RESOLUTION NO. 19-8721

A RESOLUTION OF THE CITY OF SANTA CLARA, CALIFORNIA CONSIDERING A PROGRAM ENVIRONMENTAL IMPACT REPORT, ADOPTING CEQA FINDINGS WITH RESPECT THERETO, AND ADOPTING A STATEMENT OF OVERRIDING CONSIDERATIONS AND A MITIGATION MONITORING AND REPORTING PROGRAM FOR THE ROONEY RANCH WIND REPOWERING PROJECT

BE IT RESOLVED BY THE CITY OF SANTA CLARA AS FOLLOWS:

WHEREAS, the generation of renewable electricity on lands owned by the City of Santa Clara ("City") is a public purpose and a part of the City's powers;

WHEREAS, the City retains land use authority for activities related to public purposes on its lands;

WHEREAS, the City intends to issue a Notice to Proceed ("NTP") to Rooney Ranch, LLC, a renewable energy provider, authorizing the installation of seven new wind turbines on two City-owned parcels comprising 578 acres, located in Alameda County, commonly known as Rooney Ranch ("Project");

WHEREAS, Alameda County prepared, and on November 12, 2014 certified, a program EIR (SCH # 2010082063) ("PEIR") for the installation of newer, larger wind turbines in the Altamont Pass Wind Resource Area ("APWRA"), of which the repowering of the Rooney Ranch property is a part;

WHEREAS, for the purposes of the Project's CEQA review, the City is a responsible agency under the California Environmental Quality Act ("CEQA");

WHEREAS, the City Council of the City has had the opportunity to review and consider the PEIR, and the associated Environmental Analysis and CEQA Checklist prepared for the Project ("CEQA Checklist");

WHEREAS, the City's attached CEQA findings for the Project ("CEQA Findings"), statement of overriding considerations ("Statement of Overriding Considerations"), and CEQA Checklist show the Project is within the scope of the PEIR and would not result in new or more intense

significant impacts beyond those analyzed in the PEIR;

WHEREAS, as explained in the CEQA Findings, the PEIR identified certain significant and potentially significant adverse effects on the environment that would be caused by the Project as proposed;

WHEREAS, the PEIR outlined various mitigation measures that would substantially lessen or avoid the Project's significant effects on the environment, as well as alternatives that would provide some environmental advantages; and identified certain effects that would remain significant and unavoidable after application of all feasible mitigation measures;

WHEREAS, CEQA requires the City to adopt all feasible mitigation measures and alternatives that can substantially lessen or avoid any significant environmental effects of the Project. For a responsible agency such as the City, this obligation applies to the aspects of the project that the City will be called on to carry out or approve;

WHEREAS, Public Resources Code § 21081 requires an agency to adopt findings before approving a project for which an EIR has been prepared and certified;

WHEREAS, the CEQA Findings and Statement of Overriding Considerations were prepared to satisfy the requirements of Public Resources Code § 21081;

WHEREAS, many of the significant and potentially significant environmental effects associated with the Project can either be substantially lessened or avoided through the inclusion of the mitigation measures of the PEIR, as stated in the CEQA Checklist and CEQA Findings; and

WHEREAS, the City Council intends to adopt all mitigation measures of the PEIR applicable to the Project;

WHEREAS, the significant effects of the Project that cannot be avoided or substantially lessened by the adoption of feasible mitigation measures will necessarily remain significant and unavoidable, as stated in the CEQA Checklist and CEQA Findings;

WHEREAS, as detailed in the Statement of Overriding Considerations, the City Council has determined that, despite the occurrence of certain significant unavoidable environmental effects

associated with the Project, there exist overriding economic, social and other considerations for approving the Project which justify the occurrence of those impacts and render them acceptable;

WHEREAS, the City has determined, as detailed in the CEQA Findings, that certain alternatives identified in the PEIR are infeasible due to specified economic, legal, social, technological, or other considerations; and

WHEREAS, in accordance with the requirements of CEQA, the City Council reviewed the PEIR and the attached Mitigation Monitoring and Reporting Program ("MMRP"), as well as the CEQA Findings, the Statement of Overriding Considerations, and the CEQA Checklist, along with the City Staff report pertaining to the Project, and all evidence received at a duly noticed public hearing on June 25, 2019. All of these documents and evidence are incorporated herein by reference into this Resolution.

NOW THEREFORE, BE IT FURTHER RESOLVED BY THE CITY OF SANTA CLARA AS FOLLOWS:

1. That the City Council hereby finds the above Recitals true and correct and by this reference makes them a part hereof.

2. That the City Council has reviewed and considered the information and analysis contained in the PEIR and in the CEQA Checklist.

3. That, pursuant to Public Resources Code Section 21081 and California Code of Regulations, Title 14, Section 15091, the City Council hereby adopts the attached CEQA Findings.

4. That the City Council hereby finds that, as explained in the CEQA Checklist and Statement of Overriding Considerations, the PEIR sets forth environmental impacts of the Project that are significant and unavoidable that cannot be mitigated or avoided through the adoption of feasible mitigation measures. As to these impacts, the City Council finds there exist certain overriding economic, social and other considerations for approving the Project that justify the occurrence of those impacts, as detailed in the attached Statement of Overriding

Considerations, which the City hereby adopts.

5. That, pursuant to Public Resources Code Section 21081.6, the City Council adopts the attached MMRP and makes compliance with the mitigation measures listed in the MMRP an enforceable condition of approval of the NTP authorizing the Project. The MMRP is designed to ensure that, during project implementation, the City, Rooney Ranch Wind, LLC, their assigns and successors in interest, and any other responsible parties comply with the mitigation measures listed in the MMRP. The MMRP identifies, for each mitigation measure, the action to be taken and the party responsible for implementation.

6. That based on the findings set forth in this Resolution, the evidence in the City Staff Report, the CEQA Checklist, the CEQA Findings, and the Statement of Overriding Considerations, the City Council affirms that it has reviewed and considered the PEIR, makes findings concerning significant effects, makes findings that there exist certain overriding economic, social and other considerations for issuing the NTP that justify the occurrence of the significant and unavoidable impacts associated with the Project, adopts the CEQA Findings and Statement of Overriding Considerations, and adopts the MMRP, all in compliance with CEQA as applied to the Project.

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7. That pursuant to CEQA Guidelines Section 15091(e), the City Council hereby designates the Director of Community Development as the Custodian of Records for the Project, and the Community Development Department at City Hall, 1500 Warburton Avenue, Santa Clara, California, is the location of the documents and other material that constitute the record of proceedings upon which this decision is based.

8. Effective date. This resolution shall become effective immediately.

I HEREBY CERTIFY THE FOREGOING TO BE A TRUE COPY OF A RESOLUTION PASSED AND ADOPTED BY THE CITY OF SANTA CLARA, CALIFORNIA, AT A REGULAR MEETING THEREOF HELD ON THE 25TH DAY OF JUNE, 2019, BY THE FOLLOWING VOTE:

AYES:	COUNCILORS:	Chahal, Davis, Hardy, Mahan, O'Neill and Watanabe and Mayor Gillmor
NOES:	COUNCILORS:	None
ABSENT:	COUNCILORS:	None
ABSTAINED:	COUNCILORS:	None

ATTEST: _____
NORA PIMENTEL, MMC
ASSISTANT CITY CLERK
CITY OF SANTA CLARA

Attachments incorporated by reference:
1. Rooney Ranch Wind Repowering Environmental Analysis and CEQA Checklist
2. Rooney Ranch Findings of Significant Effects
3. Rooney Ranch Statement of Overriding Considerations
4. Rooney Ranch Mitigation Monitoring and Reporting Program

Exhibit A

Rooney Ranch Wind Repowering Project Written Findings of Significant Effects

In accordance with State CEQA Guidelines Sections 15091, the following findings and supporting facts address each significant environmental effect that has been changed (including adoption of mitigation measures) to avoid or substantially reduce the magnitude of the effect, as identified in the Final PEIR (which evaluated the project at a general, programmatic level in 2014), together with the *Implementation Checklist, Environmental Analysis*, and other supporting documentation for the Rooney Ranch Wind Repowering Project (project). The findings described below are organized by resource issue, in the same order as the effects are discussed in the *Implementation Checklist* and the *Environmental Analysis*. No findings are required regarding project alternatives, as these were previously made when the Alameda County East County Board of Zoning Adjustments certified the Final PEIR. The findings reference the final PEIR (part of the record upon which Santa Clara City Council bases its decision) and mitigation measures in support of the findings. For some specific resource mitigation measures, the section and page number in the PEIR where the full text of the mitigation measure is described is noted in the finding.

Introduction

The project area is in the Altamont Hills of eastern Alameda County near the San Joaquin County line, approximately 56 miles east of San Francisco. The Altamont Hills are at the geographical interface between the coastal mountains and the Central Valley. Existing predominant uses of the area are windfarms and cattle grazing. The project area is in the central portion of the APWRA and lies north of I-580 and south of Altamont Pass Road.

The project area consists of two contiguous parcels, owned by the City of Santa Clara (City), encompassing 578 acres in the eastern Altamont Pass area of Alameda County. Rooney Ranch Wind, LLC (Rooney), a subsidiary of FTP Power LLC (dba sPower), proposes to repower a wind energy facility in the AWPRA program area to replace outdated and inefficient wind turbines with fewer and more efficient turbines. The proposed project would repower 199 previously existing wind turbines with up to seven new-generation turbines totaling 25.1 megawatts (MW) of installed capacity and make improvements to related infrastructure. Project area ingress/egress is through a locked gate from Altamont Pass Road. Additional access to the project area may be available through a private road connecting to Carroll Road to the south.

The project is expected to entail one General Electric (GE) 2.3-116 and six GE 3.8-130 turbines. Because Rooney has not yet selected the specific turbine models, it retains the option of using turbines up to 4.0 MW, depending on product availability at the time of construction. However, regardless of the turbine model selected, the project would not exceed the proposed 25.1 MW capacity, and the overall dimensions of individual turbines would not exceed those currently proposed. The specific equipment chosen for the current project would depend on final micrositing. The tubular steel towers would have internal ladders to the nacelle, the color of towers and rotors would be neutral and non-reflective (e.g., dull white or light gray), and nacelles would be completely enclosed to minimize perching opportunities.

The PEIR analyzed projects with a range of turbine sizes. Table 1-1 shows the maximum dimensions of this range for comparison with the larger of turbine types under consideration for the project.

Table 1-1. Turbine Specifications Contemplated in the PEIR and for Use with the Proposed Project

Turbine Model	PEIR Maximum—3.0 MW	General Electric 3.6 MW[1]
Rotor type	3-blade/horizontal axis	-blade/horizontal axis
Blade length	62.5 m (205 ft)	67.2 m (220 ft)
Rotor diameter	125 m (410 ft)	137 m (449 ft)
Rotor-swept area	12,259 m^2 (131,955 ft^2)	14,741 m^2 (158,671 ft^2)
Tower type	Tubular	Tubular
Tower (hub) height	96 m (315 ft)	83.6 m (274 ft)
Total height (from ground to top of blade)	153 m (502 ft)	152 m (499 ft)

[1] 3.8 and 4.0 MW turbines are also proposed; however the 3.6MW turbine is larger in all dimensions compared to the 3.8 MW turbine and is therefore presented here as the largest of the four turbine types under consideration.

As shown in the table, the proposed Rooney Ranch turbines would be within the specifications established in the PEIR for rotor type, tower type, tower (hub) height, and total height. However, blade lengths would be up to 4 feet (approximately 2%) longer, rotor diameters up to 17 feet (approximately 4%) greater, and rotor-swept area up to 2,482 m^2 (approximately 8%) larger.

Because some of the proposed Project specifications exceed those described in the PEIR, additional review of potentially affected environmental resources is provided in the Environmental Analysis. Larger turbines could affect three resources: aesthetics (Section 3.1), hazards (i.e., setbacks) (Section 3.8), and biological resources (i.e., birds and bats) (Section 3.4). At the same time, it should be borne in mind that while a 3 MW turbine was the largest considered in the PEIR, for purposes of the analysis of avian mortality, the turbine used as the basis for developing estimates of future or typical project impacts was the Vasco Winds 2.3 MW turbine. The consequence of the increased nameplate capacity to a 3.8 or even 4.0 MW turbine, however, would be lower impacts per MW for certain environmental topic areas, because a 25.1 MW project would require eleven turbines using Vasco Winds-sized turbines, whereas the same 25.1 MW capacity can be achieved with the seven turbines proposed for the Rooney Ranch Project. This decreased density of turbines would result in proportionally lesser impacts associated with air quality emissions, traffic, and ground disturbance.

The *Implementation Checklist* and the *Environmental Analysis* were prepared in response to a request to Santa Clara to issue a Notice to Proceed for repowering of the turbines on the project site.

Based on the checklist, a Mitigation Monitoring and Reporting Program has been proposed for the project, the implementation of which is required as a condition of approval. It is the responsibility of the project applicant to implement the mitigation measures identified in this document.

This document functions as a notice to proceed with the repowering of the Rooney Ranch site, as identified in the project description.

Record of Proceedings and Custodian of Record

The record upon which all findings and determinations related to the approval of the project are based comprises the items listed below.

- The PEIR, the *Implementation Checklist*, the *Environmental Analysis*, and all documents referenced in or relied upon by the PEIR and *Implementation Checklist* and *Environmental Analysis*.
- All information (including written evidence and testimony) provided by City staff to the City Council relating to the PEIR, the approvals, and the project.
- All information (including written evidence and testimony) presented to the City Council by the environmental consultants who prepared the PEIR or incorporated into reports presented to the City Council.
- All information (including written evidence and testimony) presented to the City from other public agencies related to the project or the PEIR.
- All applications, letters, testimony, and presentations relating to the project.
- All information (including written evidence and testimony) presented at any County hearing related to the project and the PEIR.
- All City-adopted or City-prepared land use plans and ordinances, including without limitation general plans, specific plans, and ordinances, together with environmental review documents, findings, mitigation monitoring programs, and other documents relevant to land use within the area.
- The Mitigation Monitoring and Reporting Program for the project.
- All other documents composing the record pursuant to Public Resources Code Section 21167.6(e).

The custodian of the documents and other materials that constitute the record of the proceedings upon which the City's decisions are based is John Davidson, Principal Planner, or his designee. Such documents and other material are located at 1500 Warburton Avenue, Santa Clara, CA 94544.

Consideration and Certification of the PEIR

In accordance with CEQA, the EBZA certified, in November 2014, that the PEIR had been completed in compliance with CEQA. The City Council has independently reviewed the record and the PEIR prior to approving the project. By these findings, the City Council confirms, ratifies, and adopts the findings and conclusions of the PEIR and the *Implementation Checklist* as supplemented and modified by these findings. The PEIR, the *Implementation Checklist,* the *Environmental Analysis,* and these findings represent the independent judgment and analysis of the City Council. The City Council recognizes that the PEIR, the *Implementation Checklist*, and the *Environmental Analysis* may contain clerical errors. The City Council reviewed the entirety of the PEIR and bases its determination on the substance of the information it contains. The City Council certifies that the PEIR and the *Implementation Checklist* and *Environmental Analysis* are adequate to support the approval of the action that is the subject of the Resolution to which these CEQA findings are attached.

The City Council certifies that the PEIR, the *Implementation Checklist,* and the *Environmental Analysis* are adequate to support approval of the proposed Rooney Ranch Wind Repowering Project described in the staff report, of each component and phase of the project as addressed in the PEIR, and of any variant or modifications of the project as described in the *Implementation Checklist* and the *Environmental Analysis*.

Absence of Significant New Information

The City Council recognizes that the *Implementation Checklist* and *Environmental Analysis* incorporate information obtained and produced after the Final PEIR was completed, and that the *Implementation Checklist* and *Environmental Analysis* contain additions, clarifications, and modifications. Most notably, the *Implementation Checklist* and *Environmental Analysis* are supplemented by attachments that evaluate and describe activities related to and necessary for implementation of the proposed project.

The City Council has reviewed and considered the Final PEIR and this subsequent information. The *Implementation Checklist* and *Environmental Analysis*, including the supporting documentation, show that, relative to the PEIR, the project would not cause new or substantially more severe impacts, or require new mitigation measures as a result of project changes, changed circumstances, or new information that was not known and could not have been known with the exercise of reasonable diligence at the time the PEIR was certified within the meaning of Section 15168(c) of the State CEQA Guidelines. No information indicates that the PEIR was inadequate or conclusory or that the public was deprived of a meaningful opportunity to review and comment on the PEIR. Thus, supplementation of the PEIR is not required.

Therefore, after having used the *Implementation Checklist* to evaluate whether the environmental effects of the Rooney Ranch Wind Repowering Project were covered in the PEIR, the City Council finds, pursuant to Section 15168(c) of the State CEQA Guidelines:

1. The Rooney Ranch Wind Repowering Project would not have effects that were not examined in the PEIR.
2. Pursuant to Section 15162 of the State CEQA Guidelines, no new or more intense significant effects would result, and no new mitigation measures would be required, beyond those of the PEIR; accordingly, the Rooney Ranch Wind Repowering Project is within the scope of the project covered by the PEIR, and no new environmental document is required.
3. All feasible mitigation measures and alternatives developed in the PEIR have been incorporated into the Rooney Ranch Wind Repowering Project.

Severability

If any term, provision, or portion of these Findings or the application of these Findings to a particular situation is held by a court of competent jurisdiction to be invalid, void, or unenforceable, the remaining provisions of these Findings, or their application to other actions related to the project, shall continue in full force and effect unless amended or modified by the City.

Findings and Recommendations Regarding Significant and Unavoidable Impacts

Air Quality

Impact AQ-2: Violate any air quality standard or contribute substantially to an existing or projected air quality violation

Potential Impact: Project construction would occur over a period of approximately 7 months. It is estimated that there would be 180 workdays that would involve the use of heavy construction equipment (see Appendix A, Air Quality Technical Memorandum to the Environmental Analysis). As described in PEIR Section 3.3, *Air Quality*, it is expected that the majority of equipment and material-related truck trips would originate at the Port of Stockton and in the city of Tracy and that the construction worker–related commute trips would occur entirely within the San Francisco Bay Area Air Basin. The portion of the equipment, material, and aggregate haul trips that would originate at the Port of Stockton and in the city of Tracy would be generated in the San Joaquin Valley Air Basin (SJVAB), which is under the San Joaquin Valley Air Pollution Control District's (SJVAPCD's) jurisdiction. Accordingly, the heavy-duty truck trip exhaust emissions that would be generated in the SJVAB have been quantified and compared to SJVAPCD's annual significance thresholds (PEIR Table 3.3-7).

During construction, the project's maximum daily unmitigated exhaust emissions of NO_x are expected to exceed the Bay Area Air Quality Management District's (BAAQMD's) significance threshold, even with mitigation, resulting in a significant impact.

Mitigation Measures: The following mitigation measures, discussed in the Draft PEIR at pages 3.3-25 through 3.3-27, are hereby adopted and will be implemented as provided in the Mitigation Monitoring and Reporting Program.

AQ-2a: Reduce construction-related air pollutant emissions by implementing applicable BAAQMD Basic Construction Mitigation Measures

AQ-2b: Reduce construction-related air pollutant emissions by implementing measures based on BAAQMD's Additional Construction Mitigation Measures

Findings: Based on the PEIR and the entire record before the City, the City Council finds the following.

Effects of Mitigation: Implementation of the mitigation actions recommended by Mitigation Measures AQ-2a and AQ-2b will reduce the project's construction-related emissions but will not mitigate this impact to a less-than-significant level, as there is no feasible way to avoid the significant impact. The project applicant will be required to implement the following actions.

AQ-2a: Reduce construction-related air pollutant emissions by implementing applicable BAAQMD Basic Construction Mitigation Measures

The project proponents will require all contractors to comply with the following requirements for all areas with active construction activities.

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) will be watered as needed to maintain dust control onsite—approximately two times per day.
- All haul trucks transporting soil, sand, or other loose material offsite will be covered.
- All visible mud or dirt track-out onto adjacent public roads will be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
- All vehicle speeds on unpaved roads will be limited to 15 mph.
- All roadways, driveways, and sidewalks to be paved will be completed as soon as possible. Building pads will be laid as soon as possible after grading unless seeding or soil binders are used.
- Idling times will be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage will be provided for construction workers at all access points.
- All construction equipment will be maintained and properly tuned in accordance with manufacturer's specifications. All equipment will be checked by a certified visible emissions evaluator.
- Post a publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints. This person will respond and take corrective action within 48 hours. The air district's phone number will also be visible to ensure compliance with applicable regulations.

AQ-2b: Reduce construction-related air pollutant emissions by implementing measures based on BAAQMD's Additional Construction Mitigation Measures

The project proponents will require all contractors to comply with the following requirements for all areas with active construction activities.

- During construction activities, all exposed surfaces will be watered at a frequency adequate to meet and maintain fugitive dust control requirements of all relevant air quality management entities.
- All excavation, grading, and/or demolition activities will be suspended when average wind speeds exceed 20 mph, as measured at the Livermore Municipal Airport.
- Wind breaks (e.g., trees, fences) will be installed on the windward side(s) of actively disturbed areas of construction. Wind breaks should have at maximum 50% air porosity.
- Vegetative ground cover (e.g., fast-germinating native grass seed) will be planted in disturbed areas as soon as possible and watered appropriately until vegetation is established.
- If feasible and practicable, the simultaneous occurrence of excavation, grading, and ground-disturbing construction activities on the same area at any one time will be limited.
- All trucks and equipment, including their tires, will be washed off prior to leaving the site.

- Site accesses to a distance of 100 feet from the paved road will be treated with a 6 to 12 inch compacted layer of wood chips, mulch, or gravel.
- Sandbags or other erosion control measures will be installed to prevent silt runoff to public roadways from sites with a slope greater than 1%.
- The idling time of diesel powered construction equipment will be minimized to 2 minutes.
- The project will develop a plan demonstrating that the offroad equipment (more than 50 horsepower) to be used in the construction project (i.e., owned, leased, and subcontractor vehicles) would achieve a project wide fleet-average 20% NO_x reduction and 45% PM reduction compared to the most recent ARB fleet average. Acceptable options for reducing emissions include the use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, add- on devices such as particulate filters, and/or other options as such become available.
- Use low VOC (i.e., ROG) coatings beyond the local requirements (i.e., Regulation 8, Rule 3: Architectural Coatings).
- All construction equipment, diesel trucks, and generators will be equipped with BACT for emission reductions of NOX and PM.
- All contractors will use equipment that meets ARB's most recent certification standard for offroad heavy duty diesel engines.

Remaining Impacts: Remaining impacts related to the project construction activities' contribution to the construction-related air pollutant emissions will be significant and unavoidable.

Overriding Considerations: As more fully explained in the Statement of Overriding Considerations contained in Exhibit C to the Resolution to which these CEQA Findings are attached, the City Council finds that there are environmental, economic, or other benefits of the approved project that override the remaining significant and unavoidable impacts on air quality. There are no other feasible mitigation measures or changes to the project that would reduce this impact to a less-than-significant level.

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)

Potential Impact: Operation of the Rooney Ranch Wind Repowering Project would not result in new permanent stationary sources of criteria pollutants, nor would it increase criteria pollutant emissions from any existing stationary sources. Impacts during construction in the SJVAPCD and during operation in the BAAQMD would be less than significant. Construction-related NO_x and particulate matter (PM) emissions in the BAAQMD would exceed the air district's thresholds, resulting in a potentially significant impact. Implementation of Mitigation Measures AQ-2a and AQ-2b would ensure that impacts related to fugitive dust would be less than significant. Because construction emissions of NO_X under the Rooney Ranch Wind Repowering Project are greater than the BAAQMD thresholds after implementation of Mitigation Measures AQ-2a and AQ-2b, construction impacts would be significant and unavoidable.

Mitigation Measures: The following mitigation measures, discussed in the Draft PEIR at pages 3.3-25 through 3.3-27, are hereby adopted and will be implemented as provided in the Mitigation Monitoring and Reporting Program.

AQ-2a: Reduce construction-related air pollutant emissions by implementing applicable BAAQMD Basic Construction Mitigation Measures

AQ-2b: Reduce construction-related air pollutant emissions by implementing measures based on BAAQMD's Additional Construction Mitigation Measures

Findings: Based on the PEIR and the entire record before the City, the City Council finds the following.

Effects of Mitigation: Implementation of the mitigation actions recommended by Mitigation Measures AQ-2a, and AQ-2b will reduce the project's construction-related emissions but will not mitigate this impact to a less-than-significant level, as there is no feasible way to avoid the significant impact.

Remaining Impacts: Remaining impacts related to the project construction activities' contribution to cumulative construction-related air pollutant emissions will be significant and unavoidable.

Overriding Considerations: As more fully explained in the Statement of Overriding Considerations contained in Exhibit C to the Resolution to which these CEQA Findings are attached, the City Council finds that there are environmental, economic, or other benefits of the approved project that override the remaining significant and unavoidable impacts on air quality. There are no other feasible mitigation measures, or changes to the project that would reduce this impact to a less-than-significant level.

Biological Resources

Impact BIO-11: Avian mortality resulting from interaction with wind energy facilities

Potential Impact: The operation of wind energy facilities has been shown to cause avian fatalities through collisions with wind turbines and powerlines and through electrocution on powerlines. Although repowering is intended to reduce fatalities, enough uncertainty remains in light of project- and site-specific data to warrant a conservative approach in the impact analysis. Accordingly, the continued or increased loss of birds (including special-status species) at a rate exceeding the baseline rate would be a significant adverse impact. A siting process was conducted for the Rooney Ranch project to choose specific turbine sites based on avian species flight patterns, as well as in recognition of terrestrial species, wetland ecologies, wind conditions (or resources) and topography, safety setback requirements, and other factors. More detailed siting analysis in accordance with BIO-11a and the project-specific Avian Protection Plan (APP) is ongoing and may continue until the building permit application is submitted. However, there is evidence that the proposed project would result in continued avian mortality in conflict with specific laws and regulations (e.g., ESA, CESA, MBTA) that are not based on mortality rates, as described in *Determination of Significance* on pages 3.4-58 and 3.4-59 of the Final PEIR, and with the objectives of the 2007 Settlement Agreement that bound the wind energy operators and Alameda County to provide strategies and measures to conserve avian species of concern and their habitats. This conflict is considered a significant impact on protected and special-status avian species, and in consideration of a conservative expectation

that some level of avian mortality would continue even with the implementation of every feasible mitigation measure and conservation strategy, this would be a significant and unavoidable impact.

Mitigation Measures: The following mitigation measures, discussed in Section 3.4.2 of the PEIR, are hereby adopted and will be implemented as provided in the Mitigation Monitoring and Reporting Program.

BIO-11a: Prepare a project-specific avian protection plan

BIO-11b: Site turbines to minimize potential mortality of birds

BIO-11c: Use turbine designs that reduce avian impacts

BIO-11d: Incorporate avian-safe practices into design of turbine-related infrastructure

BIO-11e: Retrofit existing infrastructure to minimize risk to raptors

BIO-11f: Discourage prey for raptors

BIO-11g: Implement postconstruction avian fatality monitoring for all repowering projects and implement adaptive management measures as necessary

BIO-11h: Compensate for the loss of raptors and other avian species, including golden eagles, by contributing to conservation efforts

BIO-11i: Implement an avian adaptive management program

Findings: Based on the PEIR and the entire record before the City, the City Council finds the following.

Effects of Mitigation: Implementation of Mitigation Measures BIO-11a, BIO-11b, BIO-11c, BIO-11d, BIO-11e, BIO-11f, BIO-11g, BIO-11h, and BIO-11i will reduce the rate of avian mortality associated with the project but not to a less-than-significant level, as there is no feasible way to avoid the significant impact. The project applicant will be required to implement the following actions prior to and during operations.

BIO-11a: Prepare a project-specific avian protection plan

All project proponents will prepare a project-specific APP to specify measures and protocols consistent with the program-level mitigation measures that address avian mortality. The project-specific APPs will include, at a minimum, the following components.

- Information and methods used to site turbines to minimize risk.
- Documentation that appropriate turbine designs are being used.
- Documentation that avian-safe practices are being implemented on project infrastructure.
- Methods used to discourage prey for raptors.
- A detailed description of the postconstruction avian fatality monitoring methods to be used (consistent with the minimum requirements outlined in Mitigation Measure BIO-11g).

- Methods used to compensate for the loss of raptors (consistent with the requirements of Mitigation Measure BIO-11h).

Each project applicant will prepare and submit a draft project-specific APP to the City. The draft APP will be reviewed by the TAC for consistency and the inclusion of appropriate mitigation measures that are consistent with the PEIR and recommended for approval by the City. Each project applicant must have an approved Final APP prior to commercial operation.

BIO-11b: Site turbines to minimize potential mortality of birds

Micro-siting of turbines—using analyses of landscape features and location-specific bird use and behavior data to identify locations with reduced collision risk—may result in reduced fatalities (Smallwood et al. 2009). All project proponents will conduct a siting process and prepare a siting analysis to select turbine locations to minimize potential impacts on bird and bat species. Proponents will utilize existing data as well as collect new site-specific data as part of the siting analysis.

Project proponents will utilize currently available guidelines such as the Alameda County SRC guidelines for siting wind turbines (Alameda County SRC 2010) and/or other currently available research or guidelines to conduct siting analysis. Additionally, project proponents will use the results of previous siting efforts to inform the analysis and siting methods as appropriate such that the science of siting continues to be advanced. All project proponents will collect field data that identify or confirm the behavior, utilization, and distribution patterns of affected avian and bat species prior to the installation of turbines. Project proponents will collect and utilize available existing information, including but not necessarily limited to: siting reports and monitoring data from previously installed projects; published use and abundance studies and reports; and topographic features known to increase collision risk (trees, riparian areas, water bodies, and wetlands).

Project proponents will also collect and utilize additional field data as necessary to inform the siting analysis for golden eagle. As required in Mitigation Measure BIO-8a, surveys will be conducted to locate golden eagle nests within 2 miles of proposed project areas. Siting of turbines within 2 miles of an active or alternative golden eagle nest or active golden eagle territory will be based on a site-specific analysis of risk based on the estimated eagle territories, conducted in consultation with USFWS.

BIO-11c: Use turbine designs that reduce avian impacts

Use of turbines with certain characteristics is believed to reduce the collision risk for avian species. Project proponents will implement the design-related measures listed below.

- Turbine designs will be selected that have been shown or that are suspected to reduce avian fatalities, based on the height, color, configuration, or other features of the turbines.
- Turbine design will limit or eliminate perching opportunities. Designs will include a tubular tower with internal ladders; external catwalks, railings, or ladders will be prohibited.
- Turbine design will limit or eliminate nesting or roosting opportunities. Openings on turbines will be covered to prevent cavity-nesting species from nesting in the turbines.
- Lighting will be installed on the fewest number of turbines allowed by Federal Aviation Administration (FAA) regulations, and all pilot warning lights will fire synchronously.

Turbine lighting will employ only red or dual red-and-white strobe, strobe-like, or flashing lights (U.S. Fish and Wildlife Service 2012). All lighting on turbines will be operated at the minimum allowable intensity, flashing frequency, and quantity allowed by FAA (Gehring et al. 2009; U.S. Fish and Wildlife Service 2012). Duration between flashes will be the longest allowable by the FAA.

BIO-11d: Incorporate avian-safe practices into design of turbine-related infrastructure

All project proponents will apply the following measures when designing and siting turbine-related infrastructure. These measures will reduce the risk of bird electrocution and collision.

- Permanent meteorological stations will avoid use of guy wires. If it is not possible to avoid using guy wires, the wires will be at least 4/0 gauge to ensure visibility and will be fitted with bird deterrent devices.
- All permanent meteorological towers will be unlit unless lighting is required by FAA. If lighting is required, it will be operated at the minimum allowable intensity, flashing frequency, and quantity allowed by FAA.
- To the extent possible, all powerlines will be placed underground. However, lines may be placed aboveground immediately prior to entering the substation. All aboveground lines will be fitted with bird flight diverters or visibility enhancement devices (e.g., spiral damping devices). When lines cannot be placed underground, appropriate avian protection designs must be employed. As a minimum requirement, the collection system will conform with the most current edition of the Avian Power Line Interaction Committee guidelines to prevent electrocutions.
- Lighting will be focused downward and minimized to limit skyward illumination. Sodium vapor lamps and spotlights will not be used at any facility (e.g., laydown areas, substations) except when emergency maintenance is needed. Lighting at collection facilities, including substations, will be minimized using downcast lighting and motion-detection devices. The use of high-intensity lighting; steady-burning or bright lights such as sodium vapor, quartz, or halogen; or other bright spotlights will be minimized. Where lighting is required it will be designed for the minimum intensity required for safe operation of the facility. Green or blue lighting will be used in place of red or white lighting.

BIO-11e: Retrofit existing infrastructure to minimize risk to raptors

Any existing power lines in a specific project area that are owned by the wind project operator and that are associated with electrocution of an eagle or other raptor will be retrofitted within 30 days to make them raptor-safe according to Avian Power Line Interaction Committee guidelines. All other existing structures to remain in a project area during repowering will be retrofitted, as feasible, according to specifications of Mitigation Measure BIO-11c prior to repowered turbine operation.

BIO-11f: Discourage prey for raptors

All project proponents will apply the following measures when designing and siting turbine-related infrastructure. These measures are intended to minimize opportunities for fossorial mammals to become established and thereby create a prey base that could become an attractant for raptors.

- Rodenticide will not be utilized on the project site to avoid the risk of raptors scavenging the remains of poisoned animals.
- Boulders (rocks more than 12 inches in diameter) excavated during project construction may be placed in aboveground piles in the project area so long as they are more than 500 meters (1,640 feet) from any turbine. Existing rock piles created during construction of first- and second-generation turbines will also be moved at least 500 meters (1,640 feet) from turbines.
- Gravel will be placed around each tower foundation to discourage small mammals from burrowing near turbines.

BIO-11g: Implement postconstruction avian fatality monitoring for all repowering projects

A postconstruction monitoring program will be conducted **at each repowering project for a** minimum of 3 years beginning on the commercial operation date (COD) of the project. Monitoring may continue beyond 3 years if construction is completed in phases. Moreover, if the results of the first 3 years indicate that baseline fatality rates (i.e., nonrepowered fatality rates) are exceeded, monitoring will be extended until the average annual fatality rate has dropped below baseline fatality rates for 2 years, and to assess the effectiveness of adaptive management measures specified in Mitigation Measure BIO-11i. An additional 2 years of monitoring will be implemented at year 10 (i.e., the tenth anniversary of the COD). Project proponents will provide access to qualified third parties authorized by the City to conduct any additional monitoring after the initial 3-year monitoring period has expired and before and after the additional 2-year monitoring period, provided that such additional monitoring utilizes scientifically valid monitoring protocols.

A technical advisory committee (TAC) will be formed to oversee the monitoring program and to advise the City on adaptive management measures that may be necessary if fatality rates substantially exceed those predicted for the project (as described below in Mitigation Measure BIO-11i). The TAC will have a standing meeting, which will be open to the public, every 6 months to review monitoring reports produced by operators in the program area. In these meetings, the TAC will discuss any issues raised by the monitoring reports and recommend to the City next steps to address issues, including scheduling additional meetings, if necessary.

The TAC will comprise representatives from the County (including one or more technical consultants, such as a biostatistician, an avian biologist, and a bat biologist), and wildlife agencies (CDFW, USFWS). Additional TAC members may also be considered (e.g., a representative from Audubon, a landowner in the program area, a representative of the operators) at the discretion of the County. The TAC will be a voluntary and advisory group that will provide guidance to the County Planning Department. To maintain transparency with the public, all TAC meetings will be open to the public, and notice of meetings will be given to interested parties.

The TAC will have three primary advisory roles: (1) to review and advise on project planning documents (i.e., project-specific APPs) to ensure that project-specific mitigation measures and compensatory mitigation measures described in this PEIR are appropriately and consistently applied, (2) to review and advise on monitoring documents (protocols and reporting) for

consistency with the mitigation measures, and (3) to review and advise on implementation of the adaptive management plans.

Should fatality monitoring reveal that impacts exceed the baseline thresholds established in this PEIR, the TAC will advise the City on requiring implementation of adaptive management measures as described in Mitigation Measure BIO-11i. The City will have the decision-making authority, as it is the organization issuing the Notice to Proceed. However, the TAC will collaboratively inform the decisions of the City.

Operators are required to provide for avian use surveys to be conducted within the project area boundaries for a minimum of 30 minutes duration. Surveyors will be qualified and trained and subject to approval by the City.

Carcass surveys will be conducted at every turbine for projects with 20 or fewer turbines. For projects with more than 20 turbines, such surveys will be required at a minimum of 20 turbines, and a sample of the remaining turbines may be selected for carcass searches. The operator will be required to demonstrate that the sampling scheme and sample size are statistically rigorous and defensible. Where substantial variation in terrain, land cover type, management, or other factors may contribute to significant variation in fatality rates, the sampling scheme will be stratified to account for such variation. The survey protocol for sets and subsets of turbines, as well as proposed sampling schemes that do not entail a search of all turbines, must be approved by the City in consultation with the TAC prior to the start of surveys.

The search interval will not exceed 14 days for the minimum of 20 turbines to be surveyed; however, the search interval for the additional turbines (i.e., those exceeding the 20-turbine minimum) that are to be included in the sampling scheme may be extended up to 28 days or longer if recommended by the TAC.

The estimation of detection probability is a rapidly advancing field. Carcass placement trials, broadly defined, will be conducted to estimate detection probability during each year of monitoring. Sample sizes will be large enough to potentially detect significant variation by season, carcass size, and habitat type.

Operators will be required to submit copies of all raw data forms to the County and City annually, will supply raw data in a readily accessible digital format to be specified by the County and City, and will prepare raw data for inclusion as appendices in the annual reports. The intent is to allow the County and City to conduct independent analyses and meta-analyses of data across the APWRA, and to supply these data to the regulatory agencies if requested.

Annual reports submitted to the City will provide a synthesis of all information collected to date. Each report will provide an introduction; descriptions of the study area, methods, and results; a discussion of the results; and any suitable recommendations. Reports will provide raw counts of fatalities, adjusted fatality rates, and estimates of project-wide fatalities on both a per MW and per turbine basis.

BIO-11h: Compensate for the loss of raptors and other avian species, including golden eagles, by contributing to conservation efforts

Discussion

Several options to compensate for impacts on raptors are currently available. Some are targeted to benefit certain species, but they may also have benefits for other raptor and non-raptor species. For example, USFWS's ECP Guidelines currently outline a compensatory mitigation strategy for golden eagles using the retrofit of high-risk power poles (poles known or suspected to electrocute and kill eagles). The goal of this strategy is to eliminate hazards for golden eagles. However, because the poles are also dangerous for other large raptors (e.g., red-tailed hawk, Swainson's hawk), retrofitting them can benefit such species as well as eagles.

Similarly, although the retrofitting of electrical poles may have benefits for large raptors, such an approach may provide minimal benefits for smaller raptors such as American kestrel and burrowing owl. Consequently, additional measures would be required components of an overall mitigation package to compensate for impacts on raptors in general.

The Secretary of the Interior issued Order 3330 on October 31, 2013, outlining a new approach to mitigation policies and practices of the Department of the Interior. This approach recognizes that certain strategies aimed at some species (e.g., raptors) can provide substantial benefit to others (e.g., non-raptors) and to the ecological landscape as a whole. The landscape-scale approach to mitigation and conservation efforts is now central to the Department's mitigation strategy. Although the Order was intended for use by federal agencies and as such is not directly applicable to the City, it is evident that such an approach would likely have the greatest mitigation benefits, especially when considering ongoing and long-term impacts from wind energy projects.

With these considerations in mind, the City has outlined several options that are currently available to compensate for impacts on raptors and other avian species. The options discussed below are currently considered acceptable approaches to compensation for impacts on raptors and other species. Although not every option is appropriate for all species, it is hoped that as time proceeds, a more comprehensive landscape-level approach to mitigation will be adopted to benefit a broader suite of species than might benefit from more species-specific measures. The City recognizes that the science of raptor conservation and the understanding of wind-wildlife impacts are continuing to evolve and that the suite of available compensation options may consequently change over the life of the proposed projects.

Conservation Measures

To promote the conservation of raptors and other avian species, project proponents will compensate for raptor fatalities estimated within their project areas. Mitigation will be provided in 10-year increments, with the first increment based on the estimates (raptors/MW/year) provided in this PEIR for the Vasco Winds Project (Table 3.4-10) or the project-specific EIR for future projects. The Vasco Winds fatality rates were selected because the Vasco turbines are the most similar to those likely to be proposed for future repowering projects and consequently represent the best available fatality estimates. Each project proponent will conduct postconstruction fatality monitoring for at least 3 years beginning at project startup (date of commercial operation) and again for 2 years at year 10, as required under Mitigation Measure BIO-11g, to estimate the average number of raptors taken each year by each individual project. The project proponent will compensate for this number of raptors in subsequent 10-year increments for the life of the project (i.e., three 10-year increments) as outlined below. Mitigation Measure BIO-11g also requires additional fatality monitoring at year 10 of the project. The results of the first 3 years of monitoring and/or the monitoring at year 10 may lead

to revisions of the estimated average number of raptors taken, and mitigation provided may be adjusted accordingly on a one-time basis within each of the first two 10-year increments, based on the results of the monitoring required by Mitigation Measure BIO-11g, in consultation with the TAC.

Prior to the start of operations, project proponents will submit for City approval an avian conservation strategy, as part of the project-specific APP outlined in Mitigation Measure BIO-11a, outlining the estimated number of raptor fatalities based on the number and type of turbines being constructed, and the type or types of compensation options to be implemented. Project proponents will use the avian conservation strategy to craft an appropriate strategy using a balanced mix of the options presented below, as well as considering new options suggested by the growing body of knowledge during the course of the project lifespan, as supported by a Resource Equivalency Analysis (REA) (see example in Appendix C) or similar type of compensation assessment acceptable to the City that demonstrates the efficacy of proposed mitigation for impacts on raptors.

The City Planning Director, in consultation with the TAC, will consider, based on the REA, whether the proposed avian conservation strategy is adequate, including consideration of whether each avian mitigation plan incorporates a landscape-scale approach such that the conservation efforts achieve the greatest possible benefits. Compensation measures as detailed in an approved avian conservation strategy must be implemented within 1 year of the date of commercial operations. Avian conservation strategies will be reviewed and may be revised by the City every 10 years, and on a one-time basis in each of the two 10-year increments based on the monitoring required by Mitigation Measure BIO-11g.

- **Retrofitting high-risk electrical infrastructure.** USFWS's ECP Guidelines outline a compensatory mitigation strategy using the retrofit of high-risk power poles (poles known or suspected to electrocute and kill eagles). USFWS has developed an REA (U.S. Fish and Wildlife Service 2013a) as a tool to estimate the compensatory mitigation (number of retrofits) required for the take of eagles. The REA takes into account the current understanding of eagle life history factors, the effectiveness of retrofitting poles, the expected annual take, and the timing of implementation of the pole retrofits. The project proponents may need to contract with a utility or a third-party mitigation account (such as the National Fish and Wildlife Foundation) to retrofit the number of poles needed as demonstrated by a project-specific REA. If contracting directly, the project proponent will consult with utility companies to ensure that high-risk poles have been identified for retrofitting. Proponents will agree in writing to pay the utility owner/operator to retrofit the required number of power poles and maintain the retrofits for 10 years and will provide the City with documentation of the retrofit agreement. The first retrofits will be based on the estimated number of eagle fatalities as described above in this measure or as developed in the project-specific EIR for future projects. Subsequent numbers of retrofits required for additional 10-year durations will be based on the results of project-specific fatality monitoring as outlined in Mitigation Measure BIO-11g. If fewer eagle fatalities are identified through the monitoring, the number of future required retrofits may be reduced through a project-specific REA. Although retrofitting poles has not been identified as appropriate mitigation for other large raptors, they would likely benefit from such efforts, as they (particularly red-tailed and Swainson's hawks) constitute the largest non-eagle group to suffer electrocution on power lines (Avian Power Line Interaction Committee 2006).

- **Measures outlined in an approved Eagle Conservation Plan and Bird and Bat Conservation Strategy.** Project proponents may elect to apply for programmatic eagle take permits from USFWS. The programmatic eagle take permit process currently involves preparation of an ECP and a Bird and Bat Conservation Strategy (BBCS). The ECP specifies avoidance and minimization measures, advanced conservation practices, and compensatory mitigation for eagles—conditions that meet USFWS's criteria for issuance of a permit. The BBCS outlines measures being implemented by the applicant to avoid and minimize impacts on migratory birds, including raptors. If programmatic eagle take permits are obtained by project proponents, those permit terms, including the measures outlined in the approved ECP and BBCS, may constitute an appropriate conservation measure for estimated take of golden eagles and other raptors, provided such terms are deemed by the City to be comparable to or more protective of raptors than the other options listed herein.
- **Contribute to raptor conservation efforts.** Project proponents will contribute funds, in the amount of $580/raptor fatality, in 10-year increments to local and/or regional conservation efforts designed to protect, recover, and manage lands for raptors, or to conduct research involving methods to reduce raptor fatalities or increase raptor productivity. The $580 amount is based on the average cost to rehabilitate one raptor at the California Raptor Center, affiliated with the UC Davis School of Veterinary Medicine, which receives more than 200 injured or ill raptors annually (Stedman pers. comm.). Ten-year installments are more advantageous than more frequent installments for planning and budgeting purposes.

  The funds will be contributed to an entity or entities engaged in these activities, such as the East Bay Regional Park District and the Livermore Area Regional Park District. Conservation efforts may include constructing and installing nest boxes and perches, conducting an awareness campaign to reduce the use of rodenticide, and conducting research to benefit raptors. The specific conservation effort to be pursued will be submitted to the City for approval as part of the avian conservation strategy review process. The donation receipt will be provided to the City as evidence of payment.

  The first contributions for any given project will be based on the estimated number of raptor fatalities as described above in this measure or as developed in the project-specific EIR for future projects. Funds for subsequent 10-year installments will be provided on the basis of the average annual raptor fatality rates determined through postconstruction monitoring efforts, allowing for a one-time adjustment within each 10-year increment after the results of the monitoring efforts are available. If fewer raptor fatalities are detected through the monitoring effort, the second installment amount may be reduced to account for the difference between the first estimated numbers and the monitoring results.
- **Contribute to regional conservation of raptor habitat.** Project proponents may address regional conservation of raptor habitat by funding the acquisition of conservation easements within the APWRA or on lands in the same eco-region outside the APWRA, subject to City approval, for the purpose of long-term regional conservation of raptor habitat. Lands proposed for conservation must be well-managed grazing lands similar to those on which the projects have been developed. Project proponents will fund the regional conservation and improvement of lands (through habitat enhancement, lead abatement activities, elimination of rodenticides, and/or other measures) using a number of acres equivalent to the conservation benefit of the raptor recovery and conservation efforts described above, or as determined through a project-specific REA (see example REA in

Appendix C). The conservation lands must be provided for compensation of a minimum of 10 years of raptor fatalities, as 10-year increments will minimize the transaction costs associated with the identification and conservation of lands, thereby increasing overall cost effectiveness. The conservation easements will be held by an organization whose mission is to purchase and/or otherwise conserve lands, such as The Trust for Public Lands, The Nature Conservancy, California Rangeland Trust, or the East Bay Regional Parks District. The project proponents will obtain approval from the City regarding the amount of conserved lands, any enhancements proposed to increase raptor habitat value, and the entity holding the lands and/or conservation easement.

- **Other Conservation Measures Identified in the Future.** As noted above, additional conservation measures for raptors may become available in the future. Conservation measures for raptors are currently being developed by USFWS and nongovernmental organizations (e.g., American Wind Wildlife Institute)—for example, activities serving to reduce such fatalities elsewhere, and enhancing foraging and nesting habitat. Additional options for conservation could include purchasing credits at an approved mitigation bank, credits for the retirement of windfarms that are particularly dangerous to birds or bats, the curtailment of prey elimination programs, and hunter-education programs that remove sources of lead from the environment. Under this option, the project proponent may make alternative proposals to the City for conservation measures—based on an REA or similar compensation assessment—that the City may accept as mitigation if they are deemed by the City to be comparable to or more protective of raptor species than the other options described herein.

BIO-11i: Implement an avian adaptive management program

If fatality monitoring described in Mitigation Measure BIO-11g results in an estimate that exceeds the preconstruction baseline fatality estimates (i.e., estimates at the nonrepowered turbines as described in this PEIR) for any focal species or species group (i.e., individual focal species, all focal species, all raptors, all non-raptors, all birds combined), project proponents will prepare a project-specific adaptive management plan within 2 months following the availability of the fatality monitoring results. These plans will be used to adjust operation and mitigation to the results of monitoring, new technology, and new research to ensure that the best available science is used to minimize impacts to below baseline. Project-specific adaptive management plans will be reviewed by the TAC, revised by project proponents as necessary, and approved by the City. The TAC will take current research and the most effective impact reduction strategies into account when reviewing adaptive management plans and suggesting measures to reduce impacts. The project-specific adaptive management plans will be implemented within 2 months of approval by the City. The plans will include a stepped approach whereby an adaptive measure or measures are implemented, the results are monitored for success or failure for a year, and additional adaptive measures are added as necessary, followed by another year of monitoring, until the success criteria are achieved (i.e., estimated fatalities are below the baseline). Project proponents should use the best measures available when the plan is prepared in consideration of the specific adaptive management needs. For example, if only one threshold is exceeded, such as golden eagle fatalities, the plan and measures used will target that species. As set forth in other agreements in the APWRA, project proponents may also focus adaptive management measures on individual or multiple turbines if those turbines are shown to cause a significantly disproportionate number of fatalities.

In general, the following types of measures will be considered by the TAC, in the order they are presented below; however, the TAC may recommend any of these or other measures that are shown to be successful in reducing the impact.

ADMM-1: Visual Modifications. The project proponent could paint a pattern on a proportion of the turbine blades. The proportion and the pattern of the blades to be painted will be determined by the City in consultation with the TAC. USFWS recommends testing measures to reduce *motion smear*—the blurring of turbine blades due to rapid rotation that renders them less visible and hence more perilous to birds in flight. Suggested techniques include painting blades with staggered stripes or painting one blade black. The project proponent will conduct fatality studies on a controlled number of painted and unpainted turbines. The project proponent will coordinate with the TAC to determine the location of the painted turbines, but the intent is to implement this measure in areas that appear to be contributing most to the high number of fatalities detected.

ADMM-2: Anti-Perching Measures. The City will consult with the TAC regarding the use of anti-perching measures to discourage bird use of the area. The TAC will use the most recent research and information available to determine, on a case-by–case basis, if anti-perching measures will be an effective strategy to reduce impacts. If determined to be feasible, anti-perching devices will be installed on artificial structures, excluding utility poles, within 1 mile of project facilities (with landowner permission) to discourage bird use of the area.

ADMM-3: Prey Reduction. The project proponent will implement a prey reduction program around the most hazardous turbines. Examples of prey reduction measures may include changes in grazing practices to make the area less desirable for prey species, active reduction through direct removal of prey species, or other measures provided they are consistent with management goals for threatened and endangered species.

ADMM-4: Implementation of Experimental Technologies. Project proponents can deploy experimental technologies at their facilities to test their efficacy in reducing turbine-related fatalities. Examples may include, but are not limited to, visual deterrents, noise deterrents, and active radar systems.

ADMM-5: Turbine Curtailment. If postconstruction monitoring indicates patterns of turbine-caused fatalities—such as seasonal spikes in fatalities, topographic or other environmental features associated with high numbers of fatalities, or other factors that can potentially be manipulated and that suggest that curtailment of a specific turbine's operation would result in reducing future avian fatalities—the project operator can curtail operations of the offending turbine or turbines. Curtailment restrictions would be developed in coordination with the TAC and based on currently available fatality data, use data, and research.

ADMM-6: Cut-in Speed Study. Changes in cut-in speed could be conducted to see if changing cut-in speeds from 3 meters per second to 5 meters per second (for example) would significantly reduce avian fatalities. The proponent will coordinate with the TAC in determining the feasibility of the measure for the particular species affected as well as the amount of the change in the cut-in speed.

ADMM-7: Real-Time Turbine Curtailment. The project proponent can employ a real-time turbine curtailment program designed in consultation with the TAC. The intent would be to deploy a biologist to monitor onsite conditions and issue a curtailment order when raptors are

near operating turbines. Alternatively, radar, video, or other monitoring measures could be deployed in place of a biological monitor if there is evidence to indicate that such a system would be as effective and more efficient than use of a human monitor.

Remaining Impacts: Remaining impacts related to the project impacts on avian mortality will be significant and unavoidable.

Overriding Considerations: As more fully explained in the Statement of Overriding Considerations contained in Exhibit C to the Resolution to which these CEQA Findings are attached, the City Council finds that there are environmental, economic, or other benefits of the approved project that override the remaining significant and unavoidable impacts on biological resources. There are no other feasible mitigation measures, or changes to the project that would reduce this impact to a less than significant level.

Impact BIO-14: Turbine-related fatalities of special-status and other bats

Potential Impact: Resident and migratory bats flying in and through the Rooney Ranch Repowering Project area may be killed by collision with wind turbine blades or other interaction with the wind turbine generators. Extrapolating from existing fatality data and from trends observed at other wind energy facilities where fourth-generation turbines are in operation, it appears likely that fatalities would occur predominantly in the late summer to mid-fall migration period; that fatalities would consist mostly of migratory bats, particularly Mexican free-tailed bat and hoary bat; that fatalities would occur sporadically at other times of year; and that fatalities of one or more other species would occur in smaller numbers. Despite the high level of uncertainty in estimates of bat fatality rates, all available data suggest that repowering would result in a substantial increase in bat fatalities.

Mitigation Measures: The following mitigation measures, discussed in Section 3.4.2 of the PEIR, are hereby adopted and will be implemented as provided in the Mitigation Monitoring and Reporting Program.

BIO-14a: Site and select turbines to minimize potential mortality of bats

BIO-14b: Implement postconstruction bat fatality monitoring program for all repowering projects

BIO-14c: Prepare and publish annual monitoring reports on the findings of bat use of the project area and fatality monitoring results

BIO-14d: Develop and implement a bat adaptive management plan

BIO-14e: Compensate for expenses incurred by rehabilitating injured bats

Findings: Based on the PEIR and the entire record before the City, the City Council finds the following.

Effects of Mitigation: Implementation of the mitigations recommended by Mitigation Measures BIO-14a, BIO-14b, BIO-14c, BIO-14d, and BIO-14e will reduce the rate of bat mortality associated with the project but will not mitigate this impact to a less-than-significant level, as there is no feasible way to avoid the significant impact. The project applicant will be required to implement the following actions.

BIO-14a: Site and select turbines to minimize potential mortality of bats

All project proponents will use the best information available to site turbines and to select from turbine models in such a manner as to reduce bat collision risk. The siting and selection process will take into account bat use of the area and landscape features known to increase collision risk (trees, edge habitats, riparian areas, water bodies, and wetlands). Measures include but are not limited to siting turbines the greatest distance feasible up to 500 meters (1,640) feet from still or flowing bodies of water, riparian habitat, known roosts, and tree stands (California Bat Working Group 2006:6).

To generate site-specific "best information" to inform turbine siting and operation decisions, a bat habitat assessment and roost survey will be conducted in the project area to identify and map habitat of potential significance to bats, such as potential roost sites (trees and shrubs, significant rock formations, artificial structures) and water sources. Turbine siting decisions will incorporate relevant bat use survey data and bat fatality records published by other projects in the APWRA. Roost surveys will be carried out according to the methods described in Mitigation Measure-BIO-12a.

BIO-14b: Implement postconstruction bat fatality monitoring program for all repowering projects

A scientifically defensible, postconstruction bat fatality monitoring program will be implemented to estimate actual bat fatalities and determine if additional mitigation is required. Bat-specific modifications to the 3-year postconstruction monitoring program described in Mitigation Measure BIO-11g, developed in accordance with CEC 2007 and with appropriate recommendations from California Bat Working Group guidelines (2006), will be implemented.

In addition to the requirements outlined in Mitigation Measure BIO-11g, the following two bat-specific requirements will be added.

- Include on the TAC at least one biologist with significant expertise in bat research and wind energy impacts on bats.
- Conduct bat acoustic surveys concurrently with fatality monitoring in the project area to estimate nightly, seasonal, or annual variations in relative activity and species use patterns, and to contribute to the body of knowledge on seasonal bat movements and relationships between bat activity, environmental variables, and turbine fatality. Should emerging research support the approach, these data may be used to generate site-specific predictive models to increase the precision and effectiveness of mitigation measures (e.g., the season-specific, multivariate models described by Weller and Baldwin 2011:11). Acoustic bat surveys will be designed and data analysis conducted by qualified biologists with significant experience in acoustic bat survey techniques. Methods will be informed by the latest available guidelines (California Energy Commission guidelines, 2007); California Bat Working Group guidelines, 2006), except where best available science supports technological or methodological updates. High-quality, sensitive acoustic equipment will be used to produce data of sufficient quality to generate species identifications. Survey design and methods will be scientifically defensible and will include, at a minimum, the following elements.
- Acoustic detectors will be installed at multiple stations to adequately sample range of habitats in the project area for both resident and migratory bats. The number of detector

arrays installed per project site will incorporate emerging research on the density of detectors required to adequately meet sampling goals and inform mitigation approaches (Weller and Baldwin 2011:10).

- Acoustic detector arrays will sample multiple airspace heights including as close to the repowered rotor swept area as possible Vertical structures used for mounting may be preexisting or may be installed for the project (e.g., temporary or permanent meteorological towers).
- Surveys will be conducted such that data are collected continuously from early July to early November to cover the activity transition from maternity to migration season and determine if there is elevated activity during migration. Survey season may be adjusted to more accurately reflect the full extent of the local migration season and/or season(s) of greatest local bat fatality risk, if scientifically sound data support doing so.
- Anticipated adaptive management goals, such as determining justifiable timeframes to reduce required periods of cut-in speed adjustments, will be reviewed with the TAC and incorporated in designing the acoustic monitoring and data analysis program.

Modifications to the fatality search protocol will be implemented to obtain better information on the number and timing of bat fatalities (e.g., Johnston et al. 2013:85). Modifications will include decreases in the transect width and search interval for a period of time coinciding with high levels of bat mortality, i.e., the fall migration season (roughly August to early November, or as appropriate in the view of the TAC). The nature of bat-specific transect distance and search intervals will be determined in consultation with the TAC and will be guided by scientifically sound and pertinent data on rates of bat carcass detection at wind energy facilities (e.g., Johnston et al. 2013:54–55) and site-specific data from APWRA repowering project fatality monitoring programs as these data become available.

Other methods to achieve the goals of the bat fatality monitoring program while avoiding prohibitive costs may be considered subject to approval by the TAC, if these methods have been peer reviewed and evidence indicates the methods are effective. For example, if project proponents wish to have the option of altering search methodology to a newly developed method, such as searching only roads and pads (Good et al. 2011:73), a statistically robust field study to index the results of the methodology against standard search methods will be conducted concurrently to ensure site-specific, long-term validity of the new methods.

Finally, detection probability trials will utilize bat carcasses to develop bat-specific detection probabilities. Care should be taken to avoid introducing novel disease reservoirs; such avoidance will entail using onsite fatalities or using carcasses obtained from within a reasonably anticipated flight distance for that species.

BIO-14c: Prepare and publish annual monitoring reports on the findings of bat use of the project area and fatality monitoring results

Annual reports of bat use results and fatality monitoring will be produced within 3 months of the end of the last day of fatality monitoring. Special-status bat species records will be reported to CNDDB.

BIO-14d: Develop and implement a bat adaptive management plan

In concert with Mitigation Measure BIO-14b, all project proponents will develop adaptive management plans to ensure appropriate, feasible, and current incorporation of emerging information. The goals of the adaptive management plans are to ensure that the best available science and emerging technologies are used to assess impacts on bats, and that impacts are minimized to the greatest extent possible while maximizing energy production.

