological Resources

Potential biological impacts from decommissioning under Alternative 2 would be slightly less than the proposed project (see Table 4-2). Although this alternative would allow more turbines to operate for a longer period than under current CUPs (i.e., no phased shutdown and decommissioning), all turbines would be shut down completely by 2016. Because turbine operations would only be of slightly shorter duration than under the proposed project, impacts on terrestrial biological resources would be similar to the proposed project.

An analysis of the potential avian impacts under Alternative 2 indicates that impacts could be expected to be slightly lower, but similar to, the proposed project (Table 4-2), but still higher than the No Project Alternative (the avian baseline condition). Although the estimates are based on APWRA-wide per-MW mortality estimates, they provide a comparison of the expected impacts

under each alternative. As indicated in the table, Alternative 2 could be expected to result in approximately 61% higher mortality among the focal species when compared to the avian baseline, which represents a substantially greater impact than the No Project Alternative, but slightly less than the proposed project (by about 2 %). Feasible mitigation to reduce avian impacts primarily includes seasonal shutdowns, which are already a component of Alternative 2. Similar to the proposed project, impacts on avian species under this alternative would remain significant and unavoidable.

Impact BIO-1: Potential to cause a substantial adverse effect, either directly or through habitat modifications, on special-status species (Significant; Significant and unavoidable for avian species)

Following cessation of turbine operations, the dismantling and removal of existing AWI facilities (i.e., turbine towers, foundations, substations, transformers, meteorological towers, and access roads) would result in ground disturbance of up to 91 acres of habitat (predominantly annual grassland) within the 14,196-acre study area. These activities could result in direct and indirect impacts on special-status plants and wildlife that occur or could occur within the study area (Tables 3.2-1 and 3.2-2). The overall magnitude of impacts on special-status species would be small because the majority of the 91 acres of potential area of disturbance is made up of roadways, some of which could be left in place at individual landowner request. The actual area disturbed during decommissioning would be limited to the individual 1,570-square-foot footprints associated with each turbine tower and within previously disturbed areas along ridgelines. These impacts would be short-term (1 year and 2 months) and in many cases would be limited to 1 day for a particular work area (i.e., foundation removal and reclamation).

Reclamation of habitats at existing facilities is expected to include removing concrete footings to a 3-foot depth, removing gravel, filling any holes or trenches with native soil, and reseeding. Reclamation of the site would restore the existing habitat to a more natural state, which would have an overall benefit to both plant and wildlife species. However, if a special-status species is present within the designated work area, the species could be adversely affected (individual plants could be removed or wildlife species harmed or killed).

Special-Status Plants

Suitable habitat for 27 special-status plants occurs throughout the study area (Table 3.2-1). Three special-status plants have been previously identified within the study area (brittlescale, Congdon's tarplant, and round-leaved filaree). Because the study area (14,196 acres) is substantially larger than the impact area (91 acres) and because the precise locations of facilities to be decommissioned (removed) are not known at this time, blooming-period surveys have not yet been conducted for special-status plant species with potential to occur in the study area. Although Alternative 2 would not result in the permanent removal of habitat, temporary disturbance associated with excavation and grading activities could remove special-status plants if they are present within the decommissioning and reclamation work area. Loss of special-status plant species may be considered significant under CEQA and regulated by CDFW if the loss is substantial and could affect the long-term survival of the affected population. Because the presence and extent of any special-status plants in the decommissioning and reclamation work area are unknown, this would be a potentially significant impact. Implementation of Mitigation Measures BIO-1 through BIO-7 would avoid and minimize impacts on special-status plants and reduce this impact to a less-than-significant level.

Special-Status Wildlife

Suitable habitat for 23 special-status wildlife species occurs throughout the study area (Table 3.2-2). Six of the 23 wildlife species have been previously identified within the study area (California tiger salamander, California red-legged frog, western pond turtle, western burrowing owl, American badger, San Joaquin kit fox). Many of the species identified in Table 3.2-2 have potential to occur in annual grassland habitat, which is the dominant habitat type present in the study area where existing facilities are located. It is likely that decommissioning and reclamation work areas will overlap with habitats that could be used by special-status wildlife, either as residents or during migration/movement through the open grassland landscape. Although Alternative 2 would not result in the permanent removal of habitat, temporary disturbance associated with excavation and grading activities could result in the temporary disturbance or direct mortality of special-status wildlife (including longhorn fairy shrimp, vernal pool fairy shrimp, California red-legged frog, California tiger salamander, western pond turtle, coast horned lizard, San Joaquin whipsnake, Alameda whipsnake, western burrowing owl, northern harrier, American badger, and San Joaquin kit fox) if they are present within or adjacent to the decommissioning and reclamation work area. Loss of special-status wildlife species may be considered significant under CEQA if the loss is substantial and could affect the long-term survival of the affected population. Because the presence and extent of any special-status wildlife in the decommissioning and reclamation work area are unknown, this would be a potentially significant impact. Project impacts that result in take of federally and state-listed species would also violate the ESA and CESA. Implementing Mitigation Measures BIO-1 through BIO-5 and BIO-8 through BIO-15 would avoid and minimize impacts on special-status wildlife and reduce impacts associated with decommissioning to a less-than-significant level.

Impact BIO-2: Potential substantial adverse effects on riparian habitat and other sensitive natural communities (Significant)

Ground disturbance associated with decommissioning activities under Alternative 2, like the proposed project, is expected to result in the temporary disturbance of up to 91 acres of previously disturbed area. A majority of this area is expected to be annual grassland, which is not considered a sensitive natural community. Areas supporting sensitive natural communities are scattered throughout the study area and include evergreen forest, oak woodland, willow riparian scrub, alkali meadow, and alkali wetland (Figure 3.2-1). Existing turbines, substations, and meteorological towers are not located within sensitive natural communities; however, some of the existing access roads may cross through these habitats. Access roads through sensitive natural communities could be reclaimed but these activities would generally be limited to the existing, disturbed gravel or dirt road bed and some adjacent habitat.

Decommissioning Existing AWI Facilities

Although Alternative 2 has the potential to temporarily disturb sensitive natural communities, this impact would be temporary and the reclaimed road corridor could revert back to the surrounding habitat, resulting in a net gain of sensitive natural communities. Mitigation Measures BIO-1 (general protection measures) and BIO-4 (exclusion zones) will be implemented as necessary to avoid and minimize impacts on sensitive natural communities adjacent to decommissioning and reclamation work areas and would reduce this impact to a less-than-significant level.

Impact BIO-3: Potential substantial adverse effects on state or federally protected wetlands through direct removal, filling, hydrological interruption, or other means (Significant)

Aquatic resources, including stock ponds, alkali wetlands, and seasonal drainages, occur throughout the study area (Figure 3.2-1). Existing AWI facilities may cross or occur adjacent to these aquatic resources and decommissioning activities that result in ground disturbance could directly or indirectly affect (including temporary fill and removal of culverts) aquatic resources that may qualify as waters of the United States and waters of the state. Waters of the United States are regulated by USACE and waters of the state in California are regulated by the RWQCB. Wetlands are also considered sensitive communities.

Decommissioning Existing AWI Facilities

This impact would be temporary and decommissioning and reclamation activities would ultimately restore existing crossings or habitat to a more natural state. In addition to direct impacts, reclamation activities could indirectly affect aquatic resources by causing increased erosion and sedimentation within resources located adjacent to the decommissioning and reclamation work area. Because Alternative 2 would not result in the permanent loss of waters of the United States and state, no compensatory mitigation is proposed. Implementing Mitigation Measures BIO-1 (general protection measures), BIO-4 (exclusion zones), BIO-5 (biological monitoring), BIO-18 (identify and delineate waters of the United States and waters of the state [including wetlands]), and BIO-19 (avoid and minimize disturbance of waters of the United States, including wetland communities), would avoid and minimize impacts on waters of the United States and waters of the state. These measures would reduce this impact on state or federally protected wetlands to a less-than-significant level.

Noise

Under Alternative 2, seasonal shutdown would continue and all current turbines would continue to operate through October 2016. Potential noise impacts under Alternative 2 would be similar to the proposed project. Alternative 2 would allow more turbines to operate for a longer period than under current CUPs (i.e., no phased decommissioning), possibly leading to higher noise as a result of operating longer than previously planned. This would be a significant impact. However, the daily L_{dn} value from turbine operation at any given receptor on a day currently not allowed is not expected to be greater than the L_{dn} value on days when turbines are currently allowed to operate.

Although the exposure of residences to increased wind turbine noise as a result of operations, aging turbines or lack of maintenance under Alternative 2 would be slightly less than for the proposed project, it would still be a significant impact. Implementing Mitigation Measure NOISE-1 would reduce this impact to a less-than-significant level.

Decommissioning, including removal and reclamation activities, under Alternative 2 would involve the use of construction equipment and trucks. Noise from these activities would be the same as for the proposed project. Similar to the proposed project, the exposure of residences to noise during decommissioning activities would be a significant impact. Implementing Mitigation Measure NOISE-2 would reduce this impact to a less-than-significant level.

Hazards and Hazardous Materials

Under this alternative, impacts associated with wildland fires would neither increase nor decrease as compared to the proposed project. Although the seasonal shutdown would be in effect, operations would continue for an additional year. Regardless of timing, fire protection facilities to support the existing operations are already in place. No new fire department facilities or resources would be needed to serve existing windfarm operations under this alternative. Therefore, the risk of exposure to wildfires would be similar to the proposed project, and there would not be a substantial exposure of people or structures to a significant risk of loss, injury, or death involving wildland fires. The impact would be less than significant.

4.5.2.4 Alternative 3—Continue Seasonal Shutdown, No Phased Decommissioning, Permanent Shutdown in 2018

Alternative 3 was chosen because it would reduce air quality impacts related to GHG emissions to the greatest degree, as well as meet most of the project objectives. Alternative 3 is similar to the proposed project in that it would include modification to existing CUPs that would remove phased decommissioning requirements (excluding the 10% already shut down in 2009). Under this alternative, however, while seasonal shutdown would continue between November 1 and February 15 of each year, AWI would continue to operate 828 wind turbines until October 1, 2018, when shutdown would take place. Decommissioning (the complete removal of wind turbines) would begin the following year (2019). The total megawatts produced under this alternative would be significantly higher than under the proposed project.

Air Quality and Greenhouse Gases

Despite maintaining the seasonal shutdown schedule, the permanent shutdown of all turbines by 2018 under Alternative 3 allows for greater electricity production than the year-round and 2015 permanent shutdown schedule under the proposed project. Of all the alternatives, Alternative 3 would result in the most electricity production and GHGs offset. Although some GHG emissions would result from decommissioning activities, the GHGs offset by the turbine operations under Alternative 3 are multiple orders of magnitude greater than those resulting from decommissioning activities. The net result of Alternative 3 would be a substantial reduction in GHGs. Decommissioning activities would also result in emissions of criteria pollutants, but these emissions would be below the BAAQMD's daily thresholds. The impact would be less than significant.

Biological Resources

Potential biological impacts from decommissioning under Alternative 3 would be similar to the proposed project. An analysis of the potential avian impacts under Alternative 3 indicates that operational impacts would be substantially higher than those associated with the proposed project (Table 4-2), and more than 2.5 times the level expected under the No Project Alternative (the avian baseline condition). Although the estimates are based on APWRA-wide per-MW mortality estimates, they provide a comparison of the expected impacts under each alternative. Feasible mitigation to reduce avian impacts primarily includes seasonal shutdowns, which are already a component of Alternative 3. Similar to the proposed project, impacts on avian species under this alternative would remain significant and unavoidable.

Impact BIO-1: Potential to cause a substantial adverse effect, either directly or through habitat modifications, on special-status species (Significant; Significant and unavoidable for avian species)

Following cessation of turbine operations, the dismantling and removal of existing AWI facilities (i.e., turbine towers, foundations, substations, transformers, meteorological towers, and access roads) would result in ground disturbance of up to 91 acres of habitat (predominantly annual grassland) within the 14,196-acre study area. These activities could result in direct and indirect impacts on special-status plants and wildlife that occur or could occur within the study area (Tables 3.2-1 and 3.2-2). The overall magnitude of impacts on special-status species would be small because the majority of the 91 acres of potential area of disturbance is made up of roadways, some of which could be left in place at individual landowner request. The actual area disturbed during decommissioning would be limited to the individual 1,570-square-foot footprints associated with each turbine tower and within previously disturbed areas along ridgelines. These impacts would be short-term (1 year and 2 months) and in many cases would be limited to 1 day for a particular work area (i.e., foundation removal and reclamation).

Reclamation of habitats at existing facilities is expected to include removing concrete footings to a 3-foot depth, removing gravel, filling any holes or trenches with native soil, and reseeded. Reclamation of the site would restore the existing habitat to a more natural state, which would have an overall benefit to both plant and wildlife species. However, if a special-status species is present within the designated work area, the species could be adversely affected (individual plants could be removed or wildlife species harmed or killed).

Special-Status Plants

Suitable habitat for 27 special-status plants occurs throughout the study area (Table 3.2-1). Three special-status plants have been previously identified within the study area (brittlescale, Congdon's tarplant, and round-leaved filaree). Because the study area (14,196 acres) is substantially larger than the impact area (91 acres) and because the precise locations of facilities to be decommissioned (removed) are not known at this time, blooming-period surveys have not yet been conducted for special-status plant species with potential to occur in the study area. Although Alternative 3, like the proposed project, would not result in the permanent removal of habitat, temporary disturbance associated with excavation and grading activities could remove special-status plants if they are present within the decommissioning and reclamation work area. Loss of special-status plant species may be considered significant under CEQA and regulated by CDFW if the loss is substantial and could affect the long-term survival of the affected population. Because the presence and extent of any special-status plants in the work area are unknown, this would be a potentially significant impact. Implementing Mitigation Measures BIO-1 through BIO-7 would avoid and minimize impacts on special-status plants and reduce this impact to a less-than-significant level.

Special-Status Wildlife

Suitable habitat for 23 special-status wildlife species occurs throughout the study area (Table 3.2-2). Six of the 23 wildlife species have been previously identified within the study area (California tiger salamander, California red-legged frog, western pond turtle, western burrowing owl, American badger, San Joaquin kit fox). Many of the species identified in Table 3.2-2 have potential to occur in annual grassland habitat, which is the dominant habitat type present in the study area where existing facilities are located. It is likely that decommissioning and reclamation work areas would overlap with habitats that could be used by special-status wildlife, either as residents or during

migration/movement through the open grassland landscape. Although Alternative 3 would not result in the permanent removal of habitat, temporary disturbance associated with excavation and grading activities could result in the temporary disturbance or direct mortality of special-status wildlife (including longhorn fairy shrimp, vernal pool fairy shrimp, California red-legged frog, California tiger salamander, western pond turtle, coast horned lizard, San Joaquin whipsnake, Alameda whipsnake, western burrowing owl, northern harrier, American badger, and San Joaquin kit fox) if they are present within or adjacent to the decommissioning and reclamation work area. Loss of special-status wildlife species may be considered significant under CEQA if the loss is substantial and could affect the long-term survival of the affected population. Because the presence and extent of any special-status wildlife in the decommissioning and reclamation work area are unknown, this would be a potentially significant impact. Project impacts that result in take of federally and state-listed species would also violate the ESA and CESA. Implementing Mitigation Measures BIO-1 through BIO-5 and BIO-8 through BIO-15 would avoid and minimize impacts on special-status wildlife and reduce impacts associated with decommissioning to a less-than-significant level.