The project-specific adaptive management plans will be used to adjust operation and mitigation to incorporate the results of project area monitoring and new technology and research results when sufficient evidence exists to support these new approaches. These plans will be reviewed by the TAC and approved by the City. All adaptive management measures will be implemented within a reasonable timeframe, sufficient to allow the measures to take effect in the first fall migration season following the year of monitoring in which the adaptive management threshold was crossed. ADMMs may be modified by the City in consultation with the TAC to take into account current research, site-specific data, and the most effective impact reduction strategies. ADMMs will include a scientifically defensible, controlled research component and minimum post-implementation monitoring time to evaluate the effectiveness and validity of the measures. The minimum monitoring time will consist of three sequential fall seasons of the bat-specific mortality monitoring program covering the 3–4 months of the year in which the highest bat mortality has been observed: likely August–November. The start and end dates of the 3–4 months of bat-specific mortality monitoring period will be based on existing fatality data and in consultation with the TAC.

Determining a fatality threshold to trigger adaptive management is not straightforward, as insufficient information exists on the status and vitality of the populations of migratory bat species subject to mortality in the APWRA. The low estimate of anticipated bat fatality rates is from the Vasco Winds project in the APWRA. Applying this rate programmatically would result in an estimate of 21,000 bats killed over the 30-year life of the program. The high estimate is from the Montezuma Hills Wind Resource Area. Applying this rate programmatically would result in an estimate of 49,050 bats killed over the 30-year life of the program. Bats are slow to reproduce, and turbines may be more likely to kill adult bats than juveniles, suggesting that a conservative approach is warranted. Accordingly, an initial adaptive management threshold will be established using the low fatality estimates, or 1.679 fatalities/MW/year, to ensure that the most conservative trigger for implementation of adaptive management measures is adopted.

If postconstruction fatality monitoring results in a point estimate for the bat fatality rate that exceeds the 1.679 fatalities/MW/year threshold by a statistically significant amount, then, in consultation with the TAC, ADMM-7 and ADMM-8 (described below) for bats will be implemented.

It is important to note that neither the high nor the low estimate speaks to the ability of bat populations to withstand the associated levels of take. The initial fatality rate threshold triggering adaptive management may be modified by the TAC if appropriate and if such adaptation is supported by the best available science.

The TAC may direct implementation of adaptive management measures for other appropriate reasons, such as an unexpectedly and markedly high fatality rate observed for any bat species, or special-status species being killed in unexpectedly high numbers.

ADMMs for bats may be implemented using a stepped approach until necessary fatality reductions are reached, and monitoring methods must be revised as needed to ensure accurate measurement of the effectiveness of the ADMMs. Additional ADMMs for bats should be developed as new technologies or science supports doing so.

ADMM-7: Seasonal Turbine Cut-in Speed Increase. Cut-in speed increases offer the most promising and immediately available approach to reducing bat fatalities at fourth-generation wind turbines. Reductions in fatalities (53–87%) were observed when increasing modern turbine cut-in speed to 5.0–6.5 m/s (Arnett et al. 2009:3; Good et al. 2012:iii). While implementing this measure immediately upon a project's commencement would likely reduce bat fatalities, that assumption is not yet supported by conclusive data. Moreover, without establishing baseline fatality at repowered projects, there would be no way to determine the effectiveness of the approach or whether the costs of increased cut-in speeds (and consequent power generation reductions) were providing fatality reductions.

Cut-in speed increases will be implemented as outlined below, with effectiveness assessed annually.

1. The project proponent will increase cut-in speed to 5.0 m/s from sunset to sunrise during peak migration season (generally August–October). If this is ineffective, the project proponent will increase turbine cut-in speed by annual increments of 0.5 m/s until target fatality reductions are achieved.

2. The project proponent may refine site-specific migration start dates on the basis of pre- and postconstruction acoustic surveys and ongoing review of dates of fatality occurrences for migratory bats in the APWRA.

3. The project proponent may request a shorter season of required cut-in speed increases with substantial evidence that similar levels of mortality reduction could be achieved. Should resource agencies and the TAC find there is sufficient support for a shorter period (as low as 8 weeks), evidence in support of this shorter period will be documented for the public record and the shorter period may be implemented.

4. The project proponent may request shorter nightly periods of cut-in speed increases with substantial evidence from defensible onsite, long-term postconstruction acoustic surveys indicating predictable nightly timeframes when target species appear not to be active. Target species are here defined as migratory bats or any other species appearing repeatedly in the fatality records.

5. The project proponent may request exceptions to cut-in speed increases for particular weather events or wind patterns if substantial evidence is available from onsite acoustic or other monitoring to support such exceptions (i.e., all available literature and onsite surveys indicate that bat activity ceases during specific weather events or other predictable conditions).

6. In the absence of defensible site-specific data, mandatory cut-in speed increases will commence on August 1 and continue through October 31, and will be in effect from sunset to sunrise.

ADMM-8: Emerging Technology as Mitigation. The project proponent may request, with consultation and approval from agencies, replacement or augmentation of cut-in speed increases with developing technology or another mitigation approach that has been proven to achieve similar bat fatality reductions.

The project proponent may also request the second tier of adaptive management to be the adoption of a promising but not fully proven technology or mitigation method. These requests are subject to review and approval by the TAC and must include a controlled research component designed by a qualified principal investigator so that the effectiveness of the method may be accurately assessed.

Some examples of such emerging technologies and research areas that could be incorporated in adaptive management plans are listed below.

- The use of acoustic deterrents (Arnett et al. 2013:1).
- The use of altitude-specific radar, night vision and/or other technology allowing bat use monitoring and assessment of at-risk bat behavior (Johnston et al. 2013: 90-91) if research in these areas advances sufficiently to allow effective application of these technologies.
- Application of emerging peer-reviewed studies on bat biology (such as studies documenting migratory corridors or bat behavior in relation to turbines) that support specific mitigation methods.

BIO-14e: Compensate for expenses incurred by rehabilitating injured bats

The cost of reasonable, licensed rehabilitation efforts for any injured bats taken to wildlife care facilities from the program area will be assumed in full by project proponents.

Remaining Impacts: Remaining impacts related to the project impacts on bat mortality will be significant and unavoidable.

Overriding Considerations: As more fully explained in the Statement of Overriding Considerations contained in Exhibit C to the Resolution to which these CEQA Findings are attached, the City finds that there are environmental, economic, or other benefits of the approved project that override the remaining significant and unavoidable impacts on biological resources. There are no other feasible mitigation measures, or changes to the project that would reduce this impact to a less-than-significant level.

Impact BIO-19: Potential impact on the movement of any native resident or migratory wildlife species or established native resident or migratory wildlife corridors, and the use of native wildlife nursery sites

Potential Impact: Construction activities associated with the Rooney Ranch Wind Repowering Project and fencing of work areas may temporarily impede wildlife movement through the work area or cause animals to travel longer distances to avoid the work area. This could result in higher energy expenditure and increased susceptibility to predation for some species and is a potentially significant impact. Because the construction period for the proposed project would be 6 to 9 months, it would likely encompass the movement/migration period for some species (e.g., California tiger salamander movement to/from breeding ponds). In particular, smaller animals, whose energy expenditures to travel around or avoid the area would be greater than for larger animals, could be more severely affected. The operation of wind turbines after repowering would adversely affect raptors, other birds, and bats migrating through and wintering in the project area because they could be injured or killed if they fly through the rotor plane of operating wind turbines. This would be a significant and unavoidable impact.

Mitigation Measures: The following mitigation measures, discussed in Section 3.4.2 of the PEIR, are hereby adopted and will be implemented as provided in the Mitigation Monitoring and Reporting Program.

BIO-1b: Implement best management practices to avoid and minimize impacts on special-status species

BIO-1e: Retain a biological monitor during ground-disturbing activities in environmentally sensitive areas

BIO-3a: Conduct preconstruction surveys for habitat for special-status wildlife species

BIO-5a: Implement best management practices to avoid and minimize effects on special-status amphibians

BIO-5c: Restore disturbed annual grasslands

BIO-7a: Implement best management practices to avoid and minimize effects on special-status reptiles

BIO-8a: Implement measures to avoid and minimize potential impacts on special-status and non-special-status nesting birds

BIO-8b: Implement measures to avoid and minimize potential impacts on western burrowing owl

BIO-10a: Implement measures to avoid and minimize potential impacts on San Joaquin kit fox and American badger

BIO-11b: Site turbines to minimize potential mortality of birds

BIO-11c: Use turbine designs that reduce avian impacts

BIO-11d: Incorporate avian-safe practices into design of turbine-related infrastructure

BIO-11e: Retrofit existing infrastructure to minimize risk to raptors

BIO-11i: Implement an avian adaptive management program

BIO-12a: Conduct bat roost surveys

BIO-12b: Avoid removing or disturbing bat roosts

BIO-14a: Site and select turbines to minimize potential mortality of bats

BIO-14d: Develop and implement a bat adaptive management plan

Findings: Based on the PEIR and the entire record before the City, the City Council finds the following.

Effects of Mitigation: Implementation of the mitigations recommended by Mitigation Measures BIO-1b, BIO-1e, BIO-3a, BIO-5a, BIO-5c, BIO-7a, BIO-8a, BIO-8b, BIO-10a, BIO-11b, BIO-11c, BIO-11d, BIO-11e, BIO-11i, BIO-12a, BIO-12b, BIO-14a, and BIO-14d will reduce the project's impacts on native resident or migratory wildlife corridors, and the use of native wildlife nursery sites**,** but will not mitigate this impact to a less-than-significant level, as there is no feasible way to avoid the significant impact. The project applicant will be required to implement the following actions.

BIO-1b: Implement best management practices to avoid and minimize impacts on special-status species

Project proponents will ensure that the following BMPs, in accordance with practices established in the EACCS, will be incorporated into individual project design and construction documents.

- Employees and contractors performing decommissioning and reclamation activities will receive environmental sensitivity training. Training will include review of environmental laws, mitigation measures, permit conditions, and other requirements that must be followed by all personnel to reduce or avoid effects on special-status 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.
- Vehicles and equipment will be parked on pavement, existing roads, and previously disturbed areas to the extent practicable.
- Offroad vehicle travel will be avoided.
- 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.
- Prior to ground-disturbing activities in sensitive habitats, project construction boundaries and access areas will be flagged and temporarily fenced during construction to reduce the potential for vehicles and equipment to stray into adjacent habitats.
- 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.
- 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.
- Significant earth moving-activities will not be conducted in riparian areas within 24 hours of predicted storms or after major storms (defined as 1-inch of rain or more).

- The following will not be allowed at or near work sites for project activities: trash dumping, firearms, open fires (such as barbecues) not required by the activity, hunting, and pets (except for safety in remote locations).

BIO-1e: Retain a biological monitor during ground-disturbing activities in environmentally sensitive areas

All project proponents will retain a qualified biologist (as determined by the City) to conduct periodic monitoring of decommissioning, repowering, and reclamation activities that occur adjacent to sensitive biological resources (e.g., special-status species, sensitive vegetation communities, wetlands). Monitoring will occur during initial ground disturbance where sensitive biological resources are present and weekly thereafter or as determined by the City in coordination with a qualified biologist. 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 the project proponent or its contractors maintain exclusion areas adjacent to sensitive biological resources, and for documenting compliance with all biological resources– related mitigation measures.

BIO-3a: Conduct preconstruction surveys for habitat for special-status wildlife species

No more than 3 years prior to ground-disturbing repowering activities, a qualified biologist (as determined by the City) will conduct field surveys within decommissioning, repowering, and restoration work areas and their immediate surroundings to determine the presence of habitat for special-status wildlife species. The project proponent will submit a report documenting the survey results to the City for review prior to conducting any repowering activities. The report will include the location and description of all proposed work areas, the location and description of all suitable habitat for special-status wildlife species, and the location and description of other sensitive habitats (e.g., vernal pools, wetlands, riparian areas). Additionally, the report will outline where additional species- and/or habitat-specific mitigation measures are required. This report may provide the basis for any applicable permit applications where incidental take may occur.

BIO-5a: Implement best management practices to avoid and minimize effects on special-status amphibians

All project proponents will ensure that BMPs and other appropriate measures, in accordance with measures developed for the EACCS, be incorporated into the appropriate design and construction documents. *Implementation of some of these measures will require that the project proponent obtain incidental take permits from USFWS (California red-legged frog and California tiger salamander) and from CDFW (California tiger salamander only) before construction begins.* Additional conservation measures or conditions of approval may be required in applicable project permits (e.g., ESA or CESA incidental take authorization). The applicant will comply with the State of California State Water Resources Control Board NPDES construction general requirements for stormwater.

- Ground-disturbing activities will be limited to dry weather between April 15 and October 31. No ground-disturbing work will occur during wet weather. Wet weather is defined as when there has been 0.25 inch of rain in a 24-hour period. Ground disturbing activities halted due to wet weather may resume when precipitation ceases and the National Weather Service 72-hour weather forecast indicates a 30% or less chance of precipitation. No

ground-disturbing work will occur during a dry-out period of 48 hours after the above referenced wet weather.

- 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.
- Before construction begins, a qualified biologist will locate appropriate relocation areas and prepare a relocation plan for special-status amphibians that may need to be moved during construction. The proponent will submit this plan to USFWS and CDFW for approval a minimum of 2 weeks prior to the start of construction.
- A qualified biologist will conduct preconstruction surveys immediately prior to ground-disturbing activities (including equipment staging, vegetation removal, grading). The biologist will survey the work area and all suitable habitats within 300 feet of the work area. If individuals (including adults, juveniles, larvae, or eggs) are found, work will not begin until USFWS and/or CDFW is contacted to determine if moving these life-stages is appropriate. If relocation is deemed necessary, it will be conducted in accordance with the relocation plan. Incidental take permits are required for relocation of California tiger salamander (USFWS and CDFW) and California red-legged frog (USFWS). Relocation of western spadefoot and foothill yellow-legged frog requires a letter from CDFW authorizing this activity.
- No monofilament plastic will be used for erosion control.
- All project activity will terminate 30 minutes before sunset and will not resume until 30 minutes after sunrise during the migration/active season from November 1 to June 15. Sunrise and sunset times are established by the U.S. Naval Observatory Astronomical Applications Department for the geographic area where the project is located.
- Vehicles will not exceed a speed limit of 15 mph on unpaved roads within natural land cover types, or during offroad travel.
- Trenches or holes more than 6 inches deep will be provided with one or more escape ramps constructed of earth fill or wooden planks and will be inspected by a qualified biologist prior to being filled. Any such features that are left open overnight will be searched each day prior to construction activities to ensure no covered species are trapped. Work will not continue until trapped animals have moved out of open trenches.
- Work crews or the onsite biological monitor will inspect open trenches, pits, and under construction equipment and material left onsite in the morning and evening to look for amphibians that may have become trapped or are seeking refuge.
- If special-status amphibians are found in the work area during construction and cannot or do not move offsite on their own, a qualified biologist who is USFWS and/or CDFW-approved under a biological opinion and/or incidental take permit for the specific project, will trap and move special-status amphibians in accordance with the relocation plan. Relocation of western spadefoot and foothill yellow-legged frog requires a letter permit from CDFW authorizing this activity.

BIO-5c: Restore disturbed annual grasslands

Within 30 days prior to any ground disturbance, a qualified biologist will prepare a Grassland Restoration Plan in coordination with CDFW and subject to CDFW approval, to ensure that temporarily disturbed annual grasslands and areas planned for the removal of permanent roads and turbine pad areas are restored to preproject conditions. The Grassland Restoration Plan will include but not be limited to the following measures.

- Gravel will be removed from areas proposed for grassland restoration.
- To the maximum extent feasible, topsoil will be salvaged from within onsite work areas prior to construction. Imported fill soils will be limited to weed-free topsoil similar in texture, chemical composition, and pH to soils found at the restoration site.
- Where appropriate, restoration areas will be seeded (hydroseeding is acceptable) to ensure erosion control. Seed mixes will be tailored to closely match that of reference site(s) within the program area and should include native or naturalized, noninvasive species sourced within the project area or from the nearest available location.
- Reclaimed roads will be restored in such a way as to permanently prevent vehicular travel.

The plan will include a requirement to monitor restoration areas annually (between March and October) for up to 3 years following the year of restoration. The restoration will be considered successful when the percent cover for restored areas is 70% absolute cover of the planted/seeded species compared to the percent absolute cover of nearby reference sites. No more than 5% relative cover of the vegetation in the restoration areas will consist of invasive plant species rated as "high" in Cal-IPC's California Invasive Plant Inventory Database (http://www.cal-ipc.org). Remedial measures prescribed in the plan will include supplemental seeding, weed control, and other actions as determined necessary to achieve the long-term success criteria. Monitoring may be extended if necessary to achieve the success criteria or if drought conditions preclude restoration success. 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. The project proponent will provide evidence that CDFW has reviewed and approved the Grassland Restoration Plan. Additionally, the project proponent will provide annual monitoring reports to the City by January 31 of each year, summarizing the monitoring results and any remedial measures implemented (if any are necessary) during the previous year.

BIO-7a: Implement best management practices to avoid and minimize effects on special-status reptiles

Where suitable habitat for Blainville's horned lizard, Alameda whipsnake, or San Joaquin coachwhip is identified in proposed work areas, all project proponents will ensure that BMPs and other appropriate measures, in accordance with measures developed for the EACCS, be incorporated into the appropriate design and construction documents. *Implementation of some of these measures will require that the project proponent obtain incidental take permits from USFWS and CDFW (Alameda whipsnake) before construction begins.* Additional conservation measures or conditions of approval may be required in applicable project permits (i.e., ESA incidental take permit).

- A qualified biologist will conduct preconstruction surveys immediately prior to ground-disturbing activities (e.g., equipment staging, vegetation removal, grading) associated with

the program. If any Blainville's horned lizards, Alameda whipsnakes, or San Joaquin coachwhips are found, work will not begin until they are moved out of the work area to a USFWS- and/or CDFW-approved relocation site. Incidental take permits from USFWS and CDFW are required for relocation of Alameda whipsnake. Relocation of Blainville's horned lizard and San Joaquin coachwhip requires a letter from CDFW authorizing this activity.

- No monofilament plastic will be used for erosion control.
- Where applicable, barrier fencing will be used to exclude Blainville's horned lizard, Alameda whipsnake, and San Joaquin coachwhip. Barrier fencing will be removed within 72 hours of completion of work.
- Work crews or an onsite biological monitor will inspect open trenches and pits and under construction equipment and materials left onsite for special-status reptiles each morning and evening during construction.
- Ground disturbance in suitable habitat will be minimized.
- Vegetation within the proposed work area will be removed prior to grading. Prior to clearing and grubbing operations, a qualified biologist will clearly mark vegetation within the work area that will be avoided. Vegetation outside the work area will not be removed. Where possible hand tools (e.g., trimmer, chain saw) will be used to trim or remove vegetation. All vegetation removal will be monitored by the qualified biologist to minimize impacts on special-status reptiles.
- If special-status reptiles are found in the work area during construction and cannot or do not move offsite on their own, a qualified biologist who is USFWS- and/or CDFW-approved under an incidental take permit for the specific project will trap and move the animal(s) to a USFWS and/or CDFW-approved relocation area. Incidental take permits from USFWS and CDFW are required for relocation of Alameda whipsnake. Relocation of Blainville's horned lizard and San Joaquin coachwhip requires a letter from CDFW authorizing this activity.

BIO-8a: Implement measures to avoid and minimize potential impacts on special-status and non-special-status nesting birds

Where suitable habitat is present for raptors within 1 mile (within 2 miles for golden eagles) and for tree/shrub- and ground-nesting migratory birds (non-raptors) within 50 feet of proposed work areas, the following measures will be implemented to ensure that the proposed project does not have a significant impact on nesting special-status and non-special-status birds.

- Remove suitable nesting habitat (shrubs and trees) during the non-breeding season (typically September 1–January 31) for nesting birds.
- To the extent feasible, avoid construction activities in or near suitable or occupied nesting habitat during the breeding season of birds (generally February 1–August 31).
- If construction activities (including vegetation removal, clearing, and grading) will occur during the nesting season for migratory birds, a qualified biologist will conduct preconstruction nesting bird surveys within 7 days prior to construction activities. The construction area and a 1-mile buffer will be surveyed for tree-nesting raptors (except for golden eagles), and a 50-foot buffer will be surveyed for all other bird species.
- Surveys to locate eagle nests within 2 miles of construction will be conducted during the breeding season prior to construction. A 1-mile no-disturbance buffer will be implemented

for construction activities to protect nesting eagles from disturbance. Through coordination with USFWS, the no-disturbance buffer may be reduced to 0.5 mile if construction activities are not within line-of-sight of the nest.

- If an active nest (other than golden eagle) is identified near a proposed work area and work cannot be conducted outside the nesting season (February 1–August 31), a no-activity zone will be established around the nest by a qualified biologist in coordination with USFWS and/or CDFW. Fencing and/or flagging will be used to delineate the no-activity zone. To minimize the potential to affect the reproductive success of the nesting pair, the extent of the no-activity zone will be based on the distance of the activity to the nest, the type and extent of the proposed activity, the duration and timing of the activity, the sensitivity and habituation of the species, and the dissimilarity of the proposed activity to background activities. The no-activity zone will be large enough to avoid nest abandonment and will be between 50 feet and 1 mile from the nest, or as otherwise required by USFWS and/or CDFW.

BIO-8b: Implement measures to avoid and minimize potential impacts on western burrowing owl

Where suitable habitat for western burrowing owl is in or within 500 feet of proposed work areas, the following measures will be implemented to avoid or minimize potential adverse impacts on burrowing owls.

- To the maximum extent feasible (e.g., where the construction footprint can be modified), construction activities within 500 feet of active burrowing owl burrows will be avoided during the nesting season (February 1–August 31).
- A qualified biologist will conduct preconstruction take avoidance surveys for burrowing owl no less than 14 days prior to and within 24 hours of initiating ground-disturbing activities. The survey area will encompass the work area and a 500-foot buffer around this area.
- If an active burrow is identified near a proposed work area and work cannot be conducted outside the nesting season (February 1–August 31), a no-activity zone will be established by a qualified biologist in coordination with CDFW. The no-activity zone will be large enough to avoid nest abandonment and will extend a minimum of 250 feet around the burrow.
- If burrowing owls are present at the site during the non-breeding season (September 1–January 31), a qualified biologist will establish a no-activity zone that extends a minimum of 150 feet around the burrow.
- If the designated no-activity zone for either breeding or non-breeding burrowing owls cannot be established, a wildlife biologist experienced in burrowing owl behavior will evaluate site-specific conditions and, in coordination with CDFW, recommend a smaller buffer (if possible) and/or other measure that still minimizes disturbance of the owls (while allowing reproductive success during the breeding season). The site-specific buffer (and/or other measure) 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.
- If burrowing owls are present in the direct disturbance area and cannot be avoided during the non-breeding season (generally September 1 through January 31), burrowing owls may be excluded from burrows through the installation of one-way doors at burrow entrances. A burrowing owl exclusion plan, prepared by the project proponent, must be approved by

CDFW prior to exclusion of owls. One-way doors (e.g., modified dryer vents or other CDFW-approved method) will be left in place for a minimum of 1 week and monitored daily to ensure that the owl(s) have left the burrow(s). Excavation of the burrow will be conducted using hand tools. During excavation of the burrow, a section of flexible plastic pipe (at least 3 inches in diameter) will be inserted into the burrow tunnel to maintain an escape route for any animals that may be inside the burrow. Owls will be excluded from their burrows as a last resort and only if other avoidance and minimization measures cannot be implemented.

- Avoid destruction of unoccupied burrows outside the work area and place visible markers near burrows to ensure that they are not collapsed.
- Conduct ongoing surveillance of the project site for burrowing owls during project activities. If additional owls are observed using burrows within 500 feet of construction, the onsite biological monitor will determine, in coordination with CDFW, if the owl(s) are or would be affected by construction activities and if additional exclusion zones are required.

BIO-10a: Implement measures to avoid and minimize potential impacts on San Joaquin kit fox and American badger

Where suitable habitat is present for San Joaquin fit fox and American badger in and adjacent to proposed work areas, the following measures, consistent with measures developed in the EACCS, will be implemented to ensure that proposed projects do not have a significant impact on San Joaquin kit fox or American badger. *Implementation of some of these measures will require that the project proponent obtain incidental take permits from USFWS and CDFW (San Joaquin kit fox) before construction begins.* Implementation of state and federal requirements contained in such authorization may constitute compliance with corresponding measures in this PEIR.

- To the maximum extent feasible, suitable dens for San Joaquin kit fox and American badger will be avoided.
- All project proponents will retain qualified approved biologists (as determined by USFWS) to conduct a preconstruction survey for potential San Joaquin kit fox dens (U.S. Fish and Wildlife Service 2011). Resumes of biologists will be submitted to USFWS for review and approval prior to the start of the survey.
- Preconstruction surveys for American badgers will be conducted in conjunction with San Joaquin kit fox preconstruction surveys.
- As described in U.S. Fish and Wildlife Service 2011, the preconstruction survey will be conducted no less than 14 days and no more than 30 days before the beginning of ground disturbance, or any activity likely to affect San Joaquin kit fox. The biologists will conduct den searches by systematically walking transects through the project area and a buffer area to be determined in coordination with USFWS and CDFW. Transect distance should be based on the height of vegetation such that 100% visual coverage of the project area is achieved. If a potential or known den is found during the survey, the biologist will measure the size of the den, evaluate the shape of the den entrances, and note tracks, scat, prey remains, and recent excavations at the den site. The biologists will also determine the status of the dens and map the features. Dens will be classified in one of the following four den status categories defined by USFWS (U.S. Fish and Wildlife Service 2011).
    - Potential den: Any subterranean hole within the species' range that has entrances of appropriate dimensions and for which available evidence is sufficient to conclude that it

is being used or has been used by a kit fox. Potential dens include (1) any suitable subterranean hole; or (2) any den or burrow of another species (e.g., coyote, badger, red fox, ground squirrel) that otherwise has appropriate characteristics for kit fox use; or an artificial structure that otherwise has appropriate characteristics for 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 radiotelemetry or spotlighting data; kit fox sign such as tracks, scat, and/or prey remains; or other reasonable proof that a given den is being or has been used by a kit fox (USFWS discourages use of the terms *active* and *inactive* when referring to any kit fox den because a great percentage of occupied dens show no evidence of use, and because kit foxes change dens often, with the result that the status of a given den may change frequently and abruptly).
- Known natal or pupping den: Any den that is used, or has been used at any time in the past, by kit foxes 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 kit fox tracks, scat, and prey remains in the vicinity of the den, and may have a broader apron of matted dirt or vegetation at one or more entrances. A natal den, defined as a den in which 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.
- Known 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.

Written results of the survey including the locations of any potential or known San Joaquin kit fox dens will be submitted to USFWS within 5 days following completion of the survey and prior to the start of ground disturbance or construction activities.

- After preconstruction den searches and before the commencement of repowering activities, exclusion zones will be established as measured in a radius outward from the entrance or cluster of entrances of each den. Repowering activities will be prohibited or greatly restricted within these exclusion zones. Only essential vehicular operation on existing roads and foot traffic will be permitted. All other repowering 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 using the following parameters.
  - 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 work area and the known den site at a minimum distance of 100 feet from the den. The fencing will be maintained until construction-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 in or within 200 feet of the work area.

- 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).
- In cases where avoidance is not a reasonable alternative, limited destruction of potential San Joaquin kit fox dens may be allowed as follows.
    - Natal/pupping dens: Natal or pupping dens that are occupied will not be destroyed until the adults and pups have vacated the dens and then only after consultation with USFWS. Removal of natal/pupping dens requires incidental take authorization from USFWS and CDFW.
    - Known dens: Known dens within the footprint of the activity must be monitored for 3 days with tracking medium or an infrared camera to determine current use. If no kit fox activity is observed during this period, the den should be destroyed immediately to preclude subsequent use. If kit fox activity is observed during this period, the den will be monitored for at least 5 consecutive days from the time of observation to allow any resident animal to move to another den during its normal activity. Use of the den can be discouraged by partially plugging its entrance(s) with soil in such a manner that any resident animal can escape easily. Only when the den is determined to be unoccupied will the den be excavated under the direction of a biologist. If the fox is still present after 5 or more consecutive days of monitoring, the den may be excavated when, in the judgment of the biologist, it is temporarily vacant, such as during the fox's normal foraging activities. Removal of known dens requires incidental take authorization from USFWS and CDFW.
    - Potential dens: If incidental take permits have been received (from USFWS and CDFW), potential dens can be removed (preferably by hand excavation) by biologist or under the supervision of a biologist without monitoring, unless other restrictions were issued with the incidental take permits. If no take authorizations have been issued, the potential dens will be monitored as if they are known dens. If any den was considered a potential den but was later determined during monitoring or destruction to be currently or previously used by kit foxes (e.g., kit fox sign is found inside), then all construction activities will cease and USFWS and CDFW will be notified immediately.
- Nighttime work will be minimized to the extent possible. The vehicular speed limit will be reduced to 10 miles per hour during nighttime work.
- 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.
- A representative appointed by the project proponent will be the contact for any employee or contractor who might inadvertently kill or injure a kit fox or who finds a dead, injured, or entrapped kit fox. The representative will be identified during environmental sensitivity training (Mitigation Measure BIO-1b) and his/her name and phone number will be provided to USFWS and CDFW. Upon such incident or finding, the representative will immediately contact USFWS and CDFW.
- The Sacramento USFWS office and CDFW will be notified in writing within 3 working days of the accidental death or injury of a San Joaquin kit fox during project-related activities.

Notification must include the date, time, and location of the incident, and any other pertinent information.

BIO-11b: Site turbines to minimize potential mortality of birds

For the text of Mitigation Measure BIO-11b, please refer to the discussion of Impact BIO-11 above.

BIO-11c: Use turbine designs that reduce avian impacts

For the text of Mitigation Measure BIO-11c, please refer to the discussion of Impact BIO-11 above.

BIO-11d: Incorporate avian-safe practices into design of turbine-related infrastructure

For the text of Mitigation Measure BIO-11d, please refer to the discussion of Impact BIO-11 above.

BIO-11e: Retrofit existing infrastructure to minimize risk to raptors

For the text of Mitigation Measure BIO-11e, please refer to the discussion of Impact BIO-11 above.

BIO-11i: Implement an avian adaptive management program

For the text of Mitigation Measure BIO-11i, please refer to the discussion of Impact BIO-11 above.

BIO-12a: Conduct bat roost surveys

Prior to development of any repowering project, a qualified bat biologist will conduct a roost habitat assessment to identify potential colonial roost sites of special-status and common bat species within 750 feet of the construction area. If suitable roost sites are to be removed or otherwise affected by the proposed project, the bat biologist will conduct targeted roost surveys of all identified sites that would be affected. Because bat activity is highly variable (both spatially and temporally) across the landscape and may move unpredictably among several roosts, several separate survey visits may be required. Surveys will be repeated at different times of year if deemed necessary by the bat biologist to determine the presence of seasonally active roosts (hibernacula, migratory stopovers, maternity roosts).Appropriate field methods will be employed to determine the species, type, and vulnerability of the roost to construction disturbance. Methods will follow best practices for roost surveys such that species are not disturbed and adequate temporal and spatial coverage is provided to increase likelihood of detection.

Roost surveys may consist of both daylight surveys for signs of bat use and evening/night visit(s) to conduct emergence surveys or evaluate the status of night roosts. Survey timing should be adequate to account for individual bats or species that might not emerge until well after dark.

Methods and approaches for determining roost occupancy status should include a combination of the following components as the biologist deems necessary for the particular roost site.

- Passive and/or active acoustic monitoring to assist with species identification.
- Guano traps to determine activity status.
- Night-vision equipment.
- Passive infrared camera traps.

At the completion of the roost surveys, a report will be prepared documenting areas surveyed, methods, results, and mapping of high-quality habitat or confirmed roost locations.

BIO-12b: Avoid removing or disturbing bat roosts

- Active bat roosts will not be disturbed, and will be provided a minimum buffer of 500 feet where preexisting disturbance is moderate or 750 feet where preexisting disturbance is minimal. Confirmation of buffer distances and determination of the need for a biological monitor for active maternity roosts or hibernacula will be obtained in consultation with CDFW. At a minimum, when an active maternity roost or hibernaculum is present within 750 feet of a construction site, a qualified biologist will conduct an initial assessment of the roost response to construction activities and will recommend buffer expansion if there are signs of disturbance from the roost.
- Structures (natural or artificial) showing evidence of significant bat use within the past year will be left in place as habitat wherever feasible. Should such a structure need to be removed or disturbed, CDFW will be consulted to determine appropriate buffers, timing and methods, and compensatory mitigation for the loss of the roost.
- All project proponents will provide environmental awareness training to construction personnel, establish buffers, and initiate consultation with CDFW if needed.
- Artificial night lighting within 500 feet of any roost will be shielded and angled such that bats may enter and exit the roost without artificial illumination and the roost does not receive artificial exposure to visual predators.
- Tree and vegetation removal will be conducted outside the maternity season (April 1–September 15) to avoid disturbance of maternity groups of foliage-roosting bats.
- If a maternity roost or hibernaculum is present within 500 feet of the construction site where preexisting disturbance is moderate or within 750 feet where preexisting disturbance is minimal, a qualified biological monitor will be onsite during groundbreaking activities.

BIO-14a: Site and select turbines to minimize potential mortality of bats

For the text of Mitigation Measure BIO-14a, please refer to the discussion of Impact BIO-14 above.

BIO-14d: Develop and implement a bat adaptive management plan

For the text of Mitigation Measure BIO-14d, please refer to the discussion of Impact BIO-14 above.

Remaining Impacts: Remaining impacts related to the project impacts on the movement of any native resident or migratory wildlife species or established native resident or migratory wildlife corridors, and the use of native wildlife nursery sites will be significant and unavoidable.

Overriding Considerations: As more fully explained in the Statement of Overriding Considerations contained in Exhibit C to the Resolution to which these CEQA Findings are attached, the City Council finds that there are environmental, economic, or other benefits of the approved project that override the remaining significant and unavoidable impacts on biological resources. There are no other feasible mitigation measures, or changes to the project that would reduce this impact to a less-than-significant level.

Findings and Recommendations Regarding Significant Impacts that are Mitigated to a Less-Than-Significant Level

Aesthetics

Impact AES-1: Temporary visual impacts caused by construction activities

Potential Impact: Construction associated with the project would create temporary changes in views of and from the project area. Construction is expected to last 6–9 months, and construction activities would create views of heavy equipment and associated vehicles (see Section 3.1, *Aesthetics and Visual Resources*, of the Environmental Analysis) and storage areas within the viewshed of residents, businesses, a state-designated scenic highway (I-580), and an Alameda County–designated scenic route (Altamont Pass Road). In addition, high-voltage lighting used for nighttime construction would negatively affect nighttime views of and from the work area and could be a nuisance to nearby residents, who are considered to have high visual sensitivity. Motorists along state-designated scenic highways and County-designated scenic routes, nearby residences, and employees of nearby businesses would be the principal viewer groups. Construction impacts would be temporary and short-term, and construction activities would occur in a manner consistent with local requirements for work days and hours. However, the residents and motorists in the project vicinity could perceive these impacts as significant.

Mitigation Measure: The following mitigation measure, discussed in the PEIR at page 3.1-13, is hereby adopted and will be implemented as provided in the Mitigation Monitoring and Reporting Program.

AES-1: Limit construction to daylight hours.

Findings: Based on the PEIR and the entire record before the City, the City Council finds the following.

Effects of Mitigation: Implementation of Mitigation Measure AES-1 will ensure that the impacts associated with temporary visual impacts during construction will be mitigated to a less-than-significant level. The project applicant will be required to implement the following actions.

AES-1: Limit construction to daylight hours.

Major construction activities will not be undertaken between sunset and sunrise or on weekends. Construction activity is specifically prohibited from using high-wattage lighting sources to illuminate work sites after sunset and before sunrise, with the exception of nighttime deliveries under the approved transportation control plan or other construction activities that require nighttime work for safety considerations.

Remaining Impacts: Any remaining impact associated with temporary visual impacts during construction will be less than significant.

Impact AES-2: Have a substantial adverse effect on a scenic vista

Potential Impact: A number of scenic vistas are available from local roadways near the project area. In addition, scenic vistas exist from local recreational trails and residences and businesses on hillsides in the program area. These areas consist of wide open views of the rolling, grass-covered, rural landscape dotted with existing turbines. The hub height of first-and second-generation turbines ranges from 18 to 55 meters (approximately 59 to 180 feet) and third-generation range from 41 to 68 meters (approximately 134 to 223 feet). The proposed fourth-generation towers installed under repowering activities would be 138-152 meters (453–499 feet) tall. Therefore, the proposed fourth-generation towers would be 97–120 meters (318–394 feet) taller than the existing turbines. Views of the proposed turbines may be more or less prevalent depending on a viewer's location within the landscape and if the viewer has more direct views of the turbines or views that are partially or fully screened by topography.

Although the new, more efficient turbines are larger than the existing turbines, the new widely spaced configuration detracts less from the natural landscape than the existing string configuration.

Figures 3.1-3 to 3.1-7 in Chapter 3.1 of the PEIR show existing views of the program area and simulated views with buildout of the program under both alternatives. The new, less-cluttered configuration allows for views of the rolling, grassy terrain to become more prominent, back-dropped against the sky, and less interrupted by anthropogenic features. While the larger turbines would draw viewers' attention toward them, the eye is also able to follow the ridgeline of the hills in a more cohesive manner than existing conditions. With existing conditions, the eye is drawn to and focused on the numerous turbines that clutter the view by sticking up and across the hillsides and ridgelines. Placement of new turbines on undeveloped portions of the program area would introduce large structures where none presently exist, altering the undeveloped character of these parcels.

Mitigation Measures: The following mitigation measures, discussed in Section 3.1.3 of the PEIR, are hereby adopted and will be implemented as provided in the Mitigation Monitoring and Reporting Program.

AES-2a: Require site development review prior to approval of site plans

AES-2b: Maintain site free of debris and restore abandoned roadways

AES-2c: Screen surplus parts and materials

Findings: Based on the PEIR and the entire record before the City, the City Council finds the following.

Effects of Mitigation: Implementation of Mitigation Measures AES-2a, AES-2b and AES-2c will ensure that the impacts associated with adverse effect on a scenic vista will be mitigated to a less-than-significant level. The applicant will be required to implement the following actions.

AES-2b: Maintain site free of debris and restore abandoned roadways

Project sites will be cleaned of all derelict equipment, wind turbine components not required for the project, and litter and debris from old turbines and past turbine operations. Such litter and debris may include derelict turbines, obsolete anemometers, unused electrical poles, and broken turbine blades. In addition, abandoned roads that are no longer in use on such parcels will be restored and hydroseeded to reclaim the sites and remove their visual traces from the viewscape, except in cases where the resource agencies (USFWS and CDFW) recommend that the features be left in place for resource protection. All parcels with new turbines will be maintained in such a manner through the life of project operations and until the parcels are reclaimed in accordance with the approved reclamation plan.

AES-2c: Screen surplus parts and materials

Surplus parts and materials that are kept onsite will be maintained in a neat and orderly fashion and screened from view. This can be accomplished by using a weatherproof camouflage material that can be draped over surplus parts and materials stockpiles. Draping materials will be changed out to accommodate for seasonal variations so that surplus materials are camouflaged in an effective manner when grasses are both green and brown.

Remaining Impacts: Any remaining impact associated with scenic vistas will be less than significant.

Impact AES-3: Substantially damage scenic resources, including but not limited to trees, rock outcroppings, and historic buildings along a scenic highway.

Potential Impact: I-580 from the San Joaquin County line to SR 205, a 0.4-mile-long segment, is a state-designated scenic highway. Although motorists are considered moderately sensitive, it would be a significant impact to locate turbines around this designated scenic highway where no turbines currently exist. In addition, Altamont Pass Road is a County-designated scenic route that borders the northern edge of the project area. The new Rooney Ranch turbines would be constructed between I-580 and Altamont Pass Road. Turbines would be visible from both roadways. However, the new turbines would be constructed in an area that has been historically developed with existing turbines. Motorists on these roads are accustomed to seeing wind turbines along the route, so they would not be adversely affected. Additionally, although the new, more efficient turbines would be 97–120 meters (318–394 feet) taller than the existing turbines, the new widely spaced configuration detracts less from the natural landscape than the existing string configuration (as illustrated in Figures 3.1-3 to 3.1-7 of the PEIR and Figures 3.1-1 to 3.1-4 of the Rooney Ranch Environmental Analysis). However, residents in the project vicinity could perceive these impacts as significant.

Mitigation Measures: The following mitigation measures, discussed in the PEIR at page 3.1-16, are hereby adopted and will be implemented as provided in the Mitigation Monitoring and Reporting Program.

AES-2a: Require site development review prior to approval of site plans

AES-2b: Maintain site free of debris and restore abandoned roadways

AES-2c: Screen surplus parts and materials

Findings: Based on the PEIR and the entire record before the City, the City Council finds the following.

Effects of Mitigation: Implementation of Mitigation Measures AES-2a, AES-2b and AES-2c will ensure that the impacts associated with damage to scenic resources along scenic highways will be mitigated to a less-than-significant level. The project applicant will be required to implement the following actions.

AES-2a: Require site development review prior to approval of site plans

For the text of Mitigation Measure AES-2b, please refer to the discussion of Impact AES-2 above.

AES-2b: Maintain site free of debris and restore abandoned roadways

For the text of Mitigation Measure AES-2b, please refer to the discussion of Impact AES-2 above.

AES-2c: Screen surplus parts and materials

For the text of Mitigation Measure AES-2c, please refer to the discussion of Impact AES-2 above.

Remaining Impacts: Any remaining impact associated with damage to scenic resources along scenic highways will be less than significant.

Impact AES-4: Substantially degrade the existing visual character or quality of the site and its surroundings

Potential Impact: The proposed project would primarily be visible to area residents and motorists. Strings of turbines, plus power lines, transformers, access roads, and substations are the most visually distinct artificial feature throughout most of the program area. According to Policy 170 of the ECAP, Alameda County is obligated to protect nearby existing uses from potential visual and other impacts generated by the construction and operation of windfarm facilities (see *Regulatory Setting* section of PEIR Section 3.1.3). Because the project area has been developed with old-generation turbines, the project would not degrade the visual character of the project area or its surroundings. However, the potential exists for viewers to perceive the proposed project as degrading the project area's existing visual character or quality.

Mitigation Measures: The following mitigation measures, discussed in Section 3.1.3 of the PEIR, are hereby adopted and will be implemented as provided in the Mitigation Monitoring and Reporting Program.

AES-2b: Maintain site free of debris and restore abandoned roadways

AES-2c: Screen surplus parts and materials

Findings: Based on the PEIR and the entire record before the City, the City Council finds the following.

Effects of Mitigation: Implementation of Mitigation Measures AES-2b and AES-2c will reduce impacts associated with potential degradation of the existing visual character of quality of the project area to a less-than-significant level. The applicant will be required to implement the following actions.

AES-2b: Maintain site free of debris and restore abandoned roadways

For the text of Mitigation Measure AES-2b, please refer to the discussion of Impact AES-2 above.

AES-2c: Screen surplus parts and materials

For the text of Mitigation Measure AES-2c, please refer to the discussion of Impact AES-2 above.

Remaining Impacts: Remaining impacts related to degradation of the existing visual character or quality of the site and its surroundings will be less than significant.

Impact AES-5: Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area

Potential Impact: Blade rotation could cause shadow flicker that could be a visual intrusion to viewers and could be especially disruptive to residents who would be exposed to these conditions for long periods of time. As shown in Table 2-2 of the PEIR, Alameda County has developed setback requirements for siting turbines in relation to certain types of land uses, and turbines would not be allowed to be located within these setback distances. However, these setbacks may not be sufficient to prevent shadow flicker with the new, taller turbines.

Mitigation Measure: The following mitigation measure, discussed in Section 3.1.3 of the PEIR, is hereby adopted and will be implemented as provided in the Mitigation Monitoring and Reporting Program.

AES-5: Analyze shadow flicker distance and mitigate effects or incorporate changes into project design to address shadow flicker

Findings: Based on the PEIR and the entire record before the City, the City council finds the following.

Effects of Mitigation: Implementation of the mitigation recommended by Mitigation Measure AES-5 will ensure that the impacts associated with new sources of substantial light and glare will be mitigated to a less-than-significant level. The project applicant will be required to implement the following actions.

AES-5: Analyze shadow flicker distance and mitigate effects or incorporate changes into project design to address shadow flicker

Where shadow flicker could result from the installation of wind turbines proposed near residences (i.e., within 500 meters [1,640 feet] in a generally east or west direction to account for seasonal variations), the project applicant will prepare a graphic model and study to evaluate shadow flicker impacts on nearby residences. No shadow flicker in excess of 30 minutes in a given day or 30 hours in a given year will be permitted. If it is determined that existing setback requirements as established by the County are not sufficient to prevent shadow flicker impacts on residences, Alameda County will require an increase in the required setback

distances to ensure that residences are not affected. If any residence is affected by shadow flicker within the 30-minute/30-hour thresholds, the applicant will implement measures to minimize the effect, such as relocating the turbine; providing opaque window coverings, window awnings, landscape buffers, or a combination of these features to reduce flicker to acceptable limits for the affected receptor; or shutting down the turbine during the period shadow flicker would occur. Such measures may be undertaken in consultation with owner of the affected residence. If the shadow flicker study indicates that any given turbine would result in shadow flicker exceeding the 30-minute/30-hour thresholds and the property owner is not amenable to window coverings, window awnings, or landscaping and the turbine cannot be shut down during the period of shadow flicker, then the turbine will be relocated to reduce the effect to acceptable limits.

Remaining Impacts: Any remaining impact associated with new sources of light or glare will be less than significant.

Impact AES-6: Consistency with state and local policies

Potential Impact: The turbines would be neutral and nonreflective (e.g., dull white or light gray) so as to blend with the surroundings. The project would introduce large, visually obtrusive turbines within existing scenic viewsheds in proximity to sensitive viewers and residences.

Mitigation Measures: The following mitigation measures, discussed in Section 3.1.3 of the PEIR, are hereby adopted and will be implemented as provided in the Mitigation Monitoring and Reporting Program.

AES-2b: Maintain site free of debris and restore abandoned roadways

AES-2c: Screen surplus parts and materials

AES-5: Analyze shadow flicker distance and mitigate effects or incorporate changes into project design to address shadow flicker

Findings: Based on the PEIR and the entire record before the City, the City Council finds the following.

Effects of Mitigation: Implementation of Mitigation Measures AES-2b, AES-2c, and AES-5 will ensure that the impacts associated with new sources of substantial light and glare will be mitigated to a less-than-significant level. The project applicant will be required to implement the following actions.

AES-2b: Maintain site free of debris and restore abandoned roadways

For the text of Mitigation Measure AES-2b, please refer to the discussion of Impact AES-2 above.

AES-2c: Screen surplus parts and materials

For the text of Mitigation Measure AES-2c, please refer to the discussion of Impact AES-2 above.

AES-5: Analyze shadow flicker distance and mitigate effects or incorporate changes into project design to address shadow flicker

For the text of Mitigation Measure AES-5, please refer to the discussion of Impact AES-5 above.

Remaining Impacts: Any remaining impact associated with consistency with state and local polices will be less than significant.

Air Quality

Impact AQ-4: Expose sensitive receptors to substantial pollutant concentrations

Potential Impact: Construction activities would generate air pollutant emissions, including equipment exhaust emissions and suspended and inhalable PM. However, construction activities would occur over a relatively short period of approximately 6–9 months, and associated emissions would be spatially dispersed over the approximately 580-acre project area. The closest sensitive receptors to the project area are two residences more than 2,200 feet from the nearest proposed wind turbine (see Figure 3.1-1 of the Environmental Analysis).

Mitigation Measures: The following mitigation measures, discussed in Section 3.3.2 of the PEIR, are hereby adopted and will be implemented as provided in the Mitigation Monitoring and Reporting Program.

AQ-2a: Reduce construction-related air pollutant emissions by implementing applicable BAAQMD Basic Construction Mitigation Measures

AQ-2b: Reduce construction-related air pollutant emissions by implementing measures based on BAAQMD's Additional Construction Mitigation Measures

Findings: Based on the PEIR and the entire record before the City, the City Council finds the following.

Effects of Mitigation: Implementation of Mitigation Measures AQ-2a and AQ-2b will ensure that the impacts associated with the exposure of sensitive receptors to substantial pollutant concentrations will be mitigated to a less-than-significant level. The project applicant will be required to implement the following actions.

AQ-2a: Reduce construction-related air pollutant emissions by implementing applicable BAAQMD Basic Construction Mitigation Measures

The project proponents will require all contractors to comply with the following requirements for all areas with active construction activities.

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) will be watered as needed to maintain dust control onsite—approximately two times per day.
- All haul trucks transporting soil, sand, or other loose material offsite will be covered.
- All visible mud or dirt track-out onto adjacent public roads will be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
- All vehicle speeds on unpaved roads will be limited to 15 mph.

- All roadways, driveways, and sidewalks to be paved will be completed as soon as possible. Building pads will be laid as soon as possible after grading unless seeding or soil binders are used.
- Idling times will be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage will be provided for construction workers at all access points.
- All construction equipment will be maintained and properly tuned in accordance with manufacturer's specifications. All equipment will be checked by a certified visible emissions evaluator.
- Post a publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints. This person will respond and take corrective action within 48 hours. The air district's phone number will also be visible to ensure compliance with applicable regulations.

AQ-2b: Reduce construction-related air pollutant emissions by implementing measures based on BAAQMD's Additional Construction Mitigation Measures

The project proponents will require all contractors to comply with the following requirements for all areas with active construction activities.

- During construction activities, all exposed surfaces will be watered at a frequency adequate to meet and maintain fugitive dust control requirements of all relevant air quality management entities.
- All excavation, grading, and/or demolition activities will be suspended when average wind speeds exceed 20 mph, as measured at the Livermore Municipal Airport.
- Wind breaks (e.g., trees, fences) will be installed on the windward side(s) of actively disturbed areas of construction. Wind breaks should have at maximum 50% air porosity.
- Vegetative ground cover (e.g., fast-germinating native grass seed) will be planted in disturbed areas as soon as possible and watered appropriately until vegetation is established.
- If feasible and practicable, the simultaneous occurrence of excavation, grading, and ground-disturbing construction activities on the same area at any one time will be limited.
- Construction vehicles and machinery, including their tires, will be cleaned prior to leaving the construction area to remove vegetation and soil. Cleaning stations will be established at the perimeter of the construction area.
- Site accesses to a distance of 100 feet from the paved road will be treated with a 6 to 12 inch compacted layer of wood chips, mulch, or gravel.
- Sandbags or other erosion control measures will be installed to prevent silt runoff to public roadways from sites with a slope greater than 1%.
- The idling time of diesel powered construction equipment will be minimized to 2 minutes.
- The project will develop a plan demonstrating that the offroad equipment (more than 50 horsepower) to be used in the construction project (i.e., owned, leased, and subcontractor

vehicles) would achieve a project wide fleet-average 20% NOX reduction and 45% PM reduction compared to the most recent ARB fleet average. Acceptable options for reducing emissions include the use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, add-on devices such as particulate filters, and/or other options as such become available.

- Use low VOC (i.e., ROG) coatings beyond the local requirements (i.e., Regulation 8, Rule 3: Architectural Coatings).
- All construction equipment, diesel trucks, and generators will be equipped with BACT for emission reductions of NOX and PM.
- All contractors will use equipment that meets ARB's most recent certification standard for offroad heavy duty diesel engines.

Remaining Impacts: Any remaining impact associated with exposure of sensitive receptors to pollutant concentrations will be less than significant.

Biological Resources

Impact BIO-1: Potential for ground-disturbing activities to result in adverse effects on special-status plants or habitat occupied by special-status plants

Potential Impact: Ground-disturbing activities associated with the project could result in adverse effects on special-status plants or their habitat. Direct effects include those effects where plants may be removed, damaged, or crushed (seedlings) by ground-disturbing activities, the movement or parking of vehicles, and/or the placement of equipment and supplies. Ground disturbance can kill or damage mature individuals or eliminate their habitat. Excavation alters soil properties and may create conditions unsuitable for the growth of some species or favor their replacement by other species. The roots of shrubs and other perennial species are susceptible to damage from soil compaction by equipment or construction materials. Possible indirect effects on plants could result from erosion that degrades habitat or accidental ignition of a fire that damages or kills individuals.

Mitigation Measures: The following mitigation measures, discussed in Section 3.4.2 of the PEIR, are hereby adopted and will be implemented as provided in the Mitigation Monitoring and Reporting Program.

BIO-1a: Conduct surveys to determine the presence or absence of special-status plant species

BIO-1b: Implement best management practices to avoid and minimize impacts on special-status species

BIO-1c: Avoid and minimize impacts on special-status plant species by establishing activity exclusion zones

BIO-1d: Compensate for impacts on special-status plant species

BIO-1e: Retain a biological monitor during ground-disturbing activities in environmentally sensitive areas

Findings: Based on the PEIR and the entire record before the City, the City Council finds the following.

Effects of Mitigation: Implementation of Mitigation Measures BIO-1a, BIO-1b, BIO-1c, BIO-1d, and BIO-1e will ensure that the impacts associated with the potential for ground-disturbing activities to result in adverse effects on special-status plants or habitat occupied by special-status plants will be mitigated to a less-than-significant level. The project applicant will be required to implement the following actions.

BIO-1a: Conduct surveys to determine the presence or absence of special-status plant species

Project proponents will conduct surveys for the special-status plant species within and adjacent to all project sites. All surveys will be conducted by qualified biologists in accordance with the appropriate protocols.

Special-status plant surveys will be conducted in accordance with *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (California Department of Fish and Game 2009) during the season that special-status plant species would be evident and identifiable—i.e., during their blooming season. No more than 3 years prior to ground-disturbing repowering activities and during the appropriate identification periods for special-status plants (Table 3.4-4), a qualified biologist (as determined by the City) will conduct field surveys within decommissioning work areas, proposed construction areas, and the immediately adjacent areas to determine the presence of habitat for special-status plant species. The project proponent will submit a report documenting the survey results to the City for review and approval prior to conducting any repowering activities. The report will include the location and description of all proposed work areas, the location and description of all suitable habitat for special-status plant species, and the location and description of other sensitive habitats (e.g., vernal pools, wetlands, riparian areas). Additionally, the report will outline where additional species and/or habitat-specific mitigation measures are required. This report will provide the basis for any applicable permit applications where incidental take of listed species may occur.

BIO-1b: Implement best management practices to avoid and minimize impacts on special-status species

For the text of Mitigation Measure BIO-1b, please refer to the discussion of Impact BIO-19 above.

BIO-1c: Avoid and minimize impacts on special-status plant species by establishing activity exclusion zones

Where surveys determine that a special-status plant species is present in or adjacent to a project area, direct and indirect impacts of the project on the species will be avoided through the establishment of activity exclusion zones, within which no ground-disturbing activities will take place, including construction of new facilities, construction staging, or other temporary work

areas. Activity exclusion zones for special-status plant species will be established around each occupied habitat site, the boundaries of which will be clearly marked with standard orange plastic construction exclusion fencing or its equivalent. The establishment of activity exclusion zones will not be required if no construction-related disturbances will occur within 250 feet of the occupied habitat. The size of activity exclusion zones may be reduced through consultation with a qualified biologist and with concurrence from CDFW based on site-specific conditions.

BIO-1d: Compensate for impacts on special-status plant species

All project proponents will avoid or minimize temporary and permanent impacts on special-status plants that occur on project sites and will compensate for impacts on special-status plant species. Although all impacts on large-flowered fiddleneck, diamond-petaled California poppy, and caper-fruited tropidocarpum will be avoided, impacts on other special-status plant species will be avoided to the extent feasible, and any unavoidable impacts will be addressed through compensatory mitigation.

Where avoidance of impacts on a special-status plant species is infeasible, loss of individuals or occupied habitat of a special-status plant species occurrence will be compensated for through the acquisition, protection, and subsequent management in perpetuity of other existing occurrences at a 2:1 ratio (occurrences impacted: occurrences preserved). The project proponent will provide detailed information to the City and CDFW on the location of the preserved occurrences, quality of the preserved habitat, feasibility of protecting and managing the areas in-perpetuity, responsibility parties, and other pertinent information. If suitable occurrences of a special-status plant species are not available for preservation, then the project will be redesigned to remove features that would result in impacts on that species.

BIO-1e: Retain a biological monitor during ground-disturbing activities in environmentally sensitive areas

For the text of Mitigation Measure BIO-1e, please refer to the discussion of Impact BIO-19 above.

Remaining Impacts: Any remaining impact associated with special-status plants will be less than significant.

Impact BIO-2: Adverse effects on special-status plants and natural communities resulting from the introduction and spread of invasive plant species

Potential Impact: Construction activities have the potential to facilitate the introduction and spread of invasive nonnative plant species by removing vegetation and disturbing soils. Invasive species compete with native species for resources and can alter natural communities by influencing fire regimes, hydrology (e.g., sedimentation and erosion), light availability, nutrient cycling, and soil chemistry. Invasive species also have the potential to harm human health and the economy by adversely affecting natural ecosystems, recreation, agricultural lands, and developed areas.

Mitigation Measure: The following mitigation measures, discussed in Section 3.4.2 of the PEIR, are hereby adopted and will be implemented as provided in the Mitigation Monitoring and Reporting Program.

BIO-1b: Implement best management practices to avoid and minimize impacts on special-status species

BIO-2: Prevent introduction, spread, and establishment of invasive plant species

BIO-5c: Restore disturbed annual grasslands

WQ-1: Comply with NPDES requirements

Findings: Based on the PEIR and the entire record before the City, the City Council finds the following.

Effects of Mitigation: Implementation of Mitigation Measures BIO-1b, BIO-2, BIO-5c, and WQ-1 will ensure that the impacts associated with the potential for the introduction and spread of invasive plant species to result in adverse effects on special-status plants or habitat occupied by special-status plants will be mitigated to a less-than-significant level. The applicant will be required to implement the following actions.

BIO-1b: Implement best management practices to avoid and minimize impacts on special-status species

For the text of Mitigation Measure BIO-1b, please refer to the discussion of Impact BIO-1 above.

BIO-2: Prevent introduction, spread, and establishment of invasive plant species

To avoid and minimize the introduction and spread of invasive nonnative plant species, all project proponents will implement the following BMPs.

- Construction vehicles and machinery will be cleaned prior to entering the construction area. Cleaning stations will be established at the perimeter of the construction area along all construction routes or immediately offsite.
- 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, as allowed by state and federal regulation of stormwater runoff.

In addition, the project proponents will prepare and implement erosion and sediment control plans to control short-term and long-term erosion and sedimentation effects and to restore soils and vegetation in areas affected by construction activities (Mitigation Measures BIO-1b and WQ-1). Prior to initiating any construction activities that will result in temporary impacts on natural communities, a restoration and monitoring plan will be developed for temporarily affected habitats in each project area (Mitigation Measure BIO-5c). Restoration and monitoring plans will be submitted to the City and CDFW for approval. These plans will include methods for restoring soil conditions and revegetating disturbed areas, seed mixes, monitoring and maintenance schedules, adaptive management strategies, reporting requirements, and success criteria. Following completion of project construction, the project proponents will implement the revegetation plans to restore areas disturbed by project activities to a condition of equal or greater habitat function than occurred prior to the disturbance.

Mitigation Measure BIO-5c: Restore disturbed annual grasslands

For the text of Mitigation Measure BIO-5c, please refer to the discussion of Impact BIO-19 above.

WQ-1: Comply with NPDES requirements

Project contractors will obtain coverage under the General Construction Permit before the onset of any construction activities, because all projects will entail disturbance of 1 acre or more. A SWPPP will be developed by a qualified engineer or erosion control specialist in accordance with the appropriate Board's requirements for NPDES compliance and implemented prior to the issuance of any grading permit before construction. The SWPPP will be kept onsite during construction activity and will be made available upon request to representatives of the Regional Water Boards.

Compliance and coverage with the *Storm Water Management Program* and General Construction Permit will require controls of pollutant discharges that utilize BMPs and technology to reduce erosion and sediments to meet water quality standards. BMPs may consist of a wide variety of measures taken to reduce pollutants in stormwater and other nonpoint-source runoff. Measures range from source control, such as reduced surface disturbance, to the treatment of polluted runoff, such as detention basins.

BMPs to be implemented as part of the *Storm Water Management Program* and General Construction Permit (and SWPPP) may include the following practices.