Impact BIO-2: Potential substantial adverse effects on riparian habitat and other sensitive natural communities (Significant)

Ground disturbance associated with decommissioning activities under Alternative 3 is expected to result in the temporary disturbance of up to 91 acres of previously disturbed area. A majority of this area is expected to be annual grassland, which is not considered a sensitive natural community. Areas supporting sensitive natural communities are scattered throughout the study area and include evergreen forest, oak woodland, willow riparian scrub, alkali meadow, and alkali wetland (Figure 3.2-1). Existing turbines, substations, and meteorological towers are not located within sensitive natural communities; however, some of the existing access roads may cross through these habitats. Access roads through sensitive natural communities could be reclaimed but these activities would generally be limited to the existing, disturbed gravel or dirt road bed and some adjacent habitat.

Decommissioning Existing AWI Facilities

Although Alternative 3 has the potential to temporarily disturb sensitive natural communities, this impact would be temporary and the reclaimed road corridor could revert back to the surrounding habitat, resulting in a net gain of sensitive natural communities. Mitigation Measures BIO-1 (general protection measures) and BIO-4 (exclusion zones) will be implemented as necessary to avoid and minimize impacts on sensitive natural communities adjacent to decommissioning and reclamation work areas, and would reduce impacts on riparian habitat or other sensitive natural communities to a less-than-significant level.

Impact BIO-3: Potential substantial adverse effects on state or federally protected wetlands through direct removal, filling, hydrological interruption, or other means (Significant)

Aquatic resources, including stock ponds, alkali wetlands, and seasonal drainages, occur throughout the study area (Figure 3.2-1). Existing AWI facilities may cross or occur adjacent to these aquatic resources and decommissioning activities that result in ground disturbance (including temporary fill and removal of culverts) could directly or indirectly affect aquatic resources that may qualify as waters of the United States and waters of the state. Waters of the United States are regulated by USACE and waters of the state in California are regulated by the RWQCB. Wetlands are also considered sensitive communities.

Decommissioning Existing AWI Facilities

This impact would be temporary and decommissioning and reclamation activities would ultimately restore existing crossings or habitat to a more natural state. In addition to direct impacts, reclamation activities could indirectly affect aquatic resources by causing increased erosion and sedimentation within resources located adjacent to the decommissioning and reclamation work area. Because Alternative 3 would not result in the permanent loss of waters of the United States and state, no compensatory mitigation is proposed. Implementing Mitigation Measures BIO-1 (general protection measures), BIO-4 (exclusion zones), BIO-5 (biological monitoring), BIO-18 (identify and delineate waters of the United States and waters of the state [including wetlands]), and BIO-19 (avoid and minimize disturbance of waters of the United States, including wetland communities) would avoid and minimize impacts on waters of the United States and waters of the state, and would reduce this impact on state or federally protected wetlands to a less-than-significant level.

Noise

Alternative 3 would continue the seasonal shutdown schedule and all current turbines would continue to operate through October 2018. Under this alternative, operations would increase compared to the proposed project. Exposure of residences to increased turbine noise under Alternative 3, including the potential for increased wind turbine noise as a result of aging turbines or lack of maintenance, would be greater under Alternative 3 than under the proposed project because more turbines would be running through 2018. This is considered a significant impact. Implementing Mitigation Measure NOISE-1 would reduce this impact to a less-than-significant level.

Decommissioning, including removal and reclamation activities, under Alternative 3 would involve the use of construction equipment and trucks. Noise from these activities would be the same as for the proposed project. Similar to the proposed project, exposure of residences to noise during decommissioning activities would be a significant impact. Implementing Mitigation Measure NOISE-2 would reduce this impact to a less-than-significant level.

Hazards and Hazardous Materials

Under this alternative, impacts associated with wildland fires would neither increase nor decrease as compared to the proposed project. Although the seasonal shutdown would be in effect, full operations would continue for an additional 3 years compared to the project. Regardless of timing, fire protection facilities to support the existing operations are already in place. No new fire department facilities or resources would be needed to serve existing windfarm operations under this alternative. Therefore, the risk of exposure to wildfires would be similar to the proposed project, and there would not be a substantial exposure of people or structures to a significant risk of loss, injury, or death involving wildland fires. The impact would be less than significant.

4.5.3 Environmentally Superior Alternative

CEQA requires an EIR to examine a range of feasible alternatives to the project. CEQA Guidelines Section 15126.6(e)(2) requires that the EIR identify which of those alternatives is the environmentally superior alternative. If the No Project Alternative is the environmentally superior alternative, then CEQA requires that the EIR identify which of the other alternatives is environmentally superior.

4.5.3.1 Comparison to the Project

For air quality, the primary comparison is between the numbers of GHGs offset. Although decommissioning and infrastructure removal activities would increase GHG emissions, the generation of energy produced by any of the alternatives would exceed this increase. Accordingly, as depicted in Table 4-3, the greatest offset of GHGs would occur under Alternative 3.

Most biological impacts under any of the alternatives can be reduced to less-than-significant levels with mitigation measures. However, impacts on increased bird deaths would remain significant and unavoidable under any of the alternatives. Although it would not reduce impacts to a less-than-significant level, in comparison to the project, Alternative 1 would reduce impacts on avian wildlife to the greatest degree.

Noise impacts are analyzed by comparing the number of operating hours. Of Alternatives 1, 2, and 3, the potential for noise impacts due to aging or lack of maintenance would be least under Alternative 1 and greatest under Alternative 3.

Compared to the proposed project, impacts associated with hazards and hazardous materials would not differ substantially under any of the alternatives. The greatest risk of wildfires would occur during decommissioning activities, a component of all alternatives. There is no alternative that would reduce these impacts to a noticeable degree.

Table 4-3. Comparison of Alternatives

	Project	No Project	Alt 1	Alt 2	Alt 3
AQ	112,507	105,072	104,783	155,743	257,633
Total Offset GHGs					
Biological Resources	1,750.9–	1,056.4–	1,167.1–	1,718.4–	2,820.1–
Projected number of avian fatalities	1,911.2	1,153.0	1,273.77	1,875.53	3,078.04
Noise	Moderate impacts	Least impacts	Moderate impacts	Moderate impacts	Greatest impacts
Hazards and Hazardous Materials	Less-than-significant impacts	Less-than-significant impacts	Less-than-significant impacts	Less-than-significant impacts	Less-than-significant impacts

Alternative 1 would have less-severe impacts on both avian wildlife and noise associated with increased wind turbine operation. Although this alternative would generate approximately 60% less energy than the proposed project, the most critical issue revolves around the number of avian deaths in relation to wind turbine operation. Based on a quantitative analysis of impacts presented in this document, it can be determined that Alternative 1 would have the fewest environmental impacts and would therefore be considered the environmentally superior alternative.

5.1 Cumulative Impacts

The State CEQA Guidelines define a *cumulative impact* as two or more individual impacts that, when considered together, are significant or that compound or increase other significant environmental impacts. The incremental impact of a project may be considerable when viewed in the context of other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor, but collectively significant, projects taking place over a period of time (State CEQA Guidelines Section 15355).

5.1.1 Geographic and Temporal Scope

The impacts of the proposed project are considered in combination with other past, present, and probable future related projects to identify cumulative impacts. The geographical extent to which these other projects are considered varies based on the type of environmental impacts being assessed to identify the cumulative impacts. The geographic area associated with a proposed project's different environmental impacts defines the boundaries of the area used for compiling the list of past, present, and probable future projects considered in the cumulative impact analysis.

Each section of this EIR considers the specific geographic area that is directly related to the individual topic addressed within that section. For example, the analysis of air quality is based on growth at a regional level because air quality impacts are regional in nature, whereas analysis of noise impacts only considers related projects in the vicinity of the project site because of the localized nature of the impacts. Therefore, the specific geographic areas analyzed are detailed in each resource section.

The proposed project is also limited in temporal scope in that its effects would not extend beyond 2016 or early 2017—when decommissioning activities would be completed—or under one alternative, early 2020 if decommissioning is not initiated until 2019. As a result, the project would have no cumulative impacts with respect to projects that would not be developed before 2017 or at the latest 2020.

5.1.2 Past, Present, and Reasonably Foreseeable Probable Future Projects

Between 1981 and 1993, a total of 54 CUPs were approved by Alameda County in the Altamont Pass Wind Resource Area (APWRA). By the mid-1990s, the APWRA was the largest windfarm region in the world, with over 7,200 operating wind turbines. The first generation of turbine designs by different manufacturers varied widely, with maximum production capacity of most individual turbines ranging from 40 to 150 kW (kilowatts). A small proportion of turbines, referred to as second generation turbines, were built in the late 1980s and early 1990s with larger capacities of up to 400 kW. The most prominent environmental impacts of these projects were on aesthetic, biological and noise considerations. Aesthetic impacts were deemed to be less than significant due to preexisting utility infrastructure such as high-tension power lines, and in some instances,

distance from the scenic corridor of I-580. Biological impacts, especially on avian species protected by federal and state laws and the Migratory Bird Treaty Act (MBTA), have been documented in a wide range of studies since the 1980s (see below). Noise effects were generally not anticipated, but measures to avoid adverse localized effects have been adopted as standard conditions since the mid-1990s. In the mid-1980s it became evident that birds were colliding with wind turbine blades, and that many of the birds killed were federally-protected raptor species, including golden eagle, red-tailed hawk, burrowing owl, and American kestrel. Many studies investigated the causal relationship between turbine facilities and avian mortality, and several recommendations emerged for siting future turbines, managing existing facilities, and removing individual turbines that have certain siting and physical features that result in higher than predicted avian mortality. Studies in the 1990s and through 2010 (Smallwood and Karas 2009; ICF Jones & Stokes 2009) have concluded that for a variety of reasons the current-generation turbines have substantially less impact on avian species when compared to first- and second-generation windfarms.

In 1998, Alameda and Contra Costa Counties approved a repowering program to replace the first and second generation turbines with the current generation of turbines. Only one repowering project was proposed and approved in Alameda County under that program, the Buena Vista 20.4 megawatt (MW) project of 31 turbines of 660 MW each, which was operational in 2004. In Contra Costa County, the Buena Vista and Vasco Winds repowering projects were completed respectively in 2006 and 2012, under that county's repowering program. These past projects are described further below.

In the near- and long-term, repowering projects constitute the primary type of project anticipated in the project area. Repowering is considered especially important to maintain commercially viable wind energy facilities to deliver renewable energy to the Pacific Gas and Electric (PG&E)/CAISO power grid to meet the State's Renewable Portfolio Standard and related goals. Repowering activities in the APWRA currently consist of three projects considered here for their potential cumulative impacts: the Golden Hills Project (NextEra Energy), the Patterson Pass Project (EDF Energy Resources), and the FloDesign Wind Turbines Research Project (FloDesign Wind Turbine Corporation). These projects, together with the existing old-generation windfarm facilities and the proposed Mariposa Energy Center and Cool Earth Solar Energy Facility, described below, constitute the cumulative energy and major development scenario for purposes of this EIR.

Although some repowering projects have been completed as discussed below, most of the wind turbines still operating in the APWRA are old-generation turbines. The number of turbines in operation varies over time as a result of mechanical breakdowns, maintenance, seasonal and weather-related shutdowns, attrition of turbines and strategic turbine removals intended to reduce avian fatalities, as well as phased removal of turbines required by the CUPs to enable repowering. Currently available information indicates that the total installed capacity (defined as the total rated MW capacity of each turbine string based on the number of functioning turbines each year) in the APWRA has changed over time, dropping from 533 MW in 2005 to 442 MW in 2010. Under current permits and agreements, the existing old-generation wind turbines would be removed in stages by the end of 2018, but some (such as those operated by NextEra Energy) would be fully removed by 2015.

5.1.2.1 Vasco Winds Repowering Project

The Vasco Winds Project, completed in the summer of 2012, consists of the repowering of an existing wind energy facility in the southeastern Contra Costa County portion of the APWRA, southeast of

the Los Vaqueros Reservoir, about 4.5 miles south-southwest of Byron, and roughly 5 miles north of Livermore. The project involved decommissioning and removal of 438 obsolete wind turbines and associated infrastructure as well as 286 foundations from which turbines were already removed, and replacement with up to 50 new, larger, and more efficient turbines that would increase energy production by approximately 147 percent while decreasing the facility's nameplate capacity from approximately 80 MW to 78.2 MW. The project also involved reclamation and restoration of sites not used for the new facilities, plus construction of a new underground electrical collection system and new turbine access roads.

5.1.2.2 Altamont Pass Repowering Projects

The CUPs approved in 2005 anticipated and in part “pre-scheduled” repowering of the APWRA, to require existing wind turbines to be decommissioned and removed, and for new state-of-the-art turbines to be installed in their place. Therefore, all of the APWRA is expected to be repowered or in the process of repowering by 2018. To streamline the environmental approval process, Alameda County has begun work on a Program Environmental Impact Report (PEIR) in compliance with the California Environmental Quality Act (CEQA) (Public Resources Code [PRC] Section 21000 et seq.) and the Guidelines for Environmental Quality Act (California Code of Regulations [CCR], Title 14, Chapter 3, Section 15000 et seq.). The PEIR will be an informational document to aid in public review and official decision-making regarding repowering of the APWRA.

In addition to the PEIR, the County is in the process of developing an Avian Protection Program (APP) that will provide a framework and process for wind-energy development to comply with applicable statutes (e.g., the MBTA and Bald and Golden Eagle Protection Act [BGEPA]) within the County portion of the APWRA. The APP will provide a broad evaluation of existing environmental conditions, bird use, and avian fatalities in the APWRA. It is also expected to address subsequent, project-specific requirements that will streamline permitting and ensure that mitigation and minimization measures are consistent across the County.

Golden Hills Project

NextEra Energy Resources proposes to develop, construct, own, and operate the Golden Hills Project, a 135.7 MW wind repowering project using its existing assets in the APWRA. Construction was scheduled to begin in 2011, although the project's actual start date is contingent on when entitlements become available. All phases of construction would be completed no later than 2018.

The Golden Hills Project comprises approximately 8,950 acres and would decommission and replace the existing wind turbines, which are considered high risk for avian species, with more efficient turbines. Existing wind turbines, concrete foundations for the turbine towers, pad mounted transformers and electrical cabinets, and meteorological towers will be permanently taken out of service, dismantled, and physically removed.

Following removal of existing turbines, up to 59 wind turbines, each of which would be approximately 428 feet tall to the tip of the blade and rated at 2.3 MW, would be installed. Associated infrastructure would include reinforced concrete foundations for each wind turbine and their step-up transformers, local access roads, crane pads, a 34.5 kilovolt (kV) electrical collection system, transmission line take-off, turbine control and communications systems, other electrical/controls ancillary equipment, substations for interconnections with the PG&E transmission network, and several permanent meteorological towers 262 feet high.

The Golden Hills Project would be designed with a control system that allows remote, continuous monitoring and operation. Maintenance would involve both scheduled preventive and unscheduled repair work. The anticipated life of the windfarm could be greater than 30 years. Upgrading and replacing equipment could extend the operating life indefinitely, assuming that there will be future demand (after the 30-year term) for the electricity generated by the project.