- Temporary erosion control measures (such as silt fences, staked straw bales/wattles, silt/sediment basins and traps, check dams, geofabric, sandbag dikes, and temporary revegetation or other ground cover) will be employed to control erosion from disturbed areas.
- Use a dry detention basin (which is typically dry except after a major rainstorm, when it will temporarily fill with stormwater), designed to decrease runoff during storm events, prevent flooding, and allow for off-peak discharge. Basin features will include maintenance schedules for the periodic removal of sediments, excessive vegetation, and debris that may clog basin inlets and outlets.
- Cover or apply nontoxic soil stabilizers to inactive construction areas (previously graded areas inactive for 10 days or more) that could contribute sediment to waterways.
- Enclose and cover exposed stockpiles of dirt or other loose, granular construction materials that could contribute sediment to waterways.
- Ensure that no earth or organic material will be deposited or placed where it may be directly carried into a stream, marsh, slough, lagoon, or body of standing water.
- Prohibit the following types of materials from being rinsed or washed into the streets, shoulder areas, or gutters: concrete, solvents and adhesives, thinners, paints, fuels, sawdust, dirt, gasoline, asphalt and concrete saw slurry, and heavily chlorinated water.
- Ensure that grass or other vegetative cover will be established on the construction site as soon as possible after disturbance.

The contractor will select a combination of BMPs (consistent with Section A of the Construction General Permit) that is expected to minimize runoff and remove contaminants from stormwater

discharges. The final selection of BMPs will be subject to approval by the San Francisco Bay Regional Water Board and the Central Valley Water Board.

The contractor will verify that an NOI has been filed with the State Water Board and that a SWPPP has been developed before allowing construction to begin. The contractor will perform inspections of the construction area, to verify that the BMPs specified in the SWPPP are properly implemented and maintained. The contractor will notify the appropriate Regional Water Board immediately if there is a noncompliance issue and will require compliance. If necessary, the contractor or their agent will require that additional BMPs be designed and implemented if those originally constructed do not achieve the identified performance standard.

Remaining Impacts: Any remaining impact associated with the potential for the introduction of invasive plant species to result in adverse effects on special-status plants or habitat occupied by special-status plants will be less than significant.

Impact BIO-3: Potential mortality of or loss of habitat for vernal pool branchiopods and curved-footed hygrotus diving beetle

Potential Impact: Ground-disturbing activities associated with the project could result in adverse effects on vernal pool branchiopods and curved-footed hygrotus diving beetle. Based on the known presence of vernal pool fairy shrimp in the study area, it is assumed that longhorn fairy shrimp and vernal pool tadpole shrimp may occur in all suitable habitat (rock outcrop pools and ponds) within the study area. Although project features have been designed to avoid direct and indirect impacts on suitable habitat for vernal pool branchiopods (i.e., rock outcrop pools and ponds), some of this habitat is close to disturbance areas. Consequently, mortality and habitat loss have the potential to result from construction activities.

Mitigation Measures: The following mitigation measures, discussed in Section 3.4.2 of the PEIR, are hereby adopted and will be implemented as provided in the Mitigation Monitoring and Reporting Program.

BIO-1b: Implement best management practices to avoid and minimize impacts on special-status species

BIO-1e: Retain a biological monitor during ground-disturbing activities in environmentally sensitive areas

BIO-3a: Conduct preconstruction surveys for habitat for special-status wildlife species

BIO-3b: Implement measures to avoid, minimize, and mitigate impacts on vernal pool branchiopods and curved-footed hygrotus diving beetle

Findings: Based on the PEIR and the entire record before the City, the City Council finds the following.

Effects of Mitigation: Implementation of Mitigation Measures BIO-1b, BIO-1e, BIO-3a, and BIO-3b will ensure that the impacts associated with the potential disturbance or mortality of and loss of suitable habitat for vernal pool branchiopods and curved-footed hygrotus diving beetle will be mitigated to a less-than-significant level. The applicant will be required to implement the following actions.

BIO-1b: Implement best management practices to avoid and minimize impacts on special-status species

For the text of Mitigation Measure BIO-1b, please refer to the discussion of Impact BIO-19 above.

BIO-1e: Retain a biological monitor during ground-disturbing activities in environmentally sensitive areas

For the text of Mitigation Measure BIO-1e, please refer to the discussion of Impact BIO-19 above.

BIO-3a: Conduct preconstruction surveys for habitat for special status wildlife species

For the text of Mitigation Measure BIO-1e, please refer to the discussion of Impact BIO-19 above.

BIO-3b: Implement measures to avoid, minimize, and mitigate impacts on vernal pool branchiopods and curved-footed hygrotus diving beetle

Where suitable habitat for listed vernal pool branchiopods and curved-footed hygrotus diving beetle are identified within 250 feet (or another distance as determined by a qualified biologist based on topography and other site conditions) of proposed work areas, the following measures will be implemented to ensure that the repowering projects do not have adverse impacts on listed vernal pool branchiopods or curved-footed hygrotus diving beetle. These measures are based on measures from the EACCS, with some modifications and additions. Additional conservation measures or conditions of approval may be required in applicable project permits (e.g., ESA incidental take permit).

- Avoid all direct impacts on sandstone rock outcrop vernal pools
- Ground disturbance will be avoided from the first day of the first significant rain (1 inch or more) 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 (or ponds), sandstone pools, or roadside ditches are present within 250 feet of the work area (or another appropriate distance as determined by a qualified biologist on the basis of topography and other site conditions), the biologist will stake and flag an exclusion zone prior to construction activities. The width of the exclusion zone will be based on site conditions and will be the maximum practicable distance that ensures protection of the feature from direct and indirect effects of the project. Exclusion zones will be established around features whether they are wet or dry at the time. The exclusion zone will be fenced with orange construction zone and erosion control fencing (to be installed by construction crew).
- 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 allowed.
- Avoid modifying or changing the hydrology of aquatic habitats.
- Minimize the work area for stream crossings and conduct work during the dry season (June 1 through the first significant rain of the fall/winter).
- Install utility collection lines across perennial creeks by boring under the creek.

Where impacts cannot be avoided or minimized, compensatory mitigation will be undertaken in accordance with mitigation ratios and requirements developed under the EACCS (Appendix C).

In the event that an incidental take permit is required, compensatory mitigation will be undertaken in accordance with the terms of the permit in consultation with USFWS.

Remaining Impacts: Any remaining impacts associated with effects on vernal pool branchiopods and curved-footed hygrotus beetle will be less than significant.

Impact BIO-5: Potential disturbance or mortality of and loss of suitable habitat for California tiger salamander, western spadefoot, California red-legged frog, and foothill yellow-legged frog

Potential Impact: Construction activities in the project area could result in direct effects on California tiger salamander, western spadefoot, and California red-legged frog (collectively referred to as special-status amphibians) or their habitats (ponds, drainages, and surrounding upland areas). The majority of construction activities would take place on suitable upland grassland dispersal and aestivation habitat for California tiger salamander, western spadefoot, and California red-legged frog. Aquatic habitats for specials-status amphibians would generally be avoided; however, direct impacts on habitat and impacts on water quality could result from road construction or widening activities.

Construction activities such as excavation, grading, or stockpiling of soil, could fill, remove or otherwise alter suitable habitat for special-status amphibians or result in injury or mortality of individual amphibians. Potential direct impacts include mortality or injury by equipment, entrapment in open trenches or other project facilities, and removal or disturbance of upland habitat that results in damage or elimination of suitable aestivation burrows. Specific activities that may affect these species could include installation of power collection and communication systems, turbine construction, road infrastructure construction/maintenance and upgrades, meteorological tower installation and removal, temporary staging area set-up, and reclamation activities. Special-status amphibians could be injured or killed if vehicles or construction equipment are driven through occupied habitat, or if gasoline, oil, or other contaminants enter habitat. Changes in hydrology or sedimentation of habitat from erosion associated with project construction could alter the suitability of their habitat or cause mortality.

Operation and maintenance activities may also result in impacts on special-status amphibians or their habitats. Travel on maintenance roads during the rainy season or when amphibians are dispersing could result in mortality of individuals. Road and firebreak maintenance could result in degradation of habitat or injury or mortality of special-status amphibians.

Mitigation Measures: The following mitigation measures, discussed in Section 3.4.2 of the PEIR, are hereby adopted and will be implemented as provided in the Mitigation Monitoring and Reporting Program.

BIO-1b: Implement best management practices to avoid and minimize impacts on special-status species

BIO-1e: Retain a biological monitor during ground-disturbing activities in environmentally sensitive areas

BIO-3a: Conduct preconstruction surveys for habitat for special status wildlife species

BIO-5a: Implement best management practices to avoid and minimize effects on special-status amphibians

BIO-5b: Compensate for loss of habitat for special-status amphibians

BIO-5c: Restore disturbed annual grasslands

Findings: Based on the PEIR and the entire record before the City, the City Council finds the following.

Effects of Mitigation: Implementation of Mitigation Measures BIO-1b, BIO-1e, BIO-3a, BIO-5a, BIO-5b, and BIO-5c will ensure that the impacts associated with the potential disturbance or mortality of and loss of suitable habitat for California tiger salamander, western spadefoot, and California red-legged frog will be mitigated to a less-than-significant level. The applicant will be required to implement the following actions.

BIO-1b: Implement best management practices to avoid and minimize impacts on special-status species

For the text of Mitigation Measure BIO-1b, please refer to the discussion of Impact BIO-1 above.

BIO-1e: Retain a biological monitor during ground-disturbing activities in environmentally sensitive areas

For the text of Mitigation Measure BIO-1e, please refer to the discussion of Impact BIO-1 above.

BIO-3a: Conduct preconstruction surveys for habitat for special status wildlife species

For the text of Mitigation Measure BIO-3a, please refer to the discussion of Impact BIO-19 above.

BIO-5a: Implement best management practices to avoid and minimize effects on special-status amphibians

For the text of Mitigation Measure BIO-5a, please refer to the discussion of Impact BIO-19 above.

BIO-5b: Compensate for loss of habitat for special-status amphibians

Where impacts on aquatic and upland habitat for special-status amphibians cannot be avoided or minimized, compensatory mitigation will be undertaken in accordance with mitigation ratios and requirements developed under the EACCS (Appendix C). In the event that take authorization is required, compensatory mitigation will be undertaken in accordance with the terms of the authorization in consultation with USFWS and/or CDFW.

BIO-5c: Restore disturbed annual grasslands

For the text of Mitigation Measure BIO-5c, please refer to the discussion of Impact BIO-19 above.

Remaining Impacts: Any remaining impact associated with potential disturbance or mortality of and loss of suitable habitat for California tiger salamander, western spadefoot, and California red-legged frog will be less than significant.

Impact BIO-6: Potential disturbance or mortality of and loss of suitable habitat for western pond turtle

Potential Impact: Construction activities in the project area could result in direct effects on western pond turtle or its habitats (ponds, reservoirs, drainages, and surrounding riparian and grassland areas). Because the majority of construction activities would take place on grassland habitat along ridgelines, suitable aquatic habitat would generally be avoided; however, direct impacts on habitat and impacts on water quality could result from road construction or widening activities.

Aquatic and upland (overwintering, nesting) habitat for western pond turtle may be removed or temporarily disturbed by construction activities. Potential direct impacts include mortality or injury by equipment, entrapment in open trenches or other project facilities, and removal or disturbance of aquatic or upland nesting habitat. Western pond turtles could also be injured or killed if gasoline, oil, or other contaminants enter habitat. Loss of individuals in the project area could diminish the local population and lower reproductive potential, contributing to the further decline of the species. The loss of upland nesting sites or eggs would also decrease the local population.

Mitigation Measures: The following mitigation measures, discussed in Section 3.4.2 of the PEIR, are hereby adopted and will be implemented as provided in the Mitigation Monitoring and Reporting Program.

BIO-1b: Implement best management practices to avoid and minimize impacts on special-status species

BIO-1e: Retain a biological monitor during ground-disturbing activities in environmentally sensitive areas

BIO-3a: Conduct preconstruction surveys for habitat for special-status wildlife species

BIO-6: Conduct preconstruction surveys for western pond turtle and monitor construction activities if turtles are observed

Findings: Based on the PEIR and the entire record before the City, the City Council finds the following.

Effects of Mitigation: Implementation of Mitigation Measures BIO-1b, BIO-1e, BIO-3a, and BIO-6 will ensure that the impacts associated with the potential disturbance or mortality of and loss of suitable habitat for western pond turtle will be mitigated to a less-than-significant level. The applicant will be required to implement the following actions.

BIO-1b: Implement best management practices to avoid and minimize impacts on special-status species

For the text of Mitigation Measure BIO-1b, please refer to the discussion of Impact BIO-19 above.

BIO-1e: Retain a biological monitor during ground-disturbing activities in environmentally sensitive areas

For the text of Mitigation Measure BIO-1e, please refer to the discussion of Impact BIO-19 above.

BIO-3a: Conduct preconstruction surveys for habitat for special-status wildlife species

For the text of Mitigation Measure BIO-3a, please refer to the discussion of Impact BIO-19 above.

BIO-6: Conduct preconstruction surveys for western pond turtle and monitor construction activities if turtles are observed

If it is determined through preconstruction surveys conducted pursuant to Mitigation Measure BIO-3a that suitable aquatic or upland habitat for western pond turtle is present within proposed work areas, the following measures, consistent with measures developed for the EACCS, will be implemented to ensure that the proposed project does not have a significant impact on western pond turtle.

- One week before and within 24 hours of beginning work in suitable aquatic habitat, a qualified biologist (one who is familiar with different species of turtles) will conduct surveys for western pond turtle. The surveys should be timed to coincide with the time of day and year when turtles are most likely to be active (during the cooler part of the day between 8 a.m. and 12 p.m. during spring and summer). Prior to conducting the surveys, the biologist should locate the microhabitats for turtle basking (logs, rocks, brush thickets) and determine a location to quietly observe turtles. Each survey should include a 30-minute wait time after arriving onsite to allow startled turtles to return to open basking areas. The survey should consist of a minimum 15-minute observation period for each area where turtles could be observed.
- If western pond turtles are observed during either survey, a biological monitor will be present during construction activities in the aquatic habitat where the turtle was observed. The biological monitor also will be mindful of suitable nesting and overwintering areas in proximity to suitable aquatic habitat and will periodically inspect these areas for nests and turtles.
- If one or more western pond turtles are found in the work area during construction and cannot or do not move offsite on their own, a qualified biologist will remove and relocate the turtle to appropriate aquatic habitat outside and away from the construction area. Relocation of western pond turtle requires a letter from CDFW authorizing this activity.

Remaining Impacts: Any remaining impact associated with potential disturbance or mortality of and loss of suitable habitat for western pond turtle will be less than significant.

Impact BIO-7: Potential disturbance or mortality of and loss of suitable habitat for Blainville's horned lizard, Alameda whipsnake, and San Joaquin coachwhip

Potential Impact: Construction activities in the project area could result in direct effects on Blainville's horned lizard, Alameda whipsnake, and San Joaquin coachwhip or their habitats (grassland, chaparral, oak woodland, and scrub). It is anticipated that the majority of construction activities would take place on grassland habitat along ridgelines and that loss of chaparral, oak woodland, and scrub habitat would be minimal. Potential direct impacts include mortality or injury by equipment, entrapment in open trenches or other project facilities, and removal or disturbance of habitat. Operation and maintenance activities, such as road and firebreak maintenance, may also result in injury or mortality of individuals. Loss of individuals in the project area could diminish the local populations of these species and lower reproductive potential, contributing to the further decline of these species.

Mitigation Measures: The following mitigation measures, discussed in Section 3.4.2 of the PEIR, are hereby adopted and will be implemented as provided in the Mitigation Monitoring and Reporting Program.

BIO-1b: Implement best management practices to avoid and minimize impacts on special-status species

BIO-1e: Retain a biological monitor during ground-disturbing activities in environmentally sensitive areas

BIO-3a: Conduct preconstruction surveys for habitat for special status wildlife species

BIO-5c: Restore disturbed annual grasslands

BIO-7a: Implement best management practices to avoid and minimize effects on special-status reptiles

BIO-7b: Compensate for loss of habitat for special-status reptiles

Findings: Based on the PEIR and the entire record before the City, the City Council finds the following.

Effects of Mitigation: Implementation of Mitigation Measures BIO-1b, BIO-1e, BIO-3a, BIO-5c, BIO-7a, and BIO-7b will ensure that the impacts associated with the potential disturbance or mortality of and loss of suitable habitat for Blainville's horned lizard, Alameda whipsnake, and San Joaquin coachwhip will be mitigated to a less-than-significant level. The applicant will be required to implement the following actions.

BIO-1b: Implement best management practices to avoid and minimize impacts on special-status species

For the text of Mitigation Measure BIO-1b, please refer to the discussion of Impact BIO-19 above.

BIO-1e: Retain a biological monitor during ground-disturbing activities in environmentally sensitive areas

For the text of Mitigation Measure BIO-1e, please refer to the discussion of Impact BIO-19 above.

BIO-3a: Conduct preconstruction surveys for habitat for special status wildlife species

For the text of Mitigation Measure BIO-3a, please refer to the discussion of Impact BIO-19 above.

BIO-5c: Restore disturbed annual grasslands

For the text of Mitigation Measure BIO-5c, please refer to the discussion of Impact BIO-19 above.

BIO-7a: Implement best management practices to avoid and minimize effects on special-status reptiles

For the text of Mitigation Measure BIO-7a, please refer to the discussion of Impact BIO-19 above.

BIO-7b: Compensate for loss of habitat for special-status reptiles

Where impacts on habitat for special-status reptiles cannot be avoided or minimized, compensatory mitigation will be undertaken in accordance with mitigation ratios and requirements developed under the EACCS (Appendix C). In the event that incidental take permits are required for Alameda whipsnake, compensatory mitigation will be undertaken in accordance with the terms of permits in consultation with USFWS and CDFW.

Remaining Impacts: Any remaining impact associated with potential disturbance or mortality of and loss of suitable habitat for Blainville's horned lizard, Alameda whipsnake, and San Joaquin coachwhip will be less than significant.

Impact BIO-8: Potential construction-related disturbance or mortality of special-status and non-special-status migratory birds

Potential Impact: Construction activities during the nesting season (generally February 1–August 31) of white-tailed kite, bald eagle, northern harrier, Swainson's hawk, golden eagle, western burrowing owl, loggerhead shrike, and tricolored blackbird could result in direct effects on these species, as well as on non-special-status migratory birds, if they are nesting in the project area. Suitable nesting habitat may be present in nearly all land cover types in the project area. Removal of grassland, burrows, wetland and marsh vegetation, and trees or shrubs with active nests and construction disturbance during the breeding season may result in nest abandonment and subsequent loss of eggs or young. Exclusion of burrowing owls from their burrows during the non-nesting season as part of efforts to avoid or minimize some forms of direct take could result in harm of burrowing owls. Such losses could affect the local population of special-status and non-special-status birds.

Mitigation Measures: The following mitigation measures, discussed in Section 3.4.2 of the PEIR, are hereby adopted and will be implemented as provided in the Mitigation Monitoring and Reporting Program.

BIO-1b: Implement best management practices to avoid and minimize impacts on special-status species

BIO-1e: Retain a biological monitor during ground-disturbing activities in environmentally sensitive areas

BIO-3a: Conduct preconstruction surveys for habitat for special status wildlife species

BIO-5c: Restore disturbed annual grasslands

BIO-8a: Implement measures to avoid and minimize potential impacts on special-status and non–special-status nesting birds

BIO-8b: Implement measures to avoid and minimize potential impacts on western burrowing owl

Findings: Based on the PEIR and the entire record before the City, the City Council finds the following.

Effects of Mitigation: Implementation of the mitigations recommended by Mitigation Measures BIO-1b, BIO-1e, BIO-3a, BIO-5c, BIO-8a, and BIO-8b will ensure that the impacts associated with the potential construction-related disturbance or mortality of special status and non-special-status migratory birds will be mitigated to a less-than-significant level. The applicant will be required to implement the following actions.

BIO-1b: Implement best management practices to avoid and minimize impacts on special-status species

For the text of Mitigation Measure BIO-1b, please refer to the discussion of Impact BIO-19 above.

BIO-1e: Retain a biological monitor during ground-disturbing activities in environmentally sensitive areas

For the text of Mitigation Measure BIO-1e, please refer to the discussion of Impact BIO-19 above.

BIO-3a: Conduct preconstruction surveys for habitat for special status wildlife species

For the text of Mitigation Measure BIO-3a, please refer to the discussion of Impact BIO-19 above.

BIO-5c: Restore disturbed annual grasslands

For the text of Mitigation Measure BIO-5c, please refer to the discussion of Impact BIO-19 above.

BIO-8a: Implement measures to avoid and minimize potential impacts on special-status and non–special-status nesting birds

For the text of Mitigation Measure BIO-8a, please refer to the discussion of Impact BIO-19 above.

BIO-8b: Implement measures to avoid and minimize potential impacts on western burrowing owl

For the text of Mitigation Measure BIO-8b, please refer to the discussion of Impact BIO-19 above.

Remaining Impacts: Any remaining impact associated with construction-related disturbance or mortality of special status and non-special-status migratory birds will be less than significant.

Impact BIO-9: Permanent and temporary loss of occupied habitat for western burrowing owl and foraging habitat for tricolored blackbird and other special-status and non-special-status birds

Potential Impact: Project construction would result in the temporary and permanent loss of grassland that provides suitable foraging habitat for burrowing owl and a number of other special-status and non-special-status migratory birds. Because of the limited use of the proposed project area by Swainson's hawks for foraging, no compensation is proposed for the loss of foraging habitat for Swainson's hawk. The loss of grassland foraging habitat for special-status and non-special-status birds would be compensated through implementation of Mitigation Measure BIO-5b (for special-status amphibians) and through the standardized mitigation ratios for nonlisted species developed for the EACCS (Appendix C of the PEIR).

CDFW has determined that compensation is required for permanent loss of occupied burrowing owl habitat (i.e., where burrowing owls have been documented to occupy burrows in the preceding 3 years).

Mitigation Measures: The following mitigation measures, discussed in Section 3.4.2 of the PEIR, are hereby adopted and will be implemented as provided in the Mitigation Monitoring and Reporting Program.

BIO-5b: Compensate for the loss of habitat for special-status amphibians

BIO-5c: Restore disturbed annual grasslands

BIO-9: Compensate for the permanent loss of occupied habitat for western burrowing owl

Findings: Based on the PEIR and the entire record before the City, the City Council finds the following.

Effects of Mitigation: Implementation of Mitigation Measures BIO-5b, BIO-5c, and BIO-9 will ensure that the impacts associated with the potential for permanent and temporary loss of occupied habitat for western burrowing owl and foraging habitat for tricolored blackbird and other special-status and non-special-status birds will be mitigated to a less-than-significant level. The applicant will be required to implement the following actions.

BIO-5b: Compensate for the loss of habitat for special-status amphibians

For the text of Mitigation Measure BIO-5b, please refer to the discussion of Impact BIO-5 above.

BIO-5c: Restore disturbed annual grasslands

For the text of Mitigation Measure BIO-5c, please refer to the discussion of Impact BIO-19 above.

BIO-9: Compensate for the permanent loss of occupied habitat for western burrowing owl

If construction activities would result in the removal of occupied burrowing owl habitat (determined during preconstruction surveys described in Mitigation Measure BIO-8a), this habitat loss will be mitigated by permanently protecting mitigation land through a conservation

easement or by implementing alternative mitigation determined through consultation with CDFW as described in its *Staff Report on Burrowing Owl Mitigation* (California Department of Fish and Game 2012:11–13). The project proponent will work with CDFW to develop the compensation plan, which will be subject to City review and approval.

Remaining Impacts: Any remaining impact associated with permanent and temporary loss of occupied habitat for western burrowing owl and foraging habitat for tricolored blackbird and other special-status and non–special-status birds will be less than significant.

Impact BIO-10: Potential injury or mortality of and loss of habitat for San Joaquin kit fox and American badger

Potential Impact: Construction activities in the project area could result in direct effects on San Joaquin kit fox and American badger or their grassland habitat. In addition to the permanent and temporary removal of habitat, other potential direct impacts include mortality or injury of individuals from construction vehicles or heavy equipment, direct mortality or injury of individuals from den collapse and subsequent suffocation, temporary disturbance from noise and human presence associated with construction activities, and harassment of individuals by construction personnel. Additionally, exposed pipes, large excavated holes, or trenches that are left open after construction has finished for the day could entrap San Joaquin kit foxes or American badgers. Operation and maintenance activities, such as road and firebreak maintenance, may also result in injury or mortality of individuals. Loss of individuals in the proposed project area could diminish the local populations of these species and reduce reproductive potential, contributing to the further decline of these species.

Mitigation Measures: The following mitigation measures, discussed in Section 3.4.2 of the PEIR, are hereby adopted and will be implemented as provided in the Mitigation Monitoring and Reporting Program.

BIO-1b: Implement best management practices to avoid and minimize impacts on special-status species

BIO-1e: Retain a biological monitor during ground-disturbing activities in environmentally sensitive areas

BIO-3a: Conduct preconstruction surveys for habitat for special status wildlife species

BIO-5c: Restore disturbed annual grasslands

BIO-10a: Implement measures to avoid and minimize potential impacts on San Joaquin kit fox and American badger

BIO-10b: Compensate for loss of suitable habitat for San Joaquin kit fox and American badger

Findings: Based on the PEIR and the entire record before the City, the City Council finds the following.

Effects of Mitigation: Implementation of Mitigation Measures BIO-1b, BIO-1e, BIO-3a, BIO-5c, BIO-10a, and BIO-10b will ensure that the impacts associated with the potential for injury or mortality of

and loss of habitat for San Joaquin kit fox and American badger will be mitigated to a less-than-significant level. The applicant will be required to implement the following actions.

BIO-1b: Implement best management practices to avoid and minimize impacts on special-status species

For the text of Mitigation Measure BIO-1b, please refer to the discussion of Impact BIO-19 above.

BIO-1e: Retain a biological monitor during ground-disturbing activities in environmentally sensitive areas

For the text of Mitigation Measure BIO-1e, please refer to the discussion of Impact BIO-19 above.

BIO-3a: Conduct preconstruction surveys for habitat for special status wildlife species

For the text of Mitigation Measure BIO-3a, please refer to the discussion of Impact BIO-19 above.

BIO-5c: Restore disturbed annual grasslands

For the text of Mitigation Measure BIO-5c, please refer to the discussion of Impact BIO-19 above.

BIO-10a: Implement measures to avoid and minimize potential impacts on San Joaquin kit fox and American badger

For the text of Mitigation Measure BIO-10a, please refer to the discussion of Impact BIO-19 above.

BIO-10b: Compensate for loss of suitable habitat for San Joaquin kit fox and American badger

For the text of Mitigation Measure BIO-10b, please refer to the discussion of Impact BIO-9 above.

Remaining Impacts: Any remaining impact associated with potential injury or mortality of and loss of habitat for San Joaquin kit fox and American badger will be less than significant.

Impact BIO-12: Potential mortality or disturbance of bats from roost removal or disturbance

Potential Impact: Several species of both common (*Myotis* spp.) and special-status (western red bat, pallid bat, Townsend's big-eared bat) bats are known to occur or could occur in or around the Sand Hill Wind Repowering Project area, and could use the area for foraging, dispersal, and migration. Bats may use rock outcrops, trees, buildings, bridges, and other structures in the proposed project area as maternity or migratory stopover roosts. Permanent water bodies and stock tanks in and adjacent to the proposed project area provide sources of fresh water for both resident and migratory bats.

Construction and decommissioning of turbines could result in disturbance or loss of active bat roosts through increased traffic, noise, lighting, and human access. Removal or disturbance of trees, rock outcrops, debris piles, outbuildings, or other artificial structures could result in removal of roost habitat and mortality of bats using the structure as a roost. Several species of bat are sensitive to disturbance and may abandon flightless young, or they may simply not return to the roost once disturbed, resulting in the loss of that roost as habitat for the local population. Because some bats

roost colonially, removal of special-status species' roost structures in a roost-limited habitat could result in the loss of a significant portion of the local bat population.

Mitigation Measures: The following mitigation measures, discussed in Section 3.4.2 of the PEIR, are hereby adopted and will be implemented as provided in the Mitigation Monitoring and Reporting Program.

BIO-1b: Implement best management practices to avoid and minimize impacts on special-status species

BIO-3a: Conduct preconstruction surveys for habitat for special status wildlife species

BIO-12a: Conduct bat roost surveys

BIO-12b: Avoid removing or disturbing bat roosts

Findings: Based on the PEIR and the entire record before the County, the County finds the following.

Effects of Mitigation: Implementation of the mitigations recommended by Mitigation Measures BIO-1b, BIO-3a, BIO-12a, and BIO-12b will ensure that the impacts associated with the potential for mortality or disturbance of bats from roost removal or disturbance will be mitigated to a less-than-significant level. Future applicants will be required to implement the following actions.

BIO-1b: Implement best management practices to avoid and minimize impacts on special-status species

For the text of Mitigation Measure BIO-1b, please refer to the discussion of Impact BIO-19 above.

BIO-3a: Conduct preconstruction surveys for habitat for special-status wildlife species

For the text of Mitigation Measure BIO-3a, please refer to the discussion of Impact BIO-19 above.

BIO-12a: Conduct bat roost surveys

For the text of Mitigation Measure BIO-12a, please refer to the discussion of Impact BIO-19 above.

BIO-12b: Avoid removing or disturbing bat roosts

For the text of Mitigation Measure BIO-12a, please refer to the discussion of Impact BIO-19 above.

Remaining Impacts: Any remaining impact associated with potential mortality or disturbance of bats from roost removal or disturbance will be less than significant.

Impact BIO-15: Potential for road infrastructure upgrades to result in adverse effects on alkali meadow

Because no alkali meadow is present in the project area, there would be no impact and no mitigation is required.

Impact BIO-16: Potential for road infrastructure upgrades to result in adverse effects on riparian habitat

Because no riparian habitat is present in the project area, there would be no impact and no mitigation is required.

Impact BIO-18: Potential for road infrastructure upgrades to result in adverse effects on wetlands

Potential Impact: Road infrastructure upgrades would include grading, widening, and regravelling existing roads and constructing new roads. However, because the proposed project has been designed to avoid all aquatic resources, and because no access roads would involve crossings of such features, this impact would be less than significant, and no mitigation is required.

Impact BIO-20: Conflict with local plans or policies

Potential Impact: The ECAP encourages the preservation of areas known to support special-status species, no net loss of riparian and seasonal wetlands, and protection of existing riparian woodland habitat. Additionally, the ECAP has several policies related to windfarms, including establishing a mitigation program to minimize the impacts of wind turbine operations on bird populations. No riparian habitat is present in the project area, and the project has been designed to avoid all impacts on aquatic resources. However, loss of special-status species and their habitat would be in conflict with ECAP policies.

The mitigation measures for the impacts of wind turbine operations on bird populations from the proposed program are consistent with the establishment of a mitigation program recommended by the ECAP.

Mitigation Measures: The following mitigation measures, discussed in Section 3.4.2 of the PEIR, are hereby adopted and will be implemented as provided in the Mitigation Monitoring and Reporting Program.

BIO-1a: Conduct surveys to determine the presence or absence of special-status species

BIO-1b: Implement best management practices to avoid and minimize impacts on special-status species

BIO-1c: Avoid and minimize impacts on special-status plant species by establishing activity exclusion zones

BIO-1d: Compensate for impacts on special-status plant species

BIO-1e: Retain a biological monitor during ground-disturbing activities in environmentally sensitive areas

BIO-3a: Implement measures to avoid, minimize, and mitigate impacts on vernal pool branchiopods and curved-footed hygrotus diving beetle

BIO-4a: Implement measures to avoid or protect habitat for valley elderberry longhorn beetle

BIO-4b: Compensate for direct and indirect effects on valley elderberry longhorn beetle

BIO-5a: Implement best management practices to avoid and minimize effects on special-status amphibians

BIO-5b: Compensate for loss of habitat for special-status amphibians

BIO-5c: Restore disturbed annual grasslands

BIO-7a: Implement best management practices to avoid and minimize effects on special-status reptiles

BIO-7b: Compensate for loss of habitat for special-status reptiles

BIO-8a: Implement measures to avoid and minimize potential impacts on special-status and non-special-status nesting birds

BIO-8b: Implement measures to avoid and minimize potential impacts on western burrowing owl

BIO-9: Compensate for the permanent loss of foraging habitat for western burrowing owl

BIO-10a: Implement measures to avoid and minimize potential impacts on San Joaquin kit fox and American badger

BIO-10b: Compensate for loss of suitable habitat for San Joaquin kit fox and American badger

Findings: Based on the PEIR and the entire record before the City, the City Council finds the following.

Effects of Mitigation: Implementation of Mitigation Measures BIO-1a, BIO-1b, BIO-1c, BIO-1d, BIO-1e, BIO-3a, BIO-5a, BIO-5b, BIO-5c, BIO-7a, BIO-7b, BIO-8a, BIO-8b, BIO-9, BIO-10a, and BIO-10b will ensure that the impacts associated with conflict with local plans or policies will be mitigated to a less-than-significant level. The applicant will be required to implement the following actions.

BIO-1a: Conduct surveys to determine the presence or absence of special-status species

For the text of Mitigation Measure BIO-1a, please refer to the discussion of Impact BIO-1 above.

BIO-1b: Implement best management practices to avoid and minimize impacts on special-status species

For the text of Mitigation Measure BIO-1b, please refer to the discussion of Impact BIO-19 above.

BIO-1c: Avoid and minimize impacts on special-status plant species by establishing activity exclusion zones

For the text of Mitigation Measure BIO-1c, please refer to the discussion of Impact BIO-1 above.

BIO-1d: Compensate for impacts on special-status plant species

For the text of Mitigation Measure BIO-1d, please refer to the discussion of Impact BIO-1 above.

BIO-1e: Retain a biological monitor during ground-disturbing activities in environmentally sensitive areas

For the text of Mitigation Measure BIO-1e, please refer to the discussion of Impact BIO-19 above.

BIO-3a: Implement measures to avoid, minimize, and mitigate impacts on vernal pool branchiopods and curved-footed hygrotus diving beetle

For the text of Mitigation Measure BIO-3a, please refer to the discussion of Impact BIO-19 above.

BIO-5a: Implement best management practices to avoid and minimize effects on special-status amphibians

For the text of Mitigation Measure BIO-5a, please refer to the discussion of Impact BIO-19 above.

BIO-5b: Compensate for loss of habitat for special-status amphibians

For the text of Mitigation Measure BIO-5b, please refer to the discussion of Impact BIO-5 above.

BIO-5c: Restore disturbed annual grasslands

For the text of Mitigation Measure BIO-5c, please refer to the discussion of Impact BIO-19 above.

BIO-7a: Implement best management practices to avoid and minimize effects on special-status reptiles

For the text of Mitigation Measure BIO-7a, please refer to the discussion of Impact BIO-19 above.

BIO-7b: Compensate for loss of habitat for special-status reptiles

For the text of Mitigation Measure BIO-7b, please refer to the discussion of Impact BIO-7 above.

BIO-8a: Implement measures to avoid and minimize potential impacts on special-status and non-special-status nesting birds

For the text of Mitigation Measure BIO-8a, please refer to the discussion of Impact BIO-191 above.

BIO-8b: Implement measures to avoid and minimize potential impacts on western burrowing owl

For the text of Mitigation Measure BIO-8b, please refer to the discussion of Impact BIO-19 above.

BIO-9: Compensate for the permanent loss of foraging habitat for western burrowing owl

For the text of Mitigation Measure BIO-9, please refer to the discussion of Impact BIO-9 above.

BIO-10a: Implement measures to avoid and minimize potential impacts on San Joaquin kit fox and American badger

For the text of Mitigation Measure BIO-10a, please refer to the discussion of Impact BIO-19 above.

BIO-10b: Compensate for loss of suitable habitat for San Joaquin kit fox and American badger

For the text of Mitigation Measure BIO-10b, please refer to the discussion of Impact BIO-9 above.

Remaining Impacts: Any remaining impact associated with conflict with local plans or policies will be less than significant.

Cultural Resources

Impact CUL-2: Cause a substantial adverse change in the significance of an archaeological resource

Potential Impact: Archaeological resources are present within the project area. Additionally, there is a possibility of encountering and damaging previously unrecorded archaeological resources during ground-disturbing activities.

Mitigation Measures: The following mitigation measures, discussed in Section 3.5.2 of the PEIR, are hereby adopted and will be implemented as provided in the Mitigation Monitoring and Reporting Program.

CUL-2a: Conduct a preconstruction cultural field survey and cultural resources inventory and evaluationCUL-2b: Develop a treatment plan for any identified significant cultural resources

CUL-2c: Conduct worker awareness training for archaeological resources prior to construction

CUL-2d: Stop work if cultural resources are encountered during ground-disturbing activities

Findings: Based on the PEIR and the entire record before the City, the City Council finds the following.

Effects of Mitigation: Implementation of Mitigation Measures CUL-2a, CUL-2b, CUL-2c, and CUL-2d will ensure that the impacts with the potential to cause a substantial adverse change in the significance of an archaeological resource will be mitigated to a less-than-significant level. The applicant will be required to implement the following actions.

CUL-2a: Conduct a preconstruction cultural field survey and cultural resources inventory and evaluation

The City will require applicants to retain qualified personnel to conduct an archaeological field survey of the program area to determine whether significant resources exist within the program area. The inventory and evaluation will include the documentation and result of these efforts, the evaluation of any cultural resources identified during the survey, and cultural resources monitoring, if the survey identifies that it is necessary.

CUL-2b: Develop a treatment plan for any identified significant cultural resources

If any significant resources are identified through the preconstruction survey, a treatment plan that could include site avoidance, capping, or data recovery will be developed and implemented.

CUL-2c: Conduct worker awareness training for archaeological resources prior to construction

Prior to the initiation of any site preparation and/or the start of construction, the project applicant will ensure that all construction workers receive training overseen by a qualified professional archaeologist who is experienced in teaching nonspecialists, to ensure that forepersons and field supervisors can recognize archaeological resources (e.g., areas of shellfish remains, chipped stone or groundstone, historic debris, building foundations, human bone) in the event that any are discovered during construction.

CUL-2d: Stop work if cultural resources are encountered during ground-disturbing activities

The project applicant will ensure that construction specifications include a stop-work order if prehistoric or historic-era cultural resources are unearthed during ground-disturbing activities. If such resources are encountered, the project applicant will immediately halt all activity within 100 feet of the find until a qualified archaeologist can assess the significance of the find. Prehistoric materials might include obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or tool-making debris; culturally darkened soil ("midden") containing heat-affected rocks and artifacts; stone milling equipment (e.g., mortars, pestles, handstones, or milling slabs); and battered-stone tools, such as hammerstones and pitted stones. Historic-period materials might include stone, concrete, or adobe footings and walls; filled wells or privies; and deposits of metal, glass, and/or ceramic refuse. If the find is determined to be potentially significant, the archaeologist, in consultation with the Native American representative (if appropriate), will develop a treatment plan that could include site avoidance, capping, or data recovery.

Remaining Impacts: Any remaining impact associated with a substantial adverse change in the significance of an archaeological resource will be less than significant.

Impact CUL-3: Disturb any human remains, including those interred outside of formal cemeteries

Potential Impact: Although there is no indication that the project area has been used for human burials, the possibility cannot be discounted entirely. Although the possibility is unlikely, human remains could be discovered during ground-disturbing activities.

Mitigation Measure: The following mitigation measure, discussed in Section 3.5.2 of the PEIR, is hereby adopted and will be implemented as provided in the Mitigation Monitoring and Reporting Program.

CUL-3: Stop work if human remains are encountered during ground-disturbing activities

Findings: Based on the PEIR and the entire record before the City, the City Council finds the following.

Effects of Mitigation: Implementation of Mitigation Measure CUL-3 will ensure that the impacts with the potential to disturb human remains will be mitigated to a less-than-significant level. The applicant will be required to implement the following actions.

CUL-3: Stop work if human remains are encountered during ground-disturbing activities

The project applicant will ensure the construction specifications include a stop-work order if human remains are discovered during construction or demolition. There will be no further excavation or disturbance of the site within a 100-foot radius of the location of such discovery, or any nearby area reasonably suspected to overlie adjacent remains. The Alameda County Coroner will be notified and will make a determination as to whether the remains are Native American. If the Coroner determines that the remains are not subject to his authority, he will notify the Native American Heritage Commission, who will attempt to identify descendants of the deceased Native American. If no satisfactory agreement can be reached as to the disposition of the remains pursuant to this state law, then the landowner will re-inter the human remains and items associated with Native American burials on the property in a location not subject to further subsurface disturbance. A final report will be submitted to Alameda County. This report will contain a description of the mitigation program and its results, including a description of the monitoring and testing resources analysis methodology and conclusions and a description of the disposition/curation of the resources.

Remaining Impacts: Any remaining impact associated with disturbance of human remains will be less than significant.

Geology, Soils, Mineral Resources, and Paleontological Resources

Impact GEO-1: Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death, as a result of rupture of a known earthquake fault

Potential Impact: Placement of a turbine or power collection system on or near a fault could result in damage or destruction of the turbine. If a turbine were constructed on or near a fault, rupture of that fault could damage a turbine or cause harm to personnel on the site. The turbine could be damaged or collapse and possibly injure personnel or property in the immediate area. Two active faults, two of which are zoned under the Alquist-Priolo Act, are present in the program area. A third, the Midway fault, though designated only as potentially active, is also present in the program area. However, none of these intersect the project area. The closest of these faults to the project area is the Green Fault Zone, approximately 2 miles west of the project area.

Mitigation Measures: The following mitigation measure, discussed in the PEIR in Section 3.6, is hereby adopted and will be implemented as provided in the Mitigation Monitoring and Reporting Program.

GEO-1: Conduct site-specific geotechnical investigation and implement design recommendations in subsequent geotechnical report

Findings: Based on the PEIR and the entire record before the City, the City Council finds the following.

Effects of Mitigation: Implementation of Mitigation Measure GEO-1 will ensure that the impacts with the potential to expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death, as a result of rupture of a known earthquake fault will be mitigated to a less-than-significant level. The applicant will be required to implement the following actions.

GEO-1: Conduct site-specific geotechnical investigation and implement design recommendations in subsequent geotechnical report

Prior to construction activities at any site, the project proponent will retain a geotechnical firm with local expertise in geotechnical investigation and design to prepare a site-specific geotechnical report. This report will be prepared by a licensed geotechnical engineer or engineering geologist and will be submitted to the County building department as part of the approval process. This report will be based on data collected from subsurface exploration, laboratory testing of samples, and surface mapping and will address the following issues.

- Potential for surface fault rupture and turbine site location: The geotechnical report will investigate the Greenville, Corral Hollow-Carnegie, and the Midway faults (as appropriate to the location) and determine whether they pose a risk of surface rupture. Turbine foundations and power collection systems will be sited according to recommendations in this report.
- Strong ground shaking: The geotechnical report will analyze the potential for strong ground shaking in project area and provide turbine foundation design recommendations, as well as recommendations for power collection systems.
- Slope failure: The geotechnical report will investigate the potential for slope failure (both seismically and nonseismically induced) and develop site-specific turbine foundation and power collection system plans engineered for the terrain, rock and soil types, and other conditions present at the program area in order to provide long-term stability.
- Expansive soils: The geotechnical report will assess the soil types in the program area and determine the best engineering designs to accommodate the soil conditions.
- Unstable cut or fill slopes: The geotechnical report will address geologic hazards related to the potential for grading to create unstable cut or fill slopes and make site-specific recommendations related to design and engineering.

Remaining Impacts: Any remaining impact associated with the exposure of people or structures to potential substantial adverse effects will be less than significant.

Impact GEO-2: Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death, as a result of strong seismic ground shaking

Potential Impact: Construction of turbines or power collection systems in areas with potential to experience strong ground shaking could expose people or structures to potential substantial adverse effects. If turbine foundations were not properly designed to withstand the appropriate

level of ground shaking, they could fail and cause damage to or collapse of the turbine towers. This damage or collapse could cause harm to personnel or property in the immediate area.

The project area is in a seismically active area, with the potential for moderately strong ground shaking from sources such as the Greenville fault and the Calaveras fault. Both the State of California and Alameda County have stringent building safety requirements, and all construction would have to comply with the California Building Standards Code. However, this may not address all seismic-related safety issues. If the turbine foundation and power collection system design and construction were not based on rigorous, detailed, site-specific geotechnical investigation, the foundation or collection system could fail during strong ground shaking and cause damage to or collapse of the turbine or collection system.

Mitigation Measures: The following mitigation measure, discussed in Section 3.6.2 of the PEIR, is hereby adopted and will be implemented as provided in the Mitigation Monitoring and Reporting Program.

GEO-1: Conduct site-specific geotechnical investigation and implement design recommendations in subsequent geotechnical report

Findings: Based on the PEIR and the entire record before the City, the City Council finds the following.

Effects of Mitigation: Implementation of Mitigation Measure GEO-1 will ensure that the impacts with the potential to expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death, as a result of strong seismic ground shaking will be mitigated to a less-than-significant level. The applicant will be required to implement the following actions.

GEO-1: Conduct site-specific geotechnical investigation and implement design recommendations in subsequent geotechnical report

For the text of Mitigation Measure GEO-1, please refer to the discussion of Impact GEO-1 above.

Remaining Impacts: Any remaining impact associated with the exposure of people or structures to potential substantial adverse effects will be less than significant.

Impact GEO-3: Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death, as a result of seismic-related ground failure, including landsliding and liquefaction

Potential Impact: Construction of turbines or power collection systems in areas with potential to experience seismic-related ground failure, such as landsliding, liquefaction, lateral spread, and differential settlement, could expose people or structures to potential substantial adverse effects. If turbine foundations or power collection systems were not properly designed and sited for the earthquake-induced ground failure conditions present at the program area, they could fail and cause damage to or collapse of the turbine towers or collection system. This damage or collapse could cause harm to personnel or property in the immediate area.

The project area is known to be susceptible to earthquake-induced landsliding. In addition, although the potential for liquefaction is likely low because of the depth to groundwater and the age of the geologic units in the project area, the risk of lateral spread and differential settlement is unknown.

Both the State of California and Alameda County have stringent building safety requirements, and all construction would have to comply with the California Building Standards Code. Nonetheless, this may not address all seismic-related ground failure issues. If the turbine foundation and power collection system design and construction were not based on rigorous, detailed, site-specific geotechnical investigation, the foundation or collection system could fail as a result of landsliding, lateral spread, or differential settlement and cause damage to or collapse of the turbine or collection system.

Mitigation Measure: The following mitigation measure, discussed in Section 3.6.2 of the PEIR, is hereby adopted and will be implemented as provided in the Mitigation Monitoring and Reporting Program.

GEO-1: Conduct site-specific geotechnical investigation and implement design recommendations in subsequent geotechnical report

Findings: Based on the PEIR and the entire record before the City, the City Council finds the following.

Effects of Mitigation: Implementation of Mitigation Measure GEO-1 will ensure that the impacts with the potential to expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death, as a result of seismic-related ground failure, including landsliding and liquefaction will be mitigated to a less-than-significant level. The applicant will be required to implement the following actions.

GEO-1: Conduct site-specific geotechnical investigation and implement design recommendations in subsequent geotechnical report

For the text of Mitigation Measure GEO-1, please refer to the discussion of Impact GEO-1 above.

Remaining Impacts: Any remaining impact associated with the exposure of people or structures to potential substantial adverse effects will be less than significant.

Impact GEO-4: Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death, as a result of landsliding

Potential Impact: Construction of turbines or power collection systems in areas with potential to experience nonseismic-related landsliding caused by heavy precipitation could expose people or structures to potential substantial adverse effects. If turbine foundations or power collection systems were not properly designed and sited for the landsliding conditions present at the program area, they could fail and cause damage to or collapse of the turbine towers or collection system. This damage or collapse could cause harm to personnel or property in the immediate area.

The project area is in steep, hilly terrain in an area known to be susceptible to landsliding. Both the State of California and Alameda County have stringent building safety requirements, and all construction would have to comply with the California Building Standards Code. However, this may not address all seismic-related landsliding issues. If the turbine foundation and power collection system design and construction were not based on rigorous, detailed, site-specific geotechnical investigation, the foundation or collection system could fail as a result of landsliding and cause damage to or collapse of the turbine or collection system.

Mitigation Measure: The following mitigation measure, discussed in Section 3.6.2 of the PEIR, is hereby adopted and will be implemented as provided in the Mitigation Monitoring and Reporting Program.

GEO-1: Conduct site-specific geotechnical investigation and implement design recommendations in subsequent geotechnical report

Findings: Based on the PEIR and the entire record before the City, the City Council finds the following.

Effects of Mitigation: Implementation of Mitigation Measure GEO-1 will ensure that the impacts with the potential to expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death, as a result of landsliding will be mitigated to a less-than-significant level. The applicant will be required to implement the following actions.

GEO-1: Conduct site-specific geotechnical investigation and implement design recommendations in subsequent geotechnical report

For the text of Mitigation Measure GEO-1, please refer to the discussion of Impact GEO-1 above.

Remaining Impacts: Any remaining impact associated with the exposure of people or structures to potential substantial adverse effects, including the risk of loss, injury, or death, as a result of landsliding, will be less than significant.

Impact GEO-6: Be located on expansive soil, creating substantial risks to life or property

Potential Impact: Turbine foundations built on expansive soils would be subject to the expansion and contraction of these soils, which could cause damage to structures if the subsoil, drainage, and foundation are not properly engineered. The metrological tower and underground systems would be subject to the same expansion and contraction.

Expansive soils occur in the Fontana-Diablo-Altamont soil association, which characterizes the project area. However, soil sampling and treatment procedures are addressed by state and local building codes.

Mitigation Measure: The following mitigation measure, discussed in Section 3.6.2 of the PEIR, is hereby adopted and will be implemented as provided in the Mitigation Monitoring and Reporting Program.

GEO-1: Conduct site-specific geotechnical investigation and implement design recommendations in subsequent geotechnical report

Findings: Based on the PEIR and the entire record before the City, the City Council finds the following.

Effects of Mitigation: Implementation of Mitigation Measure GEO-1 will ensure that the impacts associated with being located on expansive soil, including risks to life and property, as a result of landsliding will be mitigated to a less-than-significant level. The applicant will be required to implement the following actions.

GEO-1: Conduct site-specific geotechnical investigation and implement design recommendations in subsequent geotechnical report

For the text of Mitigation Measure GEO-1, please refer to the discussion of Impact GEO-1 above.

Remaining Impacts: Any remaining impact associated with being located on expansive soil will be less than significant.

Impact GEO-7: Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature

Potential Impact: If fossils are present in the project area, they could be damaged during ground-disturbing activities during construction, such as excavation for foundations, placement of fill, trenching for power collection systems, and grading for roads and staging areas. The more extensive and deeper the ground-disturbing activity, the greater the potential for damage to paleontological resources.

Because they are sedimentary rocks, geologic units with potential to contain paleontological resources include most units in the program area. In particular, the Neroly Formation and some units of the Great Valley Sequence are known to contain vertebrate fossils. Substantial damage to or destruction of significant paleontological resources as defined by the Society of Vertebrate Paleontology (2010) would be a significant impact.

Mitigation Measures: The following mitigation measures, discussed in Section 3.6.2 of the PEIR, are hereby adopted and will be implemented as provided in the Mitigation Monitoring and Reporting Program.

GEO-7a: Retain a qualified professional paleontologist to monitor significant ground-disturbing activities

GEO-7b: Educate construction personnel in recognizing fossil material

GEO-7c: Stop work if substantial fossil remains are encountered during construction

Findings: Based on the PEIR and the entire record before the City, the City Council finds the following.

Effects of Mitigation: Implementation of Mitigation Measures GEO-7a, GEO-7b, and GEO-7c will ensure that the impacts associated with directly or indirectly destroying a unique paleontological resource or site or unique geologic feature will be mitigated to a less-than-significant level. The applicant will be required to implement the following actions.

GEO-7a: Retain a qualified professional paleontologist to monitor significant ground-disturbing activities

The applicant will retain a qualified professional paleontologist as defined by the SVP's *Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources* (2010) to monitor activities with the potential to disturb sensitive paleontological resources. Data gathered during detailed project design will be used to determine the activities that will require the presence of a monitor. In general, these activities include any ground-disturbing activities involving excavation deeper than 3 feet in areas with high potential to contain

sensitive paleontological resources. Recovered fossils will be prepared so that they can be properly documented. Recovered fossils will then be curated at a facility that will properly house and label them, maintain the association between the fossils and field data about the fossils' provenance, and make the information available to the scientific community.

GEO-7b: Educate construction personnel in recognizing fossil material

The applicant will ensure that all construction personnel receive training provided by a qualified professional paleontologist experienced in teaching non-specialists to ensure that they can recognize fossil materials in the event any are discovered during construction.

GEO-7c: Stop work if substantial fossil remains are encountered during construction

If substantial fossil remains (particularly vertebrate remains) are discovered during earth disturbing activities, activities within 100 feet of the find will stop immediately until a state-registered professional geologist or qualified professional paleontologist can assess the nature and importance of the find and a qualified professional paleontologist can recommend appropriate treatment. Treatment may include preparation and recovery of fossil materials so that they can be housed in an appropriate museum or university collection and may also include preparation of a report for publication describing the finds. The applicant will be responsible for ensuring that recommendations regarding treatment and reporting are implemented.

Remaining Impacts: Any remaining impact associated with destruction of paleontological resources will be less than significant.

Greenhouse Gas Emissions

Impact GHG-2: Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases

Potential Impact: The project could conflict with certain GHG reduction goals set forth in AB 32, including the 39 Recommended Actions identified by ARB in its Climate Change Scoping Plan (California Air Resources Board 2008b). Of the 39 measures identified, those that would be considered to be applicable to the proposed project would primarily be those actions related to transportation, the RPS, and high global warming potential gases.

Mitigation Measures: The following mitigation measures, discussed in Section 3.7.2 of the PEIR, are hereby adopted and will be implemented as provided in the Mitigation Monitoring and Reporting Program.

GHG-2a: Implement best available control technology for heavy-duty vehicles

GHG-2b: Install low SF6 leak rate circuit breakers and monitoring

GHG-2c: Require new construction to use building materials containing recycled content

GHG-2d: Comply with construction and demolition debris management ordinance

Findings: Based on the PEIR and the entire record before the City, the City Council finds the following.

Effects of Mitigation: Implementation of Mitigation Measures GHG-2a, GHG-2b, GHG-2c, and GHG-2d will ensure that the impacts associated with a conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases will be mitigated to a less-than-significant level. The applicant will be required to implement the following actions.

GHG-2a: Implement best available control technology for heavy-duty vehicles

The applicant will require existing trucks/trailers to be retrofitted with the best available technology and/or ARB-approved technology consistent with the ARB Truck and Bus Regulation (California Air Resources Board 2011). The ARB Truck and Bus Regulation applies to all diesel-fueled trucks and buses with a gross vehicle weight rating (GVWR) greater than 14,000 pounds.

Starting January 1, 2015, the applicant must replace lighter trucks (GVWR of 14,001 to 26,000 pounds) with engines that are 20 years or older with newer trucks. The Applicant has the option to install a PM filter retrofit on a lighter truck by 2014 to make the truck exempt from replacement until January 1, 2020, and any lighter truck equipped with a PM filter retrofit prior to July 2011 would receive credit toward the compliance requirements for a heavier truck or bus in the same fleet.

Starting January 1, 2012, the applicant is required to meet the engine model year schedule shown below for heavier trucks (GVWR greater than 26,000 pounds). To comply with the schedule, the applicant will install the best available PM filter on 1996 model year and newer engines and would replace the vehicle 8 years later. The Applicant will replace trucks with 1995 model year and older engines starting in 2015. Replacements with 2010 model year or newer engines meets the final requirements, but the applicant could also replace trucks with used trucks that would have a future compliance date on the schedule. For example, a replacement with a 2007 model year engine complies until 2023. By 2023 all trucks and buses must have 2010 model year engines with few exceptions.

Engine Model Year Schedule for Heavier Trucks

Engine Year	Requirement from January 1
Pre-1994	No requirements until 2015, then 2010 engine
1994–1995	No requirements until 2016, then 2010 engine
1996–1999	PM filter from 2012 to 2020, then 2010 engine
2000–2004	PM filter from 2013 to 2021, then 2010 engine
2005–2006	PM filter from 2014 to 2022, then 2010 engine
2007–2009	No requirements until 2023, then 2010 engine
2010	Meets final requirements

In addition, the applicant could comply with a phase-in option that would allow the applicant to decide which vehicles to retrofit or replace, regardless of engine model year. The applicant must report information about all heavier trucks starting January 31, 2012, to use this option.

The Applicant could comply by demonstrating that trucks have met the percentage requirement each year as shown in the table below. For example, by 2012 the applicant's fleet would need to have PM filters on 30% of the heavier trucks in the fleet. This option counts 2007 model year and newer engines originally equipped with PM filters toward compliance and would reduce the overall number of retrofit PM filters needed. Any engine with a PM filter regardless of model

year would be compliant until at least 2020. Beginning January 1, 2020, all heavier trucks would need to meet the requirements specified in the Compliance Schedule for Heavier Trucks.

Phase-In Option for Heavier Trucks	
Compliance Date	Vehicles with PM Filters
1-Jan-12	30%
1-Jan-13	60%
1-Jan-14	90%
1-Jan-15	90%
1-Jan-16	100%

GHG-2b: Install low SF6 leak rate circuit breakers and monitoring

The applicant will ensure that any new circuit breaker installed at a substation has a guaranteed SF_6 leak rate of 0.5% by volume or less. The applicant will provide the City with documentation of compliance, such as specification sheets, prior to installation of the circuit breaker. In addition, the applicant will monitor the SF_6-containing circuit breakers at the substation consistent with Scoping Plan Measure H-6 for the detection and repair of leaks.

GHG-2c: Require new construction to use building materials containing recycled content

The applicant will require the construction of all new substation and other permanent buildings to incorporate materials for which the sum of post-consumer recycled content plus one-half of the post-industrial content constitutes at least 10% of the total value of the materials in the project.

GHG-2d: Comply with construction and demolition debris management ordinance

The applicant will comply with the Alameda County's revised Green Building Ordinance regarding construction and demolition debris as follows: (1) 100% of inert waste and 50% wood/vegetative/scrap metal not including Alternative Daily Cover (ADC) and unsalvageable material will be put to other beneficial uses at landfills, and (2) 100% of inert materials (concrete and asphalt) will be recycled or put to beneficial reuse.

Remaining Impacts: Any remaining impact associated with conflict with applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases will be less than significant.

Hazards and Hazardous Materials

Impact HAZ-4: Location on a hazardous materials site, creating a significant hazard to the public or the environment

Potential Impact: It is not known if hazardous materials sites are present within the project area. However, the potential for the existence of hazardous materials is generally low. Land uses in the APWRA include agriculture, grazing, riding and hiking trails, and windfarms. Some of these land uses involve the use of potentially hazardous materials (e.g., fertilizer). Because soil disturbance would be involved in construction activities for both decommissioning activities and construction of

individual wind projects, any contaminated soil found could represent a significant risk to human health and the environment.

Mitigation Measure: The following mitigation measure, discussed in Section 3.8.2 of the PEIR, is hereby adopted and will be implemented as provided in the Mitigation Monitoring and Reporting Program.

HAZ-4: Perform a Phase I Environmental Site Assessment prior to construction activities and remediate if necessary

Findings: Based on the PEIR and the entire record before the City, the City Council finds the following.

Effects of Mitigation: Implementation of Mitigation Measure HAZ-4 will ensure that the impacts associated with locating on a hazardous materials site creating a significant hazard to the public or the environment will be mitigated to a less-than-significant level. The applicant will be required to implement the following actions.

HAZ-4: Perform a Phase I Environmental Site Assessment prior to construction activities and remediate if necessary

Prior to construction, the project proponent will conduct a Phase I environmental site assessment in conformance with the American Society for Testing and Materials Standard Practice E1527-05. All environmental investigation, sampling, and remediation activities associated with properties in the project area will be conducted under a work plan approved by the regulatory oversight agency and will be conducted by the appropriate environmental professional consistent with Phase I site assessment requirements as detailed below. The results of any investigation and/or remediation activities conducted in the project area will be included in the project-level EIR.

A Phase I environmental site assessment should, at a minimum, include the components listed below.

- An onsite visit to identify current conditions (e.g., vegetative dieback, chemical spill residue, presence of above- or underground storage tanks).
- An evaluation of possible risks posed by neighboring properties.
- Interviews with persons knowledgeable about the site's history (e.g., current or previous property owners, property managers).
- An examination of local planning files to check prior land uses and any permits granted.
- File searches with appropriate agencies (e.g., State Water Resources Control Board, fire department, County health department) having oversight authority relative to water quality and groundwater and soil contamination.
- Examination of historical aerial photography of the site and adjacent properties.
- A review of current and historic topographic maps of the site to determine drainage patterns.
- An examination of chain-of-title for environmental liens and/or activity and land use limitations.

If the Phase I environmental site assessment indicates likely site contamination, a Phase II environmental site assessment will be performed (also by an environmental professional).

A Phase II environmental site assessment would comprise the following.

- Collection of original surface and/or subsurface samples of soil, groundwater, and building materials to analyze for quantities of various contaminants.
- An analysis to determine the vertical and horizontal extent of contamination (if the evidence from sampling shows contamination).

If contamination is uncovered as part of Phase I or II environmental site assessments, remediation will be required. If materials such as asbestos-containing materials, lead-based paint, or PCB-containing equipment are identified, these materials will be properly managed and disposed of prior to or during the demolition process.

Any contaminated soil identified on a project site must be properly disposed of in accordance with DTSC regulations in effect at the time.

Hazardous wastes generated by the proposed project will be managed in accordance with the California Hazardous Waste Control Law (HSC, Division 20, Chapter 6.5) and the Hazardous Waste Control Regulation (Title 22, CCR, Division 4.5).

If, during construction/demolition of structures, soil or groundwater contamination is suspected, the construction/demolition activities will cease and appropriate health and safety procedures will be implemented, including the use of appropriate personal protective equipment (e.g., respiratory protection, protective clothing, helmets, goggles).

Remaining Impacts: Any remaining impact associated with location on a hazardous materials site creating a significant hazard to the public or the environment will be less than significant.

Impact HAZ-7: Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan

Potential Impact: Existing vehicular traffic is associated with operation and maintenance of project facilities and is not anticipated to change under the proposed project. Accordingly, operation of the proposed project would have no impact. During construction, there would be an increase in vehicular traffic transporting work crews, equipment, and materials.

As specified in PEIR Section 3.15, *Transportation/Traffic*, a Traffic Control Plan (TCP) would be prepared for each proposed repowering project to reduce hazards that could result from the increased truck traffic, and to ensure that traffic flow on local public roads and highways are not adversely affected. This plan would incorporate measures such as informational signs, traffic cones, and flashing lights to identify any necessary changes in temporary land configuration. Flaggers with two-way radios would be used to control construction traffic and reduce the potential for accidents along roads. Speed limits would be set commensurate with road type, traffic volume, vehicle type, and site-specific conditions as necessary to ensure safe and efficient traffic flow.

Projects proposed within the unincorporated area of the county are reviewed by the Alameda County Fire Department during the building permit process to ensure that they are consistent with adopted emergency response plans and emergency evacuation plans. Consequently, the proposed

project would not conflict with any adopted emergency response plan or emergency evacuation plan.

Finally, conveyance of decommissioned turbines, towers, and other components on public roads would take place at an irregular, infrequent rate, and would be subject to standard California Department of Transportation (Caltrans) regulations. Such conveyance would not hinder emergency access to the program area. Accordingly, decommissioning activities would not conflict with any adopted emergency response plan or emergency evacuation plan.

Mitigation Measures: The following mitigation measure, discussed in Section 3.8.2 of the PEIR, is hereby adopted and will be implemented as provided in the Mitigation Monitoring and Reporting Program.

TRA-1: Develop and implement a construction traffic control plan

Findings: Based on the PEIR and the entire record before the City, the City Council finds the following.

Effects of Mitigation: Implementation of Mitigation Measure TRA-1 will ensure that any impacts that would impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan will be mitigated to a less-than-significant level. The applicant will be required to implement the following actions.

TRA-1: Develop and implement a construction traffic control plan

Prior to starting construction-related activities, the Applicant shall prepare and implement a Traffic Control Plan (TCP) that will reduce or eliminate impacts associated with the proposed program. The TCP shall adhere to Alameda County and Caltrans requirements, and must be submitted for review and approval of the County Public Works Department prior to implementation. The TCP shall include the following elements. The County and Caltrans may require additional elements to be identified during their review and approval of the TCP.

- Schedule construction hours to minimize concentrations of construction workers commuting to/from the project site during typical peak commute hours (7 a.m. to 9 a.m. and 4 p.m. to 6 p.m.).
- Limit truck access to the project site during typical peak commute hours (7 a.m. to 9 a.m. and 4 p.m. to 6 p.m.).
- Require that written notification be provided to contractors regarding appropriate haul routes to and from the program area, as well as the weight and speed limits on local county roads used to access the program area.
- Provide access for emergency vehicles to and through the program area at all times.
- When lane/road closures occur during delivery of oversized loads, provide advance notice to local fire, police, and emergency service providers to ensure that alternative evacuation and emergency routes are designated to maintain service response times.
- Provide adequate onsite parking for construction trucks and worker vehicles.
- Require suitable public safety measures in the program area and at the entrance roads, including fences, barriers, lights, flagging, guards, and signs, to give adequate warning to the

public of the construction and of any dangerous conditions that could be encountered as a result thereof.

- Complete road repairs on local public roads as needed during construction to prevent excessive deterioration. This work may include construction of temporary roadway shoulders to support any necessary detour lanes.
- Repair or restore the road right-of-way to its original condition or better upon completion of the work.
- Coordinate program-related construction activities, including schedule, truck traffic, haul routes, and the delivery of oversized or overweight materials, with Alameda County, Caltrans, and affected cities to identify and minimize overlap with other area construction projects.

Remaining Impacts: Any remaining impact associated with interference with an adopted emergency response plan or emergency evacuation plan will be less than significant.

Hydrology and Water Quality

Impact WQ-1: Violate any water quality standards or waste discharge requirements

Potential Impact: Construction-related ground-disturbing activities associated with the project would introduce the potential for increased erosion and sedimentation, with subsequent effects on drainage and water quality. During construction, trenching and other construction activities create areas of bare soil that can be exposed to erosive forces for long periods of time. Bare soils are much more likely to erode than vegetated areas because of the lack of dispersion, infiltration, and retention properties created by covering vegetation. Construction activities involving soil disturbance, excavation, cutting/filling, stockpiling, and grading could result in increased erosion and sedimentation to surface waters, if proper BMPs are not used.

While existing activities in the project area may already result in the release of sediment, the extent of ground disturbance resulting from project construction is anticipated to result in a new and intensified potential for the release of sediments from staging areas and turbine construction sites. If precautions are not taken to contain or capture sedimentation, ground-disturbing construction activities could result in substantial sedimentation in stormwater runoff and result in a significant impact on existing surface water quality.

Mitigation Measure: The following mitigation measure, discussed in Section 3.9.2 of the PEIR, is hereby adopted and will be implemented as provided in the Mitigation Monitoring and Reporting Program.

WQ-1: Comply with NPDES requirements

Findings: Based on the PEIR and the entire record before the City, the City Council finds the following.

Effects of Mitigation: Implementation of Mitigation Measure WQ-1 will ensure that any impacts that would violate any water quality standards or waste discharge requirements will be mitigated to a less-than-significant level. The applicant will be required to implement the following actions.

WQ-1: Comply with NPDES requirements

For the text of Mitigation Measure WQ-1, please refer to the discussion of Impact BIO-2 above.

Remaining Impacts: Any remaining impact associated with violation of any water quality standards or waste discharge requirements will be less than significant.

Impact WQ-3: Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation onsite or offsite

Potential Impact: The project would not entail construction of any turbines within existing drainage areas and the project footprints would be designed to avoid any downstream erosion during the storm season. In addition, the proposed project would be required to adhere to the NPDES Construction General Permit.

Mitigation Measure: The following mitigation measure, discussed in Section 3.9.2 of the PEIR, is hereby adopted and will be implemented as provided in the Mitigation Monitoring and Reporting Program.

WQ-1: Comply with NPDES requirements

Findings: Based on the PEIR and the entire record before the City, the City Council finds the following.

Effects of Mitigation: Implementation of Mitigation Measure WQ-1 will ensure that any impacts that would substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation onsite or offsite will be mitigated to a less-than-significant level. The applicant will be required to implement the following actions.

WQ-1: Comply with NPDES requirements

For the text of Mitigation Measure WQ-1, please refer to the discussion of Impact BIO-2 above.

Remaining Impacts: Any remaining impact associated with substantially altering the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation onsite or offsite will be less than significant.

Impact WQ-4: Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding onsite or offsite

Potential Impact: Although road improvements would result in an increase in the extent of graveled surfaces (which can result in increased runoff) compared to existing graveled roads, the soils underlying the project area are predominantly high runoff soils (i.e., Hydrologic Soil Group D) (Soil Conservation Service 1966, 1977). Compacted gravel roads have runoff potential similar to that of Hydrologic Soil Group D soils. Consequently, the expanded graveled roads would not result in a net increase in runoff potential than presently exists in the native soils where the new gravel would be placed. Accordingly, because the runoff would not increase as a result of the widened gravel roads, there would not be an increase in flooding onsite or offsite. In addition, as described in the

PEIR (Section 3.9, *Hydrology and Water Quality*) all projects conducted under the APWRA repowering program would be required to adhere to the NPDES stormwater Construction General Permit, which requires that postconstruction runoff management measures be implemented in the event that the project's SWPPP determines that a project could cause an increase in peak runoff flows from the project area.

Mitigation Measure: The following mitigation measure, discussed in Section 3.9.2 of the PEIR, is hereby adopted and will be implemented as provided in the Mitigation Monitoring and Reporting Program.

WQ-1: Comply with NPDES requirements

Findings: Based on the PEIR and the entire record before the City, the City Council finds the following.

Effects of Mitigation: Implementation of Mitigation Measure WQ-1 will ensure that any impacts that would substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding onsite or offsite will be mitigated to a less-than-significant level. The applicant will be required to implement the following actions.

WQ-1: Comply with NPDES requirements

For the text of Mitigation Measure WQ-1, please refer to the discussion of Impact BIO-2 above.

Remaining Impacts: Any remaining impact associated with substantial alteration of the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding onsite or offsite will be less than significant.

Impact WQ-5: Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff

Potential Impact: The project area does not currently have existing or planned stormwater drainage facilities, and buildout of the proposed project would not exceed capacities or increase the rate of polluted runoff. However, construction could generate polluted runoff as soil would be stripped, bare areas would be exposed, and stormwater could cause sedimentation.

Mitigation Measure: The following mitigation measure, discussed in Section 3.9.2 of the PEIR, is hereby adopted and will be implemented as provided in the Mitigation Monitoring and Reporting Program.

WQ-1: Comply with NPDES requirements

Findings: Based on the PEIR and the entire record before the City, the City Council finds the following.

Effects of Mitigation: Implementation of Mitigation Measure WQ-1 will ensure that any impacts that would create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff will be

mitigated to a less-than-significant level. The applicant will be required to implement the following actions.

WQ-1: Comply with NPDES requirements

For the text of Mitigation Measure WQ-1, please refer to the discussion of Impact BIO-2 above.

Remaining Impacts: Any remaining impact that would create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff will be less than significant.

Impact WQ-6: Otherwise substantially degrade water quality

Potential Impact: The project area does not currently have any substantial water quality issues or drainages that could carry a substantial amount of polluted runoff to receiving waters. In addition, project operation is not anticipated to result in a substantial amount of additional runoff that could affect water quality. However, construction could generate polluted runoff as soil would be stripped, bare areas would be exposed, and stormwater could cause sedimentation..

Mitigation Measure: The following mitigation measure, discussed in Section 3.9.2 of the PEIR, is hereby adopted and will be implemented as provided in the Mitigation Monitoring and Reporting Program.

WQ-1: Comply with NPDES requirements

Findings: Based on the PEIR and the entire record before the City, the City Council finds the following.

Effects of Mitigation: Implementation of Mitigation Measure WQ-1 will ensure that any impacts that would otherwise substantially degrade water quality will be mitigated to a less-than-significant level. The applicant will be required to implement the following actions.

WQ-1: Comply with NPDES requirements

For the text of Mitigation Measure WQ-1, please refer to the discussion of Impact BIO-2 above.

Remaining Impacts: Any remaining impact that would otherwise substantially degrade water quality will be less than significant.

Impact WQ-10: Contribute to inundation by seiche, tsunami, or mudflow

Potential Impact: Because the project area is in rolling hills and far from the ocean, the likelihood of a seiche or tsunami occurring is considered minimal. In addition, a mudflow is also highly unlikely, but could be possible in rolling hills if proper BMPs are not used during the construction process.

Mitigation Measure: The following mitigation measure, discussed in Section 3.9.2 of the PEIR, is hereby adopted and will be implemented as provided in the Mitigation Monitoring and Reporting Program.

WQ-1: Comply with NPDES requirements

Findings: Based on the PEIR and the entire record before the City, the City Council finds the following.

Effects of Mitigation: Implementation of Mitigation Measure WQ-1 will ensure that any impacts that would contribute to inundation by seiche, tsunami, or mudflow will be mitigated to a less-than-significant level. The applicant will be required to implement the following actions.

WQ-1: Comply with NPDES requirements

For the text of Mitigation Measure WQ-1, please refer to the discussion of Impact BIO-2 above.

Remaining Impacts: Any remaining impact that would contribute to inundation by seiche, tsunami, or mudflow will be less than significant.

Noise

Impact NOI-1: Exposure of residences to noise from new wind turbines

Potential Impact: The project would entail installation of seven large, modern 2.3 to 4.0 MW turbines, replacing 199 old-generation turbines. Based on maps and information submitted by the applicant, there are two residences within approximately 2,000 feet of the nearest wind turbines. This information, along with noise measurements, were used to prepare a noise study (see *Environmental Analysis, Appendix D, Sound Technical Report*).

As discussed in Section 3.11.2 of the PEIR, there are no documented instances of wind turbines causing exceedance of noise standards under existing CUPs. In addition, proposed modern turbines have several characteristics that reduce aerodynamic sound levels and make for quieter operations than the old-generation turbines. The modern turbines have relatively low rotational speeds and pitch control on the rotors, both of which reduce sound levels.

The Sound Technical Report documents that two residences are located within approximately 2,000 feet from the nearest turbine location. Such a distance would preclude noise from turbines reaching noise thresholds. Consequently, this impact is considered less than significant and no mitigation is necessary.

Impact NOI-2: Exposure of residences to noise during decommissioning and new turbine construction

Potential Impact: The results of noise modeling indicate that construction activities could result in noise that exceeds Alameda County noise ordinance standards during nonexempt hours.

Mitigation Measure: The following mitigation measure, discussed in the PEIR in Section 3.11.2, is hereby adopted and will be implemented as provided in the Mitigation Monitoring and Reporting Program.

NOI-2: Employ noise-reducing practices during decommissioning and new turbine construction

Findings: Based on the PEIR and the entire record before the City, the City Council finds the following.

Effects of Mitigation: Implementation of the mitigations recommended by Mitigation Measure NOI-2 will ensure that any impacts that would contribute exposure of residences to noise during

decommissioning and new turbine construction will be mitigated to a less-than-significant level. The applicant will be required to implement the following actions.

NOI-2: Employ noise-reducing practices during decommissioning and new turbine construction

Project applicants will employ noise-reducing construction practices so that construction noise does not exceed Alameda County noise ordinance standards. Measures to limit noise may include the following:

- Prohibit noise-generating 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 equipment noise upon prior approval by the City.

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

Remaining Impacts: Any remaining impact that would contribute to exposure of residences to noise during decommissioning and new turbine construction will be less than significant.

Transportation/Traffic

Impact TRA-1: Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation, including mass transit and non-motorized travel and relevant components of the circulation system, including, but not limited to, intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit or conflict with an applicable congestion management program, including, but not limited to, level-of-service standards and travel demand measures or other standards established by the county congestion management agency for designated roads or highways

Potential Impact: Construction traffic could cause a substantial traffic increase on the local county roads that provide direct access to the project construction sites—e.g., Altamont Pass Road—as these roads generally have low traffic volumes.

Mitigation Measure: The following mitigation measure, discussed in the PEIR in Section 3.15.2, is hereby adopted and will be implemented as provided in the Mitigation Monitoring and Reporting Program.

TRA-1: Develop and implement a construction traffic control plan

Findings: Based on the PEIR and the entire record before the City, the City Council finds the following.

Effects of Mitigation: Implementation of Mitigation Measure TRA-1 will ensure that any impacts that would conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system will be mitigated to a less-than-significant level. The applicant will be required to implement the following actions.

TRA-1: Develop and implement a construction traffic control plan

For the text of Mitigation Measure TRA-1, please refer to the discussion of Impact HAZ-7 above.

Remaining Impacts: Any remaining impact that would conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system will be less than significant.

Impact TRA-4: Substantially increase hazards because of a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment) due to construction-generated traffic

Potential Impact: The presence of large, slow-moving construction-related vehicles and equipment among the general-purpose traffic on roadways that provide access to the project area could cause other drivers to act impatiently and create traffic safety hazards. In addition, the slow-moving trucks entering or exiting the proposed project area from public roads could pose a traffic hazard to other vehicles and increase the potential for turning movement collisions at the project area entrance intersection. Heavy truck traffic delivering equipment and materials to the project area could result in road wear and damage that result in a driving safety hazard. The degree to which this latter impact would occur depends on the existing roadway design (pavement type and thickness) and existing condition of the road. Freeways such as I-580 are designed to accommodate a mix of vehicle types, including heavy trucks, and the construction vehicle impacts are expected to be negligible on those roads. However, county roads are not designed and constructed to the same standards as the interstate highways and could be damaged by construction traffic.

Construction associated with the project would require the delivery of equipment and materials, such as wind turbines, that could cause the construction trucks to exceed roadway load or size limits. To transport this equipment, the project applicant must obtain special permits from Caltrans District 4 and other relevant jurisdictions including Alameda County to move oversized or overweight materials. In addition, the applicant must ensure proper routes are followed; proper time is scheduled for the delivery; and proper escorts, including advanced warning and trailing vehicles as well as law enforcement control are available, if necessary.

Mitigation Measure: The following mitigation measure, discussed in the PEIR in Section 3.15.2, is hereby adopted and will be implemented as provided in the Mitigation Monitoring and Reporting Program.

TRA-1: Develop and implement a construction traffic control plan

Findings: Based on the PEIR and the entire record before the City, the City Council finds the following.

Effects of Mitigation: Implementation of Mitigation Measure TRA-1 will ensure that any impacts that would substantially increase hazards because of a design feature or incompatible uses due to construction-generated traffic will be mitigated to a less-than-significant level. The applicant will be required to implement the following actions.

TRA-1: Develop and implement a construction traffic control plan

For the text of Mitigation Measure TRA-1, please refer to the discussion of Impact HAZ-7 above.

Remaining Impacts: Any remaining impact that would substantially increase hazards because of a design feature or incompatible uses due to construction-generated traffic will be less than significant.

Impact TRA-5: Result in inadequate emergency access due to construction-generated traffic

Potential Impact: Slow-moving construction trucks could delay or obstruct the movement of emergency vehicles on program area haul routes used to access the project area. In addition, lane/road closures occurring during delivery of oversized loads could impair roadway capacity and increase the response time for emergency vehicles traveling through the closure area. Therefore, construction would have the potential to significantly affect emergency vehicle access.

Mitigation Measure: The following mitigation measure, discussed in the PEIR in Section 3.15.2, is hereby adopted and will be implemented as provided in the Mitigation Monitoring and Reporting Program.

TRA-1: Develop and implement a construction traffic control plan

Findings: Based on the PEIR and the entire record before the City, the City Council finds the following.

Effects of Mitigation: Implementation of Mitigation Measure TRA-1 will ensure that any impacts that would result in inadequate emergency access due to construction-generated traffic will be mitigated to a less-than-significant level. The applicant will be required to implement the following actions.

TRA-1: Develop and implement a construction traffic control plan

For the text of Mitigation Measure TRA-1, please refer to the discussion of Impact HAZ-7 above.

Remaining Impacts: Any remaining impact that would result in inadequate emergency access due to construction-generated traffic will be less than significant.

Impact TRA-6: Conflict with adopted policies, plans, or programs regarding public transit, bicycle or pedestrian facilities, or otherwise decrease the performance or safety of such facilities

Potential Impact: During construction, slow-moving oversized trucks could potentially disrupt the movement of bicycles traveling on the shoulders along Altamont Pass Road and increase the safety concerns for any bicyclists who use the routes. This roadway is not a County classified bikeway, but it is used as a recreational and inter-regional access route. In addition, lane/road closures occurring during delivery of oversized loads near the work site access points could temporarily disrupt the bicycle access on the road. Therefore, construction would have the potential to significantly affect bicycle access.

Mitigation Measure: The following mitigation measure, discussed in the PEIR in Section 3.15.2, is hereby adopted and will be implemented as provided in the Mitigation Monitoring and Reporting Program.

TRA-1: Develop and implement a construction traffic control plan

Findings: Based on the PEIR and the entire record before the City, the City Council finds the following.

Effects of Mitigation: Implementation of Mitigation Measure TRA-1 will ensure that any impacts that would conflict with adopted policies, plans, or programs regarding public transit, bicycle or pedestrian facilities, or otherwise decrease the performance or safety of such facilities will be mitigated to a less-than-significant level. The applicant will be required to implement the following actions.

TRA-1: Develop and implement a construction traffic control plan

For the text of Mitigation Measure TRA-1, please refer to the discussion of Impact HAZ-7 above.

Remaining Impacts: Any remaining impact that would conflict with adopted policies, plans, or programs regarding public transit, bicycle or pedestrian facilities, or otherwise decrease the performance or safety of such facilities will be less than significant.

1.1 Findings for Cumulative Impacts

State CEQA Guidelines Section 15130 requires the consideration of cumulative impacts in an EIR when a project's incremental effects are cumulatively considerable. Cumulatively considerable "means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects the effects of other current projects and the effects of probable future projects" (CEQA Guidelines Section 15065(a)(3)). In identifying projects that may contribute to cumulative impacts, the State CEQA Guidelines allow the use of a list of past, present, and reasonably anticipated future projects, producing related or cumulative impacts, including those that are outside of the control of the lead agency. The proposed Rooney Ranch Wind Repowering Project's cumulative contribution to various impacts was considered in conjunction with other proposed and approved projects, as set forth in Chapter 5 of the PEIR.

Based on analysis in the PEIR and the entire record before the City, the City Council makes the following findings with respect to the project's cumulatively considerable contribution to potential cumulative impacts.

Cumulatively Considerable Contributions to Potentially Significant Impacts that Cannot be Mitigated to a Less-Than-Significant Level

Aesthetics

Based on the discussion in the PEIR and the entire record before the City, the City finds that the proposed Rooney Ranch Wind Repowering Project's contributions to cumulative impacts on visual character and daytime/nighttime views will be reduced but not rendered less than considerable by Alameda County Policy ECAP 105, together with Mitigation Measures AES-2b, AES-2c, and AES-5, and that therefore the proposed project's contributions to cumulative impacts are significant and unavoidable. There are no other feasible mitigation measures that can reduce these impacts to a less-than-significant level. As more fully explained in the Statement of Overriding Considerations

contained in Exhibit C to the Resolution to which these CEQA Findings are attached, the City finds that there are environmental, economic, or other benefits of the project that override these cumulatively considerable impacts.

Air Quality

Construction emissions of ROG and NO_X for the proposed project are greater than the BAAQMD thresholds after implementation of Mitigation Measures AQ-1 and AQ-2, (see PEIR Table 3.3-11), and therefore the project's contributions to cumulative construction impacts are significant and unavoidable. There are no other feasible mitigation measures that can reduce these impacts to a less-than-significant level. As more fully explained in the Statement of Overriding Considerations contained in Exhibit C to the Resolution to which these CEQA Findings are attached, the City Council finds that there are environmental, economic, or other benefits of the project that override these cumulatively considerable impacts.

Biology

Avian and bat impacts associated with wind projects in the APWRA are significant and unavoidable. Implementation of Mitigation Measures BIO-11a through BIO-11i, include multiple techniques to help avoid, minimize and mitigate impacts, but there are no feasible mitigation measures that can reduce these impacts to a less-than-significant level. As more fully explained in the Statement of Overriding Considerations contained in Exhibit C to the Resolution to which these CEQA Findings are attached, the City Council finds that there are environmental, economic, or other benefits of the project that override these cumulatively considerable impacts.

Transportation/Traffic

Construction of multiple repowering projects simultaneously in the program area and other development and infrastructure projects in the vicinity of the project area could potentially result in cumulative construction traffic impacts on freeways and county roadways used for in common for haul routes and worker access to the project sites. The cumulative construction impacts on traffic operation, safety hazards, emergency access, and bicycle facilities would be similar to the impacts discussed in Section 3.15.2 of the PEIR and are considered to be significant. Implementation of Mitigation Measure TRA-1 would reduce the proposed project's cumulative contribution to the significant impact. However, because the construction activities and associated traffic from the Rooney Ranch project in the program area could result in traffic impacts, any proposed repowering projects with construction activities taking place concurrently with construction of the Rooney Ranch project and that share common access could contribute to a significant and unavoidable cumulative impact on traffic operation, safety hazards, emergency access, and bicycle facilities on the roadway and bicycle facilities in the project vicinity.

There are no other feasible mitigation measures that can reduce these impacts to a less-than-significant level. As more fully explained in the Statement of Overriding Considerations contained in Exhibit C to the Resolution to which these CEQA Findings are attached, the City Council finds that there are environmental, economic, or other benefits of the project that override these cumulatively considerable impacts.

Contributions to Cumulative Impacts that Can be Mitigated to a Less-Than-Significant Level

Biology

The project has the potential to contribute to cumulative biological resource impacts for a variety of resources, but the mitigation proposed will help ensure that impacts are avoided, minimized and mitigated consistent with CEQA. Based on the discussion in the PEIR and the entire record before the City, implementation of the mitigation measures identified in the PEIR will ensure that the proposed project's contributions would not be such that they would result in or contribute to a cumulative impact. The contributions are therefore less than significant.

Cultural Resources

Simultaneous construction of multiple repowering projects in the program area and other development and infrastructure projects in the vicinity of the program area could potentially result in significant impacts on historic resources, archaeological resources, and human remains, should they be present within the program or project area. Based on the discussion in the PEIR and the entire record before the City, implementation of the mitigation measures identified in the PEIR will ensure that the proposed project's contributions would not be such that they would result in or contribute to a cumulative impact. The contributions are therefore less than significant.

Geology, Soils, Mineral Resources, and Paleontological Resources

Construction in a seismically active region puts people and structures at risk from a range of earthquake-related effects, particularly seismic ground shaking and landsliding in the program area. Based on the discussion in the PEIR and the entire record before the City, various mechanisms are in place to reduce seismic-related risk, including mitigation measures identified in the PEIR and project-specific geotechnical investigation and seismic design standards promulgated by the County building codes. The proposed project would not contribute considerably to the existing cumulative impact related to seismic hazards. The geographic scope of potential cumulative effects with respect to paleontological resources is usually limited to areas within the physical footprint of a proposed project. With implementation of the mitigation measures presented in the PEIR, the proposed program would have a less-than-significant contribution to the cumulative impact on paleontological resources.

Hazards and Hazardous Materials

The proposed project, as well as other contributing projects, would be required to adhere to regulations that govern hazardous materials storage and handling, water quality BMPs, FAA regulations related to airspace, and fire prevention and management. Based on the discussion in the PEIR and the entire record before the City, these measures would ensure that impacts related to exposure to hazardous materials would be minimized or avoided. Therefore, the project's incremental, less-than-significant impacts in these areas would not be cumulatively considerable.

Hydrology and Water Quality

Based on the discussion in the PEIR and the entire record before the City, compliance with NPDES requirements and the mitigation measures for hydrology and water quality would result in less-

than-significant impacts associated with implementation of the proposed project. Other projects in the same watersheds would also be required to comply with NPDES requirements, ensuring that significant impacts would not occur.

Noise

The analysis in the PEIR and the information in the entire record before the City indicates that there is potential for the proposed project to generate noise that exceeds County noise standards, resulting in significant cumulative operational noise impacts. Implementation of Mitigation Measure NOI-1, however, would ensure compliance with County noise standards and would avoid significant cumulative operational noise impacts.

Construction of multiple repowering projects simultaneously in the program area could potentially result in a cumulative construction noise impact at residences located near the construction activities. However, the impact would be temporary and localized and implementation of Mitigation Measure NOI-2 would reduce cumulative impacts to a less-than-significant level.

Based on the discussion in the PEIR and the entire record before the City, the City Council finds that the proposed program's contributions to cumulative noise impacts on residences in the area would be less than significant.

No Contribution to a Cumulative Impact

Based on the discussion in Chapter 5 of the PEIR and the entire record before the City, the City Council finds that the proposed Rooney Ranch Wind Repowering Project would not have a cumulatively considerable contribution to the following impact areas.

- Agricultural and forestry resources.
- Greenhouse gases (the program would result in a long-term net reduction of approximately 96,049 metric tons of CO_2e per year).
- Land use and planning.
- Population and housing.
- Public services.
- Recreation.
- Utilities and service systems.

Findings for Alternatives Considered in the PEIR

Section 15091(a)(3) of the State CEQA Guidelines requires findings about the feasibility of project alternatives whenever a project within the responsibility and jurisdiction of the lead agency will have a significant environmental effect that has not been mitigated to a less-than-significant level.

Identification of Project Objectives

The underlying purpose of the Project is to repower an existing wind project on two parcels owned by the City, within the Program Area, to develop a 25.1MW commercially viable wind energy facility that would deliver renewable energy to the grid and help meet the state's RPS, GHG reduction, and carbon neutrality goals.

The fundamental objectives of the Project are:

- To satisfy existing Power Purchase Agreements by siting up to seven fourth-generation wind turbines on lands within the Program Area; and
- To maintain commercial viability.

The secondary objectives of the Project are:

- To minimize environmental impacts by:
    - Limiting ground disturbance through the re-use of existing infrastructure (e.g., roads, transmission lines) where feasible; and
    - Improving current understanding of the effects of new generation turbines on birds and bats by applying the same avian mortality monitoring protocol applied in the Program Area to the project area, rather than introducing a separate protocol.
- To increase local short-term and long-term employment opportunities;
- To provide economic benefits to Alameda County and the City; and
- To assist California in meeting its RPS, GHG reduction, and carbon neutrality goals.

Alternatives Analyzed in the PEIR

The State CEQA Guidelines state that the "range of potential alternatives to the proposed project shall include those that could feasibly accomplish most of the basic purposes of the project and could avoid or substantially lessen one or more of the significant effects" of the project. In addition, the PEIR must examine the No Project alternative. The City evaluated the alternatives listed below.

- No Project
- No Repowering
- Avoid Specific Biologically Sensitive / Constrained Areas
- No New Roads

No Project

Under the No Project alternative, the Project site would not be repowered. However, because of the site's unique wind resources, location within the Program Area, and proximity to existing transmission lines and substations, it is reasonable to expect, based on current plans and consistent with available infrastructure, that the project site would be repowered in the foreseeable future by another wind company per Guidelines 15126.6(e)(2).

Finding: Based on the PEIR and the entire record before the City, the City rejects the No Project alternative as infeasible because it would not meet most of the objectives of the project.

Explanation: The No Project alternative would fail to meet the following project objectives and is therefore rejected as infeasible.

- *Fundamental objective:* to satisfy existing Power Purchase Agreements by siting up to seven fourth-generation wind turbines on lands within the Program Area. The alternative would not meet this fundamental objective because it would not allow the proposed Project.
- *Fundamental objective:* maintain commercial viability through repowering. This alternative would not allow the Project, thereby rendering the Project commercially unviable.
- *Specific objective:* limit ground disturbance through the re-use of existing infrastructure (e.g., roads, transmission lines) where feasible. This objective cannot be met if the Project is not approved.
- *Specific objective:* improve current understanding of the effects of new generation turbines on birds and bats by applying the same avian mortality monitoring protocol applied in the Program Area to the project area, rather than introducing a separate protocol. This objective cannot be met if the Project is not approved.
- *Specific objective:* to increase local short-term and long-term employment opportunities. This objective cannot be met if the Project is not approved.
- *Specific objective:* to provide economic benefits to Alameda County and the City. This objective cannot be met if the Project is not approved.
- *Specific objective:* assist California in meeting its RPS, GHG reduction, and carbon neutrality goals. This objective cannot be met if the Project is not approved.

No Repowering

Under the No Repowering alternative, no new repowered turbines would be installed and the project area would be restored to pre-permit conditions with a prohibition against further development of wind turbines.

Finding: Based on the PEIR and the entire record before the City, the City rejects the No Repowering alternative as infeasible because it would not meet most of the objectives of the project.

Explanation: The No Repowering alternative would fail to meet the following project objectives and is therefore rejected as infeasible.

- *Fundamental objective:* to satisfy existing Power Purchase Agreements by siting up to seven fourth-generation wind turbines on lands within the Program Area. The alternative would not meet this fundamental objective because it would not allow for repowering.
- *Fundamental objective:* maintain commercial viability through repowering. Because no repowering would occur under this alternative, it will not facilitate wind energy production through repowering and therefore commercial viability will not be maintained.
- *Specific objective:* limit ground disturbance through the re-use of existing infrastructure (e.g., roads, transmission lines) where feasible. This objective cannot be met if repowering does not occur.
- *Specific objective:* improve current understanding of the effects of new generation turbines on birds and bats by applying the same avian mortality monitoring protocol applied in the Program

Area to the project area, rather than introducing a separate protocol. This objective cannot be met if repowering does not occur.

- *Specific objective:* to increase local short-term and long-term employment opportunities. This objective cannot be met if repowering does not occur.
- *Specific objective:* to provide economic benefits to Alameda County and the City. This] cannot be met if repowering does not occur.
- *Specific objective:* assist California in meeting its RPS, GHG reduction, and carbon neutrality goals. This objective cannot be met if repowering does not occur.

Fewer New Turbines Alternative

Under this alternative, there would be fewer new turbines and a smaller nameplate capacity than under the proposed Project. The Project area boundaries would be the same as under the proposed Project and all existing turbines would be decommissioned.

Finding: Based on the PEIR and the entire record before the City, the City rejects the Fewer New Turbines alternative as infeasible because it would not meet several of the Project's specific objectives.

Explanation: The Fewer New Turbines alternative would fail to meet the following project objectives and is therefore rejected as infeasible.

- *Fundamental objective:* to satisfy existing Power Purchase Agreements by siting up to seven fourth-generation wind turbines on lands within the Program Area. The alternative would not meet this fundamental objective because it would not allow for repowering to the full level of capacity required to satisfy existing Power Purchase Agreements.
- *Fundamental objective:* maintain commercial viability through repowering. The alternative would not meet this fundamental objective because further reductions of a project of this relatively small size would render the project commercially infeasible.
- *Specific objective:* to increase local short-term and long-term employment opportunities. The Fewer New Turbines alternative would reduce the project's contribution to local short-term and long-term employment opportunities.
- *Specific objective:* to provide economic benefits to Alameda County and the City. The Fewer New Turbines alternative would reduce the project's contribution to economic benefits to Alameda County and the City.
- *Specific objective:* assist California in meeting its RPS, GHG reduction, and carbon neutrality goals. The Fewer New Turbines alternative would reduce the project's ability to meet this objective.

Avoid Specific Biologically Sensitive / Constrained Areas Alternative

This alternative would prescribe a turbine layout that would avoid the construction of new roads traversing biologically sensitive or constrained areas. New turbines would be sited so that no damaging new roads would be needed. This alternative's perimeter and the total maximum number of wind turbines would be the same as under the proposed Project.

Finding: Based on the PEIR and the entire record before the City, the City rejects the Avoid Specific Biologically Sensitive / Constrained Areas alternative as infeasible because it would not with a high degree of certainty avoid or substantially reduce the significant and unavoidable impacts of the proposed Project. The already small number of turbines and small project area under the proposed Project also limits the ability to implement significant avoidance of biologically sensitive/constrained areas.

Explanation: The No Repowering, Full Decommissioning alternative would fail to substantially reduce the following significant and unavoidable impacts.

- *Air Quality:* The Avoid Specific Biologically Sensitive / Constrained Areas alternative would have basically the same air quality impacts as the proposed Project. It would not avoid or substantially reduce the following significant and unavoidable impacts: AQ-2b and AQ-2a-2, and AQ-3b and AQ-3a-2.
- *Biological Resources:* This alternative would have basically the same impacts on biological resources as the proposed Project, with the exception of construction impacts related to new road installation. It would not avoid or substantially reduce the following significant and unavoidable impacts: BIO-11b and BIO-11a-2, BIO-14b and BIO-14a-2and BIO-19b and BIO-19a-2.

No New Roads Alternative

This alternative would entail the same number of turbines in the same project area as the proposed Project. However, no new road improvements would be made. Larger and longer trucks and cranes would be required for transport and installation of repowered turbine components than could be accommodated by the existing site roads. Because the existing roads cannot accommodate the trucks required for construction of the repowered wind turbines, helicopters would be used to transport large equipment and turbine components to project sites for construction.

Finding: Based on the PEIR and the entire record before the City, the City rejects the No New Roads alternative as infeasible because it would not with a high degree of certainty avoid or substantially reduce the significant and unavoidable impacts of the proposed Project. Further, it would result in significant effects that exceed the effects of the proposed Project.

Explanation: The No New Roads alternative would fail to substantially reduce the following significant and unavoidable impacts.

- *Air Quality:* The Avoid Specific Biologically Sensitive / Constrained Areas alternative would have greater air quality impacts as the proposed Project. Therefore, it would not avoid or substantially reduce the following significant and unavoidable impacts: AQ-2b and AQ-2a-2, and AQ-3b and AQ-3a-2.
- *Biological Resources:* This alternative would have basically the same impacts on biological resources as the proposed Project, with the exception of construction impacts related to new road installation, which impacts would be reduced to a less-than-significant level through mitigation. Therefore, the alternative would not avoid or substantially reduce the following significant and unavoidable impacts: BIO-11b and BIO-11a-2, BIO-14b and BIO-14a-2and BIO-19b and BIO-19a-2.

The No New Roads alternative would result in greater impacts than the proposed Project in the following resource areas.

- *Aesthetics:* This alternative would involve the use of helicopters to transport large equipment and turbine components to project sites for construction. The highly sensitive viewers in the project area (i.e., residents and recreationists) could perceive the presence of helicopters as a greater visual impact than would occur under the proposed Project.
- *Air Quality:* Emissions from helicopter use would be substantially higher than the proposed Project's emissions from road construction and truck trips. The Project's construction emissions are significant and unavoidable; the No New Roads alternative would worsen the severity of that impact.
- *Noise:* The repeated use of large helicopters during construction of the project would be substantially louder than noise generated by road improvements and truck trips. These additional noise impacts would disturb nearby sensitive receptors and could significantly disrupt wildlife behavior patterns such as breeding, feeding or sheltering.

Findings and Recommendations Regarding Significant Irreversible Changes

CEQA Section 21100(b)(2)(B) requires that an EIR identify any significant effect on the environment that would be irreversible if the project were implemented. Section 15126.2(c) of the State CEQA Guidelines characterizes irreversible environmental changes as those involving a large commitment of nonrenewable resources or irreversible damage resulting from environmental accidents. The State CEQA Guidelines describe three distinct categories of significant irreversible changes: changes in land use that would commit future generations to specific uses, irreversible changes from environmental actions, and consumption of nonrenewable resources. The program's significant and irreversible changes are discussed in Section 5.3 of the PEIR.

Findings: Based on the PEIR and the entire record before the City, the City Council finds that the Rooney Ranch Wind Repowering Project would not result in any significant irreversible effect on the environment.

Explanation: The project area has historically been developed as a windfarm, with coexisting grazing activities that would continue. The *East County Area Plan* designates the entire program area as Large Parcel Agriculture, which carries a zoning designation of Agriculture. Chapter 17.06.040 of the Alameda County Code of Ordinances indicates that privately owned wind facilities are a conditionally permitted use on non-prime farmland within the Agriculture zoning district. The proposed project would not commit future generations to, or introduce, changes in land use that would vary from the existing conditions.

The proposed project will result in the removal of some existing foundations and the construction and repowering of an existing windfarm on approximately 580 acres in unincorporated eastern Alameda County. These activities are not expected to alter or affect the coexisting grazing uses, nor are they expected to result in environmental accidents that would cause irreversible damage. Compliance with required plans, such as the Altamont Pass Wind Farms Fire Requirements, will minimize the potential for accidents that could result in environmental damage. No irreversible changes to the project area would occur as a result of the proposed project.

Construction of a repowered windfarm would require the consumption of nonrenewable resources, such as fuel for construction vehicles and equipment. However, such use would be limited to the

short-term construction period. Operation and maintenance of the proposed project would not increase the use of nonrenewable resources relative to existing conditions. The temporary, construction-related increase would not result in significant use of nonrenewable resources and would not commit future generations to similar uses. Moreover, a primary objective of the proposed project is to provide an economically viable source of clean, renewable electricity generation that meets California's growing demand for power and fulfills numerous state and national renewable energy policies. The intent is to specifically reduce net consumption of nonrenewable sources of energy such as coal, natural gas, and other hydrocarbon-based fuels.

Findings and Recommendations Regarding Growth-Inducing Impacts

Section 15126.2(d) of the State CEQA Guidelines states that an EIR should discuss "…the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment." The State CEQA Guidelines do not provide specific criteria for evaluating growth inducement and state that growth in any area is not "necessarily beneficial, detrimental, or of little significance to the environment" (State CEQA Guidelines Section 15126.2[d]). CEQA does not require separate mitigation for growth inducement, as it is assumed that these impacts are already captured in the analysis of environmental impacts. Furthermore, Section 15126.2(d) of the State CEQA Guidelines requires that an EIR "discuss the ways" a project could be growth inducing and to "discuss the characteristic of some projects which may encourage and facilitate other activities that could significantly affect the environment."

Growth can be induced in a number of ways, such as elimination of obstacles to growth, stimulation of economic activity within the region, and precedent-setting action such as the provision of new access to an area or a change in a restrictive zoning or general plan land use designation. In general, a project could be considered growth-inducing if it directly or indirectly affects the ability of agencies to provide needed public services, or if it can be demonstrated that the potential growth significantly affects the environment in some other way. However, the State CEQA Guidelines do not require a prediction or speculation of where, when, and in what form such growth would occur (State CEQA Guidelines, Section 15145). The program's growth-inducing impacts are discussed in Section 5.2 of the PEIR.

Findings: Based on the PEIR and the entire record before the City, the City Council finds that the proposed program would not induce growth for the following reasons.

Although the proposed project involves the construction of new wind turbines, this follows a commensurate removal of old turbines. Consequently, it would not substantially change the installed electrical generation capacity of the APWRA. Therefore, the project would not be expected to indirectly induce population growth through the provision of substantial new supplies of electrical energy.

Typically, the growth-inducing potential of a project is considered significant if it fosters growth or a concentration of population in a different location or in excess of what is assumed in relevant general plans or land use plans, or projections made by regional planning agencies, such as the Association of Bay Area Governments. As discussed in PEIR Section 3.12, *Population and Housing*,

the Rooney Ranch project does not include the construction or demolition of any housing, and so would not have a direct impact on population or housing growth. Furthermore, 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.

Decommissioning and construction activities would result in a short-term increase in construction-related job opportunities in the Alameda County region. However, construction workers can be expected to be drawn from the existing construction employment labor force. The limited, short-term opportunities provided by decommissioning and construction would be unlikely to result in the relocation of construction workers to the program region. Therefore, the employment opportunities provided by construction are not anticipated to induce indirect growth in the region.

Findings and Recommendations Regarding Energy Consumption

In order to ensure that energy implications are considered in project decisions, CEQA requires a discussion of the potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy (see Public Resources Code section 21100(b)(3)). According to Appendix F of the State CEQA Guidelines, the goal of conserving energy implies the wise and efficient use of energy including: (1) decreasing overall per capita energy consumption, (2) decreasing reliance on fossil fuels, and (3) increasing reliance on renewable energy sources.

Findings: The project would help achieve this goal because it would develop a renewable source of power, helping to offset the use of nonrenewable resources and contribute to an overall reduction of nonrenewable resources currently used to generate electricity. In addition, the Section 3.7, *Greenhouse Gas Emissions*, of the PEIR describes effects on greenhouse gas emissions that would be caused by implementation of the APWRA repowering, including a program-level discussion of the effects on energy resources. Sections 3.3, *Air Quality*, and Section 3.15, *Transportation/Traffic*, of the PEIR also discuss energy-consuming equipment and vehicle trips required under the program alternatives. The Rooney Ranch project falls within the scope of these sections of the PEIR.

In the absence of the project, other power plants, both renewable and nonrenewable, may have to be constructed to serve the demand for electricity and to meet the California RPS. Existing gas-fired plants may operate longer in order to meet the demand for energy. The impacts of these other facilities may be similar to those of the project because they require land areas comparable in size and impose environmental impacts comparable in degree to those required for the project, whether for energy production or fuel extraction. Additionally, the environmental impacts of developing transmission capacity for such other power plants may be greater, especially where no transmission capacity exists or where energy production cannot be geographically concentrated to minimize the number of new transmission lines needed.

If the project were not built, California utilities would not receive the 25.1 MW contribution to the renewable state-mandated energy portfolio. The project is expected to generate renewable energy annually over its expected 30-year lifetime, a small but significant portion of the necessary new

generation required to meet the goals of the RPS. In addition to contributing to renewable energy generation, specific mitigation measures of the PEIR that would conserve energy include the following.

- AQ-2b: Reduce construction-related air pollutant emissions by implementing applicable BAAQMD Basic Construction Mitigation Measures
- GHG-2a: Implement best available control technology for heavy-duty vehicles
- GHG-2b: Install low SF_6 leak rate circuit breakers and monitoring
- GHG-2c: Require new construction to use building materials containing recycled content

Compliance with the mitigation measures identified in the PEIR would ensure that the project would not involve wasteful, inefficient, or unnecessary consumption of energy and therefore would not create significant adverse direct, indirect or cumulative effects upon energy supplies or resources, require additional sources of energy supply, or consume energy in a wasteful or inefficient manner.

Findings and Recommendations Regarding Water Supply

Senate Bill 610 requires the preparation of a water supply assessment (WSA) for any project that is subject to CEQA and meets certain requirements. A WSA associated with a project must include a discussion of the availability of an identified water supply under normal-year, single-dry-year, and multiple-dry-year conditions over a 20-year projection, accounting for the projected water demand of the project in addition to other existing and planned future uses of the identified water supply.

Findings: The WSA referenced in the Environmental Analysis, (Section 2.5.8, *Water and Wastewater Needs*) was prepared in accordance with the requirements of Water Code Section 10910 et seq. Based on the whole record, the WSA demonstrates with substantial evidence and reasonable analysis that water supplies will be sufficient to satisfy the demands of the project, in addition to existing and planned uses, and is consistent with the adopted plans and policies of the City.

Exhibit B

Rooney Ranch Wind Repowering Project Mitigation Monitoring and Reporting Program

Purpose of and Need for Monitoring

In compliance with CEQA, a program EIR (PEIR) was prepared and certified (November 12, 2014) for the repowering of the Altamont Pass Wind Resource Area (APWRA); the proposed Rooney Ranch Wind Repowering Project is consistent with the APWRA Repowering Program and tiers from that PEIR. Significant impacts of the Rooney Ranch project are therefore mitigated through implementation of mitigation measures identified in the APWRA PEIR, as applicable. This Mitigation Monitoring and Reporting Program (MMRP) is required as a condition of approval of the requested Notice to Proceed (NTP) to construct and operate the repowered Rooney Ranch wind energy facility. The *Implementation Checklist* prepared for the proposed project identified potentially significant impacts in the resource areas listed below, as well as mitigation measures to reduce these impacts to a less-than-significant level where possible.

Significant impacts pertaining to the following resource areas would be reduced to a less-than-significant level by mitigation measures identified in the PEIR.

- Aesthetics
- Exposure of sensitive receptors to substantial air pollutant concentrations during construction
- Biological resources other than birds and bats
- Cultural resources
- Geology, soils, mineral resources, and paleontological resources
- Conflicts with applicable plans, policies, or regulations adopted for the purpose of reducing the emissions of greenhouse gases
- Hazards
- Water quality
- Construction traffic

Impacts that cannot be reduced to less-than-significant levels, even with implementation of mitigation measures identified in the PEIR, are listed below.

- Air quality impacts associated with construction
- Impacts on avian species, including raptors, and bats

As noted in the *Implementation Checklist*, many of the studies and analyses specified in this MMRP are required prior to ground-disturbing activities and are expected to have substantial effects on siting decisions, project layout, and the ultimate number and possibly type of wind turbine selected. Several of these studies have been completed and are included in the Checklist Supporting Information. The following preconstruction studies and analyses required by this MMRP have been implemented as part of the project's CUP application submittal.

- **Mitigation Measure BIO-3a: Conduct preconstruction surveys for habitat for special status wildlife species.**

  A *Biological Resources Technical Report* prepared for the Rooney Ranch project is attached to the *Environmental Analysis* as Appendix B.

- **Mitigation Measure CUL-2a: Conduct a preconstruction cultural field survey and cultural resources inventory and evaluation.**

  A *Cultural Resources Survey Report* completed for the Rooney Ranch project was attached (in part) to the *Environmental Analysis* as Appendix C. (The complete contents remain confidential to protect resources that have been identified.)

- **Mitigation Measure NOI-1: Perform project-specific noise studies and implement measures to comply with County noise standards for adverse noise impacts due to wind turbine operations.**

  Preconstruction noise studies completed for the proposed project are attached to the *Environmental Analysis* as Appendix D.

CEQA requires that a lead agency adopt an MMRP) for the measures the agency has proposed to avoid or mitigate significant environmental effects (CEQA Guidelines Section 15097). The purpose of this MMRP is to ensure that the applicable PEIR mitigation measures identified in the APWRA *Implementation Checklist* are implemented for this tiered project, and to identify who is responsible for their implementation.

Table MMRP-1, which follows this introductory section, identifies the PEIR mitigation measures required for the proposed Rooney Ranch Wind Repowering Project, the parties responsible for implementing and monitoring the measures, the timing of each measure, and a summary of the actions necessary to implement and monitor each measure.

Mitigation Monitoring and Reporting Program

The MMRP has been prepared for the proposed project in accordance with Public Resources Code 21081.6, which specifies that when a public agency makes findings required by paragraph (1) of subdivision (a) of Section 21081, it "shall adopt a reporting or monitoring program for the changes made to the project or conditions of project approval, adopted in order to mitigate or avoid significant effects on the environment." Public Resources Code 21081.6 further specifies that the MMRP will "ensure compliance during project implementation."

This MMRP is intended to ensure the effective implementation of mitigation measures that are within the City of Santa Clara's authority to implement, including monitoring where identified, throughout all phases of development and operation of the proposed program.

Table MMRP-1. Mitigation Monitoring and Reporting Program

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
Aesthetics				
Mitigation Measure AES-1: Limit construction to daylight hours Major construction activities will not be undertaken between sunset and sunrise or on weekends. Construction activity is specifically prohibited from using high-wattage lighting sources to illuminate work sites after sunset and before sunrise, with the exception of nighttime deliveries under the approved transportation control plan or other construction activities that require nighttime work for safety considerations.	During construction	City—adopt a Condition of Approval; Operator—ensure construction hours are maintained	City	Monitor compliance with Conditions of Approval
Mitigation Measure AES-2b: Maintain site free of debris and restore abandoned roadways Project sites will be cleaned of all derelict equipment, wind turbine components not required for the project, and litter and debris from old turbines and past turbine operations. Such litter and debris may include derelict turbines, obsolete anemometers, unused electrical poles, and broken turbine blades. In addition, abandoned roads that are no longer in use on such parcels will be restored and hydroseeded to reclaim the sites and remove their visual traces from the viewscape, except in cases where the resource agencies (USFWS and CDFW) recommend that the features be left in place for resource protection. All parcels with new turbines will be maintained in such a manner through the life of project operations and until the parcels are reclaimed in accordance with the approved reclamation plan.	During construction and operation	City—adopt a Condition of Approval; Operator—ensure that site conditions are maintained as required	City	Monitor compliance with Conditions of Approval
Mitigation Measure AES-2c: Screen surplus parts and materials Surplus parts and materials that are kept onsite will be maintained in a neat and orderly fashion and screened from view. This can be accomplished by using a weatherproof camouflage material that can be draped over surplus parts and materials stockpiles. Draping materials will be changed out to accommodate for seasonal variations so that surplus materials are camouflaged in an effective manner when grasses are both green and brown.	During construction and operation	City—adopt a Condition of Approval; Operator—ensure that site conditions are maintained as required	City	Monitor compliance with Conditions of Approval

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
Mitigation Measure AES-5: Analyze shadow flicker distance and mitigate effects or incorporate changes into project design to address shadow flicker Where shadow flicker could result from the installation of wind turbines proposed near residences (i.e., within 500 meters [1,640 feet] in a generally east or west direction to account for all seasons), the project applicant will prepare a graphic model and study to evaluate shadow flicker impacts on nearby residences. No shadow flicker in excess of 30 minutes in a given day or 30 hours in a given year will be permitted. If it is determined that existing setback requirements as established by the County are not sufficient to prevent shadow flicker impacts on residences, the City will require an increase in the required setback distances to ensure that residences are not affected. If any residence is nonetheless affected by shadow flicker within the 30-minute/30-hour thresholds, the applicant will implement measures to minimize the effect, such as relocating the turbine; providing opaque window coverings, window awnings, landscape buffers, or a combination of these features to reduce flicker to acceptable limits for the affected receptor; or shutting down the turbine during the period shadow flicker would occur. Such measures will be undertaken in consultation with the owner of the affected residence. If the shadow flicker study indicates that any given turbine would result in shadow flicker exceeding the 30-minute/30-hour thresholds and the property owner is not amenable to window coverings, window awnings, or landscaping and the turbine cannot be shut down during the period of shadow flicker, then the turbine will be relocated to reduce the effect to acceptable limits.	During project design	City—adopt a Condition of Approval; Operator—ensure that thresholds are maintained as required	City	Monitor compliance with Conditions of Approval
Air Quality				
Mitigation Measure AQ-2a: Reduce construction-related air pollutant emissions by implementing applicable BAAQMD Basic Construction Mitigation Measures The project proponents will require all contractors to comply with the following requirements for all areas with active construction activities. • All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) will be watered as needed to maintain dust control onsite—approximately two times per day. • All haul trucks transporting soil, sand, or other loose material offsite will be covered.	During construction	City—adopt a Condition of Approval; Operator—ensure compliance	City	Monitor compliance with Conditions of Approval

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
• All visible mud or dirt track-out onto adjacent public roads will be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited. • All vehicle speeds on unpaved roads will be limited to 15 mph. • All roadways, driveways, and sidewalks to be paved will be completed as soon as possible. Building pads will be laid as soon as possible after grading unless seeding or soil binders are used. • Idling times will be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage will be provided for construction workers at all access points. • All construction equipment will be maintained and properly tuned in accordance with manufacturer's specifications. All equipment will be checked by a certified visible emissions evaluator. • Post a publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints. This person will respond and take corrective action within 48 hours. The air district's phone number will also be visible to ensure compliance with applicable regulations.				
Mitigation Measure AQ-2b: Reduce construction-related air pollutant emissions by implementing measures based on BAAQMD's Additional Construction Mitigation Measures The project proponents will require all contractors to comply with the following requirements for all areas with active construction activities. • During construction activities, all exposed surfaces will be watered at a frequency adequate to meet and maintain fugitive dust control requirements of all relevant air quality management entities. • All excavation, grading, and/or demolition activities will be suspended when average wind speeds exceed 20 mph, as measured at the Livermore Municipal Airport. • Wind breaks (e.g., trees, fences) will be installed on the windward side(s) of actively disturbed areas of construction. Wind breaks should have at maximum 50% air porosity.	During construction	City—adopt a Condition of Approval; Operator—ensure compliance	City	Monitor compliance with Conditions of Approval

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
• Vegetative ground cover (e.g., fast-germinating native grass seed) will be planted in disturbed areas as soon as possible and watered appropriately until vegetation is established. • If feasible and practicable, the simultaneous occurrence of excavation, grading, and ground-disturbing construction activities on the same area at any one time will be limited. • Construction vehicles and machinery, including their tires, will be cleaned prior to leaving the construction area to remove vegetation and soil. Cleaning stations will be established at the perimeter of the construction area. • Site accesses to a distance of 100 feet from the paved road will be treated with a 6 to 12 inch compacted layer of wood chips, mulch, or gravel. • Sandbags or other erosion control measures will be installed to prevent silt runoff to public roadways from sites with a slope greater than 1%. • The idling time of diesel powered construction equipment will be minimized to 2 minutes. • The project will develop a plan demonstrating that the offroad equipment (more than 50 horsepower) to be used in the construction project (i.e., owned, leased, and subcontractor vehicles) would achieve a project wide fleet-average 20% NO_X reduction and 45% PM reduction compared to the most recent ARB fleet average. Acceptable options for reducing emissions include the use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, add-on devices such as particulate filters, and/or other options as such become available. • Use low VOC (i.e., ROG) coatings beyond the local requirements (i.e., Regulation 8, Rule 3: Architectural Coatings). • All construction equipment, diesel trucks, and generators will be equipped with BACT for emission reductions of NO_X and PM. • All contractors will use equipment that meets ARB's most recent certification standard for offroad heavy duty diesel engines. Implementation of Mitigation Measures AQ-2a and AQ-2b would ensure that impacts related to fugitive dust emissions in the SFBAAB would be less than significant. However, implementation of these measures would not reduce total ROG or NO_X emissions to a less-than-significant level (Table 3.3-11). This impact of total ROG and NO_X emissions would be significant and unavoidable.				

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
Mitigation Measures AQ-2a and AQ-2b would not reduce the onroad emissions in the SJVAB shown in Table 3.3-7, but these emissions would not exceed SJVAPCD's significance thresholds and are, therefore, less than significant.				
Biological Resources				
Mitigation Measure BIO-1a: Conduct surveys to determine the presence or absence of special-status plant species Project proponents will conduct surveys for the special-status plant species within and adjacent to all project sites. All surveys will be conducted by qualified biologists in accordance with the appropriate protocols. Special-status plant surveys will be conducted in accordance with *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (California Department of Fish and Game 2009) during the season that special-status plant species would be evident and identifiable—i.e., during their blooming season. No more than 3 years prior to ground-disturbing repowering activities and during the appropriate identification periods for special-status plants (Table 3.4-4), a qualified biologist (as determined by the City) will conduct field surveys within decommissioning work areas, proposed construction areas, and the immediately adjacent areas to determine the presence of habitat for special-status plant species. The project proponent will submit a report documenting the survey results to the City for review and approval prior to conducting any repowering activities. The report will include the location and description of all proposed work areas, the location and description of all suitable habitat for special-status plant species, and the location and description of other sensitive habitats (e.g., vernal pools, wetlands, riparian areas). Additionally, the report will outline where additional species and/or habitat-specific mitigation measures are required. This report will provide the basis for any applicable permit applications where incidental take of listed species may occur.	Prior to site disturbance	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval
Mitigation Measure BIO-1b: Implement best management practices to avoid and minimize impacts on special-status species Project proponents will ensure that the following BMPs, in accordance with practices established in the EACCS, will be incorporated into individual project design and construction documents. • Employees and contractors performing decommissioning and reclamation activities will receive environmental sensitivity training. Training will include	Prior to and during all site disturbance	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
review of environmental laws, mitigation measures, permit conditions, and other requirements that must be followed by all personnel to reduce or avoid effects on special-status 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. • Vehicles and equipment will be parked on pavement, existing roads, and previously disturbed areas to the extent practicable. • Offroad vehicle travel will be avoided. • 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. • Prior to ground-disturbing activities in sensitive habitats, project construction boundaries and access areas will be flagged and temporarily fenced during construction to reduce the potential for vehicles and equipment to stray into adjacent habitats. • 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. • 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. • Significant earth moving-activities will not be conducted in riparian areas within 24 hours of predicted storms or after major storms (defined as 1-inch of rain or more). The following will not be allowed at or near work sites for project activities: trash dumping, firearms, open fires (such as barbecues) not required by the activity, hunting, and pets (except for safety in remote locations).				