Patterson Pass Project

EDF Renewable Energy (formerly known as enXco) proposes the Patterson Pass Project, currently a 21.8 MW windfarm made up of 336 Nordank and Bonus 65 kW turbines, now operating 317 turbines. The proposed project is to repower the existing Patterson Pass Wind Farm on private land owned by EDF Renewable Energy. Project components include replacement and installation of 7 to 12 wind turbine generators, towers, foundations, and pad-mounted transformers and installation (as needed) of power collection cables and development of roads.

FloDesign Wind Turbines Research Project

A research project is proposed by the FloDesign Wind Turbine Corporation to explore a variation of repowering, with a current, near-term project to replace 4 MW of existing wind turbine generating capacity previously operated by SeaWest Power Resources (out of about 25 MW of capacity approved in 2005). The unique feature of the FloDesign wind turbine, referred to as a “Mixer-Ejector Wind Turbine” (MEWT) is that it has a “shroud” or partial enclosure which is designed to increase its energy efficiency. FloDesign turbines are also distinctly different in being designed to have a capacity of just 100 kW per individual turbine, rather than typical current-generation wind turbines with 2 to 3 MW per turbine. The research project would serve to evaluate both the special design and efficiency of the turbines and their benefits to reduced avian mortality. In the longer term, but beyond the period of the current project (i.e., after 2016), the replacement of all SeaWest turbines is planned with a potential capacity of 30 MW.

5.1.2.3 Mariposa Energy Center

The proposed Mariposa Energy Project facility would be a 200-MW natural-gas-fired power plant located on approximately 10 acres of a 158-acre parcel, immediately south of the PG&E Company Bethany Compressor Station in Alameda County, approximately 7 miles northwest of Tracy and 7 miles east of Livermore, near the community of Mountain House. The facility is proposed to be a simple-cycle peaker power plant that would be used to meet demand for electrical power during short-term peaks in demand. As such it would run during periods of high demand for electricity, most often during the summertime when air conditioning use is highest. The project would use four simple-cycle turbines designed to supply power when renewable energy sources such as wind and solar power might not be available.

5.1.2.4 Cool Earth Solar Energy Facility

The Cool Earth Solar Project would be a utility-scale solar power plant developed on approximately 140 acres next to an existing 12 kV PG&E power line near Byron, California. The project would be a utility-scale Solar Energy Facility (SEF) of up to 10 MW with an initial phase of 30 acres to produce 1.5 MW and 3,000 MW-hours of electricity annually.

Table 5-1. Related Projects in the Area

No.	Project /Name Type	Description/Proposed Use	Location	Status
1	Vasco Winds Repowering	Repowering Program	APWRA – Contra Costa County	Completed Summer 2012
2	Altamont Pass Repowering	Repowering Program for the Altamont Pass Wind Resource Area (APWRA)	APWRA – Alameda County	Pending
	Golden Hills Project (NextEra Energy Resources) (part of Altamont Pass Repowering)	Repowering Program	APWRA	Pending
	Patterson Pass Project (EDF Renewable Energy, formerly enXco) (part of Altamont Pass Repowering)	Repowering Program	APWRA	Pending
	FloDesign Wind Turbines Research Project	Repowering with special technology	APWRA	Research Project Pending
3	Mariposa Energy Center	Natural Gas Peaker Plant	Mountain House Area	Under Construction
4	Cool Earth Solar Energy Facility	Utility-Scale Solar Energy Farm	Mountain House Area	Approved

5.1.2.5 Air Quality

Air quality analysis is inherently cumulative because it relies on regional data. Although projects to repower windfarms may result in benefits to air quality, activities related to dismantling and construction of infrastructure could result in temporary adverse effects on air quality. Decommissioning and infrastructure removal activities associated with the proposed project and its alternatives would result in a low level of emissions each day that the activities would occur (a maximum of 185 days per year). As indicated in Table 3.1-11 in Section 3.1, *Air Quality and Greenhouse Gases*, construction-related criteria pollutant emissions associated with the aforementioned activities would be below the BAAQMD significance thresholds for all criteria pollutants. Emissions associated with the construction activities of future repowering projects and the major energy-related projects in the Altamont Pass vicinity listed in Table 5-1 would be similar, and below the BAAQMD's significance thresholds. The BAAQMD's CEQA Guidelines indicate that their thresholds of significance represent both project-level and cumulative thresholds, such that if a project exceeds a BAAQMD threshold, it is deemed both a project-level impact and a cumulatively considerable significant impact. Because decommissioning activities and other cumulative project effects would not exceed the BAAQMD thresholds, the proposed project would not result in a cumulatively considerable net increase of any criteria pollutant.

5.1.2.6 Biological Resources

As described in Section 3.2, *Biological Resources*, the proposed project would result in a significant and unavoidable impact on avian species, even after the implementation of mitigation. Current estimates of focal species fatalities in the APWRA (red-tailed hawk, burrowing owl, golden eagle, and American kestrel) indicate mortality levels of 559 to 625 focal species each bird year (ICF 2012). The proposed project, considered in this context, represents a significant cumulative contribution to this ongoing impact.

Reasonably foreseeable repowering projects, which would utilize newer, larger turbines (with repowering on a MW for MW basis) are expected to result in an overall reduction in avian impacts when compared to the existing baseline fatality of the older-generation turbines. Several repowering projects have already been implemented in the APWRA, such as the Buena Vista, Vasco, and the Diablo Winds projects. Several studies have been conducted to predict the effect of repowering within the APWRA. Monitoring data for the Diablo Winds repowering project (repowered in 2004) from Smallwood and Karas (2009) indicate that fatality rates were 54% and 66% lower for raptors and all birds, respectively, relative to concurrently operating first- and second-generation turbines (2005–2007). Additionally, they predicted that repowering across the APWRA could produce similar reductions for raptors and all birds in general (54% and 65%, respectively). Smallwood (2010) used fatality data from 2005 to 2009 throughout the APWRA to develop multiple baseline fatality-rate estimates, and he compared those to predicted fatality rates at the proposed Tres Vaqueros repowering project in Contra Costa County. He concluded that current-generation turbines would reduce fatality rates by 65% and 61% for raptors and all birds, respectively.

The Monitoring Team, under the direction of the SRC, compared the average of annual adjusted fatality rates at the Diablo Winds and Buena Vista repowering projects to non-repowered turbines across the APWRA to determine if repowering may reduce the number of turbine-related fatalities for American kestrel, burrowing owl, golden eagle, and red-tailed hawk (ICF International 2012a). The estimates of the adjusted fatality rates for the Diablo Winds turbines were significantly lower than the corresponding estimates for the non-Diablo turbines for all species, except burrowing owl, the only species with overlapping 95 percent confidence intervals. The decrease was greatest for golden eagle (89%) followed by American kestrel (88%), red-tailed hawk (36%) and burrowing owl (19%). For the four species as a whole, the decrease was 46%. Reductions were even greater for the Buena Vista site for red-tailed hawk (77%) and burrowing owl (100%, no burrowing owl fatalities were detected at the Buena Vista site). However, the decrease in fatalities for American kestrel and golden eagle were not as great at Buena Vista turbines as they were at Diablo Winds turbines (ICF International 2012a).

It should be noted that the studies estimating fatality rates for repowered turbines summarized above were conducted at current-generation turbines ranging from 660 kW (Diablo Winds) to 1 MW (Buena Vista). Newer turbines used for future repowering will further increase the size and rated capacity of turbines. The repowering project at Vasco Winds is using 2.3-MW turbines, and other projects may use up to 3-MW turbines. Some evidence exists that these larger turbines will continue to reduce fatality rates per MW for birds species currently killed at the APWRA (Smallwood 2010). However, there remains a possibility that larger turbines may affect bird species left unaffected by older (i.e., smaller) turbines. Fatality rates in the APWRA are highly variable and potentially imprecise (ICF International 2012a; Smallwood 2010), making careful project-level evaluation and siting of repowered turbines important.

Although the evidence points to potential beneficial effects to avian species from repowering (when compared to the existing baseline impacts), there would still be impacts on common, special-status, and focal avian species considered important for management by Alameda County. Thus, although the impacts could be substantially reduced for some species based on the conclusions from some studies, there may be unintended or unanticipated impacts on other species. On this basis, ongoing impacts on avian species from the proposed project, when taken into context with past, present, and reasonably foreseeable future projects, are considered significant and unavoidable impacts.

5.1.2.7 Noise

Although sound from operating turbines is audible adjacent to the turbines, the County has never conducted a formal noise study in response to complaints pursuant to Section 22 of the CUP. As such, there is no documented evidence that noise standards in Section 22 of the CUP have been exceeded. This indicates that there are currently no adverse cumulative noise impacts in the project area. Accordingly, the current operation of AWI turbines is not considered to contribute to any existing or anticipated adverse cumulative noise impacts.

Under the proposed project and project alternatives, AWI turbines would operate on days when requirements of the current CUPs would otherwise prohibit operation of AWI turbines and turbines from other operators. Turbine noise would therefore occur on days that would not have turbine noise under the current CUP.

Noise generated by the proposed project and project alternatives, however, is not expected to increase daily noise levels beyond existing conditions at any given receptor, with the exception that there may be an increase in noise associated with aging equipment or a lack of maintenance. Mitigation Measure NOISE-1 will mitigate potential effects related to aging or maintenance. Although the project and project alternatives would result in turbine noise occurring on days when it would otherwise not occur under the existing CUPs, that noise is expected to be in compliance with the noise standards in Section 22 of the CUPs and therefore would not make a cumulatively considerable contribution to cumulative turbine noise impacts.

As discussed above, operation of existing turbines is not considered to contribute to any adverse cumulative noise impacts. Operation of equipment associated with ongoing maintenance activities results in infrequent, highly localized noise levels and similarly would not contribute to any adverse cumulative noise impacts. Decommissioning activities would similarly result in highly localized noise associated with operation of heavy equipment. Because these activities would be highly localized and distant from other sources of heavy equipment noise, and because there are no adverse cumulative noise impacts in the project area, noise from decommissioning would not make a cumulatively considerable contribution to adverse cumulative equipment noise impacts.

5.1.2.8 Hazards and Hazardous Materials

Hazardous materials to be used during decommissioning and removal activities are of low toxicity and would consist of fuels, oils, and lubricants. Because these materials are required for operation of construction vehicles and equipment, BMPs would be implemented to reduce the potential for or exposure to accidental spills or fires involving the use of hazardous materials. Impacts from minor spills or drips would be avoided by thoroughly cleaning up minor spills as soon as they occur. While foreseeable projects have the potential to cause similar impacts, it is assumed these projects would also implement similar BMPs. Therefore, there would not be a cumulative impact.

The proposed project would be located in an area that has a moderate to high risk for wildland fire hazards. As described in Section 3.4, *Hazards and Hazardous Materials*, fire prevention is required as part of the CUPs. The main mechanism utilized for fire prevention is the maintenance of a 30-foot-wide firebreak around buildings and structures, including turbines, riser poles, and substations. Electrical lines require a 20-foot clearance of flammable vegetation which is accomplished by application of herbicide in October or November. Another mechanism for fire prevention on turbines is the provision of a yaw damper or other approved method that prevents the over-twisting of pendant cables.

These measures reduce fire risks associated with decommissioning and removal activities of the proposed project. Similar practices can be assumed for foreseeable projects in the area. Consequently, the risk of loss, injury, or death involving wildland fires as a result of proposed project construction, in concert with other foreseeable projects, would not be cumulatively considerable.

5.2 Growth Inducement and Secondary Impacts

The proposed project is not expected to induce growth or result in secondary growth-inducing impacts. The project would not result in new employment opportunities, and therefore would not induce a demand for new housing and services. The nature of the facilities is such that there would be no direct customers and no incentive for other residences or businesses to locate nearby. Production of electricity from the project facilities is ongoing and would not create additional availability of energy resources beyond those already permitted for the facilities.

5.3 No Impacts

No impact means that the proposed project would not cause an adverse effect on the environment related to a particular issue, and that no further analysis of that issue is required. The following discussions include each issue identified as having no impact within this EIR.

5.3.1.1 Air Quality

- Impact AQ-1: Conflict with or obstruct implementation of the applicable air quality plan.

5.3.1.2 Biological Resources

- Impact BIO-5: Conflict with any local policies or ordinances protecting biological resources.
- Impact BIO-7: Result in the conversion of oak woodlands that will have a significant effect on the environment.

5.4 Less-than-Significant Environmental Impacts

A less-than-significant impact is one that would not cause a substantial adverse effect on the environment and for which no mitigation is necessary. The less-than-significant environmental impacts of the proposed project include the following impact statements from this EIR.

5.4.1.1 Air Quality

- Impact AQ-2: Violate any air quality standard or contribute substantially to an existing or projected air quality violation
- Impact AQ-3: Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is a nonattainment area for an applicable federal or state ambient

air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)

- Impact AQ-4: Expose sensitive receptors to substantial pollutant concentrations
- Impact AQ-5: Create objectionable odors affecting a substantial number of people
- Impact AQ-6: Generation of greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment
- Impact AQ-7: Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases

5.4.1.2 Biological Resources

- Impact BIO-4: Potential to interfere substantially with the movement of native resident wildlife species or impede the use of native wildlife nursery sites
- Impact BIO-6: Potential to conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan

5.4.1.3 Hazards and Hazardous Materials

- Impact HAZ-1: Result in a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials
- Impact HAZ-2: Result in the exposure of people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands

5.5 Significant Environmental Impacts

A significant impact is one that would cause a substantial adverse effect on the environment and for which mitigation is available to reduce the impact to a less-than-significant level. The significant environmental impacts of the proposed project that can be reduced to a less-than-significant level with mitigation include the following issues.

5.5.1.1 Biological Resources

- Impact BIO-1: Potential to cause a substantial adverse effect, either directly or through habitat modifications, on special-status species
- Impact BIO-2: Potential substantial adverse effects on riparian habitat and other sensitive natural communities
- Impact BIO-3: Potential substantial adverse effects on state or federally protected wetlands through direct removal, filling, hydrological interruption, or other means

5.5.1.2 Noise

- Impact NOISE-1: Exposure of residences to increased wind turbine noise
- Impact NOISE-2: Exposure of residences to noise during decommissioning activities

5.6 Significant Unavoidable Environmental Impacts

A significant and unavoidable impact is one that would cause a substantial adverse effect on the environment and for which no mitigation is available to reduce the impact to a less-than-significant level. The unavoidable significant environmental impacts of the proposed project are as follows.

5.6.1.1 Biological Resources

- Impact BIO-1: Potential to cause a substantial adverse effect, either directly or through habitat modifications, on special-status avian species

5.7 Significant Irreversible Changes

Section 15126.2 (c) of the State CEQA Guidelines requires that an EIR address any significant irreversible changes that would result from a proposed project, and provides the following direction for the discussion of irreversible changes.

Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also, irreversible damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to ensure that current consumption is justified.