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
Mitigation Measure BIO-1c: Avoid and minimize impacts on special-status plant species by establishing activity exclusion zones Where surveys determine that a special-status plant species is present in or adjacent to a project area, direct and indirect impacts of the project on the species will be avoided through the establishment of activity exclusion zones, within which no ground-disturbing activities will take place, including construction of new facilities, construction staging, or other temporary work areas. Activity exclusion zones for special-status plant species will be established around each occupied habitat site, the boundaries of which will be clearly marked with standard orange plastic construction exclusion fencing or its equivalent. The establishment of activity exclusion zones will not be required if no construction-related disturbances will occur within 250 feet of the occupied habitat. The size of activity exclusion zones may be reduced through consultation with a qualified biologist and with concurrence from CDFW based on site-specific conditions.	Prior to and during all site disturbance	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval
Mitigation Measure BIO-1d: Compensate for impacts on special-status plant species All project proponents will avoid or minimize temporary and permanent impacts on special-status plants that occur on project sites and will compensate for impacts on special-status plant species. Although all impacts on large-flowered fiddleneck, diamond-petaled California poppy, and caper-fruited tropidocarpum will be avoided, impacts on other special-status plant species will be avoided to the extent feasible, and any unavoidable impacts will be addressed through compensatory mitigation. Where avoidance of impacts on a special-status plant species is infeasible, loss of individuals or occupied habitat of a special-status plant species occurrence will be compensated for through the acquisition, protection, and subsequent management in perpetuity of other existing occurrences at a 2:1 ratio (occurrences impacted: occurrences preserved). The project proponent will provide detailed information to the City and CDFW on the location of the preserved occurrences, quality of the preserved habitat, feasibility of protecting and managing the areas in-perpetuity, responsibility parties, and other pertinent information. If suitable occurrences of a special-status plant species are not available for preservation, then the project will be redesigned to remove features that would result in impacts on that species.	Prior to and during all site disturbance	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
Mitigation Measure BIO-1e: Retain a biological monitor during ground-disturbing activities in environmentally sensitive areas All project proponents will retain a qualified biologist (as determined by the City) to conduct periodic monitoring of decommissioning, repowering, and reclamation activities that occur adjacent to sensitive biological resources (e.g., special-status species, sensitive vegetation communities, wetlands). Monitoring will occur during initial ground disturbance where sensitive biological resources are present and weekly thereafter or as determined by the City in coordination with a qualified biologist. 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 the project proponent or its contractors maintain exclusion areas adjacent to sensitive biological resources, and for documenting compliance with all biological resources– related mitigation measures.	During all site disturbance	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval
Mitigation Measure BIO-2: Prevent introduction, spread, and establishment of invasive plant species To avoid and minimize the introduction and spread of invasive nonnative plant species, all project proponents will implement the following BMPs. • Construction vehicles and machinery will be cleaned prior to entering the construction area to remove vegetation and soil. Cleaning stations will be established at the perimeter of the construction area or at a nearby offsite location (no more than 1 mile from the project construction entry point). • 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, as allowed by state and federal regulation of stormwater runoff. In addition, the project proponents will prepare and implement erosion and sediment control plans to control short-term and long-term erosion and sedimentation effects and to restore soils and vegetation in areas affected by construction activities (Mitigation Measures BIO-1b and WQ-1). Prior to initiating any construction activities that will result in temporary impacts on natural communities, a restoration and monitoring plan will be developed for temporarily affected habitats in each project area (Mitigation Measure BIO-5c). Restoration and monitoring plans will be submitted to the City and CDFW for approval. These plans	During all site disturbance	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
will include methods for restoring soil conditions and revegetating disturbed areas, seed mixes, monitoring and maintenance schedules, adaptive management strategies, reporting requirements, and success criteria. Following completion of project construction, the project proponents will implement the revegetation plans to restore areas disturbed by project activities to a condition of equal or greater habitat function than occurred prior to the disturbance.				
Mitigation Measure BIO-3a: Conduct preconstruction surveys for habitat for special-status wildlife species No more than 3 years prior to ground-disturbing repowering activities, a qualified biologist (as determined by the City) will conduct field surveys within decommissioning, repowering, and restoration work areas and their immediate surroundings to determine the presence of habitat for special-status wildlife species. The project proponent will submit a report documenting the survey results to the City for review prior to conducting any repowering activities. The report will include the location and description of all proposed work areas, the location and description of all suitable habitat for special-status wildlife species, and the location and description of other sensitive habitats (e.g., vernal pools, wetlands, riparian areas). Additionally, the report will outline where additional species- and/or habitat-specific mitigation measures are required. This report may provide the basis for any applicable permit applications where incidental take may occur.	Prior to and during all site disturbance	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval
Mitigation Measure BIO-3b: Implement measures to avoid, minimize, and mitigate impacts on vernal pool branchiopods and curved-footed hygrotus diving beetle Where suitable habitat for listed vernal pool branchiopods and curved-footed hygrotus diving beetle are identified within 250 feet (or another distance as determined by a qualified biologist based on topography and other site conditions) of proposed work areas, the following measures will be implemented to ensure that the repowering projects do not have adverse impacts on listed vernal pool branchiopods or curved-footed hygrotus diving beetle. These measures are based on measures from the EACCS, with some modifications and additions. Additional conservation measures or conditions of approval may be required in applicable project permits (e.g., ESA incidental take permit). • Avoid all direct impacts on sandstone rock outcrop vernal pools.	During construction and operation	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
• Ground disturbance will be avoided from the first day of the first significant rain (1 inch or more) 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 (or ponds), sandstone pools, or roadside ditches are present within 250 feet of the work area (or another appropriate distance as determined by a qualified biologist on the basis of topography and other site conditions), the biologist will stake and flag an exclusion zone prior to construction activities. The width of the exclusion zone will be based on site conditions and will be the maximum practicable distance that ensures protection of the feature from direct and indirect effects of the project. Exclusion zones will be established around features whether they are wet or dry at the time. The exclusion zone will be fenced with orange construction zone and erosion control fencing (to be installed by construction crew). • 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 allowed. • Avoid modifying or changing the hydrology of aquatic habitats. • Minimize the work area for stream crossings and conduct work during the dry season (June 1 through the first significant rain of the fall/winter). • Install utility collection lines across perennial creeks by boring under the creek. Where impacts cannot be avoided or minimized, compensatory mitigation will be undertaken in accordance with mitigation ratios and requirements developed under the EACCS (Appendix C). In the event that an incidental take permit is required, compensatory mitigation will be undertaken in accordance with the terms of the permit in consultation with USFWS.				
Mitigation Measure BIO-5a: Implement best management practices to avoid and minimize effects on special-status amphibians All project proponents will ensure that BMPs and other appropriate measures, in accordance with measures developed for the EACCS, be incorporated into the appropriate design and construction documents. *Implementation of some of these measures will require that the project proponent obtain incidental take permits from USFWS (California red-legged frog and California tiger salamander) and from CDFW (California tiger salamander only) before construction begins.* Additional	During construction and operation	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
conservation measures or conditions of approval may be required in applicable project permits (e.g., ESA or CESA incidental take authorization). The applicant will comply with the State of California State Water Resources Control Board NPDES construction general requirements for stormwater. • Ground-disturbing activities will be limited to dry weather between April 15 and October 31. No ground-disturbing work will occur during wet weather. Wet weather is defined as when there has been 0.25 inch of rain in a 24-hour period. Ground disturbing activities halted due to wet weather may resume when precipitation ceases and the National Weather Service 72-hour weather forecast indicates a 30% or less chance of precipitation. No ground-disturbing work will occur during a dry-out period of 48 hours after the above referenced wet weather. • 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. • Before construction begins, a qualified biologist will locate appropriate relocation areas and prepare a relocation plan for special-status amphibians that may need to be moved during construction. The proponent will submit this plan to USFWS and CDFW for approval a minimum of 2 weeks prior to the start of construction. • A qualified biologist will conduct preconstruction surveys immediately prior to ground-disturbing activities (including equipment staging, vegetation removal, grading). The biologist will survey the work area and all suitable habitats within 300 feet of the work area. If individuals (including adults, juveniles, larvae, or eggs) are found, work will not begin until USFWS and/or CDFW is contacted to determine if moving these life-stages is appropriate. If relocation is deemed necessary, it will be conducted in accordance with the relocation plan. Incidental take permits are required for relocation of California tiger salamander (USFWS and CDFW) and California red-legged frog (USFWS). Relocation of western spadefoot and foothill yellow-legged frog requires a letter from CDFW authorizing this activity. • No monofilament plastic will be used for erosion control. • All project activity will terminate 30 minutes before sunset and will not resume until 30 minutes after sunrise during the migration/active season from November 1 to June 15. Sunrise and sunset times are established by the U.S.				

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
Naval Observatory Astronomical Applications Department for the geographic area where the project is located. • Vehicles will not exceed a speed limit of 15 mph on unpaved roads within natural land cover types, or during offroad travel. • Trenches or holes more than 6 inches deep will be provided with one or more escape ramps constructed of earth fill or wooden planks and will be inspected by a qualified biologist prior to being filled. Any such features that are left open overnight will be searched each day prior to construction activities to ensure no covered species are trapped. Work will not continue until trapped animals have moved out of open trenches. • Work crews or the onsite biological monitor will inspect open trenches, pits, and under construction equipment and material left onsite in the morning and evening to look for amphibians that may have become trapped or are seeking refuge. • If special-status amphibians are found in the work area during construction and cannot or do not move offsite on their own, a qualified biologist who is USFWS and/or CDFW-approved under a biological opinion and/or incidental take permit for the specific project, will trap and move special-status amphibians in accordance with the relocation plan. Relocation of western spadefoot and foothill yellow-legged frog requires a letter permit from CDFW authorizing this activity.				
Mitigation Measure BIO-5b: Compensate for loss of habitat for special-status amphibians Where impacts on aquatic and upland habitat for special-status amphibians cannot be avoided or minimized, compensatory mitigation will be undertaken in accordance with mitigation ratios and requirements developed under the EACCS (Appendix C). In the event that take authorization is required, compensatory mitigation will be undertaken in accordance with the terms of the authorization in consultation with USFWS and/or CDFW.	Prior to disturbance	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval
Mitigation Measure BIO-5c: Restore disturbed annual grasslands Within 30 days prior to any ground disturbance, a qualified biologist will prepare a Grassland Restoration Plan in coordination with CDFW and subject to CDFW approval, to ensure that temporarily disturbed annual grasslands and areas planned for the removal of permanent roads and turbine pad areas are restored to	Prior to disturbance	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
preproject conditions. The Grassland Restoration Plan will include but not be limited to the following measures. • Gravel will be removed from areas proposed for grassland restoration. • To the maximum extent feasible, topsoil will be salvaged from within onsite work areas prior to construction. Imported fill soils will be limited to weed-free topsoil similar in texture, chemical composition, and pH to soils found at the restoration site. • Where appropriate, restoration areas will be seeded (hydroseeding is acceptable) to ensure erosion control. Seed mixes will be tailored to closely match that of reference site(s) within the program area and should include native or naturalized, noninvasive species sourced within the project area or from the nearest available location. • Reclaimed roads will be restored in such a way as to permanently prevent vehicular travel. The plan will include a requirement to monitor restoration areas annually (between March and October) for up to 3 years following the year of restoration. The restoration will be considered successful when the percent cover for restored areas is 70% absolute cover of the planted/seeded species compared to the percent absolute cover of nearby reference sites. No more than 5% relative cover of the vegetation in the restoration areas will consist of invasive plant species rated as "high" in Cal-IPC's California Invasive Plant Inventory Database (http://www.cal-ipc.org). Remedial measures prescribed in the plan will include supplemental seeding, weed control, and other actions as determined necessary to achieve the long-term success criteria. Monitoring may be extended if necessary to achieve the success criteria or if drought conditions preclude restoration success. 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. The project proponent will provide evidence that CDFW has reviewed and approved the Grassland Restoration Plan. Additionally, the project proponent will provide annual monitoring reports to the City by January 31 of each year, summarizing the monitoring results and any remedial measures implemented (if any are necessary) during the previous year.				

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
Mitigation Measure BIO-6: Conduct preconstruction surveys for western pond turtle and monitor construction activities if turtles are observed If it is determined through preconstruction surveys conducted pursuant to Mitigation Measure BIO-3a that suitable aquatic or upland habitat for western pond turtle is present within proposed work areas, the following measures, consistent with measures developed for the EACCS, will be implemented to ensure that the proposed project does not have a significant impact on western pond turtle. • One week before and within 24 hours of beginning work in suitable aquatic habitat, a qualified biologist (one who is familiar with different species of turtles) will conduct surveys for western pond turtle. The surveys should be timed to coincide with the time of day and year when turtles are most likely to be active (during the cooler part of the day between 8 a.m. and 12 p.m. during spring and summer). Prior to conducting the surveys, the biologist should locate the microhabitats for turtle basking (logs, rocks, brush thickets) and determine a location to quietly observe turtles. Each survey should include a 30-minute wait time after arriving onsite to allow startled turtles to return to open basking areas. The survey should consist of a minimum 15-minute observation period for each area where turtles could be observed. • If western pond turtles are observed during either survey, a biological monitor will be present during construction activities in the aquatic habitat where the turtle was observed. The biological monitor also will be mindful of suitable nesting and overwintering areas in proximity to suitable aquatic habitat and will periodically inspect these areas for nests and turtles. • If one or more western pond turtles are found in the work area during construction and cannot or do not move offsite on their own, a qualified biologist will remove and relocate the turtle to appropriate aquatic habitat outside and away from the construction area. Relocation of western pond turtle requires a letter from CDFW authorizing this activity.	Prior to and during all site disturbance	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval
Mitigation Measure BIO-7a: Implement best management practices to avoid and minimize effects on special-status reptiles Where suitable habitat for Blainville's horned lizard, Alameda whipsnake, or San Joaquin coachwhip is identified in proposed work areas, all project proponents will ensure that BMPs and other appropriate measures, in accordance with measures developed for the EACCS, be incorporated into the appropriate design and construction documents. *Implementation of some of these measures will require that*	During construction and operation	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
the project proponent obtain incidental take permits from USFWS and CDFW (Alameda whipsnake) before construction begins. Additional conservation measures or conditions of approval may be required in applicable project permits (i.e., ESA incidental take permit). • A qualified biologist will conduct preconstruction surveys immediately prior to ground-disturbing activities (e.g., equipment staging, vegetation removal, grading) associated with the program. If any Blainville's horned lizards, Alameda whipsnakes, or San Joaquin coachwhips are found, work will not begin until they are moved out of the work area to a USFWS- and/or CDFW-approved relocation site. Incidental take permits from USFWS and CDFW are required for relocation of Alameda whipsnake. Relocation of Blainville's horned lizard and San Joaquin coachwhip requires a letter from CDFW authorizing this activity. • No monofilament plastic will be used for erosion control. • Where applicable, barrier fencing will be used to exclude Blainville's horned lizard, Alameda whipsnake, and San Joaquin coachwhip. Barrier fencing will be removed within 72 hours of completion of work. • Work crews or an onsite biological monitor will inspect open trenches and pits and under construction equipment and materials left onsite for special-status reptiles each morning and evening during construction. • Ground disturbance in suitable habitat will be minimized. • Vegetation within the proposed work area will be removed prior to grading. Prior to clearing and grubbing operations, a qualified biologist will clearly mark vegetation within the work area that will be avoided. Vegetation outside the work area will not be removed. Where possible hand tools (e.g., trimmer, chain saw) will be used to trim or remove vegetation. All vegetation removal will be monitored by the qualified biologist to minimize impacts on special-status reptiles. • If special-status reptiles are found in the work area during construction and cannot or do not move offsite on their own, a qualified biologist who is USFWS- and/or CDFW-approved under an incidental take permit for the specific project will trap and move the animal(s) to a USFWS and/or CDFW-approved relocation area. Incidental take permits from USFWS and CDFW are required for relocation of Alameda whipsnake. Relocation of Blainville's horned lizard and San Joaquin coachwhip requires a letter from CDFW authorizing this activity.				

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
Mitigation Measure BIO-7b: Compensate for loss of habitat for special-status reptiles Where impacts on habitat for special-status reptiles cannot be avoided or minimized, compensatory mitigation will be undertaken in accordance with mitigation ratios and requirements developed under the EACCS (Appendix C). In the event that incidental take permits are required for Alameda whipsnake, compensatory mitigation will be undertaken in accordance with the terms of permits in consultation with USFWS and CDFW.	Prior to disturbance	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval
Mitigation Measure BIO-8a: Implement measures to avoid and minimize potential impacts on special-status and non–special-status nesting birds Where suitable habitat is present for raptors within 1 mile (within 2 miles for golden eagles) and for tree/shrub- and ground-nesting migratory birds (non-raptors) within 50 feet of proposed work areas, the following measures will be implemented to ensure that the proposed project does not have a significant impact on nesting special-status and non–special-status birds. • Remove suitable nesting habitat (shrubs and trees) during the non-breeding season (typically September 1–January 31) for nesting birds. • To the extent feasible, avoid construction activities in or near suitable or occupied nesting habitat during the breeding season of birds (generally February 1–August 31). • If construction activities (including vegetation removal, clearing, and grading) will occur during the nesting season for migratory birds, a qualified biologist will conduct preconstruction nesting bird surveys within 7 days prior to construction activities. The construction area and a 1-mile buffer will be surveyed for tree-nesting raptors (except for golden eagles), and a 50-foot buffer will be surveyed for all other bird species. • Surveys to locate eagle nests within 2 miles of construction will be conducted during the breeding season prior to construction. A 1-mile no-disturbance buffer will be implemented for construction activities to protect nesting eagles from disturbance. Through coordination with USFWS, the no-disturbance buffer may be reduced to 0.5 mile if construction activities are not within line-of-sight of the nest. • If an active nest (other than golden eagle) is identified near a proposed work area and work cannot be conducted outside the nesting season (February 1–	During construction and operation	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
August 31), a no-activity zone will be established around the nest by a qualified biologist in coordination with USFWS and/or CDFW. Fencing and/or flagging will be used to delineate the no-activity zone. To minimize the potential to affect the reproductive success of the nesting pair, the extent of the no-activity zone will be based on the distance of the activity to the nest, the type and extent of the proposed activity, the duration and timing of the activity, the sensitivity and habituation of the species, and the dissimilarity of the proposed activity to background activities. The no-activity zone will be large enough to avoid nest abandonment and will be between 50 feet and 1 mile from the nest, or as otherwise required by USFWS and/or CDFW.				
Mitigation Measure BIO-8b: Implement measures to avoid and minimize potential impacts on western burrowing owl Where suitable habitat for western burrowing owl is in or within 500 feet of proposed work areas, the following measures will be implemented to avoid or minimize potential adverse impacts on burrowing owls. • To the maximum extent feasible (e.g., where the construction footprint can be modified), construction activities within 500 feet of active burrowing owl burrows will be avoided during the nesting season (February 1–August 31). • A qualified biologist will conduct preconstruction take avoidance surveys for burrowing owl no less than 14 days prior to and within 24 hours of initiating ground-disturbing activities. The survey area will encompass the work area and a 500-foot buffer around this area. • If an active burrow is identified near a proposed work area and work cannot be conducted outside the nesting season (February 1–August 31), a no-activity zone will be established by a qualified biologist in coordination with CDFW. The no-activity zone will be large enough to avoid nest abandonment and will extend a minimum of 250 feet around the burrow. • If burrowing owls are present at the site during the non-breeding season (September 1–January 31), a qualified biologist will establish a no-activity zone that extends a minimum of 150 feet around the burrow. • If the designated no-activity zone for either breeding or non-breeding burrowing owls cannot be established, a wildlife biologist experienced in burrowing owl behavior will evaluate site-specific conditions and, in coordination with CDFW, recommend a smaller buffer (if possible) and/or other measure that still minimizes disturbance of the owls (while allowing reproductive success during	During construction and operation	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
the breeding season). The site-specific buffer (and/or other measure) 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. • If burrowing owls are present in the direct disturbance area and cannot be avoided during the non-breeding season (generally September 1 through January 31), burrowing owls may be excluded from burrows through the installation of one-way doors at burrow entrances. A burrowing owl exclusion plan, prepared by the project proponent, must be approved by CDFW prior to exclusion of owls. One-way doors (e.g., modified dryer vents or other CDFW-approved method) will be left in place for a minimum of 1 week and monitored daily to ensure that the owl(s) have left the burrow(s). Excavation of the burrow will be conducted using hand tools. During excavation of the burrow, a section of flexible plastic pipe (at least 3 inches in diameter) will be inserted into the burrow tunnel to maintain an escape route for any animals that may be inside the burrow. Owls will be excluded from their burrows as a last resort and only if other avoidance and minimization measures cannot be implemented. • Avoid destruction of unoccupied burrows outside the work area and place visible markers near burrows to ensure that they are not collapsed. • Conduct ongoing surveillance of the project site for burrowing owls during project activities. If additional owls are observed using burrows within 500 feet of construction, the onsite biological monitor will determine, in coordination with CDFW, if the owl(s) are or would be affected by construction activities and if additional exclusion zones are required.				
Mitigation Measure BIO-9: Compensate for the permanent loss of occupied habitat for western burrowing owl If construction activities would result in the removal of occupied burrowing owl habitat (determined during preconstruction surveys described in Mitigation Measure BIO-8a), this habitat loss will be mitigated by permanently protecting mitigation land through a conservation easement or by implementing alternative mitigation determined through consultation with CDFW as described in its *Staff Report on Burrowing Owl Mitigation* (California Department of Fish and Game 2012:11–13). The project proponent will work with CDFW to develop the compensation plan, which will be subject to City review and approval.	Prior to disturbance	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
Mitigation Measure BIO-10a: Implement measures to avoid and minimize potential impacts on San Joaquin kit fox and American badger Where suitable habitat is present for San Joaquin fit fox and American badger in and adjacent to proposed work areas, the following measures, consistent with measures developed in the EACCS, will be implemented to ensure that proposed projects do not have a significant impact on San Joaquin kit fox or American badger. *Implementation of some of these measures will require that the project proponent obtain incidental take permits from USFWS and CDFW (San Joaquin kit fox) before construction begins.* Additional conservation measures or conditions of approval may be required in applicable project permits. • To the maximum extent feasible, suitable dens for San Joaquin kit fox and American badger will be avoided. • All project proponents will retain qualified approved biologists (as determined by USFWS) to conduct a preconstruction survey for potential San Joaquin kit fox dens (U.S. Fish and Wildlife Service 2011). Resumes of biologists will be submitted to USFWS for review and approval prior to the start of the survey. • Preconstruction surveys for American badgers will be conducted in conjunction with San Joaquin kit fox preconstruction surveys. • As described in U.S. Fish and Wildlife Service 2011, the preconstruction survey will be conducted no less than 14 days and no more than 30 days before the beginning of ground disturbance, or any activity likely to affect San Joaquin kit fox. The biologists will conduct den searches by systematically walking transects through the project area and a buffer area to be determined in coordination with USFWS and CDFW. Transect distance should be based on the height of vegetation such that 100% visual coverage of the project area is achieved. If a potential or known den is found during the survey, the biologist will measure the size of the den, evaluate the shape of the den entrances, and note tracks, scat, prey remains, and recent excavations at the den site. The biologists will also determine the status of the dens and map the features. Dens will be classified in one of the following four den status categories defined by USFWS (U.S. Fish and Wildlife Service 2011). ○ Potential den: Any subterranean hole within the species' range that has entrances of appropriate dimensions and for which available evidence is sufficient to conclude that it is being used or has been used by a kit fox. Potential dens include (1) any suitable subterranean hole; or (2) any den or	During construction and operation	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
burrow of another species (e.g., coyote, badger, red fox, ground squirrel) that otherwise has appropriate characteristics for kit fox use; or an artificial structure that otherwise has appropriate characteristics for 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 radiotelemetry or spotlighting data; kit fox sign such as tracks, scat, and/or prey remains; or other reasonable proof that a given den is being or has been used by a kit fox (USFWS discourages use of the terms *active* and *inactive* when referring to any kit fox den because a great percentage of occupied dens show no evidence of use, and because kit foxes change dens often, with the result that the status of a given den may change frequently and abruptly). ○ Known natal or pupping den: Any den that is used, or has been used at any time in the past, by kit foxes 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 kit fox tracks, scat, and prey remains in the vicinity of the den, and may have a broader apron of matted dirt or vegetation at one or more entrances. A natal den, defined as a den in which 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. ○ Known 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. Written results of the survey including the locations of any potential or known San Joaquin kit fox dens will be submitted to USFWS within 5 days following completion of the survey and prior to the start of ground disturbance or construction activities. • After preconstruction den searches and before the commencement of repowering activities, exclusion zones will be established as measured in a radius outward from the entrance or cluster of entrances of each den. Repowering activities will be prohibited or greatly restricted within these exclusion zones. Only essential vehicular operation on existing roads and foot traffic will be permitted. All other repowering activities, vehicle operation, material and equipment storage, and other surface-disturbing activities will be prohibited in				

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
the exclusion zones. Barrier fencing will be removed within 72 hours of completion of work. Exclusion zones will be established using the following parameters. ○ 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 work area and the known den site at a minimum distance of 100 feet from the den. The fencing will be maintained until construction-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 in or within 200 feet of the work area. • 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). • In cases where avoidance is not a reasonable alternative, limited destruction of potential San Joaquin kit fox dens may be allowed as follows. ○ Natal/pupping dens: Natal or pupping dens that are occupied will not be destroyed until the adults and pups have vacated the dens and then only after consultation with USFWS. Removal of natal/pupping dens requires incidental take authorization from USFWS and CDFW. ○ Known dens: Known dens within the footprint of the activity must be monitored for 3 days with tracking medium or an infrared camera to determine current use. If no kit fox activity is observed during this period, the den should be destroyed immediately to preclude subsequent use. If kit fox activity is observed during this period, the den will be monitored for at least 5 consecutive days from the time of observation to allow any resident animal to move to another den during its normal activity. Use of the den can be discouraged by partially plugging its entrance(s) with soil in such a manner that any resident animal can escape easily. Only when the den is determined to be unoccupied will the den be excavated under the direction of a biologist. If the fox is still present after 5 or more consecutive days of monitoring, the den may be excavated when, in the judgment of the biologist, it is temporarily vacant, such as during the fox's normal foraging activities. Removal of known dens requires incidental take authorization from USFWS and CDFW.				

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
○ Potential dens: If incidental take permits have been received (from USFWS and CDFW), potential dens can be removed (preferably by hand excavation) by biologist or under the supervision of a biologist without monitoring, unless other restrictions were issued with the incidental take permits. If no take authorizations have been issued, the potential dens will be monitored as if they are known dens. If any den was considered a potential den but was later determined during monitoring or destruction to be currently or previously used by kit foxes (e.g., kit fox sign is found inside), then all construction activities will cease and USFWS and CDFW will be notified immediately. • Nighttime work will be minimized to the extent possible. The vehicular speed limit will be reduced to 10 miles per hour during nighttime work. • 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. • A representative appointed by the project proponent will be the contact for any employee or contractor who might inadvertently kill or injure a kit fox or who finds a dead, injured, or entrapped kit fox. The representative will be identified during environmental sensitivity training (Mitigation Measure BIO-1b) and his/her name and phone number will be provided to USFWS and CDFW. Upon such incident or finding, the representative will immediately contact USFWS and CDFW. • The Sacramento USFWS office and CDFW will be notified in writing within 3 working days of the accidental death or injury of a San Joaquin kit fox during project-related activities. Notification must include the date, time, and location of the incident, and any other pertinent information.				
Mitigation Measure BIO-10b: Compensate for loss of suitable habitat for San Joaquin kit fox and American badger Where permanent impacts on habitat for San Joaquin kit fox and American badger cannot be avoided or minimized, compensatory mitigation will be undertaken in accordance with mitigation ratios and requirements developed under the EACCS (Appendix C). In the event that incidental take permits are required for San Joaquin kit fox, compensatory mitigation will be undertaken in accordance with the terms of permits in consultation with USFWS and CDFW.	Prior to disturbance	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
Mitigation Measure BIO-11a: Prepare a project-specific avian protection plan All project proponents will prepare a project-specific APP to specify measures and protocols consistent with the program-level mitigation measures that address avian mortality. The project-specific APPs will include, at a minimum, the following components. • Information and methods used to site turbines to minimize risk. • Documentation that appropriate turbine designs are being used. • Documentation that avian-safe practices are being implemented on project infrastructure. • Methods used to discourage prey for raptors. • A detailed description of the postconstruction avian fatality monitoring methods to be used (consistent with the minimum requirements outlined in Mitigation Measure BIO-11g). • Methods used to compensate for the loss of raptors (consistent with the requirements of Mitigation Measure BIO-11h). Each project applicant will prepare and submit a draft project-specific APP to the City. The draft APP will be reviewed by the TAC for consistency and the inclusion of appropriate mitigation measures that are consistent with the PEIR and recommended for approval by the City. Each project applicant must have an approved Final APP prior to commercial operation.	Prior to site disturbance	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval
Mitigation Measure BIO-11b: Site turbines to minimize potential mortality of birds Siting of turbines—using analyses of landscape features and location-specific bird use and behavior data to identify locations with reduced collision risk—may result in reduced fatalities (Smallwood et al. 2009). All project proponents will conduct a siting process and prepare a siting analysis to select turbine locations to minimize potential impacts on bird and bat species. Proponents will utilize existing data as well as collect new site-specific data as part of the siting analysis. Project proponents will utilize currently available guidelines such as the Alameda County SRC guidelines for siting wind turbines (Alameda County SRC 2010) and/or other currently available research or guidelines to conduct siting analysis. Additionally, project proponents will use the results of previous siting efforts to inform the analysis and siting methods as appropriate such that the science of	Prior to site disturbance	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
siting continues to be advanced. All project proponents will collect field data that identify or confirm the behavior, utilization, and distribution patterns of affected avian and bat species prior to the installation of turbines. Project proponents will collect and utilize available existing information, including but not necessarily limited to: siting reports and monitoring data from previously installed projects; published use and abundance studies and reports; and topographic features known to increase collision risk (trees, riparian areas, water bodies, and wetlands). Project proponents will also collect and utilize additional field data as necessary to inform the siting analysis for golden eagle. As required in Mitigation Measure BIO-8a, surveys will be conducted to locate golden eagle nests within 2 miles of proposed project areas. Siting of turbines within 2 miles of an active or alternative golden eagle nest or active golden eagle territory will be based on a site-specific analysis of risk based on the estimated eagle territories, conducted in consultation with USFWS. Project proponents will utilize methods (i.e., computer models) to identify dangerous locations for birds and bats based on site-specific risk factors informed by the information discussed above. The project proponents will compile the results of the siting analyses for each turbine and document these in the project-level APP, along with the specific location of each turbine.				
Mitigation Measure BIO-11c: Use turbine designs that reduce avian impacts Use of turbines with certain characteristics is believed to reduce the collision risk for avian species. Project proponents will implement the design-related measures listed below. • Turbine designs will be selected that have been shown or that are suspected to reduce avian fatalities, based on the height, color, configuration, or other features of the turbines. • Turbine design will limit or eliminate perching opportunities. Designs will include a tubular tower with internal ladders; external catwalks, railings, or ladders will be prohibited. • Turbine design will limit or eliminate nesting or roosting opportunities. Openings on turbines will be covered to prevent cavity-nesting species from nesting in the turbines. • Lighting will be installed on the fewest number of turbines allowed by FAA regulations, and all pilot warning lights will fire synchronously. Turbine lighting	Prior to site disturbance	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
will employ only red or dual red-and-white strobe, strobe-like, or flashing lights (U.S. Fish and Wildlife Service 2012). All lighting on turbines will be operated at the minimum allowable intensity, flashing frequency, and quantity allowed by FAA (Gehring et al. 2009; U.S. Fish and Wildlife Service 2012). Duration between flashes will be the longest allowable by the FAA.				
Mitigation Measure BIO-11d: Incorporate avian-safe practices into design of turbine-related infrastructure All project proponents will apply the following measures when designing and siting turbine-related infrastructure. These measures will reduce the risk of bird electrocution and collision. • Permanent meteorological stations will avoid use of guy wires. If it is not possible to avoid using guy wires, the wires will be at least 4/0 gauge to ensure visibility and will be fitted with bird deterrent devices. • All permanent meteorological towers will be unlit unless lighting is required by FAA. If lighting is required, it will be operated at the minimum allowable intensity, flashing frequency, and quantity allowed by FAA. • To the extent possible, all powerlines will be placed underground. However, lines may be placed aboveground immediately prior to entering the substation. All aboveground lines will be fitted with bird flight diverters or visibility enhancement devices (e.g., spiral damping devices). When lines cannot be placed underground, appropriate avian protection designs must be employed. As a minimum requirement, the collection system will conform with the most current edition of the Avian Power Line Interaction Committee guidelines to prevent electrocutions. • Lighting will be focused downward and minimized to limit skyward illumination. Sodium vapor lamps and spotlights will not be used at any facility (e.g., laydown areas, substations) except when emergency maintenance is needed. Lighting at collection facilities, including substations, will be minimized using downcast lighting and motion-detection devices. The use of high-intensity lighting; steady-burning or bright lights such as sodium vapor, quartz, or halogen; or other bright spotlights will be minimized. Where lighting is required it will be designed for the minimum intensity required for safe operation of the facility. Green or blue lighting will be used in place of red or white lighting.	Prior to site disturbance	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
Mitigation Measure BIO-11e: Retrofit existing infrastructure to minimize risk to raptors Any existing power lines in a specific project area that are owned by the wind project operator and that are associated with electrocution of an eagle or other raptor will be retrofitted within 30 days to make them raptor-safe according to Avian Power Line Interaction Committee guidelines. All other existing structures to remain in a project area during repowering will be retrofitted, as feasible, according to specifications of Mitigation Measure BIO-11c prior to repowered turbine operation.	During operation	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval
Mitigation Measure BIO-11f: Discourage prey for raptors All project proponents will apply the following measures when designing and siting turbine-related infrastructure. These measures are intended to minimize opportunities for fossorial mammals to become established and thereby create a prey base that could become an attractant for raptors. • Rodenticide will not be utilized on the project site to avoid the risk of raptors scavenging the remains of poisoned animals. • Boulders (rocks more than 12 inches in diameter) excavated during project construction may be placed in aboveground piles in the project area so long as they are more than 500 meters (1,640 feet) from any turbine. Existing rock piles created during construction of first- and second-generation turbines will also be moved at least 500 meters (1,640 feet) from turbines. • Gravel will be placed around each tower foundation to discourage small mammals from burrowing near turbines.	During construction and operation	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval
Mitigation Measure BIO-11g: Implement postconstruction avian fatality monitoring for all repowering projects A postconstruction monitoring program will be conducted at each repowering project for a minimum of 3 years beginning on the commercial operation date (COD) of the project. Monitoring may continue beyond 3 years if construction is completed in phases. Moreover, if the results of the first 3 years indicate that baseline fatality rates (i.e., nonrepowered fatality rates) are exceeded, monitoring will be extended until the average annual fatality rate has dropped below baseline fatality rates for 2 years, and to assess the effectiveness of adaptive management measures specified in Mitigation Measure BIO-11i. An additional 2 years of monitoring will be implemented at year 10 (i.e., the tenth anniversary of the COD).	During operation	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
Project proponents will provide access to qualified third parties authorized by the City to conduct any additional monitoring after the initial 3-year monitoring period has expired and before and after the additional 2-year monitoring period, provided that such additional monitoring utilizes scientifically valid monitoring protocols.				
A technical advisory committee (TAC) will be formed to oversee the monitoring program and to advise the City on adaptive management measures that may be necessary if fatality rates substantially exceed those predicted for the project (as described below in Mitigation Measure BIO-11i). The TAC will have a standing meeting, which will be open to the public, every 6 months to review monitoring reports produced by operators in the program area. In these meetings, the TAC will discuss any issues raised by the monitoring reports and recommend to the City next steps to address issues, including scheduling additional meetings, if necessary.				
The TAC will comprise representatives from the County (including one or more technical consultants, such as a biostatistician, an avian biologist, and a bat biologist), and wildlife agencies (CDFW, USFWS). Additional TAC members may also be considered (e.g., a representative from Audubon, a landowner in the program area, a representative of the operators) at the discretion of the County. The TAC will be a voluntary and advisory group that will provide guidance to the City. To maintain transparency with the public, all TAC meetings will be open to the public, and notice of meetings will be given to interested parties.				
The TAC will have three primary advisory roles: (1) to review and advise on project planning documents (i.e., project-specific APPs) to ensure that project-specific mitigation measures and compensatory mitigation measures described in this PEIR are appropriately and consistently applied, (2) to review and advise on monitoring documents (protocols and reporting) for consistency with the mitigation measures, and (3) to review and advise on implementation of the adaptive management plans.				
Should fatality monitoring reveal that impacts exceed the baseline thresholds established in this PEIR, the TAC will advise the City on requiring implementation of adaptive management measures as described in Mitigation Measure BIO-11i. The City will have the decision-making authority, as it is the organization issuing the CUPs. However, the TAC will collaboratively inform the decisions of the City.				
Operators are required to provide for avian use surveys to be conducted within the project area boundaries for a minimum of 30 minutes duration. Surveyors will be qualified and trained and subject to approval by the City.				

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
Carcass surveys will be conducted at every turbine for projects with 20 or fewer turbines. For projects with more than 20 turbines, such surveys will be required at a minimum of 20 turbines, and a sample of the remaining turbines may be selected for carcass searches. The operator will be required to demonstrate that the sampling scheme and sample size are statistically rigorous and defensible. Where substantial variation in terrain, land cover type, management, or other factors may contribute to significant variation in fatality rates, the sampling scheme will be stratified to account for such variation. The survey protocol for sets and subsets of turbines, as well as proposed sampling schemes that do not entail a search of all turbines, must be approved by the City in consultation with the TAC prior to the start of surveys. The search interval will not exceed 14 days for the minimum of 20 turbines to be surveyed; however, the search interval for the additional turbines (i.e., those exceeding the 20-turbine minimum) that are to be included in the sampling scheme may be extended up to 28 days or longer if recommended by the TAC. The estimation of detection probability is a rapidly advancing field. Carcass placement trials, broadly defined, will be conducted to estimate detection probability during each year of monitoring. Sample sizes will be large enough to potentially detect significant variation by season, carcass size, and habitat type. Operators will be required to submit copies of all raw data forms to the County and City annually, will supply raw data in a readily accessible digital format to be specified by the County, and will prepare raw data for inclusion as appendices in the annual reports. The intent is to allow the County and City to conduct independent analyses and meta-analyses of data across the APWRA, and to supply these data to the regulatory agencies if requested. Annual reports submitted to the County and City will provide a synthesis of all information collected to date. Each report will provide an introduction; descriptions of the study area, methods, and results; a discussion of the results; and any suitable recommendations. Reports will provide raw counts of fatalities, adjusted fatality rates, and estimates of project-wide fatalities on both a per MW and per turbine basis.				

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
Mitigation Measure BIO-11h: Compensate for the loss of raptors and other avian species, including golden eagles, by contributing to conservation efforts **Discussion** Several options to compensate for impacts on raptors are currently available. Some are targeted to benefit certain species, but they may also have benefits for other raptor and non-raptor species. For example, USFWS's ECP Guidelines currently outline a compensatory mitigation strategy for golden eagles using the retrofit of high-risk power poles (poles known or suspected to electrocute and kill eagles). The goal of this strategy is to eliminate hazards for golden eagles. However, because the poles are also dangerous for other large raptors (e.g., red-tailed hawk, Swainson's hawk), retrofitting them can benefit such species as well as eagles. Similarly, although the retrofitting of electrical poles may have benefits for large raptors, such an approach may provide minimal benefits for smaller raptors such as American kestrel and burrowing owl. Consequently, additional measures would be required components of an overall mitigation package to compensate for impacts on raptors in general. The Secretary of the Interior issued Order 3330 on October 31, 2013, outlining a new approach to mitigation policies and practices of the Department of the Interior. This approach recognizes that certain strategies aimed at some species (e.g., raptors) can provide substantial benefit to others (e.g., non-raptors) and to the ecological landscape as a whole. The landscape-scale approach to mitigation and conservation efforts is now central to the Department's mitigation strategy. Although the Order was intended for use by federal agencies and as such is not directly applicable to the City, it is evident that such an approach would likely have the greatest mitigation benefits, especially when considering ongoing and long-term impacts from wind energy projects. With these considerations in mind, the City has outlined several options that are currently available to compensate for impacts on raptors and other avian species. The options discussed below are currently considered acceptable approaches to compensation for impacts on raptors and other species. Although not every option is appropriate for all species, it is hoped that as time proceeds, a more comprehensive landscape-level approach to mitigation will be adopted to benefit a broader suite of species than might benefit from more species-specific measures. The City recognizes that the science of raptor conservation and the understanding of wind-wildlife impacts are continuing to evolve and that the suite of available	Prior to startup and during operation	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
compensation options may consequently change over the life of the proposed projects. **Conservation Measures** To promote the conservation of raptors and other avian species, project proponents will compensate for raptor fatalities estimated within their project areas. Mitigation will be provided in 10-year increments, with the first increment based on the estimates (raptors/MW/year) provided in this PEIR for the Vasco Winds Project (Table 3.4-10) or the project-specific EIR for future projects. The Vasco Winds fatality rates were selected because the Vasco turbines are the most similar to those likely to be proposed for future repowering projects and consequently represent the best available fatality estimates. Each project proponent will conduct postconstruction fatality monitoring for at least 3 years beginning at project startup (date of commercial operation) and again for 2 years at year 10, as required under Mitigation Measure BIO-11g, to estimate the average number of raptors taken each year by each individual project. The project proponent will compensate for this number of raptors in subsequent 10-year increments for the life of the project (i.e., three 10-year increments) as outlined below. Mitigation Measure BIO-11g also requires additional fatality monitoring at year 10 of the project. The results of the first 3 years of monitoring and/or the monitoring at year 10 may lead to revisions of the estimated average number of raptors taken, and mitigation provided may be adjusted accordingly on a one-time basis within each of the first two 10-year increments, based on the results of the monitoring required by Mitigation Measure BIO-11g, in consultation with the TAC. Prior to the start of operations, project proponents will submit for City approval an avian conservation strategy, as part of the project-specific APP outlined in Mitigation Measure BIO-11a, outlining the estimated number of raptor fatalities based on the number and type of turbines being constructed, and the type or types of compensation options to be implemented. Project proponents will use the avian conservation strategy to craft an appropriate strategy using a balanced mix of the options presented below, as well as considering new options suggested by the growing body of knowledge during the course of the project lifespan, as supported by a Resource Equivalency Analysis (REA) (see example in Appendix C) or similar type of compensation assessment acceptable to the City that demonstrates the efficacy of proposed mitigation for impacts on raptors. The City Planning Director, in consultation with the TAC, will consider, based on the REA, whether the proposed avian-conservation strategy is adequate, including				

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
consideration of whether each avian conservation strategy incorporates a landscape-scale approach such that the conservation efforts achieve the greatest possible benefits. Compensation measures as detailed in an approved avian conservation strategy must be implemented within 1 year of the date of commercial operations. Avian conservation strategies will be reviewed and may be revised by the City every 10 years, and on a one-time basis in each of the two 10-year increments based on the monitoring required by Mitigation Measure BIO-11g. • **Retrofitting high-risk electrical infrastructure.** USFWS's ECP Guidelines outline a compensatory mitigation strategy using the retrofit of high-risk power poles (poles known or suspected to electrocute and kill eagles). USFWS has developed an REA (U.S. Fish and Wildlife Service 2013a) as a tool to estimate the compensatory mitigation (number of retrofits) required for the take of eagles. The REA takes into account the current understanding of eagle life history factors, the effectiveness of retrofitting poles, the expected annual take, and the timing of implementation of the pole retrofits. The project proponents may need to contract with a utility or a third-party mitigation account (such as the National Fish and Wildlife Foundation) to retrofit the number of poles needed as demonstrated by a project-specific REA. If contracting directly, the project proponent will consult with utility companies to ensure that high-risk poles have been identified for retrofitting. Proponents will agree in writing to pay the utility owner/operator to retrofit the required number of power poles and maintain the retrofits for 10 years and will provide the City with documentation of the retrofit agreement. The first retrofits will be based on the estimated number of eagle fatalities as described above in this measure or as developed in the project-specific EIR for future projects. Subsequent numbers of retrofits required for additional 10-year durations will be based on the results of project-specific fatality monitoring as outlined in Mitigation Measure BIO-11g. If fewer eagle fatalities are identified through the monitoring, the number of future required retrofits may be reduced through a project-specific REA. Although retrofitting poles has not been identified as appropriate mitigation for other large raptors, they would likely benefit from such efforts, as they (particularly red-tailed and Swainson's hawks) constitute the largest non-eagle group to suffer electrocution on power lines (Avian Power Line Interaction Committee 2006). • **Measures outlined in an approved Eagle Conservation Plan and Bird and Bat Conservation Strategy.** Project proponents may elect to apply for programmatic eagle take permits from USFWS. The programmatic eagle take				

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
permit process currently involves preparation of an ECP and a Bird and Bat Conservation Strategy (BBCS). The ECP specifies avoidance and minimization measures, advanced conservation practices, and compensatory mitigation for eagles—conditions that meet USFWS's criteria for issuance of a permit. The BBCS outlines measures being implemented by the applicant to avoid and minimize impacts on migratory birds, including raptors. If programmatic eagle take permits are obtained by project proponents, those permit terms, including the measures outlined in the approved ECP and BBCS, may constitute an appropriate conservation measure for estimated take of golden eagles and other raptors, provided such terms are deemed by the City to be comparable to or more protective of raptors than the other options listed herein.				
• **Contribute to raptor conservation efforts.** Project proponents will contribute funds, in the amount of $580/raptor, in 10-year increments to local and/or regional conservation efforts designed to protect, recover, and manage lands for raptors, or to conduct research involving methods to reduce raptor fatalities or increase raptor productivity. The $580 amount is based on the average cost to rehabilitate one raptor at the California Raptor Center, affiliated with the UC Davis School of Veterinary Medicine, which receives more than 200 injured or ill raptors annually (Stedman pers. comm.). Ten-year installments are more advantageous than more frequent installments for planning and budgeting purposes. The funds will be contributed to an entity or entities engaged in these activities, such as the East Bay Regional Park District and the Livermore Area Regional Park District. Conservation efforts may include constructing and installing nest boxes and perches, conducting an awareness campaign to reduce the use of rodenticide, and conducting research to benefit raptors. The specific conservation effort to be pursued will be submitted to the City for approval as part of the avian conservation strategy review process. The donation receipt will be provided to the City as evidence of payment. The first contributions for any given project will be based on the estimated number of raptor fatalities as described above in this measure or as developed in the project-specific EIR for future projects. Funds for subsequent 10-year installments will be provided on the basis of the average annual raptor fatality rates determined through postconstruction monitoring efforts, allowing for a one-time adjustment within each 10-year increment after the results of the monitoring efforts are available. If fewer raptor fatalities are determined through				

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
the monitoring effort, the second installment amount may be reduced to account for the difference between the first estimated numbers and the monitoring results.				
• **Contribute to regional conservation of raptor habitat.** Project proponents may address regional conservation of raptor habitat by funding the acquisition of conservation easements within the APWRA or on lands in the same eco-region outside the APWRA, subject to City approval, for the purpose of long-term regional conservation of raptor habitat. Lands proposed for conservation must be well-managed grazing lands similar to those on which the projects have been developed. Project proponents will fund the regional conservation and improvement of lands (through habitat enhancement, lead abatement activities, elimination of rodenticides, and/or other measures) using a number of acres equivalent to the conservation benefit of the raptor recovery and conservation efforts described above, or as determined through a project-specific REA (see example REA in Appendix C). The conservation lands must be provided for compensation of a minimum of 10 years of raptor fatalities, as 10-year increments will minimize the transaction costs associated with the identification and conservation of lands, thereby increasing overall cost effectiveness. The conservation easements will be held by an organization whose mission is to purchase and/or otherwise conserve lands, such as The Trust for Public Lands, The Nature Conservancy, California Rangeland Trust, or the East Bay Regional Parks District. The project proponents will obtain approval from the City regarding the amount of conserved lands, any enhancements proposed to increase raptor habitat value, and the entity holding the lands and/or conservation easement.				
• **Other Conservation Measures Identified in the Future.** As noted above, additional conservation measures for raptors may become available in the future. Conservation measures for raptors are currently being developed by USFWS and nongovernmental organizations (e.g., American Wind Wildlife Institute)—for example, activities serving to reduce such fatalities elsewhere, and enhancing foraging and nesting habitat. Additional options for conservation could include purchasing credits at an approved mitigation bank, credits for the retirement of windfarms that are particularly dangerous to birds or bats, the curtailment of prey elimination programs, and hunter-education programs that remove sources of lead from the environment. Under this option, the project proponent may make alternative proposals to the City for conservation measures—based on an				

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
REA or similar compensation assessment—that the City may accept as mitigation if they are deemed by the City to be comparable to or more protective of raptor species than the other options described herein.				
Mitigation Measure BIO-11i: Implement an avian adaptive management program If fatality monitoring described in Mitigation Measure BIO-11g results in an estimate that exceeds the preconstruction baseline fatality estimates (i.e., estimates at the nonrepowered turbines as described in this PEIR) for any focal species or species group (i.e., individual focal species, all focal species, all raptors, all non-raptors, all birds combined), project proponents will prepare a project-specific adaptive management plan within 2 months following the availability of the fatality monitoring results. These plans will be used to adjust operation and mitigation to the results of monitoring, new technology, and new research to ensure that the best available science is used to minimize impacts to below baseline. Project-specific adaptive management plans will be reviewed by the TAC, revised by project proponents as necessary, and approved by the City. The TAC will take current research and the most effective impact reduction strategies into account when reviewing adaptive management plans and suggesting measures to reduce impacts. The project-specific adaptive management plans will be implemented within 2 months of approval by the City. The plans will include a stepped approach whereby an adaptive measure or measures are implemented, the results are monitored for success or failure for a year, and additional adaptive measures are added as necessary, followed by another year of monitoring, until the success criteria are achieved (i.e., estimated fatalities are below the baseline). Project proponents should use the best measures available when the plan is prepared in consideration of the specific adaptive management needs. For example, if only one threshold is exceeded, such as golden eagle fatalities, the plan and measures used will target that species. As set forth in other agreements in the APWRA, project proponents may also focus adaptive management measures on individual or multiple turbines if those turbines are shown to cause a significantly disproportionate number of fatalities. In general, the following types of measures will be considered by the TAC, in the order they are presented below; however, the TAC may recommend any of these or other measures that are shown to be successful in reducing the impact.	During operation	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
ADMM-1: Visual Modifications. The project proponent could paint a pattern on a proportion of the turbine blades. The proportion and the pattern of the blades to be painted will be determined by the City in consultation with the TAC. USFWS recommends testing measures to reduce *motion smear*—the blurring of turbine blades due to rapid rotation that renders them less visible and hence more perilous to birds in flight. Suggested techniques include painting blades with staggered stripes or painting one blade black. The project proponent will conduct fatality studies on a controlled number of painted and unpainted turbines. The project proponent will coordinate with the TAC to determine the location of the painted turbines, but the intent is to implement this measure in areas that appear to be contributing most to the high number of fatalities detected.				
ADMM-2: Anti-Perching Measures. The City will consult with the TAC regarding the use of anti-perching measures to discourage bird use of the area. The TAC will use the most recent research and information available to determine, on a case-by–case basis, if anti-perching measures will be an effective strategy to reduce impacts. If determined to be feasible, anti-perching devices will be installed on artificial structures, excluding utility poles, within 1 mile of project facilities (with landowner permission) to discourage bird use of the area.				
ADMM-3: Prey Reduction. The project proponent will implement a prey reduction program around the most hazardous turbines. Examples of prey reduction measures may include changes in grazing practices to make the area less desirable for prey species, active reduction through direct removal of prey species, or other measures provided they are consistent with management goals for threatened and endangered species.				
ADMM-4: Implementation of Experimental Technologies. Project proponents can deploy experimental technologies at their facilities to test their efficacy in reducing turbine-related fatalities. Examples may include, but are not limited to, visual deterrents, noise deterrents, and active radar systems.				
ADMM-5: Turbine Curtailment. If postconstruction monitoring indicates patterns of turbine-caused fatalities—such as seasonal spikes in fatalities, topographic or other environmental features associated with high numbers of fatalities, or other factors that can potentially be manipulated and that suggest that curtailment of a specific turbine's operation would result in reducing future avian fatalities—the project operator can curtail operations of the offending turbine or turbines.				

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
Curtailment restrictions would be developed in coordination with the TAC and based on currently available fatality data, use data, and research. **ADMM-6: Cut-in Speed Study.** Changes in cut-in speed could be conducted to see if changing cut-in speeds from 3 meters per second to 5 meters per second (for example) would significantly reduce avian fatalities. The proponent will coordinate with the TAC in determining the feasibility of the measure for the particular species affected as well as the amount of the change in the cut-in speed. **ADMM-7: Real-Time Turbine** Curtailment. The project proponent can employ a real-time turbine curtailment program designed in consultation with the TAC. The intent would be to deploy a biologist to monitor onsite conditions and issue a curtailment order when raptors are near operating turbines. Alternatively, radar, video, or other monitoring measures could be deployed in place of a biological monitor if there is evidence to indicate that such a system would be as effective and more efficient than use of a human monitor.				
Mitigation Measure BIO-12a: Conduct bat roost surveys Prior to development of any repowering project, a qualified bat biologist will conduct a roost habitat assessment to identify potential colonial roost sites of special-status and common bat species within 750 feet of the construction area. If suitable roost sites are to be removed or otherwise affected by the proposed project, the bat biologist will conduct targeted roost surveys of all identified sites that would be affected. Because bat activity is highly variable (both spatially and temporally) across the landscape and may move unpredictably among several roosts, several separate survey visits may be required. Surveys will be repeated at different times of year if deemed necessary by the bat biologist to determine the presence of seasonally active roosts (hibernacula, migratory stopovers, maternity roosts).Appropriate field methods will be employed to determine the species, type, and vulnerability of the roost to construction disturbance. Methods will follow best practices for roost surveys such that species are not disturbed and adequate temporal and spatial coverage is provided to increase likelihood of detection. Roost surveys may consist of both daylight surveys for signs of bat use and evening/night visit(s) to conduct emergence surveys or evaluate the status of night roosts. Survey timing should be adequate to account for individual bats or species that might not emerge until well after dark.	Prior to and during all site disturbance	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
Methods and approaches for determining roost occupancy status should include a combination of the following components as the biologist deems necessary for the particular roost site. • Passive and/or active acoustic monitoring to assist with species identification. • Guano traps to determine activity status. • Night-vision equipment. • Passive infrared camera traps. At the completion of the roost surveys, a report will be prepared documenting areas surveyed, methods, results, and mapping of high-quality habitat or confirmed roost locations.				
Mitigation Measure BIO-12b: Avoid removing or disturbing bat roosts • Active bat roosts will not be disturbed, and will be provided a minimum buffer of 500 feet where preexisting disturbance is moderate or 750 feet where preexisting disturbance is minimal. Confirmation of buffer distances and determination of the need for a biological monitor for active maternity roosts or hibernacula will be obtained in consultation with CDFW. At a minimum, when an active maternity roost or hibernaculum is present within 750 feet of a construction site, a qualified biologist will conduct an initial assessment of the roost response to construction activities and will recommend buffer expansion if there are signs of disturbance from the roost. • Structures (natural or artificial) showing evidence of significant bat use within the past year will be left in place as habitat wherever feasible. Should such a structure need to be removed or disturbed, CDFW will be consulted to determine appropriate buffers, timing and methods, and compensatory mitigation for the loss of the roost. • All project proponents will provide environmental awareness training to construction personnel, establish buffers, and initiate consultation with CDFW if needed. • Artificial night lighting within 500 feet of any roost will be shielded and angled such that bats may enter and exit the roost without artificial illumination and the roost does not receive artificial exposure to visual predators.	During construction and operation	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
• Tree and vegetation removal will be conducted outside the maternity season (April 1–September 15) to avoid disturbance of maternity groups of foliage-roosting bats. • If a maternity roost or hibernaculum is present within 500 feet of the construction site where preexisting disturbance is moderate or within 750 feet where preexisting disturbance is minimal, a qualified biological monitor will be onsite during groundbreaking activities.				
Mitigation Measure BIO-14a: Site and select turbines to minimize potential mortality of bats All project proponents will use the best information available to site turbines and to select from turbine models in such a manner as to reduce bat collision risk. The siting and selection process will take into account bat use of the area and landscape features known to increase collision risk (trees, edge habitats, riparian areas, water bodies, and wetlands). Measures include but are not limited to siting turbines the greatest distance feasible up to 500 meters (1,640) feet from still or flowing bodies of water, riparian habitat, known roosts, and tree stands (California Bat Working Group 2006:6). To generate site-specific "best information" to inform turbine siting and operation decisions, a bat habitat assessment and roost survey will be conducted in the project area to identify and map habitat of potential significance to bats, such as potential roost sites (trees and shrubs, significant rock formations, artificial structures) and water sources. Turbine siting decisions will incorporate relevant bat use survey data and bat fatality records published by other projects in the APWRA. Roost surveys will be carried out according to the methods described in Mitigation Measure-BIO-12a.	Prior to site disturbance	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval
Mitigation Measure BIO-14b: Implement postconstruction bat fatality monitoring program for all repowering projects A scientifically defensible, postconstruction bat fatality monitoring program will be implemented to estimate actual bat fatalities and determine if additional mitigation is required. Bat-specific modifications to the 3-year postconstruction monitoring program described in Mitigation Measure BIO-11g, developed in accordance with CEC 2007 and with appropriate recommendations from California Bat Working Group guidelines (2006), will be implemented.	During operation	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
In addition to the requirements outlined in Mitigation Measure BIO-11g, the following two bat-specific requirements will be added. • Include on the TAC at least one biologist with significant expertise in bat research and wind energy impacts on bats. • Conduct bat acoustic surveys concurrently with fatality monitoring in the project area to estimate nightly, seasonal, or annual variations in relative activity and species use patterns, and to contribute to the body of knowledge on seasonal bat movements and relationships between bat activity, environmental variables, and turbine fatality. Should emerging research support the approach, these data may be used to generate site-specific predictive models to increase the precision and effectiveness of mitigation measures (e.g., the season-specific, multivariate models described by Weller and Baldwin 2011:11). Acoustic bat surveys will be designed and data analysis conducted by qualified biologists with significant experience in acoustic bat survey techniques. Methods will be informed by the latest available guidelines (California Energy Commission guidelines, 2007); California Bat Working Group guidelines, 2006), except where best available science supports technological or methodological updates. High-quality, sensitive acoustic equipment will be used to produce data of sufficient quality to generate species identifications. Survey design and methods will be scientifically defensible and will include, at a minimum, the following elements. ○ Acoustic detectors will be installed at multiple stations to adequately sample range of habitats in the project area for both resident and migratory bats. The number and locations for acoustic monitoring will be developed in consultation with the TAC. The number of detector arrays installed per project site should incorporate emerging research on the density of detectors required to adequately meet sampling goals and inform mitigation approaches (Weller and Baldwin 2011:10). ○ Acoustic detector arrays will sample multiple airspace heights including as close to the repowered rotor swept area as possible Vertical structures used for mounting may be preexisting or may be installed for the project (e.g., temporary or permanent meteorological towers). ○ Surveys will be conducted such that data are collected continuously for a minimum of 90 days between mid-August and mid-November to cover the activity transition from maternity to migration season and determine if there is elevated activity during migration. Survey season may be adjusted to more				

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
accurately reflect the full extent of the local migration season and/or season(s) of greatest local bat fatality risk, if scientifically sound data support doing so. ○ Anticipated adaptive management goals, such as determining justifiable timeframes to reduce required periods of cut-in speed adjustments, will be reviewed with the TAC and incorporated in designing the acoustic monitoring and data analysis program. Modifications to the fatality search protocol will be implemented to obtain better information on the number and timing of bat fatalities (e.g., Johnston et al. 2013:85). Modifications will include decreases in the transect width and search interval for a period of time coinciding with high levels of bat mortality, i.e., the fall migration season (roughly August to early November, or as appropriate in the view of the TAC). The nature of bat-specific transect distance and search intervals will be determined in consultation with the TAC and will be guided by scientifically sound and pertinent data on rates of bat carcass detection at wind energy facilities (e.g., Johnston et al. 2013:54–55) and site-specific data from APWRA repowering project fatality monitoring programs as these data become available. Other methods to achieve the goals of the bat fatality monitoring program while avoiding prohibitive costs may be considered subject to approval by the TAC, if these methods have been peer reviewed and evidence indicates the methods are effective. For example, if project proponents wish to have the option of altering search methodology to a newly developed method, such as searching only roads and pads (Good et al. 2011:73), a statistically robust field study to index the results of the methodology against standard search methods will be conducted concurrently to ensure site-specific, long-term validity of the new methods. Finally, detection probability trials will utilize bat carcasses to develop bat-specific detection probabilities. Care should be taken to avoid introducing novel disease reservoirs; such avoidance will entail using onsite fatalities or using carcasses obtained from within a reasonably anticipated flight distance for that species.				
Mitigation Measure BIO-14c: Prepare and publish annual monitoring reports on the findings of bat use of the project area and fatality monitoring results Annual reports of bat use results and fatality monitoring will be produced within 3 months of the end of the last day of fatality monitoring. Special-status bat species records will be reported to CNDDB.	Within 3 months of the end of the last day of fatality monitoring	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
Mitigation Measure BIO-14d: Develop and implement a bat adaptive management plan In concert with Mitigation Measure BIO-14b, all project proponents will develop adaptive management plans to ensure appropriate, feasible, and current incorporation of emerging information. The goals of the adaptive management plans are to ensure that the best available science and emerging technologies are used to assess impacts on bats, and that impacts are minimized to the greatest extent possible while maximizing energy production. The project-specific adaptive management plans will be used to adjust operation and mitigation to incorporate the results of project area monitoring and new technology and research results when sufficient evidence exists to support these new approaches. These plans will be reviewed by the TAC and approved by the City. All adaptive management measures will be implemented within a reasonable timeframe, sufficient to allow the measures to take effect in the first fall migration season following the year of monitoring in which the adaptive management threshold was crossed. ADMMs may be modified by the City in consultation with the TAC to take into account current research, site-specific data, and the most effective impact reduction strategies. ADMMs will include a scientifically defensible, controlled research component and minimum post-implementation monitoring time to evaluate the effectiveness and validity of the measures. The minimum monitoring time will consist of three sequential fall seasons of the bat-specific mortality monitoring program covering the 3–4 months of the year in which the highest bat mortality has been observed: likely August–November. The start and end dates of the 3–4 months of bat-specific mortality monitoring period will be based on existing fatality data and in consultation with the TAC. Determining a fatality threshold to trigger adaptive management is not straightforward, as insufficient information exists on the status and vitality of the populations of migratory bat species subject to mortality in the APWRA. The low estimate of anticipated bat fatality rates is from the Vasco Winds project in the APWRA. Applying this rate programmatically would result in an estimate of 21,000 bats killed over the 30-year life of the program. The high estimate is from the Montezuma Hills Wind Resource Area. Applying this rate programmatically would result in an estimate of 49,050 bats killed over the 30-year life of the program. Bats are slow to reproduce, and turbines may be more likely to kill adult bats than juveniles, suggesting that a conservative approach is warranted. Accordingly, an initial adaptive management threshold will be established using the low fatality	Prior to and during all site disturbance	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
estimates, or 1.679 fatalities/MW/year, to ensure that the most conservative trigger for implementation of adaptive management measures is adopted. If postconstruction fatality monitoring results in a point estimate for the bat fatality rate that exceeds the 1.679 fatalities/MW/year threshold by a statistically significant amount, then, in consultation with the TAC, ADMM-7 and ADMM-8 (described below) for bats will be implemented. It is important to note that neither the high nor the low estimate speaks to the ability of bat populations to withstand the associated levels of take. The initial fatality rate threshold triggering adaptive management may be modified by the TAC if appropriate and if such adaptation is supported by the best available science. The TAC may direct implementation of adaptive management measures for other appropriate reasons, such as an unexpectedly and markedly high fatality rate observed for any bat species, or special-status species being killed in unexpectedly high numbers. ADMMs for bats may be implemented using a stepped approach until necessary fatality reductions are reached, and monitoring methods must be revised as needed to ensure accurate measurement of the effectiveness of the ADMMs. Additional ADMMs for bats should be developed as new technologies or science supports doing so. **ADMM-7: Seasonal Turbine Cut-in Speed Increase.** Cut-in speed increases offer the most promising and immediately available approach to reducing bat fatalities at fourth-generation wind turbines. Reductions in fatalities (53–87%) were observed when increasing modern turbine cut-in speed to 5.0–6.5 m/s (Arnett et al. 2009:3; Good et al. 2012:iii). While implementing this measure immediately upon a project's commencement would likely reduce bat fatalities, that assumption is not yet supported by conclusive data. Moreover, without establishing baseline fatality at repowered projects, there would be no way to determine the effectiveness of the approach or whether the costs of increased cut-in speeds (and consequent power generation reductions) were providing fatality reductions. Cut-in speed increases will be implemented as outlined below, with effectiveness assessed annually. • The project proponent will increase cut-in speed to 5.0 m/s from sunset to sunrise during peak migration season (generally August–October). If this is ineffective, the project proponent will increase turbine cut-in speed by annual increments of 0.5 m/s until target fatality reductions are achieved.				