The proposed project consists of operational and temporal modifications to existing wind turbine CUPs in the Alameda County portion of the APWRA, and decommissioning activities associated with previously planned and anticipated removal of those turbines. Although the timing of the proposed project operations and decommissioning would differ from the schedule set forth in the existing CUPs, no new construction or physical changes to the environment not previously contemplated in the CUPs are proposed as part of the CUP modifications; therefore no additional nonrenewable resources would be used in project implementation. Wind turbine facilities are considered temporary uses, subject to eventual removal at the end of their useful lifespan or conclusion of use permits, whichever comes first. Although the requested CUP modifications—and therefore the project considered in this EIR—propose no changes to the eventual disposition of the project facilities, the existing CUPs require scheduled removal of facilities and reclamation of the project area land. In addition to the existing windfarm operations, the project area is predominantly used for grazing, which could continue unimpeded. The existing wind turbines and associated facilities would therefore not be considered irreversible uses of the project area.

The proposed project is not expected to result in environmental accidents that would cause irreversible damage. Compliance with required plans, such as the Altamont Pass Wind Farms Fire Requirements, would minimize the potential for accidents that could result in environmental damage.

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Appendix A
**Notice of Preparation, Scoping Meeting Transcript and
Comments**



ALAMEDA COUNTY COMMUNITY DEVELOPMENT AGENCY

PLANNING DEPARTMENT

May 31, 2012

Chris Bazar
Agency Director

Albert Lopez
Planning Director

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Room 111

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94544

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FROM: Sandra Rivera
Assistant Planning Director
Alameda County Community Development Agency
224 W. Winton Avenue, Suite 110
Hayward, CA, 94544

SUBJECT: Notice of Preparation (Notice) of an Environmental Impact Report for
Modifications to Existing (Year 2005) Conditional Use Permits – Altamont
Winds Inc. (AWI)

SUMMARY:

The County of Alameda (County) is issuing this Notice of Preparation to inform agencies and interested parties that the County will be preparing an Environmental Impact Report (EIR) for proposed modifications to existing Altamont Winds Inc. conditional use permits (CUPs) in the Altamont Pass Wind Resource Area (APWRA). Altamont Winds Inc. (the Applicant) has requested CUP modifications related to operational schedules for 85.8 MW of existing wind turbines in the Alameda County portion of the APWRA. The County will serve as the Lead Agency for the EIR, which will be prepared pursuant to the California Environmental Quality Act (CEQA) and in accordance with relevant federal, state and local regulations.

The County is soliciting the views of agencies, organizations, Native American tribes, and interested parties as to the scope and content of the environmental resources and topics to be studied in the EIR and to advise the public that outreach activities conducted by the County and their representatives will be considered in the preparation of the EIR. In accordance with CEQA, agencies are requested to review the project description provided in this NOP and provide comments on environmental issues related to the statutory responsibilities of the agency.

The EIR will be used by the East County Board of Zoning Adjustments in its consideration of approval of the proposed CUP modifications.

CEQA sets the review and comment period for an NOP to end 30 days after publication. The County therefore requests comments on this NOP be received no later than the close of business on June 25, 2012. Written comments on the AWI Permit Modification EIR scope, including the project objectives, the alternatives to be considered, the impacts to be evaluated, and the methodologies to be used in the evaluations, should be sent to:

Sandra Rivera, Assistant Planning Director
ATTN: AWI Permit Modification EIR
Alameda County Community Development Agency
224 W. Winton Avenue, Suite 110
Hayward, CA 94544

Comments can also be sent via email with subject line "AWI Permit Modification EIR" to: sandra.rivera@acgov.org. Please include a return address and contact name with your written comments.

PUBLIC SCOPING MEETING

A public scoping meeting will be held at the time and location listed below, in order to inform interested parties about the proposed scope of the analysis in the EIR and to solicit comments on the proposed scope of the EIR. Comments may be provided orally or in writing at the scoping meeting, which is scheduled at the following time and place:

Thursday, June 21, 2012
5:30 p.m. to 7:30 p.m.

Alameda County Public Works Agency
Operations Building
4825 Gleason Drive
Dublin, CA 94568

The meeting facilities will be accessible to persons with disabilities. If special translation or signing services or other special accommodations are needed, please contact Maria Palmeri at 510-670-5400 or maria.palmeri@acgov.org at least 48 hours before the scoping meeting. Scoping materials will also be made available through the County's Internet site:

<http://www.acgov.org/cda/planning/landuseprojects/currentprojects.htm> .

FOR FURTHER INFORMATION, CONTACT: Sandra Rivera, Assistant Planning Director, ATTN: AWI Permit Modification EIR, Alameda County Community Development Agency, 224 W. Winton Avenue, Suite 110, Hayward, CA, 94544, or at (510) 670-5400.

Project Location

The proposed project consists of operational modifications to 16 Conditional Use Permits (CUPs) for existing wind turbines within an approximately 14,436.45-acre portion of the 50,000-acre Altamont Pass Wind Resource Area (APWRA) in eastern Alameda County, California (Figures 1 and 2). The project site is bisected by Interstate 580. The portion of the site lying southerly of I-580 constitutes approximately 7,700 acres with the remainder lying northerly of I-580. The lands are currently under permit by AWI or its affiliates either solely or as a shared arrangement with other wind farm operators. In preparation for repowering, AWI is in discussions with another wind farm operator in the APWRA regarding a contemplated wind turbine exchange, whereby AWI would exchange some of its wind turbines for an equal number of wind turbines owned and operated by another wind farm operator. Such an exchange would result in AWI operating wind turbines on different parcels of land than those on which it presently operates. Under no circumstances, however, will any such exchange augment the capacity or quantity of AWI's operating turbines. Table 1 below outlines existing CUPs, landowners, Assessor's Parcel Numbers (APNs), and approximate acreage for the lands that may be included either in whole or in part in the project, including lands on which AWI may operate following an exchange scenario as contemplated above. Partial involvement for some parcels will be necessary because AWI does not have control of all turbines on all parcels.

Project Background

On November 13, 2003 and on January 29, 2004, the East County Board of Zoning Adjustments (EBZA) approved Conditional Use Permits (CUPs) for the continued maintenance and operation of wind turbines (or "wind farms") by four different operating companies, including among others, Altamont Winds Inc. (AWI, also operating on behalf of its affiliate WindWorks Inc.) in the Altamont Pass Wind Resource Area (APWRA) in Alameda County. Those permits are all set to expire on September 22, 2018. The EBZA concluded that its decision to issue the CUPs was categorically exempt from the California Environmental Quality Act (CEQA). The Center for Biological Diversity (CBD), Californians for Renewable Energy (CARE), and Golden Gate Audubon Society appealed these approvals to the County of Alameda

(County) Board of Supervisors (BOS) primarily on the grounds that the CUPs were not exempt from CEQA, due to special circumstances represented by high levels of avian mortality.

Table 1. Existing Conditional Use Permits (CUPs C-8239 and C-8231 are not currently owned by AWI or its affiliates).

CUP No.	Landowner	Assessor's Parcel Numbers	Approximate Acres
C-8036	Frick/Costa	99B-5680-15	207.12
C-8037	Pombo	99B-6300-2-1, 99B-6300-2-2, 99B-6425-1-6, 99B-6325-2-4 and 99B-6400-1-7	224.26
C-8134	Rooney	99B-6125-2	160.21
C-8137	Mulqueeney	99B-7900-1-5, 99B-7900-1-7, 99B-7890-2-4, 99B-7890-2-5, 99B-7890-2-6, 99B-7925-2-4, 99B-7925-2-1, 99B-7925-2-5, 99B-7950-2, 99B-7975-1, 99B-7980-1, 99B-7985-1-6, 99B-7985-1-4, 99B-7985-1-3, 99B-7985-1-5, 99A-1800-2-4, 99A-1800-2-3 and 99B-8050-1	4,447.50
C-8191	Mulqueeney	99B-7910-1-1	592.84
C-8243	ACWMA	99A-1780-1-4, 99A-1770-2-1, 99A-1770-2-2, 99A-1770-2-3, 99A-1810-1 and 99A-1790-3	1,324.83
C-8216	ACWMA	99A-1810-1	240.81
C-8231	Altamont Landfill	99B-6225-1, 99B-6250-1, 99B-6275-1-1	1,547.80
C-8232	Egan	99B-6125-3	160.47
C-8233	Elliott	99B-6125-4	157.54
C-8235	Corbett	99B-5650-1-4 and 99A-1785-1-14	284.96
C-8236	Dunton	99B-5680-1	330.46
C-8237	Valhalla (Devincenzi)	99B-5610-1 and 99B-6075-3	665.98
C-8238	Ralph (north)	99B-7300-1-5 and 99B-7375-1-7	766.57
C-8239	Jackson	99B-6125-5	325.59
C-8241	Walker	99B-6100-2-10, 99B-6100-2-11, 99B-6100-2-12, 99B-6100-3-10, 99B-6100-3-15, 99B-6100-3-11	1,314.55
C-8242	Gomes (north)	99B-6150-4-10, 99B-6150-3 and 99B-6150-2-7	635.48
C-8244	Gomes (south)	99B-6425-2-3, 99A-1790-2 and 99A-1795-1	1,049.48
		TOTAL ACREAGE	14,436.45

On September 22, 2005, the BOS upheld the decision of the EBZA to grant the CUPs with modifications to include several conditions advocated by CBD, CARE, and the Golden Gate Audubon Society to address avian mortality. Some of the major conditions imposed in the BOS approval to mitigate avian mortality in the APWRA included the following:

1. Preparation of an environmental impact report (EIR) to evaluate existing operations of the wind farms and a program of repowering the APWRA with new turbines.
2. Expiration of permits for existing turbines after 13 years (in September of 2018).

3. Formation of an APWRA Scientific Review Committee.
4. Implementation of an Avian Wildlife Protection Program & Schedule (Exhibit G of the 2005 CUPs), including seasonal shutdown and removal of high risk turbine requirements, and a schedule for phased decommissioning (shut down and removal) of existing turbines in anticipation of repowering, beginning with 10% removal by September 2009, 35% by 2013, 85% by 2015, and 100% by the end of the CUP term in 2018.
5. Periodic reviews of progress to affirm the findings of the CUPs (e.g., required by the public need, no adverse effects on the health or safety of persons residing or working in the vicinity, etc.) in Years 3 and 8.

A subsequent lawsuit by CARE and a coalition of Audubon groups led to mediation for a settlement agreement between the petitioners, the County and some of the wind farm operators in 2007, but to which AWI was not a “settling party.” The settlement agreement applied only to turbines owned by the “settling” wind power companies, but not those owned by AWI. The primary results of the settlement agreement for the settling parties included changes to Exhibit G, elimination of progress reviews in Years 3 and 6, and acceleration of habitat conservation strategies or components. For AWI as the “non-settling party,” the progress reviews and original requirements of Exhibit G were not changed, including requirements related to habitat conservation strategies, requirements for an EIR, a repowering program, the scheduled removal of turbines and other conditions. For the settling parties, a Natural Community Conservation Plan (NCCP), or similar document that could be reviewed by the California Department of Fish and Game, was planned to be prepared to address avian impacts. AWI agreed with the County to participate in the NCCP (a habitat conservation plan [HCP] in addition to the NCCP was later proposed by the County), and in the period in which the NCCP and HCP were being developed, the County put the Year 3 progress review in abeyance, until such time as those plans were adopted.

AWI is currently operating turbines under the 2005 CUPs, including two CUPs which are held by an AWI affiliate itself (C-8191 and C-8216) and numerous other turbines under 14 other CUPs that are held by Altamont Infrastructure Company. Key requirements from Exhibit G of the 2005 CUPs required the following:

- By September 30, 2009, AWI (and each of the other turbine operators) shall have ceased operation and permanently removed 10% of its individually owned existing turbines in preparation for installation of repowered turbines.
- By September 30, 2013, AWI shall have ceased operation and permanently removed an additional 25% (a total of 35% of all turbines covered by the 2005 CUPs are required to be removed) of its individually owned existing turbines.
- By September 30, 2015, AWI shall have ceased operation and permanently removed an additional 50% of its then-existing individually owned turbines (a total of 85% of all turbines covered by the 2005 CUPs are required to be removed).
- By September 30, 2018, AWI shall have ceased operation and permanently removed the remainder of its turbines such that 100% of AWI’s turbines covered by the 2005 CUPs are permanently removed.
- Between October 2009 and September 2018, from November 1 of each year to the following February 15 (3 ½ month shutdown), AWI shall cease operations of its existing (non-repowered) turbines on a one-time universal basis per season in lieu of the cross-over design winter shutdown. (The 2005 condition was modified by the Planning Director based on the recommendations of the SRC.)

Currently, a separate Program EIR (PEIR) is under development that will comply with the requirements of AWI's 2005 CUPs with regard to the requirement for an EIR to evaluate its repowering program. In addition to a PEIR, an Avian Wildlife and Bat Protection Program (AWBPP) is being developed as an appendix to the PEIR to consolidate all of the requirements related to birds and bats that will be developed through the PEIR analysis. The AWBPP will provide guidelines for operation of turbines that will be incorporated into project-specific AWBPPs developed by each wind company prior to commencing repowering construction. The preparation of the PEIR and AWBPP will support the review of new CUPs for operation of the wind turbines by all the operators (under the Repowering Program). The PEIR is also expected to evaluate specific projects for three repowering projects currently proposed by AWI, NextEra Energy Resources, and enXco, Inc. However, AWI's progress in developing a repowering program for its turbines is constrained by ongoing difficulties in securing easements from landowners and the expiration of federal renewable energy tax credits, among other obstacles affecting the viability of the project. In addition, the Federal Aviation Administration (FAA) previously indicated that a portion of the turbines proposed under the repowering program would conflict with maximum structure height requirements associated with the Livermore Airport.

Proposed Project

The proposed project consists of operational modifications to the Applicant's existing CUPs for wind power operation and maintenance activities within the Alameda County portion of the APWRA. The project facilities consist of approximately 883 existing, operational wind turbines on concrete foundations, plus support facilities, occupying approximately 155 acres within a 14,436.45-acre area. The turbines have a nameplate capacity of 85.8 MW and rest on lattice and tubular towers that range in height from 60 to 82 feet and are sited in strings along ridgelines. Support facilities include existing gated, graveled access roads, a power collection and transmission interconnection system, 32 meteorological towers ranging from 60 to 100 feet in height, communication systems, maintenance equipment areas, and offsite facilities including AWI's wind farm offices and main service yard (located near Tracy, CA), and the main wind farm control center, shared with other wind farm operators (located in Livermore, CA). The power collection and transmission interconnection system consists of pad-mount transformers, underground cables, overhead cables on poles, circuit breakers and switches, electrical metering/protection devices, and the existing Dyer, Frick, Ralph and Midway substations. Electrical power is collected from the turbines and transmitted to the substations, where its voltage is increased for interconnection with Pacific Gas and Electric's (PG&E) transmission lines. Operation of these project facilities is subject to the operational requirements outlined above.

Due to difficulties mentioned above, AWI anticipates that it may not be able to repower all of its turbines within the schedule prescribed by the 2005 CUPs. AWI is requesting a modification to its 2005 CUPs that would accomplish the following.

1. Remove the requirement for phased decommissioning.
2. Remove the seasonal shutdown requirements.
3. Provide for 100% of AWI's turbines be decommissioned by the end of 2015.