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
• The project proponent may refine site-specific migration start dates on the basis of pre- and postconstruction acoustic surveys and ongoing review of dates of fatality occurrences for migratory bats in the APWRA. • The project proponent may request a shorter season of required cut-in speed increases with substantial evidence that similar levels of mortality reduction could be achieved. Should resource agencies and the TAC find there is sufficient support for a shorter period (as low as 8 weeks), evidence in support of this shorter period will be documented for the public record and the shorter period may be implemented. • The project proponent may request shorter nightly periods of cut-in speed increases with substantial evidence from defensible onsite, long-term postconstruction acoustic surveys indicating predictable nightly timeframes when target species appear not to be active. Target species are here defined as migratory bats or any other species appearing repeatedly in the fatality records. • The project proponent may request exceptions to cut-in speed increases for particular weather events or wind patterns if substantial evidence is available from onsite acoustic or other monitoring to support such exceptions (i.e., all available literature and onsite surveys indicate that bat activity ceases during specific weather events or other predictable conditions). • In the absence of defensible site-specific data, mandatory cut-in speed increases will commence on August 1 and continue through October 31, and will be in effect from sunset to sunrise. **ADMM-8: Emerging Technology as Mitigation.** The project proponent may request, with consultation and approval from agencies, replacement or augmentation of cut-in speed increases with developing technology or another mitigation approach that has been proven to achieve similar bat fatality reductions. The project proponent may also request the second tier of adaptive management to be the adoption of a promising but not fully proven technology or mitigation method. These requests are subject to review and approval by the TAC and must include a controlled research component designed by a qualified principal investigator so that the effectiveness of the method may be accurately assessed. Some examples of such emerging technologies and research areas that could be incorporated in adaptive management plans are listed below. • The use of acoustic deterrents (Arnett et al. 2013:1).				

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
• The use of altitude-specific radar, night vision and/or other technology allowing bat use monitoring and assessment of at-risk bat behavior (Johnston et al. 2013: 90-91) if research in these areas advances sufficiently to allow effective application of these technologies. • Application of emerging peer-reviewed studies on bat biology (such as studies documenting migratory corridors or bat behavior in relation to turbines) that support specific mitigation methods.				
Mitigation Measure BIO-14e: Compensate for expenses incurred by rehabilitating injured bats The cost of reasonable, licensed rehabilitation efforts for any injured bats taken to wildlife care facilities from the program area will be assumed in full by project proponents.	During operation	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval
Mitigation Measure BIO-15: Compensate for the loss of alkali meadow habitat If alkali meadow habitat is filled or disturbed as part of a repowering project, the project proponent will compensate for the loss of this habitat to ensure no net loss of habitat functions and values. Compensation ratios will be based on site-specific information and determined through coordination with state and federal agencies (CDFW, USFWS, USACE). Unless specified otherwise by a resource agency, the compensation will be at a minimum 1:1 ratio (1 acre restored or created for every 1 acre filled) and may be a combination of onsite restoration/creation, offsite restoration, and mitigation credits. A restoration and monitoring plan will be developed and implemented. The plan will describe how alkali meadow habitat will be created and monitored.	Prior to disturbance	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval
Cultural Resources				
Mitigation Measure CUL-2a: Conduct a preconstruction cultural field survey and cultural resources inventory and evaluation The City will require applicants to retain qualified personnel to conduct an archaeological field survey of the project area to determine whether significant resources existing within the project area. The inventory and evaluation will include the documentation and result of these efforts, the evaluation of any cultural resources identified during the survey, and cultural resources monitoring, if the survey identifies that it is necessary.	Prior to disturbance	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
Mitigation Measure CUL-2b: Develop a treatment plan for any identified significant cultural resources If any significant resources are identified through the preconstruction survey, a treatment plan that could include site avoidance, capping, or data recovery will be developed and implemented.	Prior and during all site disturbance	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval
Mitigation Measure CUL-2c: Conduct worker awareness training for archaeological resources prior to construction Prior to the initiation of any site preparation and/or the start of construction, the project applicant will ensure that all construction workers receive training overseen by a qualified professional archaeologist who is experienced in teaching nonspecialists, to ensure that forepersons and field supervisors can recognize archaeological resources (e.g., areas of shellfish remains, chipped stone or groundstone, historic debris, building foundations, human bone) in the event that any are discovered during construction.	Prior to and during all site disturbance	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval
Mitigation Measure CUL-2d: Stop work if cultural resources are encountered during ground-disturbing activities The project applicant will ensure that construction specifications include a stop-work order if prehistoric or historic-era cultural resources are unearthed during ground-disturbing activities. If such resources are encountered, the project applicant will immediately halt all activity within 100 feet of the find until a qualified archaeologist can assess the significance of the find. Prehistoric materials might include obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or tool-making debris; culturally darkened soil ("midden") containing heat-affected rocks and artifacts; stone milling equipment (e.g., mortars, pestles, handstones, or milling slabs); and battered-stone tools, such as hammerstones and pitted stones. Historic-period materials might include stone, concrete, or adobe footings and walls; filled wells or privies; and deposits of metal, glass, and/or ceramic refuse. If the find is determined to be potentially significant, the archaeologist, in consultation with the Native American representative (if appropriate), will develop a treatment plan that could include site avoidance, capping, or data recovery.	During construction and other site disturbance	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
Mitigation Measure CUL-3: Stop work if human remains are encountered during ground-disturbing activities The project applicant will ensure the construction specifications include a stop-work order if human remains are discovered during construction or demolition. There will be no further excavation or disturbance of the site within a 100-foot radius of the location of such discovery, or any nearby area reasonably suspected to overlie adjacent remains. The Alameda County Coroner will be notified and will make a determination as to whether the remains are Native American. If the Coroner determines that the remains are not subject to his authority, he will notify the Native American Heritage Commission, who will attempt to identify descendants of the deceased Native American. If no satisfactory agreement can be reached as to the disposition of the remains pursuant to this state law, then the landowner will re-inter the human remains and items associated with Native American burials on the property in a location not subject to further subsurface disturbance. A final report will be submitted to Alameda County. This report will contain a description of the mitigation program and its results, including a description of the monitoring and testing resources analysis methodology and conclusions and a description of the disposition/curation of the resources.	During site disturbance	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval
Geology, Soils, Mineral Resources, and Paleontological Resources				
Mitigation Measure GEO-1: Conduct site-specific geotechnical investigation and implement design recommendations in subsequent geotechnical report Prior to construction activities at any site, the project proponent will retain a geotechnical firm with local expertise in geotechnical investigation and design to prepare a site-specific geotechnical report. This report will be prepared by a licensed geotechnical engineer or engineering geologist and will be submitted to the County building department as part of the approval process. This report will be based on data collected from subsurface exploration, laboratory testing of samples, and surface mapping and will address the following issues. • Potential for surface fault rupture and turbine site location: The geotechnical report will investigate the Greenville, Corral Hollow-Carnegie, and the Midway faults (as appropriate to the location) and determine whether they pose a risk of surface rupture. Turbine foundations and power collection systems will be sited according to recommendations in this report.	Prior to site disturbance	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
• Strong ground shaking: The geotechnical report will analyze the potential for strong ground shaking in project area and provide turbine foundation design recommendations, as well as recommendations for power collection systems. • Slope failure: The geotechnical report will investigate the potential for slope failure (both seismically and nonseismically induced) and develop site-specific turbine foundation and power collection system plans engineered for the terrain, rock and soil types, and other conditions present at the program area in order to provide long-term stability. • Expansive soils: The geotechnical report will assess the soil types in the program area and determine the best engineering designs to accommodate the soil conditions. • Unstable cut or fill slopes: The geotechnical report will address geologic hazards related to the potential for grading to create unstable cut or fill slopes and make site-specific recommendations related to design and engineering.				
Mitigation Measure GEO-7a: Retain a qualified professional paleontologist to monitor significant ground-disturbing activities The applicant will retain a qualified professional paleontologist as defined by the SVP's *Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources* (2010) to monitor activities with the potential to disturb sensitive paleontological resources. Data gathered during detailed project design will be used to determine the activities that will require the presence of a monitor. In general, these activities include any ground-disturbing activities involving excavation deeper than 3 feet in areas with high potential to contain sensitive paleontological resources. Recovered fossils will be prepared so that they can be properly documented. Recovered fossils will then be curated at a facility that will properly house and label them, maintain the association between the fossils and field data about the fossils' provenance, and make the information available to the scientific community.	During site disturbance	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval
Mitigation Measure GEO-7b: Educate construction personnel in recognizing fossil material The applicant will ensure that all construction personnel receive training provided by a qualified professional paleontologist experienced in teaching non-specialists to ensure that they can recognize fossil materials in the event any are discovered during construction.	Prior to and during all site disturbance	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
Mitigation Measure GEO-7c: Stop work if substantial fossil remains are encountered during construction If substantial fossil remains (particularly vertebrate remains) are discovered during earth disturbing activities, activities within 100 feet of the find will stop immediately until a state-registered professional geologist or qualified professional paleontologist can assess the nature and importance of the find and a qualified professional paleontologist can recommend appropriate treatment. Treatment may include preparation and recovery of fossil materials so that they can be housed in an appropriate museum or university collection and may also include preparation of a report for publication describing the finds. The applicant will be responsible for ensuring that recommendations regarding treatment and reporting are implemented.	During construction	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval
Greenhouse Gas Emissions				
Mitigation Measure GHG-2a: Implement best available control technology for heavy-duty vehicles The applicant will require existing trucks/trailers to be retrofitted with the best available technology and/or ARB-approved technology consistent with the ARB Truck and Bus Regulation (California Air Resources Board 2011). The ARB Truck and Bus Regulation applies to all diesel-fueled trucks and buses with a gross vehicle weight rating (GVWR) greater than 14,000 pounds. Starting January 1, 2015, the applicant must replace lighter trucks (GVWR of 14,001 to 26,000 pounds) with engines that are 20 years or older with newer trucks. The Applicant has the option to install a PM filter retrofit on a lighter truck by 2014 to make the truck exempt from replacement until January 1, 2020, and any lighter truck equipped with a PM filter retrofit prior to July 2011 would receive credit toward the compliance requirements for a heavier truck or bus in the same fleet.	During construction and during operation if applicable	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions

Starting January 1, 2012, the applicant is required to meet the engine model year schedule shown below for heavier trucks (GVWR greater than 26,000 pounds). To comply with the schedule, the applicant will install the best available PM filter on 1996 model year and newer engines and would replace the vehicle 8 years later. The Applicant will replace trucks with 1995 model year and older engines starting in 2015. Replacements with 2010 model year or newer engines meets the final requirements, but the applicant could also replace trucks with used trucks that would have a future compliance date on the schedule. For example, a replacement with a 2007 model year engine complies until 2023. By 2023 all trucks and buses must have 2010 model year engines with few exceptions.

Engine Model Year Schedule for Heavier Trucks

Engine Year	Requirement from January 1
Pre-1994	No requirements until 2015, then 2010 engine
1994–1995	No requirements until 2016, then 2010 engine
1996–1999	PM filter from 2012 to 2020, then 2010 engine
2000–2004	PM filter from 2013 to 2021, then 2010 engine
2005–2006	PM filter from 2014 to 2022, then 2010 engine
2007–2009	No requirements until 2023, then 2010 engine
2010	Meets final requirements

In addition, the applicant could comply with a phase-in option that would allow the applicant to decide which vehicles to retrofit or replace, regardless of engine model year. The applicant must report information about all heavier trucks starting January 31, 2012, to use this option.

Phase-In Option for Heavier Trucks

Compliance Date	Vehicles with PM Filters
1-Jan-12	30%

Mitigation Measure			Timing	Implementing Party	Monitoring Party	Monitoring Actions
The Applicant could comply by demonstrating that trucks have met the percentage requirement each year as shown in the table below. For example, by 2012 the applicant's fleet would need to have PM filters on 30% of the heavier trucks in the fleet. This option counts 2007 model year and newer engines originally equipped with PM filters toward compliance and would reduce the overall number of retrofit PM filters needed. Any engine with a PM filter regardless of model year would be compliant until at least 2020. Beginning January 1, 2020, all heavier trucks would need to meet the requirements specified in the Compliance Schedule for Heavier Trucks.	1-Jan-13	60%				
	1-Jan-14	90%				
	1-Jan-15	90%				
	1-Jan-16	100%				
Mitigation Measure GHG-2b: Install low SF_6 leak rate circuit breakers and monitoring The applicant will ensure that any new circuit breaker installed at a substation has a guaranteed SF_6 leak rate of 0.5% by volume or less. The applicant will provide the City with documentation of compliance, such as specification sheets, prior to installation of the circuit breaker. In addition, the applicant will monitor the SF_6-containing circuit breakers at the substation consistent with Scoping Plan Measure H-6 for the detection and repair of leaks.			During construction and operation	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval
Mitigation Measure GHG-2c: Require new construction to use building materials containing recycled content The applicant will require the construction of all new substation and other permanent buildings to incorporate materials for which the sum of post-consumer recycled content plus one-half of the post-industrial content constitutes at least 10% of the total value of the materials in the project.			During construction and operation	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval
Mitigation Measure GHG-2d: Comply with construction and demolition debris management ordinance The applicant will comply with the County's revised Green Building Ordinance regarding construction and demolition debris as follows: (1) 100% of inert waste and 50% wood/vegetative/scrap metal not including Alternative Daily Cover (ADC) and unsalvageable material will be put to other beneficial uses at landfills, and (2)			During construction and operation	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
100% of inert materials (concrete and asphalt) will be recycled or put to beneficial reuse.				
Hazards and Hazardous Materials				
Mitigation Measure HAZ-4: Perform a Phase I Environmental Site Assessment prior to construction activities and remediate if necessary Prior to construction, the project proponent will conduct a Phase I environmental site assessment in conformance with the American Society for Testing and Materials Standard Practice E1527-05. All environmental investigation, sampling, and remediation activities associated with properties in the project area will be conducted under a work plan approved by the regulatory oversight agency and will be conducted by the appropriate environmental professional consistent with Phase I site assessment requirements as detailed below. The results of any investigation and/or remediation activities conducted in the project area will be included in the project-level EIR. A Phase I environmental site assessment should, at a minimum, include the components listed below. • An onsite visit to identify current conditions (e.g., vegetative dieback, chemical spill residue, presence of above- or underground storage tanks). • An evaluation of possible risks posed by neighboring properties. • Interviews with persons knowledgeable about the site's history (e.g., current or previous property owners, property managers). • An examination of local planning files to check prior land uses and any permits granted. • File searches with appropriate agencies (e.g., State Water Resources Control Board, fire department, County health department) having oversight authority relative to water quality and groundwater and soil contamination. • Examination of historical aerial photography of the site and adjacent properties. • A review of current and historic topographic maps of the site to determine drainage patterns. • An examination of chain-of-title for environmental liens and/or activity and land use limitations.	Prior to site disturbance	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
If the Phase I environmental site assessment indicates likely site contamination, a Phase II environmental site assessment will be performed (also by an environmental professional). A Phase II environmental site assessment would comprise the following. • Collection of original surface and/or subsurface samples of soil, groundwater, and building materials to analyze for quantities of various contaminants. • An analysis to determine the vertical and horizontal extent of contamination (if the evidence from sampling shows contamination). If contamination is uncovered as part of Phase I or II environmental site assessments, remediation will be required. If materials such as asbestos-containing materials, lead-based paint, or PCB-containing equipment are identified, these materials will be properly managed and disposed of prior to or during the demolition process. Any contaminated soil identified on a project site must be properly disposed of in accordance with DTSC regulations in effect at the time. Hazardous wastes generated by the proposed project will be managed in accordance with the California Hazardous Waste Control Law (HSC, Division 20, Chapter 6.5) and the Hazardous Waste Control Regulation (Title 22, CCR, Division 4.5). If, during construction/demolition of structures, soil or groundwater contamination is suspected, the construction/demolition activities will cease and appropriate health and safety procedures will be implemented, including the use of appropriate personal protective equipment (e.g., respiratory protection, protective clothing, helmets, goggles).				
Hydrology and Water Quality				
Mitigation Measure WQ-1: Comply with NPDES requirements Project contractors will obtain coverage under the General Construction Permit before the onset of any construction activities, because all projects will entail disturbance of 1 acre or more. A SWPPP will be developed by a qualified engineer or erosion control specialist in accordance with the appropriate Board's requirements for NPDES compliance and implemented prior to the issuance of any grading permit before construction. The SWPPP will be kept onsite during	Prior to and during all site disturbance	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
construction activity and will be made available upon request to representatives of the Regional Water Boards. Compliance and coverage with the *Storm Water Management Program* and General Construction Permit will require controls of pollutant discharges that utilize BMPs and technology to reduce erosion and sediments to meet water quality standards. BMPs may consist of a wide variety of measures taken to reduce pollutants in stormwater and other nonpoint-source runoff. Measures range from source control, such as reduced surface disturbance, to the treatment of polluted runoff, such as detention basins. BMPs to be implemented as part of the *Storm Water Management Program* and General Construction Permit (and SWPPP) may include the following practices. • Temporary erosion control measures (such as silt fences, staked straw bales/wattles, silt/sediment basins and traps, check dams, geofabric, sandbag dikes, and temporary revegetation or other ground cover) will be employed to control erosion from disturbed areas. • Use a dry detention basin (which is typically dry except after a major rainstorm, when it will temporarily fill with stormwater), designed to decrease runoff during storm events, prevent flooding, and allow for off-peak discharge. Basin features will include maintenance schedules for the periodic removal of sediments, excessive vegetation, and debris that may clog basin inlets and outlets. • Cover or apply nontoxic soil stabilizers to inactive construction areas (previously graded areas inactive for 10 days or more) that could contribute sediment to waterways. • Enclose and cover exposed stockpiles of dirt or other loose, granular construction materials that could contribute sediment to waterways. • Ensure that no earth or organic material will be deposited or placed where it may be directly carried into a stream, marsh, slough, lagoon, or body of standing water. • Prohibit the following types of materials from being rinsed or washed into the streets, shoulder areas, or gutters: concrete, solvents and adhesives, thinners, paints, fuels, sawdust, dirt, gasoline, asphalt and concrete saw slurry, and heavily chlorinated water.				

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
• Ensure that grass or other vegetative cover will be established on the construction site as soon as possible after disturbance. The contractor will select a combination of BMPs (consistent with Section A of the Construction General Permit) that is expected to minimize runoff and remove contaminants from stormwater discharges. The final selection of BMPs will be subject to approval by the San Francisco Bay Regional Water Board and the Central Valley Water Board. The contractor will verify that an NOI has been filed with the State Water Board and that a SWPPP has been developed before allowing construction to begin. The contractor will perform inspections of the construction area, to verify that the BMPs specified in the SWPPP are properly implemented and maintained. The contractor will notify the appropriate Regional Water Board immediately if there is a noncompliance issue and will require compliance. If necessary, the contractor or their agent will require that additional BMPs be designed and implemented if those originally constructed do not achieve the identified performance standard.				
Noise				
Mitigation Measure NOI-1: Perform project-specific noise studies and implement measures to comply with County noise standards The applicant for any proposed repowering project will retain a qualified acoustic consultant to prepare a report that evaluates noise impacts associated with operation of the proposed wind turbines. This evaluation will include a noise monitoring survey to quantify existing noise conditions at noise sensitive receptors located within 2,000 feet of any proposed turbine location. This survey will include measurement of the daily A-weighted L_{dn} values over a 1-week period and concurrent logging of wind speeds at the nearest meteorological station. The study will include a site-specific evaluation of predicted operational noise levels at nearby noise sensitive uses. If operation of the project is predicted to result in noise in excess of 55 dBA (L_{dn}) where noise is currently less than 55 dBA (L_{dn}) or result in a 5 dB increase where noise is currently greater than 55 dBA(L_{dn}), the applicant will modify the project, including selecting new specific installation sites within the program area, to ensure that these performance standards will not be exceeded. Methods that can be used to ensure compliance with these performance standards include but not limited to increasing the distance between proposed turbines and noise sensitive uses and the use of alternative turbine operational modes to reduce noise. Upon completion of the evaluation, the project applicant will submit a report	Prior to and during all site disturbance	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
to the City demonstrating how the project will comply with these performance standards. After review and approval of the report by County staff, the applicant will incorporate measures as necessary into the project to ensure compliance with these performance standards.				
Mitigation Measure NOI-2: Employ noise-reducing practices during decommissioning and new turbine construction Project applicants will employ noise-reducing construction practices so that construction noise does not exceed Alameda County noise ordinance standards. Measures to limit noise may include the following: • Prohibit noise-generating 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 equipment noise upon prior approval by the City. In no case will the applicant be allowed to use gasoline or diesel engines without muffled exhausts.	Prior to and during all site disturbance	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval
Transportation/Traffic				
Mitigation Measure TRA-1: Develop and implement a construction traffic control plan Prior to starting construction-related activities, the Applicant shall prepare and implement a Traffic Control Plan (TCP) that will reduce or eliminate impacts associated with the proposed program. The TCP shall adhere to Alameda County and Caltrans requirements, and must be submitted for review and approval of the County Public Works Department prior to implementation. The TCP shall include the following elements. The County and Caltrans may require additional elements to be identified during their review and approval of the TCP.	Prior to and during all site disturbance	City—adopt a Condition of Approval; Operator—implement	City	Monitor compliance with Conditions of Approval

Mitigation Measure	Timing	Implementing Party	Monitoring Party	Monitoring Actions
• Schedule construction hours to minimize concentrations of construction workers commuting to/from the project site during typical peak commute hours (7 a.m. to 9 a.m. and 4 p.m. to 6 p.m.). • Limit truck access to the project site during typical peak commute hours (7 a.m. to 9 a.m. and 4 p.m. to 6 p.m.). • Require that written notification be provided to contractors regarding appropriate haul routes to and from the program area, as well as the weight and speed limits on local county roads used to access the program area. • Provide access for emergency vehicles to and through the program area at all times. • When lane/road closures occur during delivery of oversized loads, provide advance notice to local fire, police, and emergency service providers to ensure that alternative evacuation and emergency routes are designated to maintain service response times. • Provide adequate onsite parking for construction trucks and worker vehicles. • Require suitable public safety measures in the program area and at the entrance roads, including fences, barriers, lights, flagging, guards, and signs, to give adequate warning to the public of the construction and of any dangerous conditions that could encountered as a result thereof. • Complete road repairs on local public roads as needed during construction to prevent excessive deterioration. This work may include construction of temporary roadway shoulders to support any necessary detour lanes. • Repair or restore the road right-of-way to its original condition or better upon completion of the work. • Coordinate program-related construction activities, including schedule, truck traffic, haul routes, and the delivery of oversized or overweight materials, with Alameda County, Caltrans, and affected cities to identify and minimize overlap with other area construction projects.				

Exhibit C

Rooney Ranch Wind Repowering Project Statement of Overriding Considerations

Pursuant to the requirements of Public Resources Code Sections 21002, 21002.1, and 21081, and Section 15093 of the State CEQA Guidelines, the Santa Clara City Council finds that approval of the Rooney Ranch Wind Repowering Project, whose potential environmental impacts have been evaluated in the *Implementation Checklist*, as a tiered project related to the Altamont Pass Wind Resource Area Repowering Program EIR (PEIR), and as indicated in the findings presented in Exhibit A, will result in the occurrence of significant effects that are not avoided or substantially lessened, as described in Exhibit A. These significant effects are listed below.

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 BIO-11: Avian mortality resulting from interaction with wind energy facilities

Impact BIO-14: Turbine-related fatalities of special-status and other bats

Impact BIO-19: Potential impact on 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 native wildlife nursery sites

Further, as required by CEQA Section 21081(b) and State CEQA Guidelines Section 15093, the City Council finds that the unavoidable significant effects listed above are outweighed by specific overriding economic, legal, social, technological, or other benefits offered by the project. Specifically, the project will provide the benefits described below.

Environmental Benefits

California's Renewables Portfolio Standard (RPS) requires all electricity retailers in the state, including publicly owned utilities, investor-owned utilities, electricity service providers, and community choice aggregators, to adopt RPS goals of obtaining 20% of retail energy sales from renewable energy sources by the end of 2013, 25% by the end of 2016, and 33% by the end of 2020. Originally established in 2002 under Senate Bill (SB) 1078 and amended in 2010 by SB 107, the RPS was codified by SB X1-2 in 2011. Governor Edmund G. Brown, Jr., signed SB 350 into legislation in October 2015, requiring retail sellers and publicly owned utilities to procure 50% of their electricity from eligible renewable energy resources by 2030. On September 10, 2018, Governor Brown signed SB 100, establishing that 100% of all electricity in California must be obtained from renewable and zero-carbon energy resources by December 31, 2045. SB 100 also creates new standards for the RPS

goals established by SB 350. Specifically, the bill increases required energy from renewable sources for both investor- and publicly owned utilities from 50% to 60% by 2030. Incrementally, these energy providers must also have a renewable energy supply of 33% by 2020, 44% by 2024, and 52% by 2027. The updated RPS goals are considered achievable, since many California energy providers are already meeting or exceeding the RPS goals established by SB 350.

Wind energy is a renewable energy source that is limited to just a few major wind resource areas in California, one of which is the Altamont Pass Wind Resource Area where the Rooney Ranch Wind Project is proposed. The project will assist California in meeting the legislated RPS and goals established under SB 350 for the generation of renewable electric energy both by maintaining renewable energy output and by enabling and accelerating the repowering of old-generation turbines, which are known to be hazardous to avian species.

Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006, establishes a statewide goal of reducing greenhouse gas (GHG) emissions to 1990 levels by 2020. This statute requires the California Air Resources Board (ARB) to develop a Scoping Plan that describes the specific programs that California will employ to meet this goal. The Scoping Plan was first considered by ARB in 2008 and its first update was adopted on May 22, 2014. The RPS program is an integral part of the suite of GHG emissions reduction programs that are relied upon by the Scoping Plan. Therefore, the project will assist California in maintaining its legislated Global Warming Solutions Act criteria that require reductions in carbon dioxide and other GHG emissions—reductions that in turn represent benefits in the region. Approval of the project will aid the State in meeting energy needs in an efficient and environmentally sound manner.

Economic Benefits

The project will provide new full-time jobs during construction. The project will provide economic benefits to the local community and its residents by increased spending in the community as a result of construction- and development-related work. In addition, the project is compatible with the existing agricultural use. It will provide financial support to the City through a revenue stream from ground leases in the project area. Additionally, it will promote the continued economic viability of grazing on the land. The City can use the funding to enhance or continue agricultural operations. Project road maintenance will also enhance agricultural operations by improving access throughout the project properties.

Technological Benefits

The project will provide technological benefits through the replacement of large numbers of existing wind energy collection systems with a smaller number of more technologically advanced systems. Although the new turbines are larger, the available evidence indicates that repowering with the improved technology could substantially reduce turbine-related avian fatalities (although fatalities remain a significant impact).

As discussed in Section 3. 11 of the PEIR, the fourth-generation turbines are upwind turbines, meaning each turbine faces into the wind, so the wind encounters the rotor blades before the tower and nacelle, making for quieter operations than the existing downwind turbines. Additionally, the modern turbines have relatively low rotational speeds and pitch control on the rotors, both of which

reduce sound levels compared to the sound produced by the turbines that previously operated in the project area.

Safety Benefits

Repowering would result in public safety benefits for several reasons: reductions in fire hazard, the underground placement of electrical lines, and improved turbine technology that reduces the risk of blade throw. Section 3.8 of the PEIR provides a discussion of fire risks and indicates that the most common causes of wildland fire at windfarms are hardware and conductor failures of power collection lines, dropping of collection lines, turbine malfunction or mechanical failure, and avian electrocution incidents. Because of their age, design, and large number, the old-generation turbines presented a greater risk of fire ignition than the proposed new turbines. Repowering, by reducing the number of turbines and undergrounding the electrical collection system, would therefore reduce the likelihood of fire ignition associated with hardware failure, electrical line failure, and avian electrocutions. Installation of new turbines would also greatly reduce the potential and probability of blade throw or failure associated with existing wind turbines. Most fourth-generation turbines, such as those proposed for the program, are equipped with newer safety and engineering features to reduce the risk of blade failure and are designed for safe operation under normal conditions. The rotors of these turbines are provided with blade pitch controls that regulate the angle of the rotor blade into the wind, as well as redundant brake mechanisms that can control speed and shutdown or slowdown in response to excessive wind speed. The greatly reduced number of individual wind turbines would further reduce the probability of blade throw, which in any case is far lower for new-generation than for old-generation turbines.

Benefits to the Knowledge Base

Post-construction monitoring, which will be required once the new turbines are in operation, will provide data to quantify the actual change in the extent of avian fatalities from repowering and the extent of avian fatalities for projects in the program area. This will contribute to the body of knowledge about avian fatalities in the Altamont Pass region and will support future environmental analyses and mitigations.

Summary

The City is obligated by Section 15093 of the State CEQA Guidelines to balance the competing interests of identified project benefits against the unavoidable environmental risks when determining whether to approve a project. The City Council finds that the project, with all the mitigation measures proposed, would best balance the advancement of wind technology, while also reducing the unavoidable impacts on protected or special-status avian wildlife species, including golden eagles and other raptors, to the lowest acceptable level.

ROONEY RANCH WIND REPOWERING PROJECT
ENVIRONMENTAL ANALYSIS AND CEQA CHECKLIST

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Acronyms and Abbreviations

AB	Assembly Bill
APE	area of potential effects
APLIC	Avian Power Line Interaction Committee
APWRA	Altamont Pass Wind Resource Area
ARB	California Air Resources Board
BAAQMD	Bay Area Air Quality Management District
BMPs	best management practices
CAAQS	California ambient air quality standards
CAP	Climate Action Plan
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
City	City of Santa Clara
CNDDB	California Natural Diversity Database
CO	carbon monoxide
CO_2e	carbon dioxide equivalent
County	Alameda County Community Development Agency
CRHR	California Register of Historic Resources
CUP	conditional use permit
CUPA	Certified Unified Program Agency
dBA	A-weighted decibel
DPM	diesel particulate matter
EACCS	East Alameda County Conservation Strategy
ECAP	East County Area Plan
EIR	environmental impact report
EPA	U.S. Environmental Protection Agency
FAA	Federal Aviation Administration
gen-tie	generation-tie
GHG	greenhouse gas
H&S	health and safety
HCP	habitat conservation plan
HDD	horizontal directional drilling
HMBP	Hazardous Materials Business Plan
I-	Interstate
kV	kilovolt
MW	megawatt
NAAQS	national ambient air quality standards
NAHC	Native American Heritage Commission
NCCP	natural community conservation plan
NO_X	nitrogen oxide
NRHP	National Register of Historic Places
O&M	Operations & Maintenance
PG&E	Pacific Gas and Electric Company
PRD	permit registration document

project or proposed project	Rooney Ranch Wind Repowering Project
QA/QC	quality assurance/quality control
ROG	reactive organic gases
Rooney	Rooney Ranch, LLC
RPS	Renewables Portfolio Standard
SB	Senate Bill
SF_6	sulfur hexafluoride
SJVAPCD	San Joaquin Valley Air Pollution Control District
SMARTS	Stormwater Multiple Application and Report Tracking System
SPCC	Spill Prevention Control and Countermeasures
SWPPP	stormwater pollution prevention plan
WSA	water supply assessment

Chapter 1
Introduction

On November 12, 2014, the Alameda County Community Development Agency (County) published and certified, as CEQA lead agency, the *Altamont Pass Wind Resource Area Repowering Final Program Environmental Impact Report* (PEIR) (Alameda County Community Development Agency 2014). A detailed account of the history and legal activities culminating in preparation of the PEIR is provided in that document. As it explains, subsequent repowering projects in the APWRA would be tiered off the PEIR, provided that they are consistent with the PEIR, and would accordingly be developed to be consistent with the County's goals, objectives, and conditions as set forth therein. This analysis has been prepared by the City of Santa Clara (City) as a responsible agency specifically to address the Rooney Ranch Wind Repowering Project (project or proposed project), in accordance with the PEIR.

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1.1 Project Overview

Rooney Ranch, LLC (Rooney) is proposing the Rooney Ranch Wind Repowering Project (project or proposed project) on two parcels in the Altamont Pass Wind Resource Area (APWRA) (Figure 1-1) . The project area consists of two contiguous parcels, owned by the City of Santa Clara (City), encompassing 578 acres. Rooney Ranch, LLC, a subsidiary of FTP Power LLC (dba sPower), proposed to repower a wind energy facility in the APWRA to replace outdated and inefficient wind turbines with fewer and more efficient turbines. The proposed project would entail replacement of 199 old wind turbines with up to seven new wind turbines and is expected to utilize turbines with generating capacities between 2.3 and 4.0 megawatts (MW), all similar in size and appearance, to develop up to 25.1 MW in output generation. Two conceptual alternative layouts are proposed, each using up to seven wind turbines. The layouts would use identical numbers and types of wind turbines and the turbine locations are nearly identical with small differences in the location of several turbines. The final layout would be selected on the basis of site constraints (i.e., avian siting considerations), data obtained from meteorological monitoring of the wind resources, and turbine availability. Each of these factors would be considered when micrositing turbines, with the final layout reflecting one or some combination of the alternative layouts. Existing roads would be used where possible, and temporary widening and some new roads would be necessary.

1.2 Relationship to the PEIR

The City has prepared this analysis and checklist to validate the project's conformance with the analysis and mitigation presented in the PEIR, and to ensure that the proposed project is in compliance with requirements of the California Environmental Quality Act (CEQA). The summary analysis in the checklist is intended to inform decision makers and the public of the project's conformity with the analysis in the PEIR and to identify the specific impacts and mitigation measures relevant to the project.

This analysis and checklist support the decision not to prepare a subsequent EIR pursuant to Section 15168(c)(2) of the State CEQA Guidelines. The relationship of the checklist (supported by this analysis) to the PEIR is consistent with the intent of a PEIR as established in State CEQA Guidelines Section 15168(d), which calls for use of an initial study to determine whether a later, directly related (or tiered) project would have new or different environmental effects that were not disclosed in the PEIR or that would warrant a new EIR. The environmental checklist prepared for the proposed project constitutes an initial study for the purpose of Section 15063, including its provision for use with a previously prepared EIR (Section 15063(b)(1)(B)). Moreover, any public notice required by City ordinance will state, as required by State CEQA Guidelines Section 15168(e), that the activities associated with the Rooney Ranch project are within the scope of the PEIR and that the PEIR adequately described and assessed these activities.

As shown in Chapter 3, *Environmental Analysis*, despite the changes summarized in Section 1.3, the proposed project would not result in any impacts not addressed in the PEIR, nor would it result in impacts of greater severity than those presented in the PEIR.

1.3 Changes Relevant to the PEIR Analysis

Since preparation of the PEIR, four factors relevant to the PEIR analysis have emerged. First, some of the turbines under consideration for the proposed project, while mostly within the overall dimensional specifications of the turbines analyzed in the PEIR, exceed the individual nameplate capacity of the turbines analyzed. The consequences of this change are two-fold: fewer turbines would be required to achieve the same project-level generation capacity, and the larger turbines would have a larger rotor-swept area.

The second factor involves additional information on avian and bat mortality rates and effects, available since the PEIR was prepared. This information includes recent fatality monitoring reports from the Golden Hills project, additional information on micrositing, and additional information on golden eagle populations. This issue is addressed briefly below and in detail in Section 3.4.2, *Environmental Impacts and Mitigation Measures*.

Third, the foreseeable future wind projects have changed from those contemplated in the PEIR. Consequently, depending on the development of other projects in the program area, the size of the proposed project could contribute to an exceedance of the maximum capacity of the aggregate repowering projects contemplated in the PEIR.

Finally, Alameda County has informed the City that information regarding nighttime lighting during operation of the turbines, as well as FAA requirements, may in fact be different from the information

presented in the PEIR. These four issues are described and evaluated in detail in the following subsections and in Chapter 3, *Environmental Analysis*, of this document.

1.3.1 Turbine Size

Rooney proposes to use two types of turbines: a 2.3 MW model and a 3.6 or 3.8 MW model. Because Rooney has not yet selected the specific turbine models, it retains the option of using turbines up to 4.0 MW, depending on product availability at time of construction. However, regardless of the turbine model selected, the project would not exceed the proposed Rooney Ranch 25.1 MW aggregate capacity, and the overall dimensions of individual turbines would not exceed those currently proposed.

The PEIR analyzed projects with a range of turbine sizes. Table 1-1 shows the maximum dimensions of this range for comparison with the largest of three turbine types under consideration for the proposed project.

Table 1-1. Turbine Specifications Contemplated in the PEIR and for the Proposed Project

Turbine Model	PEIR Maximum—3.0 MW	General Electric 3.6 MW
Rotor type	3-blade/horizontal axis	3-blade/horizontal axis
Blade length	62.5 m (205 ft)	67.2 m (220 ft)
Rotor diameter	125 m (410 ft)	137 m (449 ft)
Rotor-swept area	12,259 m^2 (131,955 ft^2)	14,741 m^2 (158,671 ft^2)
Tower type	Tubular	Tubular
Tower (hub) height	96 m (315 ft)	81.5 m (267 ft)
Total height (from ground to top of blade)[a]	153 m (502 ft)	150 m (492 ft)

[a] Depending on the type of turbine and tower height used for the proposed project, total height would be up to but would not exceed 152 m (499 ft).

As shown in the table, the proposed Rooney turbines would be within the specifications established in the PEIR for rotor type, tower type, tower (hub) height, and total height. However, blade lengths would be up to 15 feet (approximately 7%) longer, rotor diameters up to 39 feet (approximately 9%) greater, and rotor-swept area up to 2,482 m^2 (approximately 17%) larger.

Because some of the proposed project specifications exceed those described in the PEIR, additional review of potentially affected environmental resources is provided in this document. Larger turbines could affect three resources: aesthetics (Section 3.1), hazards (i.e., setbacks) (Section 3.8), and biological resources (i.e., birds and bats) (Section 3.4). At the same time, it should be borne in mind that while a 3 MW turbine was the largest considered in the PEIR, for purposes of the analysis of avian mortality, the turbine used as the basis for developing estimates of future or typical project impacts was the Vasco Winds 2.3 MW turbine. The consequence of the increased nameplate capacity would be lower impacts per MW for certain environmental topic areas, because a 25.1 MW project would require 10 turbines the Vasco Winds-sized turbines, whereas the same 25.1 MW capacity can be achieved with the 7 turbines proposed for the Rooney Ranch Project. This decreased density of turbines would result in proportionally lesser impacts associated with air quality emissions, traffic, and ground disturbance.

1.3.2 Additional Avian and Bat Information

1.3.2.1 Golden Hills Fatality Monitoring Reports

The PEIR considered fatality monitoring results from three projects: Diablo Winds, Buena Vista, and Vasco Wind. Since the PEIR was prepared in 2014, an additional 2 years of monitoring for birds and bats at Vasco Wind were completed. The results were reported in Brown et al. (2016) and are incorporated into this analysis. Additionally, the Golden Hills project was constructed and 2 years of avian and bat monitoring have been completed.

In early 2018, H. T. Harvey & Associates prepared the *Golden Hills Wind Energy Center Postconstruction Fatality Monitoring Report: Year 1*, presenting the results of the first year's monitoring effort and analysis of those results (H. T. Harvey & Associates 2018a). The monitoring effort indicated potentially higher mortality rates than those estimated in the PEIR, particularly for golden eagles and red-tailed hawks. The PEIR analyzed effects on avian and bat species using information on multiple repowered projects collected over multiple years, noting that "… fatality rates in the APWRA are highly variable (that is because they differ across years, turbine types, geographies, and topographies…)."

The first year of Golden Hills data (H. T. Harvey & Associates 2018a) reflected monitoring during northern California's wettest year on record, using search methods (e.g., search dogs and shorter, 7-day search intervals) that were not used for most of the baseline (and repower) mortality estimates presented in the PEIR. The monitoring duration during unusually high rainfall conditions and the use of different search methods make comparison with the PEIR's baseline data difficult (H. T. Harvey & Associates 2018a:51). Results for the second year of monitoring at Golden Hills were mixed. Some substantial reductions of the mortality rate for some species were observed (e.g., red-tailed hawk), while the mortality rate for some species increased, sometimes inexplicably (e.g., burrowing owl).

The Golden Hills estimated mortality rate (averaged over the 2 years of monitoring) for all raptors combined (the primary criterion for APWRA avian impact measurement) was significantly lower than the pre-repowering average from the APWRA-wide avian monitoring study (which already reflected significant mortality reductions resulting from seasonal shutdown and the removal of high-risk turbines in accordance with the 2007 settlement agreement) (H. T. Harvey & Associates 2018b). APWRA-wide nonrepowered average mortality rates for all raptors combined was 2.43/MW/year. The all-raptors combined average mortality rate for Golden Hills in its first 2 years of operation was 1.74/MW/year, 28% less than the average APWRA-wide rate—even though the latter included seasonal shutdowns and high-risk turbine removals.

The primary estimation model used in the first year H. T. Harvey report estimated higher golden eagle mortality rates (0.13/MW/year) than baseline, nonrepowered conditions (H. T. Harvey & Associates 2018a:50). However, the authors explained that the model "inflate[d] the estimate by incorporating searcher efficiency and carcass persistence parameters that represent medium/large birds as a group rather than eagles specifically" (i.e., the use of medium bird persistence parameters introduced an assumption that more golden eagle carcasses were missed during searches than was in fact the case because the large size of golden eagles makes them hard to miss). Other models used in the first-year H. T. Harvey report that did not incorporate these parameters yielded results that, in the words of the study, were "closer to reality." Those models estimated golden eagle mortality rates nearly matching (0.09/MW/year) or slightly below (0.07/MW/year) baseline conditions

(0.08/MW/year) (H. T. Harvey & Associates 2018a:50). These rates are still higher than the rates of the three repowered projects used to generate estimates in the PEIR. The report observed that all of its golden eagle mortality rates may be overstated as a consequence of bias attributable to the presence of old turbines near the Golden Hills site that provided perching and nesting opportunities for raptors, including golden eagles, which were seen perching on them on several occasions (H. T. Harvey & Associates 2018a:46, 50). By the second year, the primary mortality model used was consistent with the method used in the final Vasco Winds monitoring report. The second-year golden eagle mortality rates were reported as being slightly higher than the first-year rates (0.17/MW/year) (H. T. Harvey & Associates 2018b:xiii). The authors further noted that "Higher fatality rates in this study compared to other APWRA repowering studies may partly reflect the influence of differing estimation methods, but probably reflect substantial inter-annual variation in climate and landscape conditions and the attendant influence on wildlife populations, as well as the consequences of evaluating project impacts based on short-term studies that may inadvertently represent atypical conditions." (H. T. Harvey & Associates 2018b:xii). In general, the authors of the second-year Golden Hills report noted that the primary conclusions from the first 2 monitoring years were that the golden eagle mortality rate was higher during both years compared to other recent APWRA studies. Additionally, they further noted that climactic conditions (a return to wetter conditions) may have contributed to the increase in golden eagle fatalities in year 2 (H. T. Harvey & Associates 2018b:63). As additional evidence of this interannual variability, the authors point to annual reproductive monitoring of golden eagles across central California, which they note dropped markedly during the 4-year drought, began to resurge in 2016, declined again during the very wet 2017 breeding season, and then surged again in 2018 (H. T. Harvey & Associates 2018b:63). For the purposes of this analysis, estimates of golden eagle fatalities were calculated in two ways. The first way considered the estimates from year one, referred to by H. T. Harvey (2018a) as "closer to reality." The second way considered the alternative (and higher) estimates derived from the Huso DS729 estimation method.

Red-tailed hawk mortality rates observed in the first-year H. T. Harvey study also exceeded both the rates of the three repowering projects used to generate the PEIR's estimates for Golden Hills and the APWRA-wide estimates, but the H. T. Harvey report observed that additional years of study would be needed to determine whether this was an anomaly or a standard pattern (H. T. Harvey & Associates 2018a:50). As stated in the first-year H. T. Harvey report, red-tailed hawk results may also have been skewed by perching and nesting opportunities created by nearby old turbines, the removal of which would likely reduce mortality rates. The red-tailed hawk mortality rate dropped by approximately 41% in the second year of the Golden Hills study—from 0.91/MW/year to 0.37/MW/year, nearly in line with the pre-repowering PEIR rate of 0.44/MW/year. The other raptor species analyzed in the H. T. Harvey reports, American kestrel and burrowing owl, revealed significantly lower averaged mortality rates than were estimated in the PEIR (H. T. Harvey & Associates 2018a, 2018b). The recently available information also indicates fatalities of tricolored blackbird and white-tailed kite are possible, as they have been observed at Vasco Wind and Golden Hills (although in very low numbers—one tricolored blackbird individual found during monitoring at each project and two white-tailed kites at Golden Hills).

With regard to bats, it is worth noting that the first-year monitoring report for the Vasco Winds project (Brown et al. 2013), erroneously reported overall bat mortality rates. Table 10 in Brown et al. (2013) reported adjusted mortality rates for bats in several ways, including using "national means" or "national averages" and several onsite trials with different size classes. As reported in that first-year monitoring report, the highest mortality rate was reported as 1.679 bats/MW/year

considering the overall detection, otherwise known as the "big D" adjustment method. The PEIR used this mortality rate and an additional mortality rate from a nearby wind resource area to calculate the range of estimated bat fatalities for the Program alternatives and the specific projects. By the time the final report was prepared addressing all 3 monitoring years (Brown et al. 2016), a mortality rate of 1.679 bats/MW/year was reported in Table 30 for year one considering national averages. However, the average mortality rate for 3 years using the "D" adjustment was actually 3.207 bats/MW/year. Consequently, the estimates of bat fatalities described in the PEIR used the incorrect mortality rates for the estimates. For this analysis, the corrected mortality rates from the final Vasco Winds report were used (a 3-year average of 3.207 bats/MW/year).

The recent monitoring reports for Golden Hills (H. T. Harvey & Associates 2018a, 2018b) provide additional information regarding bat mortality rates following repowering. The monitoring results documented the majority of fatalities as Mexican free-tailed bats and hoary bats; however, several other species were affected to a much lesser degree. It is also worth noting that the Golden Hills fatality monitoring results for the first 2 years represent the first use of scent-detection dogs for an extended period to conduct fatality searches in the APWRA (H. T. Harvey & Associates 2018a:xii; Smallwood et al. 2018[1]). The authors of the studies note that the use of scent detection dogs, as well as shorter search intervals, "clearly resulted in our detecting far greater numbers of bat fatalities than previously reported in the APWRA; however, similar estimates of per MW fatality rates in this study and the post-repowering Vasco Winds study suggest that repowering with larger, taller turbines also may have contributed to a higher fatality rate for bats" (H. T. Harvey & Associates 2018a:xiii). Additional discussion of potential biases resulting from comparisons of this and other studies are presented later in this analysis.

1.3.2.2 Micrositing Studies

The PEIR outlined a mitigation strategy that, among other measures, recognized the potential benefits of careful micrositing of turbines in minimizing effects on avian species. Since preparation of the PEIR, this mitigation strategy has been initiated for several proposed projects in the APWRA. Several studies, undertaken both before and after issuance of the PEIR, used a generally similar approach involving map-based collision hazard models to site turbines (Smallwood and Neher 2009, 2016a, 2017). However, many of these projects were never constructed. Additional studies, such as Bell (2017), which tracked golden eagles using satellite telemetry, have also supported map-based collision hazard models. Smallwood and Neher (2010a, 2010b, 2011) used micrositing analysis for the Vasco Winds and Tres Vaqueros projects in Contra Costa County; however, because the Tres Vaqueros project was never constructed, no results are available for interpretation. Smallwood and Neher (2015a) later conducted micrositing for the proposed Patterson Pass Repowering Project. Patterson Pass was authorized by the County with completion of the PEIR in 2014, but has not yet been constructed. Additionally, Smallwood and Neher (2016b) conducted micrositing at the Sand Hill repowering project (a project that had the same name in 2016 but is different from the currently proposed Project and under different ownership); this project was also never constructed. Finally, Smallwood and Neher (2016c) completed micrositing studies for the Summit Winds project, but like Tres Vaqueros, Patterson Pass, and the original Sand Hill project, Summit Winds has not yet been constructed. Smallwood and Neher (2015b, 2015c) conducted a micrositing study for the Golden Hills Repowering Project (following publication of the PEIR) for which fatality monitoring results

[1] Smallwood et al. 2018 conducted surveys using detection dogs at the Golden Hills and Buena Vista sites for a limited period (compared to the overall Golden Hills study described in H. T. Harvey & Associates 2018a, 2018b).

are available. In summary, of multiple micrositing studies undertaken in the APWRA, only two—Vasco Winds and Golden Hills—have been associated with projects that were subsequently completed and for which monitoring results are available.

The Golden Hills study used collision hazard models to site turbines, as did the other studies, with the intent of minimizing avian collision risk. The Golden Hills project was subsequently built, beginning operation in December 2015, and the first- and second-year monitoring results have been published (H. T. Harvey & Associates 2018a, 2018b). Smallwood and Neher (2017) and Smallwood (2018) reviewed a draft and final of the first-year monitoring results and prepared a report and addendum, discussing the effectiveness of the micrositing effort and whether the collision hazard models used to guide micrositing were effective. The report states that the collision hazard models have improved over time, and that continued adjustments may improve the model performance. The report also highlighted that prioritizing fatality minimization for one species—golden eagle, for example—can result in putting other species at greater collision risk. Additionally, the addendum to the 2017 report stated that "the collision hazard models were likely effective at minimizing golden eagle fatalities in the absence of grading …" and noted that "… grading for wind turbine pads and access roads was extensive." Thus, Smallwood (2018) effectively cited topographic changes due to new access road and turbine pad construction as a potential cause for an increase in golden eagle mortality at Golden Hills. However, the extent to which these factors actually influence potential mortality remains speculative.

Smallwood and Neher (2017) noted that "Map-based collision hazard models of each successive repowering project benefitted from lessons learned from past efforts on repowering projects …" In general, this statement is speculative: although a number of micrositing studies have been prepared, definitive conclusions regarding the effectiveness of micrositing efforts are limited by the small sample size of projects completed for which fatality monitoring results are available (only Vasco Winds and Golden Hills have fatality monitoring results available). However, in general, the approach among all repowered projects, regardless of whether they were constructed, has been similar. Overall, the micrositing approach—and the studies completed to date—are consistent with and support the approach used in the PEIR (Mitigation Measure BIO-11b) that requires micrositing for each subsequent project to "… use the results of previous siting efforts to inform the analysis and siting methods as appropriate such that the science of siting continues to be advanced." Recent results and new information, such as the influence that grading may have on micrositing, may be useful in subsequent micrositing efforts and will be addressed in future studies consistent with the direction of the PEIR. However, in general, the efficacy and benefits of micrositing currently remain speculative.

1.3.2.3 Additional Golden Eagle Studies

Since preparation of the PEIR, USFWS proposed and finalized a rule revising the regulations for permits for incidental take of eagles and eagle nests. In support of that process, USFWS prepared a report summarizing the status, trends, and sustainable take rates in the United States for bald and golden eagles (U.S. Fish and Wildlife Service 2016). In Bird Conservation Region (BCR) 32, a region covering most of California and that includes the APWRA, the median golden eagle population was estimated to be 718 individuals, a reduction from previous estimates (U.S. Fish and Wildlife Service 2016).

Additionally, and under similar timing to the USFWS study, USGS recently conducted a survey and implemented a sampling design to estimate the occupancy, breeding success, and abundance of

territorial pairs of golden eagles in the Diablo Range (Wiens et al. 2015); an additional study focused on the APWRA and surrounding region (Kolar and Wiens 2017). A total of 138 territorial pairs of golden eagles were observed during surveys completed in the 2014 breeding season, representing about one-half of the 280 pairs (560 individuals) that the authors estimated to occur in the 1,996-square-mile region sampled. The results from Wiens et al. (2015) were further described specifically for the region surrounding the APWRA in Kolar and Wiens (2017). This recent work supports the current USFWS management guidelines for golden eagles, which considers surveys for occupied eagle territories when the territories may overlap with wind energy projects. The findings of the study indicated that the average nearest-neighbor distance of simultaneously occupied territories was approximately 3.2 km (approximately 2 miles) Bell (2017). This information is consistent with the approach to nesting eagle surveys in the PEIR (Mitigation Measure BIO-8a), which requires "Surveys to locate eagle nests within 2 miles of construction…."

Considering the information currently available, it is likely that the current estimate of 718 individuals in BCR 32, currently used by USFWS to estimate cumulative effects on golden eagles, is an underestimate. The USGS study estimates that there are 560 individuals (280 territorial pairs) within the Diablo Range (Wiens et al. 2015:13). The Diablo Range encompasses approximately 2% of the total size of BCR 32. While eagle density is likely to vary dramatically over the landscape within BCR 32, it is unlikely that variability is so high that 78% of the population occupies just 2% of BCR 32, with only 22% of the population scattered throughout the remaining 98% of the BCR. It is much more likely that BCR 32 carries more than 718 individuals. USFWS requires that analysis of cumulative effects on golden eagle populations consider the "local area population" (LAP). The LAP is calculated for golden eagles based on the number of eagles within 109 miles (the golden eagle natal dispersal distance) of a project site (U.S. Fish and Wildlife Service 2013). For the proposed Project, the LAP encompasses approximately 29,600 square miles (excluding the Pacific Ocean and San Francisco Bay). The entire Diablo Range subject to study by USGS is within the Rooney Ranch LAP for golden eagles, occupying approximately 7% of the Rooney Ranch LAP. Therefore, 7% of the LAP includes all 560 individuals. The remaining 93% of the Rooney Ranch LAP supports significant areas with suitable habitat (generally oak or pine woodlands in a grasslands matrix) in the Coast Ranges north of San Francisco Bay and significant areas of suitable habitat south of the Diablo Range that USGS did not survey. Considering the available information, it is likely that the Rooney Ranch LAP comprises substantially more than 560 individuals. Conservatively assuming that the remaining 93% of the Rooney Ranch LAP supports only 50% of the density of eagles on average that the Diablo Range supports, then another 280 eagles may reside within the LAP, outside the Diablo Range. Thus, at least 840 individuals are likely to make up the Rooney Ranch LAP.

USFWS has identified authorized take rates of between 1 and 5% of the total estimated LAP as benchmarks, with authorized take of up to 5 percent being at the upper end of what might be appropriate under the Bald and Golden Eagle Act's preservation standard absent compensatory mitigation. Hunt et al. (2017) recently examined demographic data for the region surrounding the APWRA and estimated that the annual reproductive output of 216–255 breeding pairs would have been necessary to support published estimates of 55–65 turbine blade-strike fatalities per year. Additional demographic modeling research related to golden eagle populations is ongoing and was recently described in Wiens et al. (2017). USFWS recently determined in an environmental assessment for the Shiloh IV Wind Project, approximately 30 miles north of the Rooney Ranch project, that the current mortality rate for the LAP was approximately 12% annually (U.S. Fish and Wildlife Service 2014). However, this estimate was based on an LAP estimate of 526 individuals and a total estimated take (within the LAP from all sources) of 64.5 individuals (47.5 of those estimated

within the APWRA) (U.S. Fish and Wildlife Service 2014:36–38). Considering the recently available information from USGS indicating that the LAP is likely substantially larger than previously estimated, cumulative impacts on the APWRA LAP are likely to be substantially lower than previously estimated by USFWS.