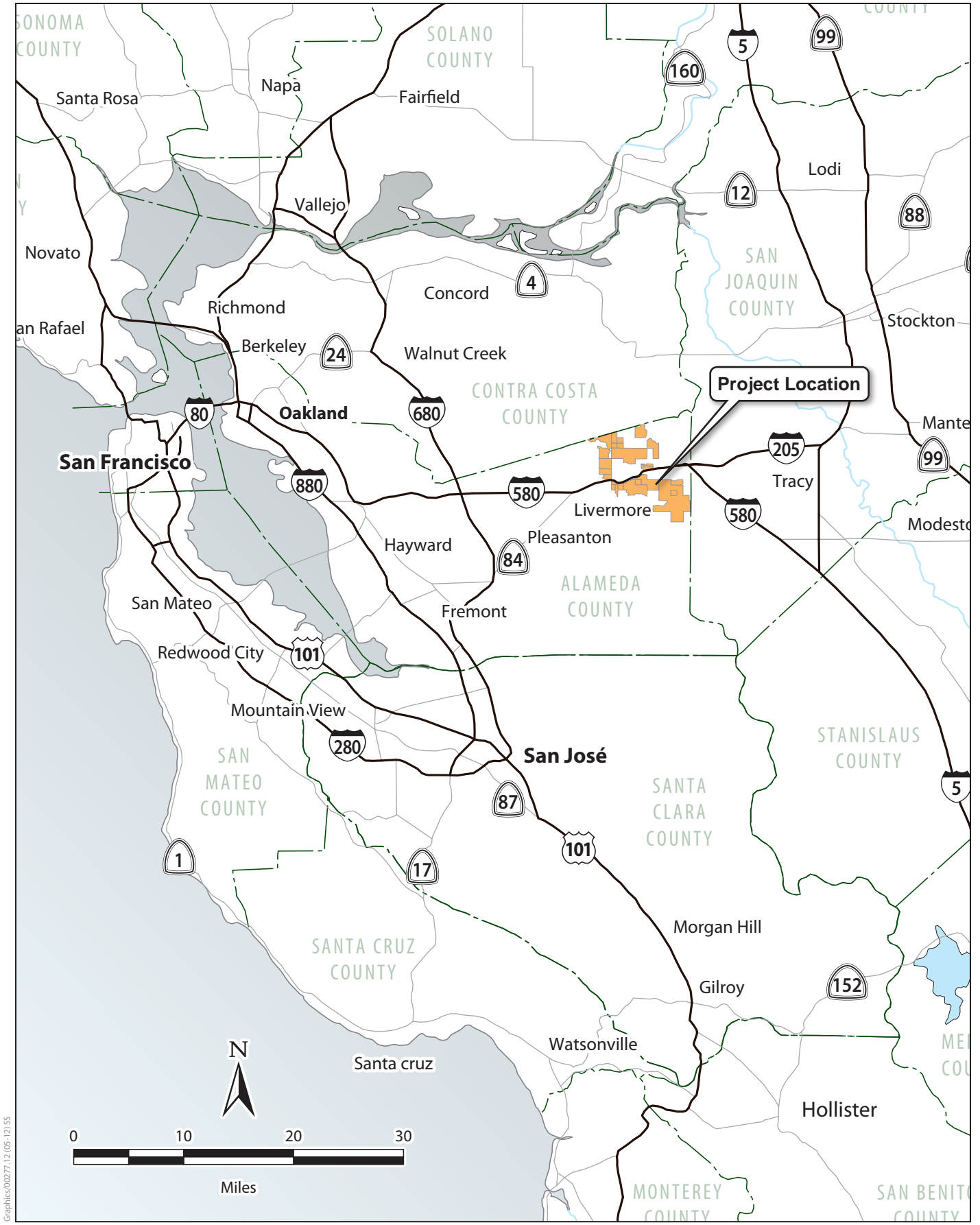
In accordance with the CEQA Guidelines and the terms of AWI's 2005 CUPs, the County is requiring an EIR to evaluate the environmental effects of such a modification and to propose mitigation measures to reduce any significant effects identified, before considering AWI's request.

Probable Environmental Effects

In accordance with CEQA Guidelines Section 15161, the AWI Permit Modification EIR will examine the environmental impacts of the requested CUP modifications, focusing primarily on the changes in the environment that would result from the proposed modifications to the wind farm's operational schedule. The EIR will consider the physical changes to the environment that would likely result from operational modifications to the existing AWI facilities, including direct, indirect and cumulative impacts.

The EIR will discuss the potential for impacts to all resources required to be considered under CEQA. However, based on the project description and the County's understanding of the environmental issues associated with the project, the following topics will be analyzed in greatest detail in the Draft EIR:

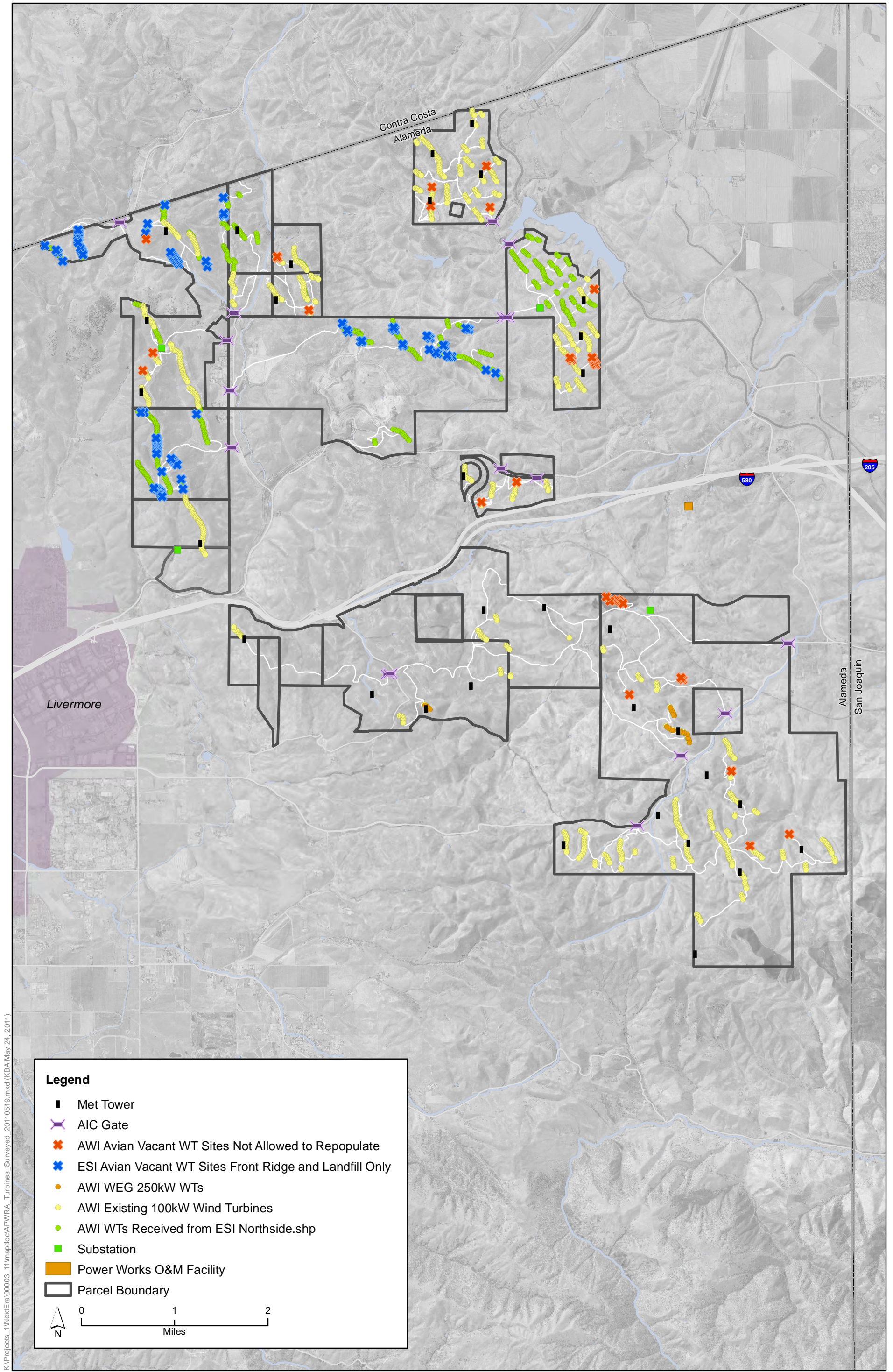
- **Air Quality and Climate Change.** The EIR will evaluate improvements or impairments to air quality and greenhouse gas emissions that may occur as a result of operating turbines on a different schedule than currently required.
- **Biological Resources.** The EIR will evaluate the impacts the proposed CUP modifications may have on biological resources, including impacts on listed plant and animal species, as well as special-status plant and animal species, and potentially sensitive natural communities and wetlands. Based on results of the Alameda County Avian Fatality Monitoring Program, the biological resources evaluation will pay particular attention to potential impacts to avian and bat species associated with the project's proposed changes in operation of wind turbines.
- **Noise.** Changes in noise level that may occur as a result of operating turbines on a different schedule than currently required will be evaluated, as well as any changes in noise levels that may be associated with aging of the existing turbines.
- **Public Services and Utilities.** Fire safety and related fire protection services will be analyzed in the EIR to address any effects of operating turbines on a different schedule than currently required.



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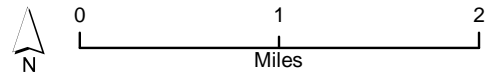


Figure 1
Project Location



Legend

- Met Tower
- ✕ AIC Gate
- ✕ AWI Avian Vacant WT Sites Not Allowed to Repopulate
- ✕ ESI Avian Vacant WT Sites Front Ridge and Landfill Only
- AWI WEG 250kW WTs
- AWI Existing 100kW Wind Turbines
- AWI WTs Received from ESI Northside.shp
- Substation
- Power Works O&M Facility
- ▭ Parcel Boundary



K:\Projects_1\NextEra\00003_11\mapdoc\APWRA_Turbines_Surveyed_20110519.mxd (KBA May 24, 2011)



Figure 2
Project Boundary

ALTAMONT WINDS INC. PERMIT MODIFICATION EIR
PUBLIC SCOPING MEETING

ORIGINAL

4825 Gleason Drive, Dublin, California

June 21, 2012

5:30 p.m.

TAKEN BEFORE JULIE L. BANTLEY
CERTIFIED SHORTHAND REPORTER
STATE OF CALIFORNIA
C.S.R. LICENSE NO. 11422



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PROCEEDINGS

SANDRA RIVERA: Welcome, everybody. I know we all know each other actually here. So just to make sure you're at the right scoping meeting, it's for the permit modification for AWI's current operations. And just for meeting reminders -- I won't read through the whole thing. I think most of you have already signed in. And just make sure your cell phones are turned off or silent, and if you can fill out the speaker cards if you're going to speak. And comments can be mailed or e-mailed to me, and the information will be listed at the end of the slides. But in the NOP we did state that the comment period ended on the 25th, when in fact it does end on July 2nd. So there is more time than what some folks may have thought. So July 2nd. And if -- just so that we can keep this PowerPoint going, if we can hold comments and question until the end of the presentation.

So the agenda is that we'll go through the purpose of the EIR scoping meeting, and we'll go through the proposed project. We will also go through the environmental review process if we have questions through that, and then we'll have public comments.

So you practically know all of us. I'm Sandy Rivera with Alameda County. And we'll get through

1 introductions for the county staff.

2 ANDREW YOUNG: Andrew Young with the planning
3 department.

4 SANDRA RIVERA: Altamont Winds, if you want
5 to --

6 WILLIAM DAMON: I'm Bill Damon with Altamont
7 Winds.

8 JESSE SIROTKIN: Jesse Sirotkin with Altamont
9 Winds.

10 MICHELLE WILES: Michelle Wiles with Altamont
11 Winds.

12 ANDREW ROTH: I'm Andrew Roth.

13 SANDRA RIVERA: And then we have ICF staff.

14 SUSAN SWIFT: Susan Swift with ICF.

15 CHRIS BRUNGARDT: Chris Brungardt with ICF.

16 SANDRA RIVERA: And so they will be our
17 environmental consultants through this process. And so,
18 of course, the purpose of the scoping meeting is to get
19 your input, and at least the two people outside of the
20 usual group here that might have some comments. But we
21 definitely want comments with regard to the project
22 objectives, the alternatives that are to be considered,
23 as well as the impacts to be evaluated. Methodologies,
24 if you have any comments on that as well. But for the
25 most part that will come a little later after the

1 administrative draft is in there.

2 So Andy is going to go over the project. And
3 I'll hand it over to you, Andy.

4 ANDREW YOUNG: Okay. I'll just kind of walk
5 you through the main proposal. Of course, the vast
6 plurality of people here are very familiar with the
7 proposal, I believe. But let's just go through this.
8 So as you know there were 31 conditional use permits
9 approved from 2005 and 2006. These were approved for
10 continued operations by the four different operators of
11 which one is AWI, Altamont Winds, Inc. And they
12 operated as of 2005 920 turbines under separate CUPs, 16
13 CUPs.

14 The -- the main important points of the CUPs as
15 approved in 2005 were to establish a scientific review
16 committee requiring the monitoring program for avian
17 mortality and mandated the seasonal winter shutdowns of
18 the entire APWRA. Those were changed over time. And
19 also required a phase reduction of existing turbines
20 through the end of the permit period. So also required
21 one of the attachments to the conditions was the Avian
22 Wildlife Protection Program and the schedule to address
23 avian mortality, and that established a schedule for
24 preparing an EIR to evaluate both existing operations
25 and repowering the APWRA. Also established required

1 reviews of progress on repowering through 2018 and
2 established the schedule for progressive phased
3 reduction of the turbines for 2018. After that
4 approval, of course, there was a lawsuit and mediation
5 that ran between 2005 and 2007. And there were three
6 settling parties, and AWI was -- chose not to settle
7 with the requirements of the mediation, and so their
8 2005 CUP requirements remained in place.

9 And so these are the remaining outstanding
10 scheduled shut downs. So by 2009 there were 10 percent
11 reduction of turbines. Seasonal shutdowns, of course,
12 three and a half months between November and February of
13 each year. And by 2015, 85 percent of the turbines
14 would have to be removed or shut down. And by 2018, the
15 end of the period -- the permit period, 100 percent
16 would be removed.

17 So the proposed project is very
18 straightforward. Really 3 -- 3 components besides
19 preparing an EIR on existing operations. It is to
20 remove the seasonal shutdown requirements. It removes
21 the requirement for phase B commissioning, and also
22 establishes a timeline that instead of shutting down
23 progressively by 2018, that all of them would shut down
24 by 2015.

25 There is a little graphic that sort of

1 illustrates the sort of shape of these alternatives.
2 The existing CUP requirements are in the dark blue,
3 whereas the proposed project would be more of a square
4 shaped light blue area of continued 90 percent of their
5 2005 level of operations through 2015.

6 And also key aspects of the proposed project
7 are that there is no new construction, no physical
8 changes to the existing facilities, except for continued
9 operation during the seasonal shutdowns when the other
10 operators will be shutting down their turbines. There
11 are 103 additional vacant sites besides these 815
12 operating wind turbines, of which 68 are available for
13 relocation or transfer of turbines if that should need
14 to be done. So the nameplate capacity is 85.8
15 megawatts.

16 Various aspects of the turbine characteristics
17 and more information about the operations. And there's
18 a graphic illustration of the distribution of their
19 facilities, which are also shown on the board up at the
20 front of the room.

21 And with that I will turn this over to Susan
22 who will describe the environmental review process.

23 SUSAN SWIFT: I'm going to talk to you a bit
24 about the California Environmental Quality Act, or CEQA,
25 so you can see how it affects the proposed project, get

1 an idea of the process the project has to go through
2 before the County can even consider anything about it,
3 really.

4 First, the purpose of CEQA. CEQA is a
5 statewide law. It ensures that a project's
6 environmental effects are considered before a government
7 agency can act on that project. It's intended to be a
8 very public process, and hence tonight's meeting.

9 CEQA is really a disclosure and decision-making
10 tool. And as you can see from the slide it has several
11 different purposes. It's intended to inform the
12 government decision makers and the public about any
13 potential effects. Identify ways that those effects
14 could be either avoided or reduced, either through
15 implementation of different alternatives or mitigation
16 measures if they are feasible. And to publicly disclose
17 the reasons why a government agency approves a project
18 even if it has significant environmental effects.

19 Certain projects are subject to CEQA review.
20 They are considered projects under CEQA. It has its own
21 definition of project. Basically there are two main
22 criteria that are used to determine the need for
23 environmental review under CEQA.

24 One, if an action requires an agency's
25 discretionary approval, such as the conditional use

1 permits for AWI's wind turbines; and, two, if the
2 project may cause a direct physical change in the
3 environment or reasonably foreseeable indirect change in
4 the environment, those are both criteria to determine if
5 something is subject to CEQA review.

6 In the case of this project, the modifications
7 to AWI's conditional use permits, the County determines
8 the specific type of document, environmental impact
9 report, or EIR, is required. In the EIR's document the
10 studies and publicly disclosed project's environmental
11 impacts, and it's prepared if the public agency
12 determines substantial evidence that the project may
13 have significant adverse environmental effect.

14 There are certain requirements under CEQA that
15 have to be addressed in an EIR. We provide a
16 description of the project, and we use that description
17 to evaluate any potential impacts of the project. If
18 our evaluation finds significant impacts, we then
19 propose mitigation that tries to minimize or avoid those
20 impacts.

21 We also develop and study alternatives as a way
22 to reduce the potential impacts of the project, and we
23 look at the cumulative impacts for how a proposed
24 project contributes to the overall picture of existing
25 and proposed projects in the surrounding area.

1 So now you've got an idea of what the project
2 is and what an EIR needs to include. These are the
3 specific issue areas that this particular EIR is likely
4 to focus on. Air quality, climate change. There are
5 specific requirements for that. Biological resources is
6 certainly an issue. Noise and public services and
7 utilities. In terms of the public services and
8 utilities, the primary emphasis will be on considering
9 fire protection services and requirements for that.

10 CEQA has also, in addition to the required
11 content, a specific process that we have to follow.
12 Right now we are near the beginning of the process.
13 You'll see in bold up there there's a preparation public
14 comment period. The notice of preparation of the EIR,
15 the NOP, has been released. We're in the middle of the
16 public comment period. That's what tonight's meeting is
17 about. After we get your input, we go back and consider
18 it and we start our evaluation. We use that evaluation
19 and your input to prepare the draft EIR. The draft EIR
20 then is circulated for public review, and we solicit
21 comments again. We consider those comments. We respond
22 to them in the final EIR.

23 The mitigation and monitoring and reporting
24 program basically consists of the mitigation measures
25 from the final EIR, along with the long-term reporting

1 process that's intended to ensure accountability and
2 compliance with the mitigation measures. That's there
3 to reduce or avoid significant environmental impacts
4 that might have been identified in the EIR. After the
5 final EIR is released, the public agency's approving
6 body, in this case the East County Board of Zoning
7 Adjustments, considers the final EIR for certification.
8 Then once the final EIR is certified, then the agency
9 can make its decision on the project itself.

10 So as you can see it's a long process. Very
11 structured, and as the public you're a big part of it.
12 Andrew described the project itself, and I explained how
13 the project fits into the CEQA process. Given all that
14 information, in just a minute we would like to open up
15 the meeting to hear your comments on the scope of the
16 EIR.

17 Before we start hearing your suggestions, let's
18 just quickly go over the procedure for submitting
19 comments. Obviously tonight you can comment verbally on
20 the EIR scope. In addition to that, or instead, if you
21 prefer not to speak tonight, that's fine, you can
22 comment by mail or e-mail. We'll put that information
23 up shortly after any verbal comments showing you where
24 to send written comments. If you look on the comment
25 cards on the back it's actually set up that you can just

1 mail the card in. It's preprinted and everything.

2 Now the commenting procedure, please make sure
3 that any comments you have you focus on the scope of the
4 permit modification EIR. It's an important part of the
5 process. We want to make sure that all gets down. If
6 you'd like to speak tonight, please fill out a comment
7 card, submit it to us, if you haven't already done so.
8 They are available up here in the front and also at the
9 other end of the room. You can put them in one of the
10 baskets or you can hand them to one of us. And once we
11 get the card, we'll call your name. So please wait
12 until your name is called. And if you do choose to
13 comment verbally tonight, we just ask that you please
14 clearly state your name for the record and that you
15 limit your comments to three minutes. You're certainly
16 welcome to submit longer more detailed comments. But,
17 really, e-mail and mail are easier ways to approach it
18 that way.

19 So given that, we're going to go ahead and shut
20 off the projector and ask you to share any scoping
21 comments you have with us. After that, we'll briefly go
22 over the next steps in the process and we'll provide you
23 with the mailing and e-mail addresses.

24 SANDRA RIVERA: Could I add that because we
25 don't have as many people today that maybe three minutes

1 can be extended.

2 SUSAN SWIFT: Yeah. Does anybody have any
3 scoping comments? Things that they'd like to see
4 addressed in the EIR; things they want addressed? If
5 so, if you have a comment card.

6 DARREL SWEET: Just to clarify, do I need to
7 fill out a card for a question?

8 ANDREW YOUNG: No, go ahead.

9 SUSAN SWIFT: No, go ahead.

10 DARREL SWEET: I'm Darrel Sweet. We live next
11 door to some of the projects that are on North Flynn
12 Road. So one of the questions I had, is there any -- in
13 the scoping, is there any of that information as it
14 relates to neighbors? Obviously noise would be one.
15 But are those other scoping things that include affects
16 on people who live there as opposed to just --

17 SUSAN SWIFT: Yes.

18 DARREL SWEET: -- wildlife?

19 SUSAN SWIFT: Yes, it does.

20 DARREL SWEET: Okay.

21 MS. SWIFT: Yes, they will -- our specialist
22 will be doing a detailed noise study.

23 DARREL SWEET: Okay.

24 MS. SWIFT: Definitely.

25 Anything else?

1 Well, let me go ahead and give you the next
2 steps. Basically the next thing that happens after this
3 is the scoping period ends July 2nd at 5:00 p.m.
4 Basically close of business that day. After that, as I
5 said, we take any comments we receive and we incorporate
6 them into our approach to the project, and we go ahead
7 and complete the draft EIR. It's scheduled to be
8 released to the public sometime in October of this year,
9 and that will start the public review of the draft EIR,
10 and that will go through October and part of November,
11 depending on when it starts in October.

12 After that we'll take your comments on that.
13 And as I described earlier, we will incorporate those
14 into the final EIR. And that's slated to come out in
15 spring of next year, 2013. Once that's out, the final
16 EIR will be certified also that spring and any
17 implementation of modification that's been requested
18 would start sometime in mid 2013.

19 So just a reminder, 5:00 p.m. on July 2nd.
20 Mailing address is, as I said, printed on the back of
21 the comment cards if you want to use those. And if you
22 prefer e-mail, it needs to go Sandra Rivera, and here's
23 her e-mail address. Just make sure that the in subject
24 line you put, "AWI permit modification EIR" so she knows
25 that's what it's for.

1 SANDRA RIVERA: Yeah, that would be really
2 helpful with all the other e-mails.

3 MS. SWIFT: Other than that, thank you for
4 coming tonight and attending the meeting.

5 SANDRA RIVERA: Thanks.

6 JOAN STEWART: Can I ask one question? On that
7 slide that you had where you were giving the dates, July
8 2nd.

9 MS. SWIFT: Yes.

10 JOAN STEWART: Then I've got the final EIR is
11 released for certification --

12 MS. SWIFT: Uh-huh.

13 JOAN STEWART: -- in spring too?

14 MS. SWIFT: Right. That can't happen until
15 after the final EIR is drafted. Any decision on the
16 project follows the certification. Okay.

17 ANDREW YOUNG: I guess we will expect to see --
18 hopefully we'll have a few substantive scoping comments
19 written to us -- provided to us by e-mail or written.

20 MS. SWIFT: I'll put the e-mail back up.

21 SANDRA RIVERA: I know there are a few that
22 have already stated that they'll be providing comments
23 but could not make the meeting.

24 ANDREW YOUNG: Just for -- I assume you should
25 be aware also that -- what would you say? -- about 200

1 postcards were mailed out?

2 SANDRA RIVERA: Right. At least.

3 ANDREW YOUNG: Or not postcards actually. They
4 were envelopes containing the complete notice.

5 SANDRA RIVERA: It did go to -- a little later
6 but went to state clearing house.

7 ANDREW YOUNG: All right.

8 MS. SWIFT: All right.

9 SANDRA RIVERA: Thank you.

10 (Whereupon, at 5:54 p.m. the
11 proceedings were concluded.)

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DARREL SWEET
Darrel Sweet Livestock
12233 North Flynn Road
Livermore, CA 94550-9227

(925) 443-7692
Fax 449-8891

dsweet@cattlemen.net

June 1, 2012

Sandy Rivera, Assistant Planning Director
ATTN: AWI Permit Modification EIR
Alameda County Community Development Agency
224 W Winton Ave, Suite 110
Hayward, CA 94544

Dear Ms. Rivera:

Fire

The major fires in the Altamont over time have related to the operations of the wind farms. This continues to be a threat to the neighbors facilities and ranching income. The companies should be required to discuss this issue with neighbors and the Fire Marshall and develop mitigation and reparations agreements, particularly with the neighbors that have no wind generators.

Noise

As you know, the wind farms are noisy. Decisions for siting and operating schedules should take neighboring residents into account. An increased operating schedule will only prolong the noise. Mitigation, even tree planning and buffers won't be effective by 2015. The EIR should contain real mitigation measures and conflict resolution for noise impacts on the neighbors. A process to monitor and regulate noise ordinance compliance is necessary.

It is generally agreed by AWI and the County of Alameda that the generators next to our property exceed the County's noise ordinance. There has been a great lack of actual responsiveness by the companies to our concerns, even though they acknowledge they have exceeded County noise ordinance and express concern.

Visual

Missing cover plates and oily blades are a visual blight. Also, some of the fallen pieces on the grand remain there for very long periods of time.

Neighborhood relationships.

The companies operate without establishing neighborhood relations or understanding and responding to our concerns, particularly with the neighbors that do not have wind generators. There is no process at this point for neighbors to become acquainted with staff and to provide for ongoing communications and conflict resolution. A regular forum such as the Rural Roads one facilitated by Supervisor Haggerty could be a model. Examples of neighborhood issues, in addition to those above:

- Because the public is interested in seeing wind generators up close, we often have uninvited cars trespassing onto our property.
- Shared road maintenance and signage and locked gates

- Human Health. The Sweet family has shared research about affects of blade 'shadow', noise and vibrations on neighbor health. The EIR should respond to this topic after thoroughly researching this topic.
- Wind farms are industrial in general are intrusive to the neighborhood - certainly not an enhancement. For example, it is disconcerting to see and hear maintenance workers at any time, which is also a concern for personal security.

Thank you for processing these comments.

Yours truly,

Darrel Sweet

From: [Brian Mathews](#)
To: [Rivera, Sandra, CDA](#)
Subject: NOP For Altamont Winds EIR
Date: Wednesday, June 27, 2012 10:32:11 AM

Sandra,

It was good talking to you the other day. It sounds like the APWRA is going to keep you busy for a while.

We talked about this last week but the time got away from me, and I wasn't able to get it off to you in time.

The Alameda County Waste Management Authority requests that the AWI EIR have a detailed explanation of the interlinking business relationships of AWI and the other companies in the Altamont Pass Wind Resource Area. The detail should include percent ownership of and by each entity, corporate structure(s) of all entities, roles and responsibilities for each legal entity which holds a CUP for wind energy production, and a work flow diagram for each CUP. What we mean by the work flow diagram that while a CUP may be held by one company, the authorization for its implementation may be through several operating companies, holding companies, easements, of leases, which are owned all or in part by a parent company. The Authority would like that structure diagramed for revenue from the CUP improvement up to the parent company, and for expenses from the Parent Company to the Improvement(s). This type of diagram is important for the decision makers (the Authority Board) so they can understand how the various entities are linked to each other and how business flows because it could impact how mitigations are implemented and maintained, safety issues are addressed, and communication is to be managed. The Authority Board will need this information to be able to sign any future CUP applications or renewals.

Again, Sorry for the delay. Call me if you have any questions. Thanks

Brian Mathews

Senior Program Manager

StopWaste.Org (The Alameda County Waste Management Authority and Recycling Board operating as one public agency)

510-891-6518 - Direct



*inspiring people to protect
Bay Area birds since 1917*



Santa Clara Valley Audubon Society
Founded in 1926

July 2, 2012

Via Email and U.S. Mail

Ms. Sandra Rivera
Alameda County Community Development Agency
224 W. Winton Ave., Room 110
Hayward, California 94544
Email: Sandra.rivera@acgov.org

Re: Scoping Comments regarding EIR for Modifications of Existing (Year 2005)
Conditional Use Permits – Altamont Winds, Inc. (AWI)

Dear Sandra:

We are writing on behalf of Golden Gate Audubon and Santa Clara Valley Audubon (collectively, “Audubon”) to provide scoping comments regarding the Environmental Impact Report (“EIR”) for modifications to Altamont Wind Inc.'s (“AWI”) existing Conditional Use Permits (“CUPs”). Audubon is concerned about modifications of existing CUPs that in any way create additional risks for birds, bats, and other wildlife that rely on the Altamont Pass.

Audubon intends to continue to participate in the planning process for wind turbines in the Altamont Pass. While these preliminary scoping comments are intended to help guide the EIR process, we intend to provide more substantive comments once the Draft EIR is available. Our preliminary comments and concerns based on our review of the Notice of Preparation (“NOP”) are provided below.

1. **Project Description.** The EIR must include a more complete Project Description than is provided in the NOP. For example, the NOP states that AWI is in discussions with land owners and other wind companies, the results of which will affect the outcome of the project. Audubon is also not clear as to whether repowering will occur. The final Project Description should be complete and determinate.
2. **Baseline Conditions.** The EIR should provide an adequate description of baseline conditions. These include compliance with CUP conditions to date.
 - a. AWI's compliance with all existing requirements of current permits to date should be discussed. Audubon believes that AWI's compliance record regarding decommissioning and removal of turbines and any remediation required.