1.3.3 Megawatt Cap

The PEIR identified two alternatives for repowering the APWRA, analyzing both at an equal level of detail. Because the County adopted and certified the PEIR without identifying a preferred alternative, the County may authorize either alternative. Alternative 2 was the larger alternative, assuming a maximum capacity of 450 MW for the APWRA at full repowering. The PEIR also analyzed two projects, Golden Hills and Patterson Pass, and considered four other future projects (Table 1-2). While the PEIR did not contemplate the sequencing of projects considered in the future, County staff consider that the future projects identified in the PEIR should be considered first in allocating the total nameplate capacity. Subsequent projects would be reviewed on a first-come, first-served basis. As outlined in Table 1-2, the total capacity of approved, operational, or foreseeable future projects considered in the PEIR, or as authorized and constructed under the PEIR is 316.5 MW. The proposed project would increase that total to 341.6 MW. Because this is less than the 450 MW cap established by program Alternative 2, the proposed project would not conflict with the PEIR. The proposed project, with a 25.1 MW nameplate capacity, in concert with the Sand Hill project, would increase the total capacity of the program area to 450.1 MW, a 0.02% exceedance of the 450 MW capacity contemplated in Alternative 2 in the PEIR. For all resources, this minor difference cannot realistically be measured and is within the rounding already used in the PEIR; it would not result in new significant effects or a substantial increase in the severity of effects already described in the PEIR.

Table 1-2. Operational, Approved, or Foreseeable Projects in the APWRA

Project	Owner/Operator	Status	Total MW
Patterson Pass[a]	EDF	Approved (PEIR)	19.8
Golden Hills[b]	NextEra	Operational (PEIR)	85.9
Golden Hills North	NextEra	Operational	40.8
Sand Hill[c]	Ogin (now sPower)	Approved	36
Mulqueeny Ranch	Brookfield	Foreseeable (PEIR)	80
Summit Wind[d]	AWI (now Salka, LLC)	Approved	54
		Subtotal	316.5
Sand Hill (additional)[c]	sPower	CUP Application Submitted	108.5
Rooney Ranch[e]	sPower	Foreseeable	25.1
		Total	450.1

[a] County planning staff has indicated that the Patterson Pass project is under new ownership and is no longer owned by EDF.

[b] Golden Hills was identified in the PEIR as up to 88.4 MW but the complete project was 85.9 MW.

[c] The Sand Hill project was identified in the PEIR as up to 34MW. Under additional review, it was ultimately approved in 2016 for 36 MW. sPower, the current project owner, has applied to expand the project to a total of 144.5 MW (36 MW +108.5 MW= 144.5MW).

[d] The Summit Wind project was identified in the PEIR as up to 95 MW but was approved in 2016 for 54 MW.

[e] The Rooney Ranch project proposed by sPower would be subject to approval by the City of Santa Clara.

1.3.4 Turbine Lighting

The PEIR assumed that lighting for repowered turbines would be similar to lighting of previously existing turbines. Alameda County has since informed the City that the new turbines may require more lighting than the previously existing, smaller turbines, most of which were not tall enough to require FAA lighting. This issue does not constitute a change in the project or its circumstances; it is rather a change in information. In this case, CEQA prohibits a supplemental review of the issue because the correct information about the relative lighting impacts of new versus old turbines was readily available during preparation of the PEIR. For example, the Vasco Winds project, which has nighttime lighting, could have been observed at the time the PEIR was prepared. Thus, CEQA prohibits the County from preparing a supplemental EIR under Public Resources Code Section 21166(c) and 14 California Code of Regulations Section 15162(a)(3) on the basis of the lighting issue because it constitutes information that could have been known with the exercise of reasonable diligence at the time the PEIR was certified as complete.

As discussed in Section 2.4.1, *Proposed Project Features*, Rooney Ranch will implement lighting management techniques as part of the project to minimize the need for turbine lighting. The exact lighting minimization methods would be determined through consultation with the FAA.. Finally, although the larger turbines may require more lighting, there will be significantly fewer turbines (7 instead of 199), and any required lighting will be consistent with current conditions that include multiple repowered sites in the APWRA with larger, new turbines that have already installed lights per FAA requirements. Consequently, considering the analysis above and with FAA coordination, this analysis confirms that the project would not result in a new source of substantial light or glare beyond what is described in the PEIR.

1.4 Organization of this Document

This analysis has been structured to parallel the PEIR; accordingly, all resource topics are addressed—even those that clearly would fall within the analysis and conclusions in the PEIR. Following this introductory chapter, the analysis comprises the chapters and appendices listed below.

Chapter 2, *Project Description*, describes the project features, sequence of construction, and details of operations and maintenance.

Chapter 3, *Environmental Analysis*, provides the analysis of each resource topic considered in the PEIR, with a conclusion regarding any divergence from the conclusions presented in the PEIR.

Chapter 4, *List of Preparers*, identifies the persons involved in the preparation of this document.

Appendix A, *Air Quality Technical Memorandum*, provides the assumptions and modeling results used to support the air quality analysis for the proposed project.

Appendix B, *Biological Resources Evaluation Report*, is the project-specific report detailing biological conditions in the project area.

Appendix C, *Cultural Resources Survey Report*, is the report prepared by ICF cultural resources staff for the proposed project.

Appendix D, *Sound Technical Report*, is the report detailing the noise analysis prepared for the proposed project.

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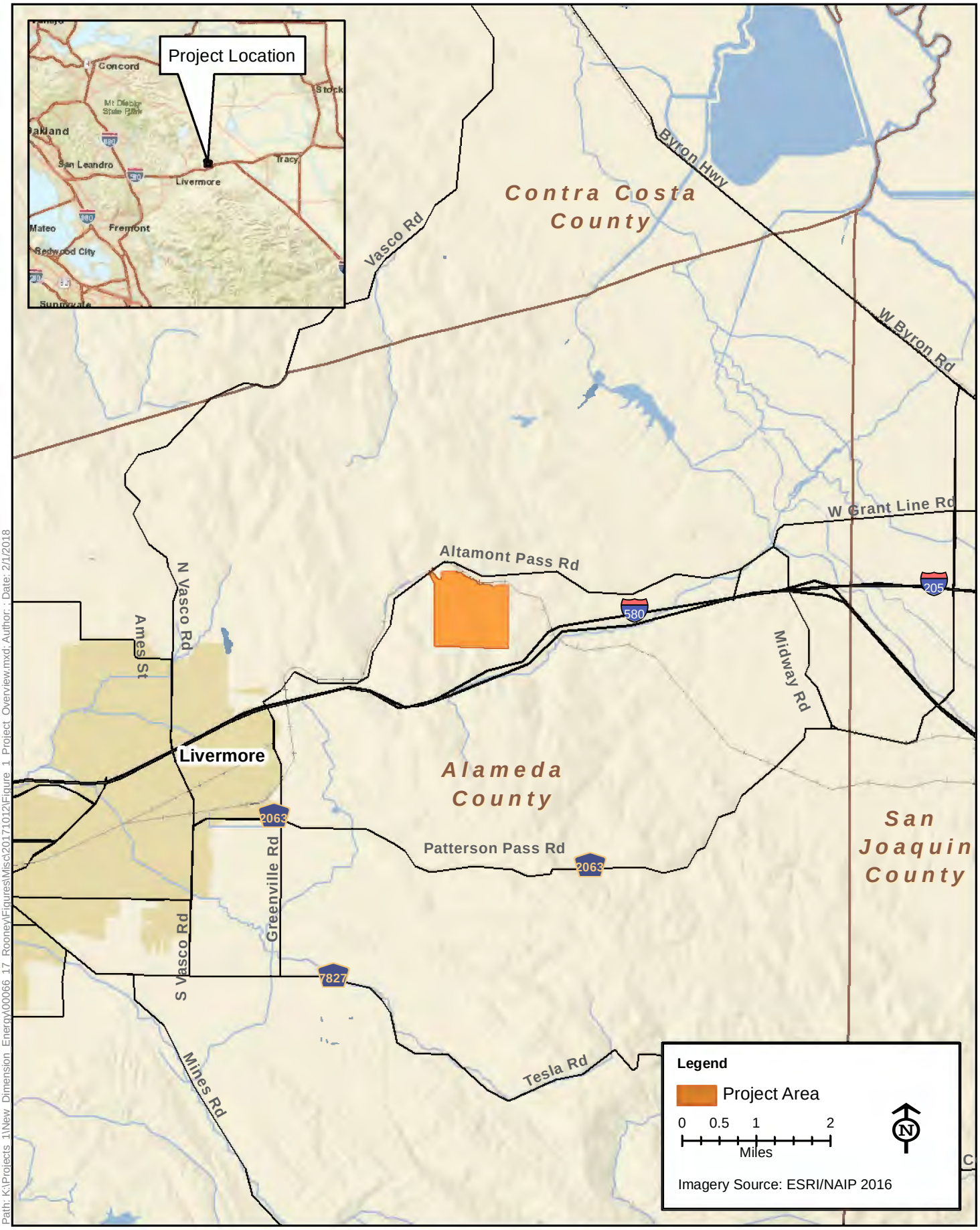

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Figure 1-1
Project Location

Chapter 2
Project Description

2.1 Project Location and Land Ownership

The 578-acre project area—an existing wind project in the Alameda County portion of the APWRA—comprises two parcels, owned by the City, south of Altamont Pass Road (Figure 2-1). Land use in the project area and the surrounding APWRA consists largely of cattle-grazed land supporting operating wind turbines and ancillary facilities.

Generally characterized by rolling foothills of annual grassland, the mostly treeless region is steeper on the west and gradually flatter to the east where it slopes toward the floor of the Central Valley. Elevations in the area range from approximately 600 to 1,200 feet above sea level.

The project area—parcels 99B-6275-2-5 and 99B-6500-1—is located in Township 2, Range 3 East, Sections 28 of the Mount Diablo Base Meridian. Rooney has lease agreements with the City to install, operate, and maintain the repowered wind turbines while permitting ongoing agricultural activities to continue.

2.2 Project Need, Goals, and Objectives

The underlying purpose of the Project is to repower an existing wind project on two parcels owned by the City, within the Program Area, to develop a 25.1MW commercially viable wind energy facility that would deliver renewable energy to the grid and would be subject to a single, uniform avian monitoring protocol and help meet the state's RPS, GHG reduction, and carbon neutrality goals.

The fundamental objectives of the Project are:

- To satisfy existing Power Purchase Agreements by siting up to seven fourth-generation wind turbines on lands within the Program Area; and
- To maintain commercial viability.

The secondary objectives of the Project are:

- To minimize environmental impacts by:
    - Limiting ground disturbance through the re-use of existing infrastructure (e.g., roads, transmission lines) where feasible; and
    - Improving current understanding of the effects of new generation turbines on birds and bats by applying the same avian mortality monitoring protocol applied in the Program Area to the project area, rather than introducing a separate protocol.
- To increase local short-term and long-term employment opportunities;
- To provide economic benefits to Alameda County and the City; and
- To assist California and the City of Santa Clara/Silicon Valley Power in meeting its RPS, GHG reduction, and carbon neutrality goals.

2.3 Existing Facilities

2.3.1 Wind Turbines and Foundations

The proposed project may include the removal of old turbine foundations where they conflict with the location of repowered project components.

2.3.2 Access Roads

Primary access to the project area is through a locked gate from Altamont Pass Road. Additional access to the project area may be available through a private road connecting to Carroll Road to the south. Onsite roads are graveled and vary in width from 8 to 16 feet.

2.3.3 Meteorological Towers

Two meteorological towers, 18–60 meters (60–197 feet) tall are present onsite. These towers monitor and record meteorological data such as wind speed, wind direction, and atmospheric pressure.

2.3.4 Power Collection System

Electricity generated by the existing project consisting of 199 old first-generation wind turbines was collected from each wind turbine and transmitted to the Santa Clara substation, where its voltage was increased for interconnection with the Pacific Gas and Electric Company's (PG&E's) transmission lines. The collection system includes pad-mounted transformers, underground cables, overhead cables on wooden poles, assorted circuit breakers and switches, electrical metering/protection devices, and the Santa Clara substation, which encompasses 0.2 acre in the northwest corner of the project area.

2.3.5 Cattle Handling and Staging Areas

A cattle handling and staging area with several abandoned buildings are also located near the substation and encompass 0.3 acre in the northwest corner of the project area.

2.4 Proposed Project Features

The actual layout may differ from the two primary proposed layouts illustrated in Figures 2a and 2b because the exact turbine locations are subject to micrositing (i.e., small moves to accommodate setback constraints, avian siting requirements, and other local considerations). Either layout is expected to have the same extent of impact. Temporarily disturbed areas would be restored within 1 year. The proposed project features are listed below and discussed in greater detail in the following subsections.

- A total nameplate generation capacity of up to 25.1 MW.
- Removal of wind turbine foundations that are in conflict with new project components.

- Installation of up to seven new wind turbine generators, towers, foundations, and pad-mounted transformers.
- Development of project roads and installation of a power collection system.
- Use of existing roads to the extent possible.
- Use of existing substation (with upgrades to the equipment within the footprint of the existing facility).
- Installation of one permanent meteorological tower.

2.4.1 Wind Turbines

Most of the turbines being repowered in the APWRA were installed in the 1980s and represent first- and second- generation utility-grade commercial wind turbine technology, now considered old technology. The terms *first-generation*, *second-generation*, *third-generation*, and *fourth-generation* are used to group wind turbine types with similar technologies currently installed or to be installed in the program area. In this context, first-generation wind turbines are those designed and installed during the 1980s. Second-generation turbines are those designed and installed in the 1990s. Third-generation turbines are those installed in previous repowering projects that use similar design to turbines proposed for the project but that are of smaller size (i.e., up to 1 MW). Fourth-generation turbines—such as those proposed for installation at Rooney, are large, 1.6–4.0 MW turbines.

The proposed repowering project would entail installation of up to seven new-generation turbines in the project area. A range of turbines is being considered for the proposed project. Turbines being considered range in nameplate capacity from 2.3 to 4.0 MW, a rotor diameter of 90–140 meters (295–459 feet), towers of 80–110 meters (262–361 feet), and a maximum total turbine height of up to152 meters (499 feet). The current project layout assumes the use of turbines with the specifications presented in Table 2-1.

Lighting for wind turbines will be consistent with FAA requirements. If necessary, and approved by the FAA, Rooney would also implement lighting management techniques as part of the project to minimize the need for turbine lighting. The exact lighting minimization methods would be determined through consultation with the FAA. Intensity of the lights would be based on a level of ambient light, with illumination less than 2 foot-candles being normal for nighttime and illumination greater than 5 foot-candles being the standard for daytime. Because some evidence suggests that lights may be an attractant for birds during nighttime migration, the minimum number of required lights would be used to minimize attractants for birds during nighttime migration. Through its review process, the FAA could recommend that tower markings or aviation safety lighting be installed on all or only a portion of the turbine towers. The FAA could also determine that the absence of marking and/or lighting would not threaten aviation.

Table 2-1. Turbine Specifications[a]

Turbine Characteristic	Turbine Model		
	General Electric 2.3-116	General Electric 3.6-137	General Electric 3.8-130
Rotor type	3-blade/horizontal axis	3-blade/horizontal axis	3-blade/horizontal axis
Blade Length	56.9 m (187 ft)	67.2 m (220 ft)	63.7 m (209 ft)
Rotor diameter	116 m (381 ft)	137 m (449 ft)	130 m (427 ft)
Rotor-swept area	10,568 m^2 (113,753 ft^2)	14,741 m^2 (158,671 ft^2)	13,273 m^2 (142,869 ft^2)
Rotational speed	Variable: 5.0–14.9 rpm	Variable: 6.3–13.6 rpm	Variable: 6.95–12.1 rpm
Tower type	Tubular	Tubular	Tubular
Tower (hub) height	80 m (308 ft)	81.5 m (267 ft)	85 m (279 ft)
Rotor height (from ground to lowest tip of blade)	22 m (72.2 ft)	13.0 m (42.7 ft)	20 m (65.6 ft)
Total height (from ground to top of blade)[b]	138 m (453 ft)	150 m (492 ft)	150 m (492 ft)

[a] Depending on availability at the time of construction, turbines of up to 4.0 MW may be used for the proposed project. Turbine dimensions would not exceed those shown in the table and the project capacity would not exceed 25.1 MW.

[b] Depending on the type of turbine and tower height used for the proposed project, total height would be up to but would not exceed 152 m (499 ft).

2.4.1.1 Siting Requirements

The City has encouraged Rooney to adhere to the County's requirements to the extent possible to maintain consistency with regional planning that has been conducted to date. Setback requirements were originally developed for Alameda County windfarms in the 1980s and 1990s in consideration of a variety of factors, such as appropriate distance between upwind and downwind turbines for effective wind production, noise effects on sensitive land uses, visual impacts resulting from proximity to residences and possible shadow flicker, concerns with tower collapse, and blade throw hazard (where all or part of a rotor blade may break loose from the nacelle and strike an occupied area or infrastructure). While there is no ordinance dictating setback conditions in Alameda County, setbacks have historically been determined on a project-by-project basis in accordance with the standard conditions of approval for a conditional use permit (CUP). However, while the standard conditions applied in the 1980s and 1990s were appropriate for the older generation turbines, they may not be so for the fourth-generation turbines proposed for repowering. Accordingly, the County has developed a set of updated standards to be used for proposed repowering projects. These are shown in Table 2-2.

Table 2-2. Updated Alameda County Turbine Setback Requirements

Affected Land Use or Corridor	General Setback	Setback Adjustment for Turbine Elevation Above or Below Affected Use[a]	Alternative Minimum[b]
Adjacent parcel with approved wind energy CUP[c]	1.1 times rotor length	1% TTH added or subtracted per 10 ft of turbine elevation, respectively, above or below affected parcel	50% of general setback
Adjacent parcel without approved wind energy CUP	1.25 times TTH	1% TTH per 10 ft above or below affected parcel	1.1 times rotor length
Adjacent dwelling unit	3 times TTH	1% TTH per 10 ft above or below affected unit	50% of general or elevation differential setback
Public road (including I-580), trail, commercial or residential zoning	2.5 times TTH	1% TTH per 10 ft above or below affected right-of-way	50% of general setback with report by qualified professional, approved by Planning Director
Recreation area or property	1.25 times TTH	1% TTH per 10 ft above or below affected property	TTH
Transmission line[d]	2 times TTH	1% TTH per 10 ft above or below path of conductor line at ground level	50% of general setback with report by qualified professional, approved by Planning Director

Note: TTH = total turbine height: the height to the top of the rotor at 12:00 position. Setback distance to be measured horizontally from center of tower at ground level.

[a] The General Setback based on TTH will be increased or reduced, respectively, based on whole 10-ft increments in the ground elevation of the turbine above or below an affected parcel, dwelling unit, road right-of-way, or transmission corridor conductor line. Any portion of a 10-ft increment in ground elevation will be disregarded (or rounded down to the nearest 10-ft interval).

[b] *Alternative Minimum* refers to a reduced setback standard, including any adjustment for elevation, allowed with a notarized agreement or an easement on the affected property (if applicable), subject to approval of the Planning Director.

[c] CUP = conditional use permit. No setback from parcel lines is required within the same wind energy CUP boundary. Knowledge of proposed wind energy CUPs on adjacent parcels to be based on best available information at the time of the subject application.

[d] Measured from the center of the conductor line nearest the turbine.

2.4.1.2 Wind Turbine Installation

Foundations

The type of turbine foundation used depends on terrain, wind speeds, and wind turbine type. Two foundation types may be used in repowering APWRA wind projects: an inverted "T" slab foundation and a concrete cylinder foundation.

An inverted T slab foundation is a type of spread footing foundation. A single concrete pad is placed at ground level. Part of the pad may be placed below ground level depending on the slope. At the center of the pad is a cylindrical concrete pedestal to which the wind turbine tower is bolted; hence the name, inverted T.

A concrete cylinder foundation is a large concrete cylinder with a concrete pedestal that is slightly larger than the tower base diameter. The size of the concrete pad is determined by wind turbine size and site-specific conditions (e.g., expected maximum wind speeds, soil characteristics). Its weight must be sufficient to hold the wind turbine in place.

Either type of foundation is typically formed by placing concrete in an excavated footing with reinforced steel. The foundation would be installed immediately within the turbine work area adjacent to the crane pad. While the foundation type is determined by terrain, wind speeds, and turbine type, in general, the foundation is formed by placing concrete in an excavated footing with reinforced steel. A small graveled area would encircle each foundation to facilitate maintenance access. The total diameter of the final project footprint for each turbine, including the graveled area, would be approximately 60 feet.

Construction

Repowered turbine construction entails placement of a new tower, rotor, nacelle, transformer, and foundation. Construction and installation of repowered turbines are regulated by City conditions of approval, building permit requirements, and grading permit requirements.

At each turbine site, a level turbine work area would be graded to support the construction of tower foundations (discussed below) and to support the use of large cranes to lift the turbine components into place. The extent and shape of grading at each turbine site would depend on local topography; however, each site would require approximately 2.9 acres of graded area to support the construction of foundations and installation of turbines. A crane pad would be leveled and graded within the turbine work area at each turbine site. The crane pad—a flat, level, and compacted area—would provide the base from which the crane would work to place the turbine. Most wind turbine construction activities would occur within the turbine work area.

The turbine towers, nacelles, and blades would be delivered to each turbine location in the order of assembly, once the concrete of the foundation has been poured and has cured sufficiently. Large cranes are brought to each site to lift and assemble the turbine components. First, the base section of the tower is secured to the foundation using large bolts. The remaining tower sections are then lifted with the crane and connected to the base section. After the nacelle and rotor are delivered to the turbine site, the turbine blades are bolted to the rotor hub, and the nacelle and rotor are lifted by a crane and connected to the main shaft.

Excess rock generated by foundation construction would be spread on existing roads and maintenance areas surrounding the turbines. Old foundations from the previous wind project onsite may be removed if they are within proposed construction areas and if removal is necessary for the installation of new turbines; such removals would involve workers demolishing the foundations using jackhammers or similar tools. The material from old turbine foundations may be reused for road base or hauled offsite to the Altamont Landfill.

2.4.2 Site Preparation and Access Roads

Fourth-generation turbine towers and blades are significantly longer than older turbine components and require larger and longer trucks and cranes for transport and installation. These vehicles require wider roads with shallower turns and gradients than are currently present in the project area. Consequently, the existing road infrastructure must be upgraded to accommodate construction of the turbines. Road infrastructure upgrades would include grading, widening, and re-graveling of

the existing roads. Existing road widths vary from 12 to 20 feet; future roads are expected to be approximately 20 feet wide. New roads may be needed in areas where existing roads do not provide access to proposed turbine locations.

Most roads in the portion of the project area where new turbines would be installed would be temporarily widened to approximately 40 feet to accommodate larger towers as well as the larger equipment necessary to install them. It is likely that the locations where roads curve as they climb hills to the ridgetops would require more roadwork and would be widened to more than 40 feet in some spots to safely accommodate the larger equipment. In addition, access road entrances from main roads onto the project site would need to be widened to provide sufficient space for the minimum turning radius of construction cranes and other flatbed delivery trucks. Lands subject to temporary road widening beyond a 20-foot permanent width would be reclaimed after construction.

Culverts will be installed as part of the road drainage system on slopes. No stream crossings are present in the project area where proposed roads would be installed, and therefore culverts for stream crossings will not be necessary. Existing culverts may need to be replaced with larger culverts or reinforced to provide adequate size and strength for construction vehicles.

2.4.3 Staging Areas

Six staging areas of various sizes, totaling up to 15 acres, would be established in the project area. These areas would be used for the storage of turbine components, construction equipment, water tanks, office trailers, and other supplies needed for project construction. The trailers would be used to support workforce needs and site security and would also house a first aid station, emergency shelter, and hand tool storage area for the construction workforce. Parking areas would be located near the trailers. Vegetation would be cleared and the staging areas would be graded level. These areas would use native material, supplemented with gravel or soil stabilizer, if needed, and appropriate erosion control devices (e.g., earth berm, silt fences, straw bales) would be installed to manage water runoff. Diversion ditches would be installed, as necessary, to prevent stormwater from running onto the site from surrounding areas. Following completion of construction activities, the contractor would restore the temporary staging areas. The gravel surface would be removed, and the areas would be contour graded (if necessary and if environmentally beneficial) to conform with the natural topography. Stockpiled topsoil would be replaced, and the area would be stabilized and reseeded with an appropriate seed mixture.

2.4.4 Meteorological Towers

A permanent meteorological tower would be installed in a strategic location onsite to monitor wind speeds and to calibrate turbines. The permanent meteorological tower would be a freestanding tower without guy wires, approximately 80 meters tall. The permanent meteorological tower would require a small concrete foundation and graveled area around the tower, as well as an access road to facilitate maintenance activities. The small foundation and graveled area would be approximately 30 feet in diameter.

2.4.5 Power Collection System

Each new wind turbine must be connected to the medium-voltage electrical collection system via a pad-mounted transformer. The collection system carries electricity generated by the turbines to a substation, where the voltage level of the collection system is stepped up to that of the power grid.

From the substation, electricity is carried through an interconnection point to the transmission lines that distribute electricity to the power grid. Transmission lines in the project vicinity are maintained by PG&E. Each of the collection system components are discussed below.

2.4.5.1 Collection Lines

Medium-voltage collection lines would collect power from each turbine for conveyance to the substation. Medium-voltage lines are normally up to 35 kilovolts (kV). The new medium-voltage collection lines would be installed underground as close to project roads as possible to minimize ground disturbance as well as to facilitate access for any necessary O&M activities on the lines.

Installation of underground medium-voltage lines is accomplished using a cut-and-cover construction method. A disturbance width of 20 feet is generally standard to allow for the trench excavation and equipment, but this width may vary depending on the topography and soil type. Typically, the topsoil is separated from the subsurface soil for later replacement. A 3-foot-wide trench is then plowed using a special bulldozer attachment that buries the line in the same pass in which it digs the trench. Once the collection lines are in place, the trench is partially backfilled with subsurface soil. Typically, communication lines are then placed in the trench. The trench is then backfilled with the remaining subsurface soil, compacted, and covered with the reserved topsoil.

2.4.5.2 Transformers and Power Poles

Transformers boost the voltage of the electricity produced by the turbines to the voltage of the collection system. Each turbine would have its own transformer adjacent to or within the turbine, either mounted on a small pad adjacent to the turbine or within the tower.

The installation of overhead power lines and poles would be limited to locations where underground lines are infeasible and immediately outside the substation where underground medium-voltage lines come aboveground to connect to the substation.

To install power poles, a laydown area is required. To mount the medium-voltage lines on a power pole, a pull site and a tension site are required. Pole sites, pull sites, tension sites, access roads, and laydown areas are cleared (i.e., mowed) if necessary. Pole holes and any necessary anchor holes are excavated. Where possible, a machine auger is used to install poles. The width and depth of the setting hole depends on the size of the pole, soil type, span, and wind loading.

Power poles are framed, devices installed, and any anchors and guy wires are installed before the pole is set. Anchors and guy wires installed during construction are left in place. After setting the pole, conductors are strung.

2.4.5.3 Substation

The main functions of a collector substation are to step up the voltage from the turbine collection lines to the transmission level and to provide fault protection. The basic elements of the substation facilities are a control house, a bank of one or two main transformers, outdoor breakers, capacitor banks, relaying equipment, high-voltage bus work, steel support structures, an underground grounding grid, and overhead lightning-suppression conductors. The main outdoor electrical equipment and control house are installed on a concrete foundation.

The existing onsite substation served as the collector substation for the previous wind project. The substation consists of a graveled footprint area of approximately 0.2 acre, a 12-foot chain-link

perimeter fence, and an outdoor lighting system. This substation may be expanded to a 0.3-acre footprint to accommodate the installation of new, upgraded equipment. Any new lights would be shielded or directed downward to reduce glare. The upgraded substation would be fenced in, keeping with the fencing around the existing substation (i.e., 12-foot chain link perimeter fencing).

2.4.6 Operations and Maintenance Facility

An existing off-site O&M building and yard will be used for the project. Additional small storage buildings may be required at the site, but would be constructed within the existing fenced area of the existing O&M yard.

2.5 Project Construction

Turbines would be delivered to the site from the Port of Stockton or other nearby port or rail transfer locations. Tower assembly requires the use of one large track-mounted crane and two small cranes. The turbine towers, nacelles, and rotor blades would be delivered to each foundation site and unloaded by crane. A large track-mounted crane would be used to hoist the base tower section vertically then lower it over the threaded foundation bolts. The large crane would then raise each additional tower section to be bolted through the attached flanges to the tower section below. The crane then would raise the nacelle, rotor hub, and blades to be installed atop the tower. Two smaller wheeled cranes would be used to offload turbine components from trucks and to assist in the precise alignment of the tower sections. Estimated disturbance areas associated with project construction are provided in Table 2-3 and were calculated by estimating disturbance associated with each alternative layout and by using the most impactful scenario. The extent of impacts of the two alternatives under consideration would be nearly identical.

Table 2-3. Estimated Disturbance Associated with Project Construction (acres)[a]

Activity	Permanent Impact	Temporary Impact
Power collection system installation	0.0	3.0
Staging area installation	0.0	15.0
Access road expansion[b]	1.0	7.0
Turbine foundation installation	0.5	17.6
Meteorological tower installation	0.1	0.2
Substation expansion	0.1	0.1
Subtotal	1.7	42.9

[a] The extent of impacts of the two alternatives under consideration would be approximately the same.

[b] Existing access roads will be reused to the extent possible, however some small sections of new access road will be required and are included in the totals presented

2.5.1 Schedule

Project construction would proceed after all construction-related permits are issued. These activities are anticipated to proceed according to the sequence described below. Construction-related best management practices (BMPs) would be implemented during the November–April wet season. The final approved work hours would be specified in the proposed project's Notice to

Proceed, if issued by the City. If extended hours are necessary or desired, the appropriate approvals would be sought.

2.5.2 Construction Sequence

Typical construction steps are listed below.

- Demarcation of construction areas and any sensitive biological, cultural, or other resources needing protection.
- Construction of temporary staging areas.
- Road infrastructure upgrades.
- Erosion and sediment control.
- Wind turbine construction.
    - Final site selection and preparation.
    - Crane pad construction.
    - Foundation excavation and construction.
    - Tower assembly.
    - Installation of nacelle and rotor.
- Power collection system and communication line installation.
- Upgrades to the substation.
- Permanent meteorological tower installation.
- Final cleanup and restoration.

The construction contractors would prepare the project area, deliver and install the project facilities, oversee construction, and complete final cleanup and restoration of the construction sites. Rooney would implement BMPs consistent with standard practice and with the requirements of the PEIR as well as any state or federal permits to minimize soil erosion, sedimentation of drainages downslope of the project area, and any other environmental impacts. Examples of likely erosion control measures are listed below.

- Use of straw wattles, silt fences/straw bale dikes, and straw bales to minimize erosion and collect sediment (to protect wildlife, no monofilament-covered sediment control measures would be used).
- Reseeding and restoration of the site.
- Maintenance of erosion control measures.
- Regular inspection and maintenance of erosion control measures.

The construction activities and the approximate duration of each are listed below.

- Staging areas: 2 weeks.
- Road construction: 8 weeks.
- Foundations/electrical: 8 weeks.

- Turbine delivery and installation: 12 weeks.
- Electrical trenching and substation upgrades: 12 weeks.
- Cleanup: 12 weeks.

2.5.3 Demarcation of Sensitive Resources

Sensitive resources in and adjacent to construction areas would be marked to ensure adequate avoidance. Sensitive areas identified through the environmental approval and permitting processes would be staked and flagged. Prior to construction, the construction contractor and any subcontractors would conduct a walk-through of areas to be affected, or potentially affected, by construction activities. The preconstruction walk-throughs would be conducted regularly to identify sensitive resources to be avoided, limits of clearing, location of drainage features, and the layout for sedimentation and erosion control measures. Following identification of these features, specific construction measures would be reviewed and any modifications to construction methods or locations would be agreed upon before construction could begin.

2.5.4 Workforce

Based on data provided for typical wind energy projects of similar size, an average of 50 workers would be employed during construction, with a peak workforce of 75. Craft workers would include millwrights, iron workers, electricians, equipment operators, carpenters, laborers, and truck drivers. Local construction contractors and suppliers would be used to the extent possible.

2.5.5 Construction Equipment

Equipment used for construction of repowering activities generally includes the types listed below.

- Cranes
- Lowboys/trucks/trailers
- Flatbed trucks
- Service trucks (e.g., pickup trucks)
- Backhoes
- Bulldozers
- Excavators
- Graders
- Dump trucks
- Track-type dozers
- Rock crushers
- Water trucks
- Compactors
- Loaders

- Rollers
- Drill rigs
- Trenching cable-laying vehicles
- Cement trucks
- Concrete trucks and pumps
- Small hydraulic cranes
- Heavy and intermediate cranes
- Forklifts
- Generators

2.5.6 Hazardous Materials Storage

Hazardous materials would be stored at the staging area (use of extremely hazardous materials is not anticipated). To minimize the potential for harmful releases of hazardous materials through spills or contaminated runoff, these substances would be stored within secondary containment areas in accordance with federal, state, and local requirements and permit conditions. Storage facilities for petroleum products would be constructed, operated, and maintained in accordance with the Spill Prevention Control and Countermeasures (SPCC) Plan that would be prepared and implemented for the proposed project (Title 40 Code of Federal Regulations Part 112). The SPCC Plan would specify engineering standards (for example, secondary containment); administrative standards (for example, training with special emphasis on spill prevention, standard operating procedures, inspections); and BMPs.

A Hazardous Materials Business Plan (HMBP) would be developed for the proposed project. The HMBP would contain specific information regarding the types and quantities of hazardous materials, as well as their production, use, storage, spill response, transport, and disposal.

2.5.7 Traffic and Parking

Construction traffic routing would be established in a Construction Traffic Plan, which would include a traffic safety and signing plan prepared by Rooney in coordination with the City, County, and other relevant agencies. The plan would define hours, routes, and safety and management requirements.

This plan would incorporate measures such as informational signs, traffic cones, and flashing lights to identify any necessary changes in temporary land configuration. Flaggers with two-way radios would be used to control construction traffic and reduce the potential for accidents along roads. Speed limits would be set commensurate with road type, traffic volume, vehicle type, and site-specific conditions as necessary to ensure safe and efficient traffic flow. Onsite construction traffic would be restricted to the roads developed for the proposed project. Use of existing unimproved roads would be restricted to emergency situations.

Vehicle trips to the site during construction would include oversized vehicles delivering wind turbine generator and substation materials, heavy equipment, and other construction-related materials. Construction of the proposed project components (roads, turbines, substation, and

electrical/communication lines) would take place concurrently, using individual vehicles for multiple tasks. There would also be daily round trips of vehicles transporting construction personnel to the site.

Construction-related parking would be located in the construction staging area. Carpooling would be used when possible.

After construction, O&M of the proposed project would require fewer round trips per day using pickups or other light-duty trucks.

2.5.8 Water and Wastewater Needs

Water for construction activities would be provided through an agreement with municipal or private suppliers. Temporary onsite water tanks and water trucks would be made available for fire water support, dust suppression, and construction needs. Daily water use would vary, depending on the weather conditions and time of year, both of which affect the need for dust control. Hot, dry, windy conditions would necessitate greater amounts of water. Tanker trucks would apply water to construction areas where needed to aid in road compaction and reduce construction-generated dust.

A minimal amount of water would be required for construction worker needs (drinking water, sanitation facilities). This water would be trucked in or delivered as bottled drinking water. A local sanitation company would provide and maintain appropriate construction sanitation facilities. Portable toilets would be placed at each of the staging areas. When necessary, additional facilities would be placed at specific construction locations. Appropriate BMP training would be provided to truck operators to prevent runoff from dust suppression and control activities. Water used for cement mixing and truck washing would be managed in accordance with applicable permit conditions (and BMPs).

While the proposed project would require only a minimal amount of water on a temporary basis during construction, and an even smaller amount of water during operations for the O&M building, Rooney has voluntarily prepared a water supply assessment (WSA) for the purpose of ensuring that sufficient water supply is available for the proposed project. Water for construction (primarily for dust control) would be provided from Zone 7 Water Agency, Byron-Bethany Irrigation District, the City of Livermore, or other approved water district or agency, if available. The WSA concludes that there is adequate water supply available to meet the needs of the proposed project for both construction activities and operations.

2.5.9 Inspection and Startup Testing

Prior to operation, each completed turbine would be inspected and checked for mechanical, electrical, and control functions in accordance with the manufacturer's specifications before being released for startup testing. A series of startup procedures would then be performed by the manufacturer's technicians. Electrical tests on the transformers, underground power lines, and collector substations would be performed by qualified engineers, electricians, and test personnel to ensure that electrical equipment is operating within tolerances and that the equipment has been installed in accordance with design specifications. The aboveground power lines interconnecting to the PG&E system would be tested and inspected as required.

2.5.10 Restoration

Clearing and disposing of trash, debris, and scrub on those portions of the site where construction would occur would be performed at the end of each workday through all stages of construction. Existing vegetation would be cleared only where necessary. All excavations would be backfilled with compacted earth and aggregate as soon as cable infrastructure is tested. Disposal of cuttings and debris would be in an approved facility designed to handle the waste.

Before construction is complete, all remaining trash and debris would be removed from the site. Any debris would be properly disposed of offsite consistent with restoration requirements for nearby projects and described in a Reclamation Plan, which would be developed prior to construction as part of the construction planning and permitting process. Any material placed in the areas of the foundations or roads would be compacted as required for soil stability.

2.5.11 Safety and Environmental Compliance Programs

2.5.11.1 Quality Assurance and Quality Control

A quality assurance/quality control (QA/QC) program would be implemented to ensure that construction and startup of the facility are completed as specified. Rooney would be responsible for ensuring implementation of the QA/QC program prior to construction. The program would specify implementing and maintaining QA/QC procedures, environmental compliance programs and procedures, and health and safety compliance programs and procedures, and would integrate Rooney's activities with the contractors during project construction. The engineering procurement and construction contractor and turbine supplier would be responsible for enforcing compliance with the construction procedures program of all of their subcontractors.

2.5.11.2 Environmental Compliance

Orientation of construction staff would include education on the potential environmental impacts of project construction. The construction manager would establish procedures for staff to formally report any issues associated with the environmental impacts, to keep management informed, and to facilitate rapid response.

2.5.11.3 Stormwater Control

Because the project would disturb more than 1 acre, it would require coverage under the state's General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order 2010-0014-DWQ) (Construction General Permit). Permit coverage would be obtained by submitting permit registration documents (PRDs) to the State Water Resources Control Board through its Stormwater Multiple Application and Report Tracking System (SMARTS) website. The PRDs include a notice of intent, site maps, a stormwater pollution prevention plan (SWPPP), a risk level assessment, and other materials. The SWPPP would include the elements described in Section A of the Construction General Permit and maps that show the location and type of erosion control, sediment control, and non-stormwater BMPs, all of which are intended to prevent significant water quality impacts on receiving waters. The SWPPP would also describe site inspection, monitoring, and BMP maintenance procedures and schedules.

2.5.11.4 Safety Compliance

Rooney and its construction contractors and subcontractors would be responsible for construction health and safety issues. The contractor would provide a health and safety (H&S) coordinator, who would ensure that applicable laws, regulations, ordinances, and standards concerning health and safety are followed and that any identified deficiencies are corrected as quickly as possible. The H&S coordinator would conduct onsite orientation and safety training for contract and subcontract employees and would report back to the onsite construction manager. Upon identification of a health and safety issue, the H&S coordinator would work with the construction manager and responsible subcontractor or direct hire workers to correct the violation.

2.5.11.5 Emergency Situations

If severe storms result in a downed power line, standard O&M procedures would be applied. The turbines would be equipped with internal protective control mechanisms to safely shut them down in the event of a high-voltage grid outage or a turbine failure related to fire or mechanical problems. A separate low-voltage distribution service feed might be connected to the low-voltage side of the collector substation as a backup system to provide auxiliary power to project facilities in case of outages. For safety, the collector substation would be fenced, locked, and properly signed to prevent access to high-voltage equipment. Safety signage would be posted around turbines, transformers, and other high-voltage facilities and along roads, as required.

2.5.11.6 Public Access and Security

The project would be located entirely on a property with restricted public access. Only authorized access to the project site would be allowed. The site is fenced and the collector substation would be fenced with an additional 12-foot-high chain-link fence to prevent public and wildlife access to high-voltage equipment. Safety signs would be posted in conformance with applicable state and federal regulations around all turbines, transformers, and other high-voltage facilities and along access roads. Vegetation clearance would be maintained adjacent to project ingress and egress points and around the collector substation, transformers, and interconnection riser poles.

2.5.11.7 Hazardous Materials Storage and Handling

The County's Hazardous Materials Program Division is the Certified Unified Program Agency (CUPA) for all areas of Alameda County. Management of hazardous materials would be conducted in accordance with a County-approved HMBP developed for the proposed project pursuant to the requirements of the CUPA. Hazardous materials used during O&M activities would be stored within the O&M building in aboveground containers with appropriate spill containment features as prescribed by the local fire code or the SPCC Plan for the O&M building as stipulated by the appropriate regulatory authority.

Lubricants used in the turbine gearbox are potentially hazardous. The gearbox would be sealed to prevent lubricant leakage. The gearbox lubricant would be sampled periodically and tested to confirm that it retains adequate lubricating properties. When the lubricants have degraded to the point where they are no longer adequate, the gearbox would be drained, new lubricant added, and the used lubricants disposed of at an appropriate facility in accordance with all applicable laws and regulations.

Transformers contain oil for heat dissipation. The transformers are sealed and contain no polychlorinated biphenyls or moving parts. The transformer oil would not be subject to periodic inspection and does not need replacement.

O&M vehicles would be properly maintained to minimize leaks of motor oil, hydraulic fluid, and fuel. During operation, O&M vehicles would be serviced and fueled at the O&M building (using mobile fuel tanks) or at an offsite location. No storage tanks are located at the existing project, and none are proposed.

2.6 Operation and Maintenance Activities

Maintenance of turbines and associated infrastructure includes a wide variety of activities. Routine maintenance involves activities such as checking torque on tower bolts and anchors; checking for cracks and other signs of stress on the turbine mainframe and other turbine components; inspecting for leakage of lubricants, hydraulic fluids, and other hazardous materials and replacing them as necessary; inspecting the grounding cables, wire ropes and clips, and surge arrestors; cleaning; and repainting. Most routine maintenance activities occur within and around the tower and the nacelle. Cleanup from routine maintenance activities would be conducted at the time maintenance is performed by the O&M personnel. While performing most routine maintenance activities, O&M staff would travel by pickup or other light-duty trucks. In addition, nonroutine maintenance such as repair or replacement of rotors or other major components could be necessary. Such maintenance would involve use of one or more cranes and equipment transport vehicles.

Monitoring of project operations would be computer-based; computers in the base of each turbine tower would be connected to the O&M facility through fiber-optic or wireless telecommunication links.

The O&M workforce would consist of turbine technicians, operations personnel, administrative personnel, and management staff. O&M staff would monitor turbine and system operation, perform routine maintenance, shut down and restart turbines when necessary, and provide security. All O&M staff would be trained regularly to observe BMPs. Approximately two full-time staff would be required to conduct O&M activities.

2.7 Post-Project Decommissioning

The anticipated life of the windfarm is more than 30 years, as upgrading and replacing equipment could extend the operating life indefinitely with appropriate permit approvals. However, the life of the project for CEQA purposes would be 35 years.

Decommissioning would involve removing the turbines, transformers, and related infrastructure in accordance with landowner agreements. Substations and met towers may be removed and the sites reclaimed; alternatively, the sites could be retained for continued use. A single large crane would be used to disassemble the turbines, and smaller cranes would lift the parts onto trucks to be hauled away. Generally, turbines, electrical components, and towers would either be refurbished and resold or recycled for scrap. All unsalvageable materials would be disposed of at authorized sites in accordance with federal, state, and local laws, regulations, ordinances, and adopted policies in effect at the time of final decommissioning. Existing service roads would be used. Road reclamation would

be accomplished using scrapers and gravel trucks. Site reclamation after decommissioning would be subject to a locally approved reclamation plan. Based on site-specific requirements, the reclamation plan would include regrading, spot replacement of topsoil, and revegetation of disturbed areas with an approved seed mix.

Path: \\PDCCITRDSGIS1\Projects_1\New_Dimension_Energy\00066_17_Rooney\Figures\Permit\CEQA_Add\Figure_2-1_Parcel BoundariesFull.mxd; Author: ; Date: 7/20/2018

Figure 2-1
Parcel Boundaries

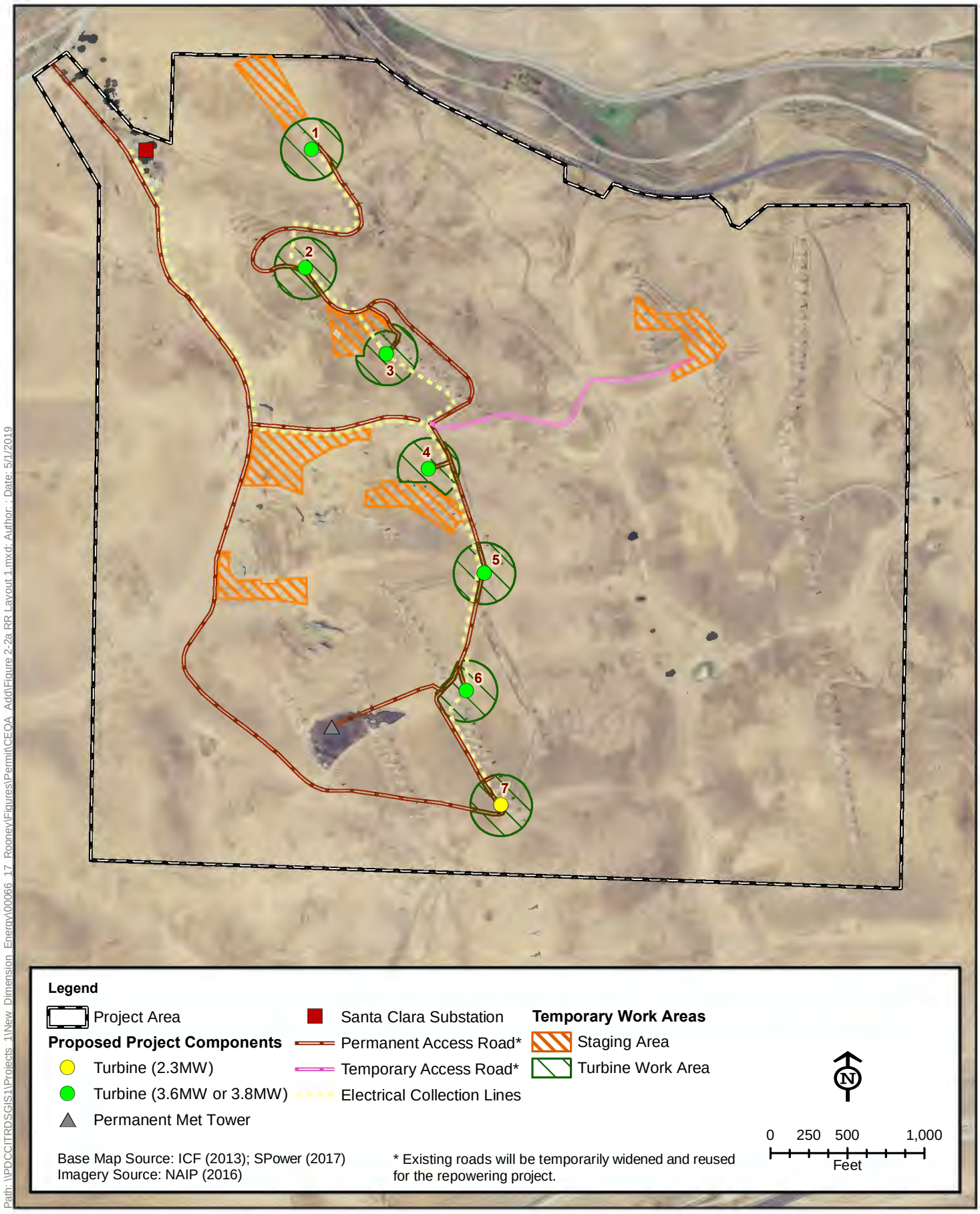


Figure 2-2a
Rooney Ranch Wind Repowering Project—Layout 1

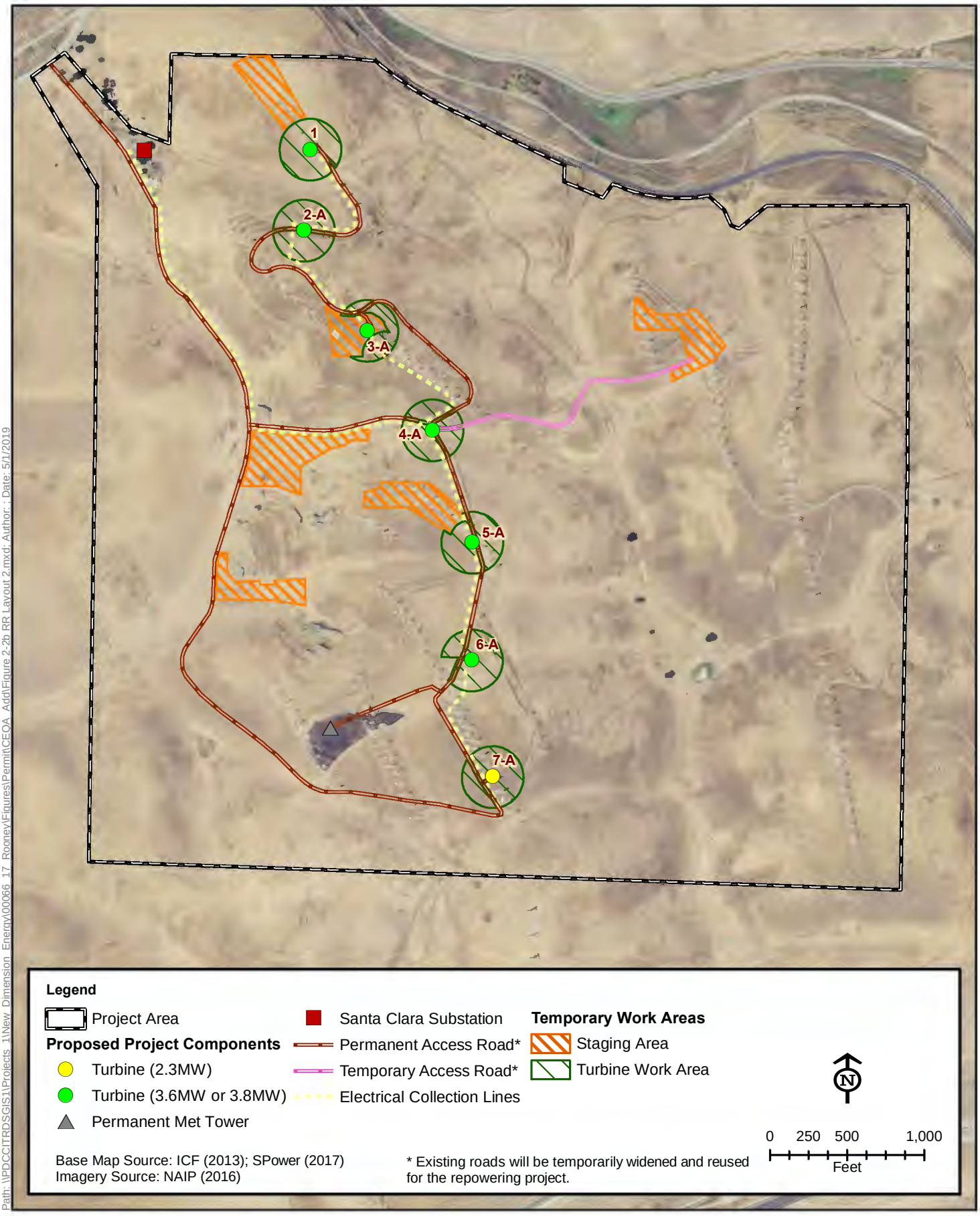


Figure 2-2b
Rooney Ranch Wind Repowering Project—Layout 2

Chapter 3
Environmental Analysis

As discussed in Chapter 1, *Introduction*, the analysis in this document parallels the organization of the PEIR. While some resource topics might have been summarily dismissed, it was deemed preferable to provide a brief argument supporting the decision to omit a more detailed analysis.

The resource discussions are organized as shown below. Where references are cited, they are provided at the end of each section.

- Section 3.1—Aesthetics and Visual Resources
- Section 3.2—Agricultural and Forestry Resources
- Section 3.3— Air Quality
- Section 3.4—Biological Resources
- Section 3.5—Cultural Resources
- Section 3.6—Geology, Soils, Mineral Resources, and Paleontological Resources
- Section 3.7—Greenhouse Gas Emissions
- Section 3.8—Hazards and Hazardous Materials
- Section 3.9—Hydrology and Water Quality
- Section 3.10—Land Use and Planning
- Section 3.11—Noise
- Section 3.12—Population and Housing
- Section 3.13—Public Services
- Section 3.14—Recreation
- Section 3.15—Transportation/Traffic
- Section 3.16—Utilities and Service Systems

3.1 Aesthetics and Visual Resources

The PEIR presented a broad and thorough analysis of the impacts on aesthetics and visual resources that would result from repowering the program area, selecting key viewpoints to develop photo simulations comparing the view under existing conditions with the same view under repowered conditions. To conduct the project-level analysis, analysts selected three project-specific viewpoints to characterize visual changes that would result from project implementation (Figure 3.1-1).

- Viewpoint 1—Looking southwest from Altamont Pass Road east of the project area.
- Viewpoint 2—Looking southeast from Altamont Pass Road west of the project area.
- Viewpoint 3—Looking northeast from the intersection of I-580 and Flynn Road North.

A review of the two alternative layouts was conducted to determine if they differ substantially from a visual analysis perspective. The results of that review indicated that the layouts are not substantially different; consequently, Layout 1 was selected for the visual simulations. Visual simulations were prepared for each viewpoint, using the largest and tallest turbine model proposed to ensure a conservative approach to the analysis—that is, a worst-case scenario.

3.1.1 Existing Conditions

As described in the PEIR, the project vicinity is mostly characterized by grass-covered, rolling hills, with road cuts to accommodate rural roads and I-580. Strings of turbines, power lines, transformers, access roads, and substations are the most visually distinct artificial features throughout most the vicinity. Rural residences dot the vicinity surrounding the project area, but there are no residences within it. Both Altamont Pass Road, north of the project area, and I-580, south of the project area, are designated scenic routes.

3.1.2 Environmental Impacts and Mitigation Measures

The project-level analysis was based on review of the PEIR and on the visual photo simulations listed above. These photo simulations are presented in Figures 3.1-2 through 3.1-4.

The PEIR relied on a qualitative evaluation of the visual impacts of repowering the program area overall. In general, the PEIR characterized the new repowered turbines across the program area in comparison with the existing old-generation turbines. The project's turbines would have a slightly longer blade length (i.e., 15 feet) and rotor-swept area than the turbines evaluated in the PEIR, but the project would require fewer turbines because each would have a higher capacity than those contemplated in the PEIR. The longer blade length is not expected to be visually noticeable from nearby roads or residences because the proposed turbines are consistent with the overall dimensions of those evaluated in the PEIR; consequently, the analysis in the PEIR is relevant and appropriate for the project. Accordingly, the applicant's proposal to use slightly larger turbines would not constitute a new significant effect or a substantial increase in the severity of effects on visual resources compared to those described in the PEIR. Additional analysis specific to the project is provided below.

Impact AES-1: Temporary visual impacts caused by construction activities (less than significant with mitigation)

The PEIR concluded that construction activities could result in a significant impact, particularly for highly sensitive viewers such as residents and recreationists. The analysis specifically called out scenic roadways. Accordingly, the potential visual impacts associated with construction as addressed in the PEIR would apply to the project; as concluded in the PEIR, implementation of Mitigation Measure AES-1, Limit construction to daylight hours, would reduce these impacts to a less-than-significant level. This conclusion is consistent with the analysis presented in the PEIR, and the mitigation measures set forth in the PEIR would adequately address this impact.

Impact AES-2: Have a substantial adverse effect on a scenic vista (less than significant with mitigation)

The PEIR concluded that while the new, large turbines may be more visually evident than the older, smaller turbines, their wide spacing on the landscape would be less disruptive of the landscape features. The program-level analysis raised the greatest concern for areas without turbines. The project area was previously developed with old-generation turbines, making this concern not relevant to the repowering project.

Accordingly, while the repowering project would introduce changes to views in and of the project area, many of these changes might in fact be beneficial, because much of the project area would change from exhibiting many small turbines to fewer, larger turbines. Nevertheless, for purposes of full and conservative disclosure, because of the project area's situation between two designated scenic roadways, the construction of turbines in this area could have a substantial adverse effect; thus, this impact is considered potentially significant. Implementation of Mitigation Measures AES-2b, Maintain site free of debris and restore abandoned roadways, and AES-2c, Screen surplus parts and materials, would reduce this impact to a less-than-significant level. This conclusion is consistent with the analysis presented in the PEIR, and the mitigation measures set forth in the PEIR would adequately address this impact.

Impact AES-3: Substantially damage scenic resources, including but not limited to trees, rock outcroppings, and historic buildings along a scenic highway (less than significant with mitigation)

As described above, Altamont Pass Road and I-580 are County-designated scenic roadways. As stated in the PEIR:

> There are also portions of I-580, Altamont Pass Road, Flynn Road, Mountain House Road, Patterson Pass Road, and the proposed Route 239 Freeway … where no turbines currently exist, but motorists on these roads are accustomed to seeing wind turbines along the route, so they would not be adversely affected.

Because the repowering turbines would replace the old-generation wind turbines, this analysis concludes that implementation of Mitigation Measures AES-2b and AES-2c would reduce the impact on scenic roadways to a less-than-significant level. This conclusion is consistent with the analysis presented in the PEIR, and the mitigation measures set forth in the PEIR would adequately address this impact.

Impact AES-4: Substantially degrade the existing visual character or quality of the site and its surroundings (less than significant with mitigation)

The PEIR concluded that, in general, replacing numerous small turbines with fewer, much larger turbines would not degrade the existing visual character of the area but rather would improve the visual quality. While it might be argued that this impact would be less than significant, for purposes of full and conservative disclosure, this impact is considered potentially significant. Implementation of Mitigation Measures AES-2b and AES-2c would reduce this impact to a less-than-significant level. This conclusion is consistent with the analysis presented in the PEIR, and the mitigation measures set forth in the PEIR would adequately address this impact.

Impact AES-5: Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area (less than significant with mitigation)

The PEIR concluded that lighting required by the Federal Aviation Administration (FAA) would not differ substantially from that associated with existing turbines in the project vicinity, that lighting associated with the substations would be shielded and directed downward to reduce glare, and that the color of new towers and rotors would be neutral and nonreflective. Since preparation of the PEIR, the County has informed the City that the new turbines may require more lighting than the previously existing, smaller turbines, most of which were not tall enough to require FAA lighting. However, as discussed in Section 1.3.4, *Turbine Lighting*, this change does not constitute a new or more intense significant effect. Additionally, Rooney Ranch has committed, as part of the proposed project, to consult with the FAA to reduce lighting requirements to the extent allowed under applicable regulations, which will further address potential effects. Finally, although the larger turbines may require more lighting, there will be significantly fewer turbines (7 instead of 199), and any required lighting will be consistent with current conditions that include multiple repowered sites in the APWRA with larger, new turbines that have already installed lights per FAA requirements. Consequently, the project would not result in a new source of substantial light or glare beyond what is described in the PEIR.