3. **Consistency Determinations.** The EIR should analyze the consistency of AWI's continued operations (regardless of modifications to the CUPs) with all land use plans, regulations, and laws, including the Migratory Bird Treaty Act, the Bald and Golden Eagle Protection Act, and the California Fish & Game Code.
4. **Impacts to Biological Resources.** The EIR must include a robust analysis of impacts to biological resources, especially wildlife.
 - a. The EIR must include an Avian and Bat Protection Plan, or similar document. The ABPP must have specific monitoring, evaluation, and adaptive management measures. Development of the ABPP cannot be deferred until after release of the DEIR or certification of the EIR.
 - b. Please analyze AWI's contribution to cumulative impacts on raptors and other wildlife due to operations of AWI's turbines in the Altamont Pass. Because turbines throughout California may be exerting population-level impacts on species, particularly Golden Eagles, the analysis should consider impacts on local, regional, and range-wide populations of Golden Eagles and other species.
 - c. The decommissioning schedule was designed specifically to benefit raptors. How would removing the requirement for phased decommissioning benefit raptors?
 - d. The Seasonal Shutdown requirement was designed specifically to benefit raptors. How would removing the shutdown requirement benefit raptors?
 - i. How would a change in AWI's shutdown requirements affect the efficacy or monitoring of shutdown turbines operated by other owners?
 - e. Please discuss the impacts that the proposed modifications would have on ongoing monitoring efforts within the APWRA. Because monitoring is closely tied to overall management and future repowering efforts, modifications to CUPs that confuse or obstruct monitoring should be considered to have significant negative impacts and mitigation measures or alternatives should be proposed.
 - f. To date, bat mortality and injury arising from operations in the Altamont Pass has not been adequately studied. The EIR should include a study regarding impacts to bats and proposed suitable mitigation measures.
 - g. The EIR must include consideration of terrestrial impacts, which are often overlooked in turbine-siting and repowering projects. Consultation with local, state, and federal wildlife agencies on terrestrial impacts is required and should be reflected in the EIR.

- h. Please include consideration of impacts to wetlands and identify necessary mitigation measures, including specific performance standards and mitigation ratios.
 - i. Please consider impacts to native grasses and other native vegetation. This analysis should include the spreading of weeds and other direct impacts arising from construction, ground-moving, grading and ongoing operations of the turbines.
 - j. The analysis of alternatives and mitigation measures to reduce impacts to wildlife should include analysis of using radar to detect birds before they reach turbines and a study of the relationship between cut-in speeds and impacts to wildlife, especially bats.
 - k. Please document the effectiveness of remediation for removed or decommissioned turbines to date. For example, are restoration efforts successful? Will there be a Monitoring and Reporting Program with quantifiable and enforceable standards?
- 5. **Public and Environmental Benefits.** While an EIR need not necessarily discuss economic factors, the benefit to the public and to the environment arising from the proposed project (including CUP modifications) should be discussed either in the EIR at elsewhere in the public record. Audubon does not see any tangible or measurable benefit to the public by moving AWI's decommissioning schedule to 100% in 2015. Current CUPs require that AWI has 85% of their turbines decommissioned in that timeframe. Please describe the environmental impact of 85% decommissioning vs. 100% decommissioning.
 - a. It appears to Audubon that while AWI would benefit financially and operationally by removing the requirement for phased decommissioning and removing the seasonal shutdown requirement, there would be not benefit to the environment, especially to birds and other wildlife in the Altamont Pass. Please describe the environmental benefit that can reasonably be expected to accrue under the modified CUPs.
- 6. **Mitigation Measures.** The EIR must identify mitigation measures that would reduce the impacts associated with AWI's operations to a less than significant level. If none are available or if mitigation measures are inadequate, please provide findings for a statement of overriding considerations.
 - a. The EIR must not include so-called "deferred mitigation", including measures to develop plans, mitigation ratios, or other mitigation-related requirements at a later date (i.e., after the DEIR has been released for public comment). Deferred mitigation is not permitted under CEQA.

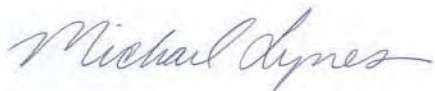
7. **Project Alternatives.** Please identify alternatives to the project, including alternatives that significantly reduce or altogether avoid impacts associated with AWI's operations in the Altamont Pass, including modification of the permits to reduce the number of turbines, expand the seasonal shutdown, and other steps necessary to reduce impacts to wildlife.
- a. Part of the EIR's analysis should include a "No Turbine" alternative, which considers a baseline environment in which no turbines exist after either 2015 or 2018.
 - b. To the extent that new turbines will be considered, the EIR should include alternatives for siting non-traditional turbine designs, including designs that may result in fewer avian and bat mortality. Use of these alternative designs should be considered as an alternative for any repowering efforts by AWI. Because CEQA requires the consideration of a reasonable range of feasible alternatives, the consideration of alternative turbine designs that reduce risks to wildlife should be included regardless cost, provided the cost is not so prohibitively expensive so as to render the alternative infeasible.

8. **Other Impacts.**

- a. Please consider aesthetic and other impacts to adjacent lands, including lands held or managed by the East Bay Regional Park District.

Thank you for your consideration. If you would like to discuss this matter, please do not hesitate to contact us.

Sincerely,



Mike Lynes
Conservation Director
Golden Gate Audubon



Bob Power
Executive Director
Santa Clara Valley Audubon



State of California – The Natural Resources Agency
DEPARTMENT OF FISH AND GAME
Bay Delta Region
7329 Silverado Trail
Napa, CA 94558
(707) 944-5500
www.dfg.ca.gov

EDMUND G. BROWN JR., Governor
CHARLTON H. BONHAM, Director



July 23, 2012

Ms. Sandra Rivera
Alameda County Community Development Agency
224 W. Wilton Avenue, Suite 110
Hayward, California 94544

Dear Ms Rivera:

Subject: Modifications to Existing Conditional Use Permits – Altamont Winds Inc., Notice of Preparation of an Environmental Impact Report, SCH# 2012062060, Alameda County

The Department of Fish and Game (Department) appreciates the opportunity to comment on the proposed Notice of Preparation (NOP) of an Environmental Impact Report (EIR) for Modifications to Existing Conditional Use Permits (Project). The existing Conditional Use Permit (CUP) granted to Altamont Winds Inc. (AWI) in September 2005, includes conditions of approval advocated by Center for Biological Diversity (CBD), Californians for Renewable Energy (CARE), and the Golden Gate Audubon Society to address the high level of avian mortalities occurring in the Altamont Pass Wind Resource Area (APWRA). The current CUP will expire in 2018. The proposed Project would modify the existing CUP to include actions that are not consistent with the conditions imposed in the currently approved CUP.

The Project proposes the removal of the current 2005 CUP's requirement for phased decommissioning, seasonal shutdown requirements, and provides for 100% of AWI's turbines to be decommissioned by the end of 2015. The Project includes approximately 883 existing, operational wind turbines and their foundations with a capacity of 85.8 MW in a 14,436-acre area. These turbines range from 60 to 82 feet in height and rest on lattice and tubular towers.

Seasonal Shutdown

The Department recommends that EIR include an analysis of the biological significance of seasonal shutdowns on all avian species, not just the four focal raptor species, using data collected by the APWRA monitoring team and other appropriate data.

Decommissioning

The Department recommends that the condition requiring turbine decommissioning and removal contained in the current CUP are fully complied with prior to authorizing any modification to the CUP. Similarly, if changes to the CUP are authorized, the Department recommends the schedule of decommissioning and removal be enforced so as to minimize additional avian fatalities. The Department also recommends any decommissioning schedule include removal of guyed meteorological towers because of the ongoing hazard guy wires pose to avian species.

Decommissioning, turbine removal, and site restoration is likely to result in ground disturbance which may result in impacts to terrestrial species. The Department recommends the EIR include a complete assessment (including but not limited to type, quantity and locations) of the

habitats and flora and fauna within and adjacent to the project area, including locally unique species and sensitive habitats. The assessment should include the reasonably foreseeable direct and indirect changes (temporary and permanent) that may occur with implementation of the Project. Rare, threatened and endangered species to be addressed should include all those which meet the California Environmental Quality Act (CEQA) definition (see CEQA Guidelines, Section 15380). DFG recommended survey and monitoring protocols and guidelines are available at http://www.dfg.ca.gov/wildlife/nongame/survey_monitor.html

Permits

A California Endangered Species Act (CESA) Incidental Take Permit (ITP) would be warranted if the Project has the potential to result in take of species of plants or animals listed under CESA during decommissioning activities. The Project area includes locations known to be inhabited by species listed as either threatened or endangered under both the federal Endangered Species Act and CESA; therefore, DFG concludes an ITP is warranted. Issuance of a CESA Permit is subject to CEQA documentation; therefore, a CEQA document supporting the issuance of a CESA ITP would need to analyze impacts, propose mitigation measures, and include a mitigation monitoring and reporting program. DFG recommends additional consultation if the Project will impact CESA listed species (see CEQA Guidelines, Section 15096) such as California tiger salamander (*Ambystoma californiense*), Alameda whipsnake (*Masticophis lateralis euryxanthus*), and San Joaquin kit fox (*Vulpes macrotis mutica*).

For any activity that will divert or obstruct the natural flow, or change the bed, channel or bank (which may include associated riparian resources) or a river or stream, or use material from a streambed, a Lake and Streambed Alteration Agreement (LSAA), pursuant to Section 1600 et seq. of Fish and Game Code, may be warranted. Issuance of an LSAA is subject to CEQA.

Avoidance and Minimization Measures

To assist the Lead Agency in preparation of an EIR (and for assistance in developing avoidance, minimization and mitigation measures) the Department is available for consultation; however, because the EIR has not been prepared, the Department cannot conduct a complete analysis of the Project's potential impacts. After the Department reviews a complete project description, we will be able to fully analyze the project's impacts and proposed mitigation measures and determine if those impacts have been mitigated to levels less-than-significant. In the interim, we are providing the following recommendations for preliminary, general avoidance and minimization measures:

1. Keep disturbance or removal of vegetation to the minimum necessary to complete operations.
2. Limit activities to the daylight hours.
3. Limit decommissioning activities to dry weather condition days that occur during the period between April 15 and October 15. Wet weather is defined as when there has been ¼-inch of rain in a 24-hour period. We also recommend a dry out period of 24 hours after the above referenced wet weather before work begins again.

Ms. Sandra Rivera
July 23, 2012
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4. Avoid rodent burrows to the maximum extent practicable.
5. To prevent inadvertent entrapment of wildlife during decommissioning, all excavated, steep-walled holes or trenches more than six inches deep should be covered at the close of each working day by plywood or similar materials, or provided with one or more escape ramps constructed of earth fill or wooden planks. All holes or trenches should be thoroughly inspected for trapped animals before filling.
6. Visually check all sections of pipe and construction materials for the presence of wildlife sheltering within them prior to removal off-site. In addition, pipes stored on-site should be capped to prevent wildlife from entering.
7. To prevent the movement of invasive plant and animal species, wash all ground disturbing equipment so equipment is weed free prior to entry and staging onto construction sites.

Thank you for the opportunity to provide input on the NOP for the EIR on this renewable energy project. The Department supports the development of renewable energy resources for projects which are in compliance with existing State and Federal laws and acts and when measures are implemented which effectively avoid or minimize impacts to native species and their habitats and sufficiently mitigate for unavoidable impacts to ensure that they do not preclude conservation of these biological resources. We are available to provide input during the development of the EIR as both a Trustee and Responsible agency under CEQA section 15386 and 15381.

If you have any questions, please contact Ms. Danielle Roach, Environmental Scientist, at droach@dfg.ca.gov or (707) 944-5571; or Mr. Craig Weightman, Acting Environmental Program Manager, at cweightman@dfg.ca.gov or (707) 944-5577.

Sincerely,



Scott Wilson
Acting Regional Manager
Bay Delta Region

cc: Department of Fish and Game
Danielle Roach,, Bay Delta Region
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CONCERNS IN REGARD TO AWI PERMIT MODIFICATION EIR

- 1) Human health issues – What are the short term and long term risks to the constant noise produced by turbines?
 - a. Migraines
 - b. Chronic dizziness
 - c. Motion sickness
 - d. Insomnia
 - e. Anxiety and Depression

- 2) Noise
 - a. What is the allowable level of decibels in relation to permanent dwellings?
 - b. What is the allowable level of decibels in relation to neighbor's property line?

- 3) Visual
 - a. When something is broken, what is the allowable amount of time before it needs to be fixed (there are currently turbines all over the Altamont with missing pcs that look terrible)?
 - b. When grease and oil are visible all over the blades due to leaky engines, what is the allowable amount of time before they are shut off and repaired?

- 4) Fire hazard
 - a. What can be done to reduce the fire hazards the turbines create?
 - b. When they do cause a fire, are there air pollution problems that neighbors should be concerned about?
 - c. During fire season, should there be a lookout on site and a water truck present at all times?

- 5) What are the expectations of the County in regards to the Wind Power companies mitigating all of the above concerns and nuisances?
 - a. During teardown (noise, dust, traffic)
 - b. During construction (noise, dust, traffic)
 - c. During normal turbine operation (all above concerns)

Appendix B
**California Natural Diversity Database – Special Status
Plant & Wildlife Occurrences**



Quad is (Clifton Court Forebay (3712175) or Byron Hot Springs (3712176) or Altamont (3712166) or Midway (3712165))

CNDDDB Element Query Results

ScientificName	CommonName	ElementCode	OccurrenceTotal	GlobalRank	StateRank	FederalStatus	StateStatus	RarePlantRank	OtherStatus	Habitat
Accipiter cooperii	Cooper's hawk	ABNKC12040	102	G5	S3	None	None		DFG_WL-Watch List IUCN_LC-Least Concern	Cismontane woodland Riparian forest Riparian woodland Upper montane coniferous forest
Agelaius tricolor	tricolored blackbird	ABPBXB0020	428	G2G3	S2	None	None		ABC_WLBCC-Watch List of Birds of Conservation Concern BLM_S-Sensitive DFG_SSC-Species of Special Concern IUCN_EN-Endangered USFWS_BCC-Birds of Conservation Concern	Freshwater marsh Marsh and swamp Swamp Wetland
Alkali Meadow	Alkali Meadow	CTT45310CA	8	G3	S2.1	None	None			Meadow and seep Wetland
Alkali Seep	Alkali Seep	CTT45320CA	10	G3	S2.1	None	None			Meadow and seep Wetland
Ambystoma californiense	California tiger salamander	AAAAA01180	1057	G2G3	S2S3	Threatened	Threatened		DFG_SSC-Species of Special Concern IUCN_VU-Vulnerable	Cismontane woodland Meadow and seep Riparian woodland Valley and foothill grassland Vernal pool Wetland
Amsinckia grandiflora	large-flowered fiddleneck	PDBOR01050	8	G1	S1	Endangered	Endangered	1B.1		Cismontane woodland Valley and foothill grassland
Anniella pulchra pulchra	silvery legless lizard	ARACC01012	91	G3G4T3T4Q	S3	None	None		DFG_SSC-Species of Special Concern USFS_S-Sensitive	Chaparral Coastal dunes Coastal scrub
Antrozous pallidus	pallid bat	AMACC10010	402	G5	S3	None	None		BLM_S-Sensitive DFG_SSC-Species of Special Concern IUCN_LC-Least Concern USFS_S-Sensitive WBWG_H-High Priority	Chaparral Coastal scrub Desert wash Great Basin grassland Great Basin scrub Mojavean desert scrub Riparian woodland Sonoran desert scrub Upper montane coniferous forest Valley and foothill grassland
Aquila chrysaetos	golden eagle	ABNKC22010	141	G5	S3	None	None		BLM_S-Sensitive CDF_S-Sensitive DFG_FP-Fully Protected DFG_WL-Watch List IUCN_LC-Least Concern USFWS_BCC-Birds of Conservation Concern	Broadleaved upland forest Cismontane woodland Coastal prairie Great Basin grassland Great Basin scrub Lower montane coniferous forest Pinon and juniper woodlands Upper montane coniferous forest

ScientificName	CommonName	ElementCode	OccurrenceTotal	GlobalRank	StateRank	FederalStatus	StateStatus	RarePlantRank	OtherStatus	Habitat
Astragalus tener var. tener	alkali milk-vetch	PDFAB0F8R1	65	G2T2	S2	None	None	1B.2		Valley and foothill grassland Alkali playa Valley and foothill grassland Vernal pool Wetland
Athene cunicularia	burrowing owl	ABNSB10010	1808	G4	S2	None	None		BLM_S-Sensitive DFG_SSC-Species of Special Concern IUCN_LC-Least Concern USFWS_BCC-Birds of Conservation Concern	Coastal prairie Coastal scrub Great Basin grassland Great Basin scrub Mojavean desert scrub Sonoran desert scrub Valley and foothill grassland
Atriplex cordulata var. cordulata	heartscale	PDCHE040B0	64	G3T2	S2.2?	None	None	1B.2	BLM_S-Sensitive	Chenopod scrub Meadow and seep Valley and foothill grassland
Atriplex depressa	brittlescale	PDCHE042L0	59	G2Q	S2.2	None	None	1B.2		Alkali playa Chenopod scrub Meadow and seep Valley and foothill grassland Vernal pool Wetland
Atriplex joaquinana	San Joaquin spearscale	PDCHE041F3	107	G2	S2	None	None	1B.2	BLM_S-Sensitive	Chenopod scrub Meadow and seep Valley and foothill grassland
Atriplex minuscula	lesser saltscale	PDCHE042M0	37	G1	S1.1	None	None	1B.1		Alkali playa Chenopod scrub Valley and foothill grassland
Balsamorhiza macrolepis	big-scale balsamroot	PDAST11061	38	G2	S2	None	None	1B.2	BLM_S-Sensitive USFS_S-Sensitive	Cismontane woodland Ultramafic Valley and foothill grassland
Blepharizonia plumosa	big tarplant	PDAST1C011	50	G1	S1	None	None	1B.1		Valley and foothill grassland
Branchinecta longiantenna	longhorn fairy shrimp	ICBRA03020	11	G1	S1	Endangered	None		IUCN_EN-Endangered	Valley and foothill grassland Vernal pool Wetland
Branchinecta lynchi	vernal pool fairy shrimp	ICBRA03030	608	G3	S2S3	Threatened	None		IUCN_VU-Vulnerable	Valley and foothill grassland Vernal pool Wetland
Branchinecta mesoallensis	midvalley fairy shrimp	ICBRA03150	99	G2	S2	None	None			Vernal pool Wetland
Buteo regalis	ferruginous hawk	ABNKC19120	96	G4	S3S4	None	None		DFG_WL-Watch List IUCN_LC-Least Concern USFWS_BCC-Birds of Conservation Concern	Great Basin grassland Great Basin scrub Pinon and juniper woodlands Valley and foothill grassland
Buteo swainsoni	Swainson's hawk	ABNKC19070	1747	G5	S2	None	Threatened		ABC_WLBCC-Watch List of Birds of Conservation Concern BLM_S-Sensitive IUCN_LC-Least Concern USFS_S-Sensitive USFWS_BCC-Birds of Conservation Concern	Great Basin grassland Riparian forest Riparian woodland Valley and foothill grassland
California macrophylla	round-leaved filaree	PDGER01070	155	G2	S2	None	None	1B.1	BLM_S-Sensitive	Cismontane woodland

ScientificName	CommonName	ElementCode	OccurrenceTotal	GlobalRank	StateRank	FederalStatus	StateStatus	RarePlantRank	OtherStatus	Habitat
Calochortus pulchellus	Mt. Diablo fairy-lantern	PMLI0D160	40	G2	S2	None	None	1B.2		Valley and foothill grassland Chaparral Cismontane woodland Riparian woodland Valley and foothill grassland
Caulanthus lemmonii	Lemmon's jewel-flower	PDBRA0M0E0	62	G2	S2.2	None	None	1B.2	BLM_S-Sensitive USFS_S-Sensitive	Pinon and juniper woodlands Valley and foothill grassland
Centromadia parryi ssp. congdonii	Congdon's tarplant	PDAST4R0P1	92	G4T2	S2	None	None	1B.2	BLM_S-Sensitive	Valley and foothill grassland
Chloropyron molle ssp. hispidum	hispid bird's-beak	PDSCR0J0D1	35	G2T2	S2.1	None	None	1B.1	BLM_S-Sensitive	Alkali playa Meadow and seep Wetland
Chloropyron palmatum	palmate-bracted bird's-beak	PDSCR0J0J0	26	G1	S1	Endangered	Endangered	1B.1		Chenopod scrub Meadow and seep Valley and foothill grassland Wetland
Circus cyaneus	northern harrier	ABNKC11010	43	G5	S3	None	None		DFG_SSC-Species of Special Concern IUCN_LC-Least Concern	Coastal scrub Great Basin grassland Marsh and swamp Riparian scrub Valley and foothill grassland Wetland
Cismontane Alkali Marsh	Cismontane Alkali Marsh	CTT52310CA	4	G1	S1.1	None	None			Marsh and swamp Wetland
Deinandra bacigalupii	Livermore tarplant	PDAST4R0V0	3	G1	S1.2	None	None	1B.2		Meadow and seep
Delphinium californicum ssp. interius	Hospital Canyon larkspur	PDRAN0B0A2	18	G3T2?	S2?	None	None	1B.2		Chaparral Cismontane woodland Meadow and seep
Delphinium recurvatum	recurved larkspur	PDRAN0B1J0	91	G3	S3	None	None	1B.2	BLM_S-Sensitive	Chenopod scrub Cismontane woodland Valley and foothill grassland
Desmocerus californicus dimorphus	valley elderberry longhorn beetle	IICOL48011	201	G3T2	S2	Threatened	None			Riparian scrub
Elanus leucurus	white-tailed kite	ABNKC06010	157	G5	S3	None	None		BLM_S-Sensitive DFG_FP-Fully Protected IUCN_LC-Least Concern	Cismontane woodland Marsh and swamp Riparian woodland Valley and foothill grassland Wetland
Emys marmorata	western pond turtle	ARAAD02030	1134	G3G4	S3	None	None		BLM_S-Sensitive DFG_SSC-Species of Special Concern IUCN_VU-Vulnerable USFS_S-Sensitive	Aquatic Artificial flowing waters Klamath/North coast flowing waters Klamath/North coast standing waters Marsh and swamp Sacramento/San Joaquin flowing waters Sacramento/San Joaquin standing waters South coast flowing waters South coast standing waters Wetland
Eremophila alpestris actia	California horned lark	ABPAT02011	77	G5T3Q	S3	None	None		DFG_WL-Watch List IUCN_LC-Least Concern	Marine intertidal and splash zone communities Meadow and seep

ScientificName	CommonName	ElementCode	OccurrenceTotal	GlobalRank	StateRank	FederalStatus	StateStatus	RarePlantRank	OtherStatus	Habitat
Eschscholzia rhombipetala	diamond-petaled California poppy	PDPAP0A0D0	10	G1	S1.1	None	None	1B.1	BLM_S-Sensitive	Valley and foothill grassland
Falco mexicanus	prairie falcon	ABNKD06090	456	G5	S3	None	None		DFG_WL-Watch List IUCN_LC-Least Concern USFWS_BCC-Birds of Conservation Concern	Great Basin grassland Great Basin scrub Mojavean desert scrub Sonoran desert scrub Valley and foothill grassland
Fritillaria agrestis	stinkbells	PMLIL0V010	32	G3	S3.2	None	None	4.2		Chaparral Cismontane woodland Ultramafic Valley and foothill grassland
Hesperolinon breweri	Brewer's western flax	PDLIN01030	24	G2	S2	None	None	1B.2	BLM_S-Sensitive	Chaparral Cismontane woodland Ultramafic Valley and foothill grassland
Hibiscus lasiocarpus var. occidentalis	woolly rose-mallow	PDMAL0H0R3	170	G4	S2.2	None	None	1B.2		Freshwater marsh Marsh and swamp Wetland
Hygrotus curvipes	curved-foot hygrotus diving beetle	IICOL38030	21	G1	S1	None	None			Aquatic
Hypomesus transpacificus	Delta smelt	AFCHB01040	27	G1	S1	Threatened	Endangered		AFS_TH-Threatened IUCN_EN-Endangered	Aquatic Estuary
Lanius ludovicianus	loggerhead shrike	ABPBR01030	80	G4	S4	None	None		DFG_SSC-Species of Special Concern IUCN_LC-Least Concern USFWS_BCC-Birds of Conservation Concern	Broadleaved upland forest Desert wash Joshua tree woodland Mojavean desert scrub Pinon and juniper woodlands Riparian woodland Sonoran desert scrub
Lasiurus cinereus	hoary bat	AMACC05030	235	G5	S4?	None	None		IUCN_LC-Least Concern WBWG_M-Medium Priority	Broadleaved upland forest Cismontane woodland Lower montane coniferous forest North coast coniferous forest
Lilaeopsis masonii	Mason's lilaeopsis	PDAPI19030	196	G2	S2	None	Rare	1B.1		Freshwater marsh Marsh and swamp Riparian scrub Wetland
Limosella subulata	Delta mudwort	PDSCR10050	56	G4?Q	S2.1	None	None	2.1		Brackish marsh Freshwater marsh Marsh and swamp Riparian scrub Wetland
Madia radiata	showy golden madia	PDAST650E0	52	G2	S2.1	None	None	1B.1	BLM_S-Sensitive	Chenopod scrub Cismontane woodland Valley and foothill grassland
Masticophis flagellum ruddocki	San Joaquin whipsnake	ARADB21021	82	G5T2T3	S2?	None	None		DFG_SSC-Species of Special Concern	Chenopod scrub Valley and foothill grassland
Masticophis lateralis euryxanthus	Alameda whipsnake	ARADB21031	145	G4T2	S2	Threatened	Threatened			Chaparral Cismontane woodland Coastal scrub Valley and foothill grassland
Navarretia nigelliformis ssp. radians	shining navarretia	PDPLM0C0J2	55	G4T2	S2	None	None	1B.2	BLM_S-Sensitive	Cismontane woodland Valley and foothill grassland

ScientificName	CommonName	ElementCode	OccurrenceTotal	GlobalRank	StateRank	FederalStatus	StateStatus	RarePlantRank	OtherStatus	Habitat
Northern Claypan Vernal Pool	Northern Claypan Vernal Pool	CTT44120CA	21	G1	S1.1	None	None			Vernal pool Wetland
										Vernal pool Wetland
Perognathus inornatus	San Joaquin pocket mouse	AMAFD01061	109	G4T2T3	S2S3	None	None		BLM_S-Sensitive	Coastal scrub Valley and foothill grassland
Phrynosoma blainvillii	coast horned lizard	ARACF12100	660	G4G5	S3S4	None	None		BLM_S-Sensitive DFG_SSC-Species of Special Concern IUCN_LC-Least Concern USFS_S-Sensitive	Chaparral Cismontane woodland Coastal bluff scrub Coastal scrub Desert wash Pinon and juniper woodlands Riparian scrub Riparian woodland Valley and foothill grassland
Plagiobothrys glaber	hairless popcornflower	PDBOR0V0B0	9	GH	SH	None	None	1A		Marsh and swamp Salt marsh Vernal pool Wetland
Rana boylei	foothill yellow-legged frog	AAABH01050	804	G3	S2S3	None	None		BLM_S-Sensitive DFG_SSC-Species of Special Concern IUCN_NT-Near Threatened USFS_S-Sensitive	Aquatic Chaparral Cismontane woodland Coastal scrub Klamath/North coast flowing waters Lower montane coniferous forest Meadow and seep Riparian forest Riparian woodland Sacramento/San Joaquin flowing waters
Rana draytonii	California red-legged frog	AAABH01022	1327	G4T2T3	S2S3	Threatened	None		DFG_SSC-Species of Special Concern IUCN_VU-Vulnerable	Aquatic Artificial flowing waters Artificial standing waters Freshwater marsh Marsh and swamp Riparian forest Riparian scrub Riparian woodland Sacramento/San Joaquin flowing waters Sacramento/San Joaquin standing waters South coast flowing waters South coast standing waters Wetland
Senecio aphanactis	chaparral ragwort	PDAST8H060	35	G3?	S1.2	None	None	2.2		Cismontane woodland Coastal scrub
Spea hammondi	western spadefoot	AAABF02020	422	G3	S3	None	None		BLM_S-Sensitive DFG_SSC-Species of Special Concern IUCN_NT-Near Threatened	Cismontane woodland Coastal scrub Valley and foothill grassland Vernal pool Wetland
Sycamore Alluvial Woodland	Sycamore Alluvial Woodland	CTT62100CA	17	G1	S1.1	None	None			Riparian woodland
Taxidea taxus	American badger	AMAJF04010	454	G5	S4	None	None		DFG_SSC-Species of Special Concern IUCN_LC-Least Concern	Alkali marsh Alkali playa Alpine Alpine dwarf scrub Bog and fen Brackish marsh Broadleaved upland forest Chaparral Chenopod scrub

ScientificName	CommonName	ElementCode	OccurrenceTotal	GlobalRank	StateRank	FederalStatus	StateStatus	RarePlantRank	OtherStatus	Habitat
										Cismontane woodland Closed-cone coniferous forest Coastal bluff scrub Coastal dunes Coastal prairie Coastal scrub Desert dunes Desert wash Freshwater marsh Great Basin grassland Great Basin scrub Interior dunes lone formation Joshua tree woodland Limestone Lower montane coniferous forest Marsh and swamp Meadow and seep Mojavean desert scrub Montane dwarf scrub North coast coniferous forest Oldgrowth Pavement plain Redwood Riparian forest Riparian scrub Riparian woodland Salt marsh Sonoran desert scrub Sonoran thorn woodland Ultramafic Upper montane coniferous forest Upper Sonoran scrub Valley and foothill grassland
Trifolium hydrophilum	saline clover	PDFAB400R5	44	G2	S2	None	None	1B.2		Marsh and swamp Valley and foothill grassland Vernal pool Wetland
Tropidocarpum capparideum	caper-fruited tropidocarpum	PDBRA2R010	18	G1	S1.1	None	None	1B.1	USFS_S-Sensitive	Valley and foothill grassland
Valley Needlegrass Grassland	Valley Needlegrass Grassland	CTT42110CA	45	G3	S3.1	None	None			Valley and foothill grassland
Valley Sink Scrub	Valley Sink Scrub	CTT36210CA	29	G1	S1.1	None	None			Chenopod scrub
Vulpes macrotis mutica	San Joaquin kit fox	AMAJA03041	959	G4T2T3	S2S3	Endangered	Threatened			Chenopod scrub Valley and foothill grassland

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