However, the PEIR also concluded that shadow flicker—caused by blade rotation—could create a disruptive visual intrusion to residents who are exposed to the condition for extended periods: more than 30 minutes in a given day or 30 hours in a given year. Mitigation Measure AES-5, Analyze shadow flicker distance and mitigate effects or incorporate changes into project design to address shadow flicker, Rooney will retain a qualified engineering firm to conduct a shadow flicker analysis for the proposed project. The terms of the mitigation measure require that Rooney implement measures to minimize the effect in consultation with any owner of a residence affected more than 30 minutes in a given day or 30 hours in a given year. Implementation of Mitigation Measure AES-5 would reduce this impact to a less-than-significant level. This conclusion is consistent with the analysis presented in the PEIR, and the mitigation measures set forth in the PEIR would adequately address this impact.

Impact AES-6: Consistency with state and local policies (less than significant with mitigation)

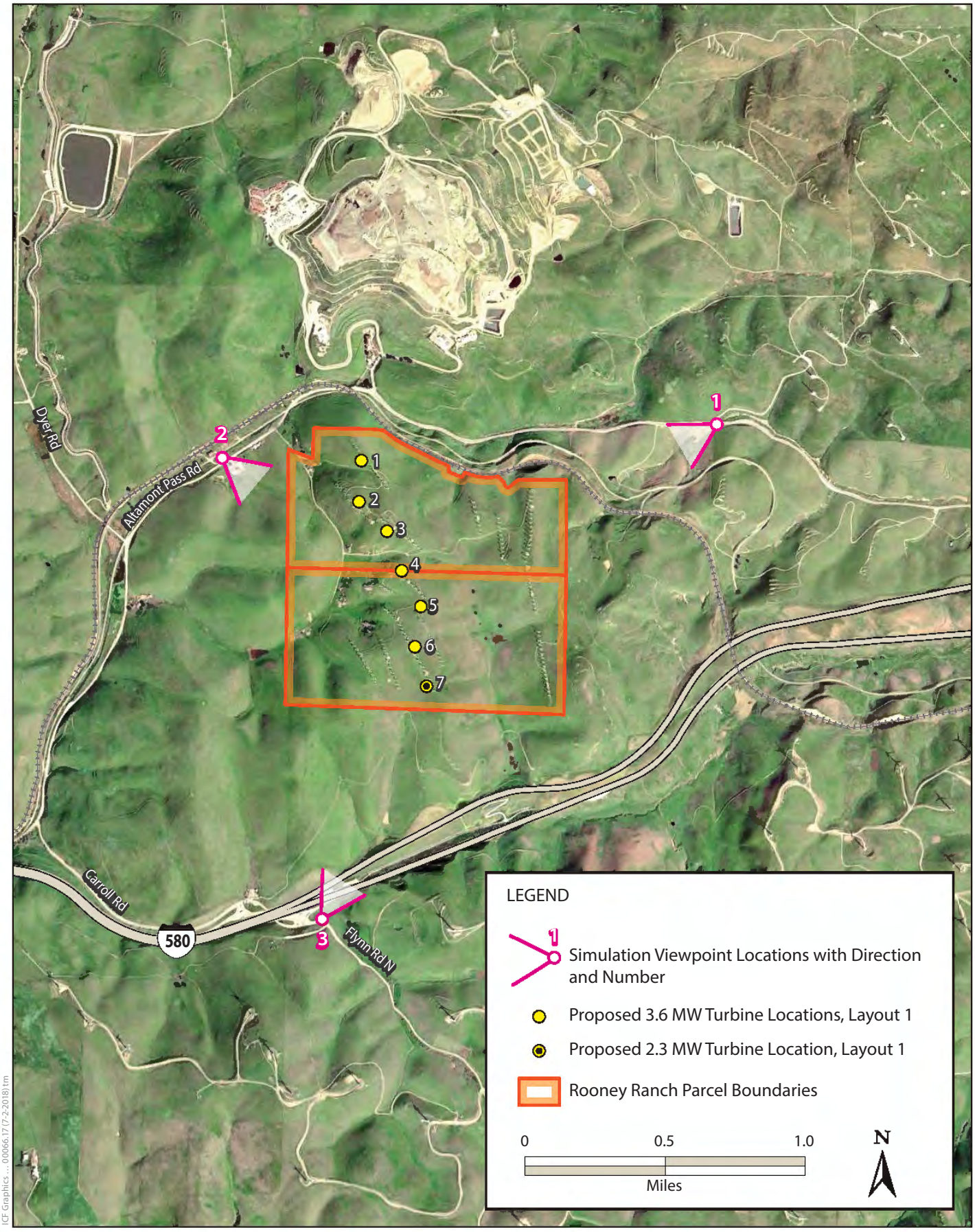
The City commits to comply with measures set forth to protect visual resources along scenic roadways and open space areas identified for protection, as detailed in the Scenic Route and Open Space Elements of the Alameda County General Plan (Alameda County 1966). In addition, the City commits to comply with measures set forth in the East County Area Plan (ECAP) to protect visual resources such as sensitive viewsheds, streets and highways, scenic highways, and areas affected by

windfarms (Alameda County 2000). Implementation of Mitigation Measures AES-2b, AES-2c, 3, and 5 would reduce this impact to a less-than-significant level. This conclusion is consistent with the analysis presented in the PEIR, and the mitigation measures set forth in the PEIR would adequately address this impact.

3.1.3 References Cited

Alameda County. 1966. *Scenic Route Element of the General Plan*. May. Reprinted June 1974, Amended May 5, 1994.

———. 2000. *East County Area Plan*. Adopted May 1994. Modified by passage of Measure D, effective December 22, 2000. Oakland, CA.



ICF Graphics ... 00066.17 (7-2-2018) tm

Figure 3.1-1
Visual Simulation Viewpoint Locations

ICF Graphics ... 00066.17 (7-24-2018) tm

Figure 3.1-2
Viewpoint 1—Looking Southwest along Altamont Pass Road

ICF Graphics ... 00066.17 (7-24-2018) tm

Figure 3.1-3
Viewpoint 2—Looking Southeast along Altamont Pass Road

ICF Graphics ... 00066.17 (7-24-2018) tm

Figure 3.1-4
Looking Northeast near the intersection of Flynn Road and Interstate 580

3.2 Agricultural and Forestry Resources

The PEIR identified approximately 24 acres of Prime Farmland in the extreme northeast corner of the program area and found that conversion of this agricultural land would constitute a significant impact, which could be mitigated to a less-than-significant level. However, because the Prime Farmland is outside the project area, there would be no impact. Similarly, the PEIR found that because wind turbines are a conditionally permitted use on grazing land under Williamson Act contract, there would be no impact pertaining to conflicts with existing zoning. Finally, there is no forest land in the program area. Accordingly, agricultural and forestry resources are not discussed further in this analysis.

3.3 Air Quality

The PEIR evaluated impacts associated with development of up to 450 MW in combined nameplate capacity within the program area. Project-level criteria pollutant emissions and associated air quality impacts were assessed using many of the same methods and models as described in the PEIR. Specifically, analysts estimated combustion exhaust and fugitive dust based on project-specific construction and operating data (e.g., schedule, equipment, truck volumes) provided by the project engineer and a combination of emission factors and methodologies from CalEEMod, version 2016.3.2; California Air Resources Board's (ARB's) EMFAC2017 model; the U.S. Environmental Protection Agency's (EPA's) AP-42 Compilation of Air Pollutant Emission Factors, and several other industry-accepted tools. Appendix A provides additional modeling detail, including equipment and vehicle assumptions.

3.3.1 Existing Conditions

As described in the PEIR, the proposed project is located in Alameda County, which is in the Bay Area Air Quality Management District (BAAQMD). Concentrations of ozone, carbon monoxide (CO), nitrogen dioxide, sulfur dioxide, lead, and particulate matter (PM10 and PM2.5) are commonly used as indicators of ambient air quality conditions. These pollutants are known as *criteria pollutants* and are regulated by EPA and ARB through national and California ambient air quality standards (NAAQS and CAAQS), respectively. The NAAQS and CAAQS establish limits of criteria pollutant concentrations to protect human health and prevent environmental and property damage. Other pollutants of concern in the project area are nitrogen oxides (NO_X) and reactive organic gases (ROG), which are precursors to ozone, and diesel particulate matter (DPM), which can cause cancer and other human health ailments. In general, the project area is generally well ventilated by winds, resulting in relatively good ambient air quality conditions.

3.3.2 Environmental Impacts and Mitigation Measures

Construction emissions would primarily occur in the project area in the BAAQMD. However, some equipment and materials would originate from the Port of Stockton and the city of Tracy, both of which are within the San Joaquin Valley Air Pollution Control District (SJVAPCD). Accordingly, heavy-duty truck trip exhaust emissions that would be generated in the SJVAPCD have been quantified and included in the construction analysis. Operational emissions would occur exclusively in the BAAQMD. Consistent with the PEIR, thresholds developed by the BAAQMD and SJVAPCD are used to evaluate the significance of the project's emissions and associated air quality impacts (San Joaquin Valley Air Pollution Control District 2015; Bay Area Air Quality Management District 2017).

Impact AQ-1: Conflict with or obstruct implementation of the applicable air quality plan (less than significant)

The PEIR concluded that repowering projects under both alternatives would not conflict with the goals of BAAQMD's Clean Air Plan or SJVAPCD's air quality attainment plans. Accordingly, because the proposed project is consistent with the assumptions used in the PEIR, this impact would be less than significant, and no mitigation is required. This conclusion is consistent with the analysis presented in the PEIR.

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

The PEIR concluded that maximum daily unmitigated ROG and NO_X from construction of repowering projects would exceed BAAQMD's significance thresholds, resulting in a significant impact. Fugitive dust would also constitute a significant impact without application of BMPs. Implementation of Mitigation Measures AQ-2a, Reduce construction-related air pollutant emissions by implementing applicable BAAQMD Basic Construction Mitigation Measures, and AQ-2b, Reduce construction-related air pollutant emissions by implementing measures based on BAAQMD's Additional Construction Mitigation Measures, would ensure that impacts related to fugitive dust would be less than significant. However, implementation of these measures would not reduce emissions to a less-than-significant level. Accordingly, the impact of construction-related NO_X emissions would be significant and unavoidable in the BAAQMD. Neither long-term operation of the project nor material hauling in SJVAPCD during construction would exceed any air district thresholds, and impacts would be less than significant. These conclusions are consistent with the analysis presented in the PEIR.

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) (significant and unavoidable for construction and less than significant for operation)

The PEIR concluded that construction of repowering projects would exceed BAAQMD's ROG and NO_X thresholds even after implementation of feasible mitigation. Accordingly, the PEIR determined that cumulative construction impacts in the BAAQMD would be significant and unavoidable. Long-term operation of the repowered projects was found to have a less-than-significant cumulative air quality impact.

As discussed under Impact AQ-2, neither long-term operation of the proposed project nor material hauling in SJVAPCD during construction would exceed air district thresholds. Accordingly, cumulative impacts during construction in the SJVAPCD and during operation in the BAAQMD would be less than significant. Construction-related NO_x and PM emissions in the BAAQMD would exceed the air district's thresholds, resulting in a potentially significant impact. Implementation of Mitigation Measures AQ-2a and AQ-2b would ensure that impacts related to fugitive dust would be less than significant. However, NO_X emissions would remain significant and unavoidable and cumulatively considerable. This conclusion is consistent with the analysis presented in the PEIR.

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

The PEIR concluded that receptor exposure to DPM from construction of the repowering projects would be less than significant with implementation of Mitigation Measures AQ-2a and AQ-2b, which would reduce both criteria pollutants and DPM emissions.

Long-term operation of the proposed project would not result in a significant new source of emissions. Offsite truck trips during construction would be transitory, using multiple roads over a widespread area, thereby helping to disperse toxic pollutants and minimize exposure. Onsite construction activities would generate DPM, but these would occur over a relatively short period—approximately 6 months, far less than the exposure duration of 30 years that is typically associated

with chronic cancer risk (Office of Environmental Health Hazard Assessment 2015). Emissions would also be spatially dispersed throughout the project area and at multiple turbine locations.

While exposure to DPM emissions would be of short duration, two receptors are approximately 2,000 feet from turbine work areas. These receptors may be exposed to increased health risks during construction at these individual locations. Accordingly, this impact is conservatively concluded to be potentially significant. Implementation of Mitigation Measures AQ-2a and AQ-2b would reduce DPM emissions and associated health risks to sensitive receptors. This impact would be less than significant with mitigation. This conclusion is consistent with the analysis presented in the PEIR.

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

The PEIR concluded that neither construction nor operation of the repowering projects would result in significant odor impacts. Odor emissions under the proposed project would be similar to those evaluated at the program level; they would be primarily limited to the construction period. Sources of odors during construction would be diesel-powered trucks and vehicles. Potential odors from these sources would be temporary (1 year) and spatially dispersed over the project area. Accordingly, the proposed project is not anticipated to create objectionable odors that would violate air district nuisance rules. This impact would be less than significant, and no mitigation is required. This conclusion is consistent with the analysis presented in the PEIR.

3.3.3 References Cited

Bay Area Air Quality Management District. 2017. *Air Quality Guidelines*. May.

Office of Environmental Health Hazard Assessment. 2015. *Air Toxics Hot Spot Program Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments*. February.

San Joaquin Valley Air Pollution Control District. 2015. *Guidance for Assessing and Mitigating Air Quality Impacts*. March.

3.4 Biological Resources

To evaluate the potential project-specific impacts on biological resources, ICF prepared the *Biological Resources Evaluation for the Rooney Ranch Wind Repowering Project* (Biological Resources Evaluation) (Appendix B). In addition to reviewing previous work conducted in support of the PEIR and the East Alameda County Conservation Strategy (EACCS), ICF biologists searched the California Department of Fish and Wildlife's (CDFW's) California Natural Diversity Database (CNDDB) for the Altamont, Clifton Court Forebay, Byron Hot Springs, and Midway U.S. Geological Survey 7.5-minute quadrangles (California Department of Fish and Wildlife 2018) and the U.S. Fish and Wildlife Service IPaC Trust Resource Report species list for the project area (U.S. Fish and Wildlife Service 2018). They also reviewed aerial photographs from Google Earth for the study area to obtain information on historical habitat conditions.

ICF botanists/wetland ecologists conducted aquatic resource delineation surveys on March 3 and 14, 2017. These were formal delineations undertaken with the purpose of characterizing potential waters of the United States, including wetlands, in the project area.

Biologists conducted habitat surveys of the biological study area (i.e., the project area plus a 1.24-mile buffer around it to account for the possible dispersal distance of California tiger salamanders from aquatic breeding habitat). The surveys included a site assessment for California tiger salamander and California red-legged frog.

3.4.1 Existing Conditions

3.4.1.1 Land Cover Types

Not all the land cover types described in the PEIR were found to be present in the project area. The land cover types and the extent of each identified through the survey efforts are shown in Table 3.4-1.

Table 3.4-1. Approximate Acreage of Land Cover Types

Land Cover/Habitat Type	Acres
Nonnative annual grassland	572.0
Ephemeral drainage	0.2
Rock outcrop	2.3
Pond	0.6
Developed/roads/other infrastructure	3.0
Total	578.1

3.4.1.2 Special-Status Plants

According to the Biological Resources Evaluation, the 10 special-status plant species listed below have been identified as having the potential to occur in the project area. All these species were

considered in the PEIR, although additional species that could occur in the program area were determined not to occur in the project area due to microhabitat conditions or range constraints.

- Bent-flowered fiddleneck (*Amsinckia lunaris*)—CRPR 1B.2[2]
- Big-scale balsamroot (*Balsamorhiza macrolepis* var. *macrolepis*)—CRPR 1B.1
- Big tarplant (*Blepharizonia plumosa*)—CRPR 1B.1
- Round-leaved filaree (*California macrophylla*)—CRPR 1B.1
- Lemmon's jewelflower (*Caulanthus lemmonii*)—CRPR 1B.2
- Recurved larkspur (*Delphinium recurvatum*)—CRPR 1B.2
- Diamond-petaled California poppy (*Eschscholzia rhombipetala*)—CRPR 1B.1
- Shining navarretia (*Navarretia nigelliformis* ssp. *radians*)—CRPR 1B.2
- Rayless ragwort (*Senecio aphanactis*)—CRPR 2.2
- Caper-fruited tropidocarpum (*Tropidocarpum capparideum*)—CRPR 1B.1

None of these species have been previously documented within or adjacent to the study area.

3.4.1.3 Special-Status Wildlife

According to the Biological Resources Evaluation, the 20 special-status wildlife species listed below have been identified as having the potential to occur in the project area. All these species were considered in the PEIR, although additional species that could occur in the program area were determined not to occur in the project area due to microhabitat conditions or range constraints.

- Longhorn fairy shrimp (*Branchinecta longiantenna*)—federally listed as endangered.
- Vernal pool fairy shrimp (*Branchinecta lynchi*)—federally listed as threatened.
- Vernal pool tadpole shrimp (*Lepidurus packardi*)—federally listed as endangered.
- California tiger salamander (*Ambystoma californiense*)—state- and federally listed as threatened.
- California red-legged frog (*Rana draytonii*)—federally listed as threatened.
- Western spadefoot (*Spea hammondii*)—CDFW species of special concern.
- Western pond turtle (*Actinemys marmorata*)—CDFW species of special concern.
- San Joaquin coachwhip (*Masticophis flagellum ruddocki*)—CDFW species of special concern.
- Blainville's horned lizard (*Phyrnosoma blainvillii*)— CDFW species of special concern.
- White-tailed kite (*Elanus leucurus*)—California fully protected.

[2] CRPR = California Rare Plant Rank.
1B.1 = rare, threatened or endangered in California and elsewhere, seriously endangered in California.
1B.2 = rare, threatened or endangered in California and elsewhere, fairly endangered in California.
2.2 = rare, threatened or endangered in California, but more common elsewhere, fairly endangered in California.

- Northern harrier (*Circus cyaneus*)—CDFW species of special concern.
- Bald eagle (*Haliaeetus leucocephalus*)—federally de-listed; state-listed as endangered, fully protected.
- Golden eagle (*Aquila chrysaetos*)—California fully protected.
- Swainson's hawk (*Buteo swainsoni*)—state-listed as threatened.
- Western burrowing owl (*Athene cunicularia*)—CDFW species of special concern.
- American peregrine falcon (*Falco peregrinus anatum*)—California fully protected.
- Loggerhead shrike (*Lanius ludovicianus*)— CDFW species of special concern.
- Tricolored blackbird (*Agelaius tricolor*)—state-listed as threatened.
- American badger (*Taxidea taxus*)— CDFW species of special concern.
- San Joaquin kit fox (*Vulpes macrotis mutica*)—state-listed as threatened; federally listed as endangered.

Burrowing owls, foraging golden eagles, and vernal pool fairy shrimp were observed in the study area during the April 4, 2017 surveys (Appendix B).

3.4.2 Environmental Impacts and Mitigation Measures

Impact BIO-1: Potential for ground-disturbing activities to result in adverse effects on special-status plants or habitat occupied by special-status plants (less than significant with mitigation)

The PEIR concluded that ground-disturbing activities associated with project construction could result in adverse impacts on special-status plants and their habitat. Because the activities associated with the proposed project and the special-status plant species with potential to occur in the project area are consistent with those contemplated in the PEIR, the impact would be comparable to that presented in the PEIR, and the same mitigation measures would apply. Implementation of Mitigation Measures BIO-1a, Conduct surveys to determine the presence or absence of special-status plant species; BIO-1b, Implement best management practices to avoid and minimize impacts on special-status species; BIO-1c, Avoid and minimize impacts on special-status plant species by establishing activity exclusion zones; BIO-1d, Compensate for impacts on special-status plant species; and BIO-1e, Retain a biological monitor during ground-disturbing activities in environmentally sensitive areas, would reduce this impact to a less-than significant level. This conclusion is consistent with the analysis presented in the PEIR, and the mitigation measures set forth in the PEIR would adequately address this impact.

Impact BIO-2: Adverse effects on special-status plants and natural communities resulting from the introduction and spread of invasive plant species (less than significant with mitigation)

The potential for the introduction and spread of invasive plant species in the project area as a result of construction activities would be the same as described in the PEIR for repowering projects overall. The introduction of invasive nonnative plant species would constitute a significant indirect impact. Implementation of Mitigation Measures BIO-1b; BIO-2, Prevent introduction, spread, and

establishment of invasive plant species; BIO-5c, Restore disturbed annual grasslands; and WQ-1, Comply with NPDES requirements, would reduce this impact to a less-than-significant level. This conclusion is consistent with the analysis presented in the PEIR, and the mitigation measures set forth in the PEIR would adequately address this impact.

Impact BIO-3: Potential mortality of or loss of habitat for vernal pool branchiopods and curved-footed hygrotus diving beetle (less than significant with mitigation)

The PEIR concluded that repowering projects could result in habitat loss for and direct mortality of individual vernal pool branchiopods (i.e., vernal pool fairy shrimp, vernal pool tadpole shrimp, and longhorn fairy shrimp) as well as curved-footed hygrotus diving beetles (*Hygrotus curvipes*). Because potential habitat for vernal pool branchiopods and curved-footed hygrotus diving beetle is present in and near the project area, mortality and habitat loss are potentially significant impacts. The PEIR concluded that implementation of Mitigation Measures BIO-1b; BIO-1e; BIO-3a, Conduct preconstruction surveys for habitat for special-status wildlife species; and BIO-3b, Implement measures to avoid, minimize, and mitigate impacts on vernal pool branchiopods and curved-footed hygrotus diving beetle, would reduce this impact to a less-than-significant level. This conclusion is consistent with the analysis presented in the PEIR, and the mitigation measures set forth in the PEIR would adequately address this impact.

Impact BIO-4: Potential disturbance or mortality of and loss of suitable habitat for valley elderberry longhorn beetle (no impact)

Although the PEIR identified the potential for impacts on valley elderberry longhorn beetle (*Desmocerus californicus*) in portions of the program area, no elderberry shrubs (the species' host plant) have been identified in the project area; accordingly, there would be no impact and no mitigation would be required.

Impact BIO-5: Potential disturbance or mortality of and loss of suitable habitat for California tiger salamander, western spadefoot, California red-legged frog, and foothill yellow-legged frog (less than significant with mitigation)

The PEIR concluded that construction as well as operation and maintenance activities could result in habitat loss for California tiger salamander, western spadefoot, California red-legged frog, and foothill yellow-legged frog, as well as mortality of individuals. Site assessments conducted for the Biological Resources Evaluation found no suitable habitat for foothill yellow-legged frog; however, because suitable habitat for the other three species is present in the project area, the project could result in significant impacts. The PEIR concluded that implementation of Mitigation Measures BIO-1b; BIO-1e; BIO-3c; BIO-5a, Implement best management practices to avoid and minimize effects on special-status amphibians; BIO-5b, Compensate for loss of habitat for special-status amphibians; and BIO-5c would reduce this impact to a less-than-significant level. This conclusion is consistent with the analysis presented in the PEIR, and the mitigation measures set forth in the PEIR would adequately address this impact.

Impact BIO-6: Potential disturbance or mortality of and loss of suitable habitat for western pond turtle (less than significant)

The PEIR concluded that construction activities could result in direct effects on western pond turtles and their habitat. However, according to current project design, all turbine components and work areas are located outside suitable aquatic habitat for western pond turtle identified in the study area

(large pond in southeast quadrant of study area). Because project facilities are more than 0.25 mile from suitable aquatic habitat, the proposed project is not expected to affect potentially nesting pond turtles in the study area. This conclusion is consistent with the analysis presented in the PEIR, and no mitigation is required.

Impact BIO-7: Potential disturbance or mortality of and loss of suitable habitat for Blainville's horned lizard, Alameda whipsnake, and San Joaquin coachwhip (less than significant with mitigation)

The PEIR concluded that construction activities and, to a lesser extent, operation and maintenance activities could result in habitat loss for and individual fatalities of Blainville's horned lizard, Alameda whipsnake, and San Joaquin coachwhip. The Biological Resources Evaluation found that Alameda whipsnake had little to no likelihood to occur in the project area; however, the potential remains for direct impacts on the other two species of special-status reptiles. Implementation of Mitigation Measures Mitigation Measures BIO-1b; BIO-1e; BIO-3a; BIO-5c; BIO-7a, Implement best management practices to avoid and minimize effects on special-status reptiles; and BIO-7b, Compensate for loss of habitat for special-status reptiles, would reduce this impact to a less-than-significant level. This conclusion is consistent with the analysis presented in the PEIR, and the mitigation measures set forth in the PEIR would adequately address this impact.

Impact BIO-8: Potential construction-related disturbance or mortality of special-status and non–special-status migratory birds (less than significant with mitigation)

The PEIR concluded that construction activities during the nesting season of white-tailed kite, bald eagle, northern harrier, Swainson's hawk, golden eagle, western burrowing owl, loggerhead shrike, and tricolored blackbird could result in direct effects on these species, as well as on non–special-status migratory birds, if they are nesting in the program area. Because of the scarcity of trees in the project area, particularly near proposed turbine sites and roadways, there is limited potential for construction activities to affect nesting eagles or tree-nest species (e.g., Swainson's hawks, golden eagles, kites). However, shrub- and ground-nesting species (e.g., tricolored blackbird, western burrowing owl) could be affected by construction activities. Because construction activities described in the PEIR are the same as those anticipated for the proposed project, the impacts would be the same. Implementation of Mitigation Measures BIO-1b; BIO-1e; BIO-3a; BIO-5c; BIO-8a, Implement measures to avoid and minimize potential impacts on special-status and non–special-status nesting birds; and BIO-8b, Implement measures to avoid and minimize potential impacts on western burrowing owl, would reduce these impacts to a less-than-significant level. This conclusion is consistent with the analysis presented in the PEIR, and the mitigation measures set forth in the PEIR would adequately address this impact.

Impact BIO-9: Permanent and temporary loss of occupied habitat for western burrowing owl and foraging habitat for tricolored blackbird and other special-status and non–special-status birds (less than significant with mitigation)

The PEIR concluded that repowering projects would result in the temporary and permanent loss of grassland that is suitable foraging habitat for burrowing owls and other special-status and non–special-status migratory birds. However, the PEIR elected not to propose compensatory mitigation for loss of Swainson's hawk foraging habitat, because that species rarely uses grassland in the program area. Because grassland habitat in the project area is consistent with that throughout the program area, the same impacts would apply. Implementation of Mitigation Measures BIO-5b; BIO-

5c; and BIO-9, Compensate for the permanent loss of occupied habitat for western burrowing owl, would reduce this impact to a less-than-significant level. This conclusion is consistent with the analysis presented in the PEIR, and the mitigation measures set forth in the PEIR would adequately address this impact.

Impact BIO-10: Potential injury or mortality of and loss of habitat for San Joaquin kit fox and American badger (less than significant with mitigation)

The PEIR concluded that repowering projects could result in temporary and permanent loss of grassland habitat that could support San Joaquin kit foxes and American badgers, as well as in direct mortality of individuals. The Biological Resources Evaluation concluded that badgers have a high likelihood to occur in the project area, while San Joaquin kit foxes are unlikely to use the area but have a slight likelihood of moving through it between other more suitable areas. Because of declines in both species, any impacts would be significant, especially if they result in fatalities. Because project activities and project area conditions are consistent with those contemplated in the PEIR, the impacts would be the same. Implementation of Mitigation Measures BIO-1b; BIO-1e; BIO-3a; BIO-5c; BIO-10a, Implement measures to avoid and minimize potential impacts on San Joaquin kit fox and American badger; and BIO-10b, Compensate for loss of suitable habitat for San Joaquin kit fox and American badger, would reduce this impact to a less-than-significant level. This conclusion is consistent with the analysis presented in the PEIR, and the mitigation measures set forth in the PEIR would adequately address this impact.

Impact BIO-11: Avian mortality resulting from interaction with wind energy facilities (significant and unavoidable)

Analysis Methods

The PEIR estimated annual avian fatalities for two Program alternatives (a 417 MW alternative and a 450 MW alternative) and two projects (Golden Hills and Patterson Pass). The analysis methods in the PEIR used for the Program alternatives and the two projects were identical. The estimate of the number of birds killed annually under a nonrepowered condition (baseline) was compared to the estimated number of birds killed annually under observed repowered conditions. For the mortality rates, the average of the annual estimates of each mortality rate from the 2005–2011 bird years (n=7 years) provided by the Alameda County Avian Fatality Monitoring Program (ICF International 2013) was based on old-generation turbines only (i.e., results from the Diablo Winds and Buena Vista turbines were excluded because they are not considered old-generation turbines). This average was used because the annual mortality rates vary considerably from year to year.

The analysis was based on five groups of species: focal species, species of local conservation concern, raptors (including owls and turkey vultures), non-raptors, and all birds. Focal species were defined in the 2007 Settlement Agreement as American kestrel, burrowing owl, golden eagle, and red-tailed hawk for the purpose of measuring the reduction in raptor fatalities resulting from implementation of management actions. Four additional species (loggerhead shrike [California species of special concern], prairie falcon [CDFW Watch List], Swainson's hawk [listed as threatened under CESA], and barn owl) were added for the analyses in the PEIR because of high mortality rates, general concerns about the conservation status of the species, or both.

The rates used to calculate the number of fatalities expected to occur as a result of repowering were derived from the rates at three repowering projects in the APWRA that use newer, repowered

turbines: Diablo Winds, Buena Vista, and Vasco Winds. Diablo Winds comprises thirty-one 660 kW turbines, Buena Vista comprises thirty-eight 1 MW turbines, and Vasco Wind comprises thirty-four 2.3 MW turbines (Insignia Environmental 2012; Brown et al. 2013; ICF International 2013). Although there is considerable range in turbine sizes among these three projects, they were all considered new-generation turbines relative to the rest of the turbines installed in the APWRA.

The PEIR described potential biases in the avian fatality analysis methods; such biases are useful to consider and revisit as new information becomes available, especially in view of the complexities of estimating fatalities over a large area and timespan as is the case in the APWRA. As described in the PEIR, several factors confound the comparison of avian mortality rates between old- and new-generation turbines. The mortality rates from nonrepowered turbines were obtained while management actions were being implemented to reduce avian fatalities. These actions included the shutdown of turbines during the winter period, a time when winds are lowest but avian use of the area is highest for three of the four focal species. In addition, hazardous turbines were being removed during the period of data collection. These actions in combination resulted in a reduction of avian mortality rates, tending to underestimate the differences between old-generation turbines and newer turbines because the newer turbines are not shut down during the winter period and none were deemed hazardous enough to warrant removal. The new information considered in this analysis neither resolves nor removes these potential issues and biases.

The PEIR also acknowledged several potential biases regarding mortality rates for repowered projects. The mortality rates from two of the three repowered projects are associated with turbines considerably smaller than those likely to be used in all future repowering projects. The PEIR noted that evidence collected to date suggests that avian mortality rates may decrease as turbine size increases (Smallwood and Karas 2009). Consequently, these rates may be biased high relative to the turbines likely to be used in the two projects described in the PEIR and future projects implemented in the rest of the APWRA. These potential issues and biases also remain unchanged in light of the new information.

The PEIR noted considerable variation in collision risk across the various topographies and geographies of the APWRA, presumably due in part to variations in abundance and use of these areas by different species. For example, burrowing owls were known to be abundant in the area around the Diablo Winds turbines when they were installed, and thus there is a relatively high rate (for new-generation turbines) of fatalities at these turbines. Conversely, no burrowing owl fatalities were detected in the Buena Vista project area in the 3 years of fatality monitoring after repowering. Thus, the mortality rates at the three repowered project sites may not be representative of the mortality rates likely to occur at other repowering project sites. Because of the variation between these projects, mortality rates from all three projects were used to provide a range in the estimates of total annual fatalities likely to occur as a result of repowering. This analysis and the recently available information continue to support the finding that (1) variation between projects and areas is likely to occur, and (2) the variation may be substantial for some species but not others. Additionally, this analysis also indicates that variation between survey years may be substantial. For example, the first-year mortality rate for red-tailed hawk (0.91 fatality/MW/year) at the Golden Hills project was more than twice that of the second-year mortality rate (0.37 fatality/MW/year). The authors of the Golden Hills report, H. T. Harvey & Associates, did not offer a hypothesis for the substantial reduction in the mortality rate of red-tailed hawks observed during the second year; however, this difference illustrates the substantial variation that can occur even in a single study from year to year.

Finally, the PEIR noted that one of the biggest differences among all studies was variation in detection probability. *Detection probability* as presented in the PEIR refers to the probability that a turbine-related fatality is actually detected. There are various ways of measuring detection probability, the most common being the use of carcass placement trials to measure the rate at which carcasses are removed from the search area and the rate at which searchers detect carcasses that are still present. Detection probability varies among searchers, habitat types, seasons, and years, and it can be influenced by other factors as well. The Alameda County Avian Fatality Monitoring Program measured detection probabilities in only one year, and these probabilities were used to estimate the number of killed birds in all years of the study. If detection probability varies considerably across years, such variation can also confound to an unknown degree comparisons of mortality rates and estimates of total fatalities across projects. A review of the recently available reports indicate that some progress has been made toward a unified approach to detection probability. The final report for the Vasco Winds project (Brown et al. 2016) reported mortality rates adjusted for overall detection probability. The first-year report for the Golden Hills project reported mortality rates in several ways, but did not use a method that used overall detection probability. The authors of the first year Golden Hills report noted that the primary method used to estimate mortality rates (the Huso DS729 estimation method) may have skewed the estimates for golden eagles compared to other estimation methods presented in the report, noting "we think these latter estimates are closer to reality than the Huso DS729 estimate for golden eagles, because they do not inflate the estimate by incorporating searcher efficiency and carcass persistence parameters that represent medium/large birds as a group rather than eagles specifically" (H. T. Harvey & Associates 2018a:xii). The estimates presented for Golden Hills, using different estimators for different years, illustrate the variation in detection probability and the challenges and uncertainties surrounding estimates that can result from it.

This analysis applies the method used in the PEIR to calculate average annual mortality rates, but it uses new data generated since approval of the PEIR, including updated average annual mortality rates for the full monitoring period of the Vasco Winds project (3 years), and average annual mortality rates at the Golden Hills project (2 years). Additionally, in light of the larger body of data available since approval of the PEIR, this analysis considers two other metrics not previously used in the PEIR when calculating total fatalities for species and species groups; the number of fatalities based on an average of the mortality rates for all studies, and the number of fatalities based on a weighted average of the mortality rates for all studies. The average is calculated by simply averaging the mortality rates for all repowering projects considered. The weighted average is calculated by considering each year of fatality monitoring for each wind energy facility in the calculations. For example, the Vasco Winds completed 3 years of fatality monitoring, and each is year is considered in the calculated estimates. Using this method, projects with more monitoring years are given more "weight" compared to projects with fewer monitoring years. Table 3.4-2, updated from Table 3.4-10 in the PEIR, presents updated mortality rates for Vasco Winds and the addition of mortality rates for Golden Hills. For each species or species group, the nonrepowered rate (as calculated and provided in the PEIR) is presented, followed by the average mortality rates (monitoring efforts vary between 2 and 4 years) for each project.

Table 3.4-2. Annual Adjusted Fatality Rates for Nonrepowered and Repowered APWRA Turbines (updated from Table 3.4-10 in the PEIR)

		Repowered			
Species/Group	Nonrepowered[a]	Diablo Winds[b]	Buena Vista[c]	Vasco Winds[d]	Golden Hills[e]
American kestrel	0.59 (0.5902)	0.09	0.15	**0.28 (-0.02)**	**0.17**
Barn owl	0.24 (0.2145)	0.02	0.00	**0.02 (-0.01)**	**0.06**
Burrowing owl	0.78 (0.7754)	0.84	–	**0.06 (+0.01)**	**0.58**
Golden eagle	0.08 (0.0807)	0.01	0.04	**0.06 (+0.03)**	**0.13–0.15[g]**
Loggerhead shrike	0.19 (0.1879)	0.00	–	–	**0.07**
Prairie falcon	0.02 (0.0201)	–	0.00	**0.01 (+0.01)**	**0.01**
Red-tailed hawk	0.44 (0.4391)	0.20	0.10	**0.21 (-0.04)**	**0.64**
Tricolored blackbird[f]	–	–	–	**0.02 (+0.02)**	**0.02**
White-tailed kite[f]	–	–	–	–	**0.02**
Swainson's hawk	0.00 (0.0014)	–	–	–	–
All raptors	2.43 (2.4313)	1.21	0.31	**0.64 (0.00)**	**1.74**
All native non-raptors	4.50 (4.5046)	2.51	1.01	**2.04 (+0.05)**	**5.38**

Notes: Mortality rates reflect annual fatalities per MW. "–" denotes that no fatalities were detected. "0.00" signifies that, although fatalities were detected, the rate is lower than two significant digits. **Information in bold text is changed or new mortality rates available since the PEIR was prepared. Information in bold parentheses is the change in the mortality rate since the PEIR.**

[a] Average of 2005–2011 bird years (as reported in Table 3.4-10 of the PEIR). The numbers in parenthesis are the estimates out to four significant digits that were used to calculate baseline mortality rates in the PEIR.

[b] Average of 2005–2009 bird years (as reported in Table 3.4-10 of the PEIR).

[c] Average of 3 years (2007–2009) (as reported in Table 3.4-10 of the PEIR).

[d] Average of 3 years as reported in Brown et al. 2016. Numbers in parentheses represent the change since the numbers reported in Table 3.4-10 of the PEIR.

[e] Average of 2 years as reported in H. T. Harvey & Associates (2018a, 2018b).

[f] Tricolored blackbird was not reported in this table in the PEIR but has been added because of its recent listing under CESA and reported fatalities at Vasco Winds and Golden Hills. Similarly, white-tailed kite was not reported in this table in the PEIR but has been added because of its fully protected status.

[g] As noted in H. T. Harvey & Associates (2018a:x), the estimates of golden eagle mortality rates varied between 0.07 and 0.13 bird/MW/year for the first year of monitoring, depending on the estimation method used. The authors noted that the more appropriate mortality rate estimate may be 0.09 bird/MW/year because of searcher efficiency and carcass persistence considerations. Consequently, the range of mortality rates reported for Golden Hills (as averaged over 2 years) is presented here for golden eagle.

Analysis Results

The PEIR used the same assessment method for the two Program alternatives and the two project-specific analyses (Alameda County Community Development Agency 2014). In each instance, estimated annual fatalities for existing and repowered scenarios were calculated and presented, followed by a discussion and summary of impacts on individual species and groups of species. A similar approach was used for this analysis, with updates for new information as noted in Tables 3.4-3, 3.4-4, and 3.4-5. The individual species or groups of species are discussed following each table. For each species or group, the number of fatalities that would have occurred at the nonrepowered turbines is presented. The mortality rates for each repowered project (as listed in Table 3.4-2) are then extrapolated to the alternatives from the PEIR and the proposed Project to calculate an estimated number of fatalities for that rate. This method is repeated for each repowered project so that a range of estimated fatalities is presented. Additionally, the magnitude of estimated change is presented as a percent change from baseline. Lastly, for each species or groups of species, the number of estimated fatalities is also presented based on an average of all the repowering projects completed to date, and based on a weighted average[3] of all the repowering projects to date.

PEIR Alternative 1—417MW

[3] The "weighted average" is calculated by considering each year of fatality monitoring for each wind energy facility in the calculations. For example, the Vasco Winds completed 3 years of fatality monitoring, and each is year is considered in the estimates. Using this method, projects with more monitoring years are given more "weight" compared to projects with fewer monitoring years.

Table 3.4-3. Estimated Annual Avian Fatalities for Existing and Repowered Program Area (updated from Table 3.4-11 in the PEIR)

	Estimated Annual Fatalities for the Program Area—417MW								
	Nonrepowered Program Area	Repowered Program (417 MW) Using Average Mortality rates from Comparable Projects							
		Diablo Winds[b]		Buena Vista[c]		Vasco Winds[d]		Golden Hills[e]	
Species	Average Annual Fatalities	Average Annual Fatalities	% Decrease	Average Annual Fatalities	% Decrease	Average Annual Fatalities	% Decrease	Average Annual Fatalities	% Decrease
American kestrel	194.2	37.5	81	62.6	68	116.8	40	70.9	63
Barn owl	79.5	8.3	90	0.0	100	8.3	89	25.0	68
Burrowing owl	255.1	350.3	-37	0.0	100	25.0	90	241.9	6
Golden eagle	26.6	4.2	84	16.7	37	20.9	21	54.2 to 62.6[f]	-106 to -138[f]
Loggerhead shrike	61.8	0.0	100	0.0	100	0.0	100	29.2	53
Prairie falcon	6.6	0.0	100	0.0	100	4.2	37	4.2	37
Red-tailed hawk	144.5	83.4	42	41.7	71	87.6	40	266.9	-84
Tricolored blackbird	0.0	0.0	0	0.0	0	8.3	NA[g]	8.3	NA[g]
White-tailed kite	0.0	0.0	0	0.0	0	0.0	0	8.3	NA[g]
Swainson's hawk	0.5	0.0	100	0.0	100	0.0	100	0	100
All raptors	799.5	504.6	37	129.3	84	266.9	67	725.6	9
All native non-raptors	1,480.5	1,046.7	29	421.2	72	850.7	43	2,243.5	-52

Note: mortality rates reflect annual fatalities (95% confidence interval).

[a] All estimates based on an existing capacity at the time of the 2010 NOP of 329 MW and a proposed capacity of 417 MW for Alternative 1 in the PEIR.

[b] Diablo Winds mortality rates extrapolated to the Program area. Estimates of average annual fatalities are unchanged since they were reported in the PEIR.

[c] Buena Vista mortality rates extrapolated to the Program area. Estimates of average annual fatalities are unchanged since they were reported in the PEIR.

[d] Vasco Winds mortality rates extrapolated to the Program area. Estimates are based on 2 additional years of monitoring completed since the PEIR was prepared, as reported in Brown et al. (2016).

[e] Golden Hills mortality rates were not available at the time the PEIR was prepared. Golden Hills mortality rates extrapolated to the Program area. Estimates are based on 2 years of monitoring as reported in H. T. Harvey & Associates (2018a, 2018b).

[f] As noted in Table 5, the range of credible estimates for the Golden Hills project were used in this analysis to estimate average annual fatalities.

[g] NA = not applicable: a percent decrease cannot be calculated because there were no fatalities reported at nonrepowered turbines.

American Kestrel. As shown in Table 3.4-3, the repowered 417 MW Program would be expected to result in an estimated 38–117 American kestrel fatalities per year—a 40–81% decrease compared to nonrepowered rates at 329 MW of installed capacity. Considering the fatality monitoring information available since the PEIR was published, the final Vasco Wind monitoring results (Brown et al. 2016) resulted in a slightly lower estimated mortality rate for American kestrel (0.28 fatality/MW/year) compared to the mortality rate reported in the PEIR (0.30 fatality/MW/year). The average mortality rate for the first 2 years of the Golden Hills project was significantly lower than the nonrepowered rated reported in the PEIR (0.17 fatality/MW/year versus 0.59 fatality/MW/year) (H. T. Harvey & Associates 2018a, 2018b). The calculated average and weighted average mortality rates across all repowering projects, applied to the 417 MW Program was 71.9 fatalities per year (a 63% decrease) to 66.7 fatalities per year (a 66% decrease), respectively.

The PEIR stated that the overall Program could decrease annual fatalities of American kestrel by 36–81%, a value substantially similar to the results of this report, which considers recently available fatality monitoring results from the Golden Hills and Vasco Winds projects. Consequently, the mortality estimates of the PEIR remain unchanged relative to the 417 MW Program's potential effects on American kestrel.

Barn Owl. As shown in Table 3.4-3, the repowered 417 MW Program would be expected to result in an estimated 8–25 barn owl fatalities per year—a 69–90% decrease compared to nonrepowered rates at 329 MW of installed capacity. The PEIR noted that barn owl populations are stable to possibly declining within the state; it also noted that it was uncertain what effect repowering may have on local barn owl populations. The PEIR also noted that the higher RSA of repowered turbines may reduce the risk of turbine collision because barn owls hunt primarily in low quartering flights at about 1.5–4.5 meters (5–15 feet) above the ground.

Considering the fatality monitoring information available since the PEIR was published, the final Vasco Wind monitoring results (Brown et al. 2016) were in line with the results of monitoring at Diablo Winds (0.02 barn owl fatality/MW/year) reported in PEIR, while the Golden Hills mortality rate was slightly higher (0.06 barn owl fatality/MW/year). The PEIR estimated that the overall program could decrease annual barn owl fatalities by 83–90%—in keeping with the results of this analysis, which considers the recently available fatality monitoring results from the Golden Hills and Vasco Winds projects. The calculated average and weighted average mortality rates across all repowering projects, applied to the 417 MW Program was 10.4 fatalities per year (an 87% decrease) to 9.0 fatalities per year (an 89% decrease), respectively. Consequently, the fatality estimates of the PEIR remain unchanged relative to the 417 MW Program's potential effects on barn owl.

Burrowing Owl. As shown in Table 3.4-3, the repowered 417 MW Program would be expected to result in an estimated 25–350 burrowing owl fatalities per year—a change ranging from a 90% decrease to a 37% increase in fatalities compared to nonrepowered rates at 329 MW of installed capacity. Considering the fatality monitoring information available since the PEIR was published, the final Vasco Wind monitoring results (Brown et al. 2016) yielded a slightly higher estimated mortality rate for burrowing owl (0.06 fatality/MW/year) than the rate reported in the PEIR (0.05 fatality/MW/year). The average mortality rate for the first 2 years of the Golden Hills project (H. T. Harvey & Associates 2018a, 2018b) was significantly higher than the rate reported in the PEIR (0.58 fatality/MW/year); however, it was still lower than the rate reported in the PEIR for Diablo Winds (0.84 fatality/MW/year) and the rate reported in the PEIR for nonrepowered turbines (0.78 fatality/MW year). The calculated average and weighted average mortality rates across all

repowering projects, applied to the 417 MW Program was 154.3 fatalities per year (a 40% decrease) to 177.7 fatalities per year (a 30% decrease), respectively.

The PEIR noted that "A growing body of circumstantial evidence indicates that many of the burrowing owl fatalities found during fatality surveys are due to predation rather than turbine collision…." It concluded that "… the potential reduction in turbine-related burrowing owl fatalities may be underestimated because of the inability to distinguish fatalities resulting from predation from those caused by turbine collision." Just after the PEIR was published, the Alameda County avian monitoring team, with approval of the Scientific Review Committee, began a study of background mortality (ICF 2016). The study was prompted by the finding that substantial numbers of small bird carcasses—including burrowing owls—continued to accumulate in the search area around turbines during the period of seasonal shutdown, even though turbines were not operating (ICF 2016). Overall, the study reported that the patterns were relatively clear for small birds potentially subject to predation, but they were not as clear for burrowing owls. The authors of the study noted that California was in the fourth year of a historic drought, and anecdotal information suggested that the burrowing owl population was rapidly declining. Additionally, as H. T. Harvey & Associates (2018b) noted in their recent monitoring report for the Golden Hills project "… the fact that 84% of the Year 2 burrowing owl fatalities were found as feather spots or carcass remnants, mostly around burrows and along erosion-control wattles, suggests that predation was the primary cause of fatalities for this species …." Thus, substantial uncertainty still remains surrounding burrowing owl mortality rates.

The PEIR stated that the overall Program could decrease annual fatalities of burrowing owl by 92% or could increase them by 37%. The potential reduction and increase in fatalities described in the PEIR is nearly identical to the results of this analysis. This information, when considered in the context of the additional information on background mortality, suggests that effects on burrowing owls may be similar to those described in the PEIR.

Golden Eagle. As shown in Table 3.4-3, the repowered 417 MW Program would be expected to result in between 4–54 fatalities per year and 4–63 fatalities per year, depending on the fatality estimation methods used—a change resulting in an 84% decrease to a 136% increase in fatalities compared to nonrepowered rates at 329 MW of installed capacity. Considering the fatality monitoring information available since the PEIR was published, the final Vasco Wind monitoring results (Brown et al. 2016) indicated a slightly higher estimated mortality rate for golden eagle (0.06 fatality/MW/year) than the rate reported in the PEIR (0.03 fatality/MW/year). The average mortality rate for the first 2 years of the Golden Hills project (H. T. Harvey & Associates 2018a, 2018b) was significantly higher than the rate reported in the PEIR (0.013–0.15 fatality/MW/year, depending on the estimation method used). The calculated average and weighted average mortality rates across all repowering projects, applied to the 417 MW Program was 24.0 fatalities (a 10% decrease) to 18.6 fatalities per year (a 30% decrease), respectively.

The PEIR stated that the overall Program could decrease annual fatalities of golden eagle by 32–83% and that the repowering program was likely to reduce golden eagle fatalities. The additional monitoring results from Vasco Winds support this determination, while the Golden Hills monitoring results do not. As noted in Tables 3.4-2 and 3.4-3, there is some uncertainty regarding the appropriate mortality rate; however, the Golden Hills mortality rate is generally higher than that of other recent repowering projects. Consequently, although the updated results from some repowering projects, such as the updated Vasco Winds results, still indicate that repowering does reduce golden eagle fatalities, as has in fact have been observed during the majority of monitoring

studies and years, the recent results at the Golden Hills project renders the outcome of repowering less clear for this species than was indicated in the PEIR, although average estimates across projects, both standard and weighted, still suggest a reduction. At this point, the predictors of high- versus low-level golden eagle mortality rates at a given wind project remain unknown.

Red-Tailed Hawk. As shown in Table 3.4-3, the repowered 417 MW Program would be expected to result in an estimated 42–267 red-tailed hawk fatalities per year—from a 71% decrease to an 85% increase compared to nonrepowered rates at 329 MW of installed capacity. Considering the fatality monitoring information available since the PEIR was published, the final Vasco Wind monitoring results (Brown et al. 2016) resulted in a slightly lower estimated mortality rate for red-tailed hawk (0.21 fatality/MW/year) than the mortality rate reported in the PEIR (0.25 fatality/MW/year). However, the average mortality rate for the first 2 years of the Golden Hills project (H. T. Harvey & Associates 2018a, 2018b) was significantly higher than the rate reported in the PEIR (0.64 fatality/MW/year). The calculated average and weighted average mortality rates across all repowering projects, applied to the 417 MW Program was 119.9 fatalities per year (a 17% decrease) to 103.0 fatalities per year (a 29% decrease), respectively.

The PEIR stated that the overall Program could decrease annual fatalities of red-tailed hawks by 23–69% and that the repowering program was likely to continue to reduce the number of red-tailed hawks killed each year. The additional monitoring results from Vasco Winds support this determination, while the Golden Hills monitoring results do not. Reviewing the Golden Hills monitoring results further, the first-year mortality rate for red-tailed hawk (0.91 fatality/MW/year) was more than twice the second-year mortality rate (0.37 fatality/MW/year). The authors of the Golden Hills report, H. T. Harvey & Associates (2018a:xi), noted that results for red-tailed hawk may have been skewed by perching and nesting opportunities created by nearby old turbines. The second-year report did not discuss this factor further, although the removal of old-generation turbines, which is ongoing in the APWRA, may have had an effect on the second-year mortality rate. Consequently, the recently available information suggests that although reductions in red-tailed hawk fatalities from repowering have been observed during the majority of monitoring studies and years, the outcome of repowering is less clear for this species than indicated in the PEIR, although average estimates across projects, both standard and weighted, still suggest a reduction. The final year of monitoring at the Golden Hills project may provide additional insight into these effects.

Loggerhead Shrike. As shown in Table 3.4-3, the repowered 417 MW Program would be expected to result in an estimated 0–30 loggerhead shrike fatalities per year—up to a 53% decrease compared to nonrepowered rates at 329 MW of installed capacity. The PEIR noted that no documented fatalities of loggerhead shrikes had occurred at any of the repowered projects in the APWRA at the time the PEIR was prepared. As noted in Table 3.4-3, the final 2 years of monitoring at Vasco Winds did not result in any documented loggerhead shrike fatalities. The recent Golden Hills project documented a single fatality of this species, resulting in an estimated mortality rate of 0.07 fatality/MW/year for that project, a reduction from the nonrepowered rate provided in the PEIR (0.19 fatality/MW/year). The calculated average and weighted average mortality rates across all repowering projects, applied to the 417 MW Program was 7.3 fatalities per year (an 88% decrease) to 4.5 fatalities per year (a 93% decrease), respectively.

The PEIR noted that the lack of documented fatalities suggests that there may be a reduced level of fatality from repowered turbines. The recent Golden Hills monitoring results, which documented one fatality, also support the conclusion that repowering may reduce fatalities compared to

nonrepowered baseline rates. Consequently, the conclusions of the PEIR remain unchanged relative to the Project's potential effects on loggerhead shrike.

Prairie Falcon. As shown in Table 3.4-3, the repowered 417 MW Program would be expected to result in 0–4 fatalities per year—a 37% decrease compared to nonrepowered rates at 329 MW of installed capacity. The calculated average and weighted average mortality rates across all repowering projects, applied to the 417 MW Program was 2.1 to 1.6 fatalities per year, respectively. Considering the fatality monitoring information available since the PEIR was published, a prairie falcon fatality was documented in the third year of the Vasco Wind monitoring (Brown et al. 2016) resulting in an average mortality rate of 0.01 fatality/MW/year. A single prairie falcon was recorded "on-plot" as a documented fatality in the second year of the Golden Hills project (H. T. Harvey & Associates 2018b), also resulting in an average rate of 0.01 fatality/MW/year. Both mortality rates are half that of the nonrepowered rate provided in the PEIR (0.02 fatality/MW/year). The calculated average and weighted average mortality rates across all repowering projects, applied to the 417 MW Program was 2.1 fatalities per year (a 68% decrease) to 1.6 fatalities per year (a 76% decrease), respectively.

The PEIR noted that fatality estimates at repowered sites were not available because no fatalities had been documented at repowered turbines at the time the PEIR was prepared. The PEIR also concluded that a lack of documented fatalities suggests that there may be a reduced level of fatality from repowered turbines, as well as a potentially lower risk to this species. The recent Vasco Winds and Golden Hills monitoring results support this conclusion.

Tricolored Blackbird. As shown in Table 3.4-3, the repowered 417 MW Program would be expected to result in 0–8 fatalities per year. At the time the PEIR was prepared, tricolored blackbird had not been recorded as a fatality either at nonrepowered turbines or at repowered turbines. Since that time, the Vasco Winds and Golden Hills projects have each reported one fatality, resulting in average mortality rates of 0.02 fatality/MW/year at both facilities (Brown et al. 2016; H. T. Harvey & Associates 2018a, 2018b). These recently available monitoring results suggest a relatively low mortality rate for this species, but a potential for fatalities under the 417 MW Program. The calculated average and weighted average mortality rates across all repowering projects, applied to the 417 MW Program was 4.2 fatalities per year to 3.2 fatalities per year, respectively.

White-Tailed kite. As shown in Table 3.4-3, the repowered 417 MW Program would be expected to result in 0–8 fatalities per year. At the time the PEIR was prepared, white-tailed kite had not been recorded as a fatality either at nonrepowered turbines or at repowered turbines. Since that time, the Golden Hills project reported one fatality in 2017 that was excluded from the fatality estimation methods (H. T. Harvey & Associates 2018a) and one fatality in 2018 (H. T. Harvey & Associates 2018b), resulting in an average mortality rate of 0.02 fatality/MW/year. These recently available monitoring results suggest a relatively low mortality rate for this species, but a potential for fatalities under the 417 MW Program. The calculated average and weighted average mortality rates across all repowering projects, applied to the 417 MW Program was 2.1 to 1.3 fatalities per year, respectively.

Swainson's Hawk. As noted in the PEIR, there is only one recorded Swainson's hawk fatality in the APWRA (nonrepowered turbines), resulting in an annual estimated mortality rate of approximately zero (Table 3.4-3). No Swainson's hawk fatalities have been detected at Diablo Winds, Buena Vista, Vasco Winds, or Golden Hills. Based on the low (effectively zero) estimated mortality rate from nonrepowered sites, the lack of fatalities detected at repowered sites, and the relatively low number

of detections during avian use surveys conducted by the County's avian fatality monitoring team, it is expected that the mortality rate for Swainson's hawk would remain at or near zero for the repowered 417 MW Program. The PEIR concluded that adverse effects on the local Swainson's hawk population were unlikely to occur, and recently available information supports this conclusion.

Raptors. As shown in Table 3.4-3, the repowered 417 MW Program would be expected to result in an estimated 129–726 raptor fatalities per year—a 9–84% decrease compared to nonrepowered rates at 329 MW of installed capacity. Considering the fatality monitoring information available since the PEIR was published, the raptor mortality rate remained unchanged in the final Vasco Wind monitoring report (Brown et al. 2016) at 0.64 fatality/MW/year. The recent Golden Hills project documented an average estimated mortality rate for raptors of 1.74 fatalities/MW/year, a reduction from the nonrepowered rate provided in the PEIR (2.43 fatalities/MW/year). The recently available monitoring results continue to support the conclusion that repowering will reduce effects on raptors as a species group. The calculated average and weighted average mortality rates across all repowering projects, applied to the 417 MW Program was 406.6 fatalities per year (a 49% decrease) to 397.1 fatalities per year (a 50% decrease), respectively.

Native non-raptors. As shown in Table 3.4-3, the repowered 417 MW Program would be expected to result in an estimated 421–2,244 native non-raptor fatalities per year—from a 72% decrease to a 51% increase compared to nonrepowered rates at 329 MW of installed capacity. Considering the fatality monitoring information available since the PEIR was published, the native non-raptor mortality rate remained nearly unchanged in the final Vasco Wind monitoring report (Brown et al. 2016) at 2.04 fatalities/MW/year. The recent Golden Hills project documented an average estimated mortality rate for native non-raptors of 5.38 fatalities/MW/year, a modest increase from the nonrepowered mortality rate provided in the PEIR (4.50 fatalities/MW/year). The calculated average and weighted average mortality rates across all repowering projects, applied to the 417 MW Program was 1,140.5 fatalities per year (a 23% decrease) to 1,041.2 fatalities per year (a 30% decrease), respectively.

PEIR Alternative 2—450 MW

The estimated changes associated with Alternative 2 (450 MW) are shown in Table 3.4-4 and are discussed following the table.

Table 3.4-4. Estimated Annual Avian Fatalities for Existing and Repowered Program Area—450 MW (updated from Table 3.4-12 in the PEIR)

	Estimated Annual Fatalities for the Program Area-450 MW								
	Nonrepowered Program Area	Repowered Program (450 MW) Using Average Mortality rates from Comparable Projects							
		Diablo Winds[b]		Buena Vista[c]		Vasco Winds[d]		Golden Hills[e]	
Species	Average Annual Fatalities	Average Annual Fatalities	% Decrease	Average Annual Fatalities	% Decrease	Average Annual Fatalities	% Decrease	Average Annual Fatalities	% Decrease
American kestrel	194.2	40.5	79	67.5	65	126.0	35	76.5	61
Barn owl	79.5	9.0	89	0.0	100	9.0	89	27.0	66
Burrowing owl	255.1	378.0	-47	0.0	100	27.0	89	261.0	-2
Golden eagle	26.6	4.5	83	18.0	32	22.5	15	58.5 to 67.5[f]	-122 to -156[f]
Loggerhead shrike	61.8	0.0	100	0.0	100	0.0	100	31.5	50
Prairie falcon	6.6	0.0	100	0.0	100	4.5	32	4.5	32
Red-tailed hawk	144.5	90.0	38	45.0	69	94.5	35	288.0	-99
Tricolored blackbird	0.0	0.0	0	0.0	0	9.0	NA[g]	9.0	NA[g]
White-tailed kite	0.0	0.0	0	0.0	0	0.0	0	9.0	NA[g]
Swainson's hawk	0.5	0.0	100	0.0	100	0.0	100	0	100
All raptors	799.9	544.5	32	139.5	83	288.0	64	783.0	2
All native non-raptors	1,482.0	1,129.5	24	454.5	69	918.0	38	2,421.0	-64

Note: mortality rates reflect annual fatalities (95% confidence interval).

[a] All estimates based on an existing capacity at the time of the 2010 NOP of 329 MW and a proposed capacity of 450 MW for Alternative 2 in the PEIR.

[b] Diablo Winds mortality rates extrapolated to the Program area. Estimates are unchanged since they were reported in the PEIR.

[c] Buena Vista mortality rates extrapolated to the Program area. Estimates are unchanged since they were reported in the PEIR.

[d] Vasco Winds mortality rates extrapolated to the Program area. Estimates are based on 2 additional years of monitoring completed since the PEIR was prepared, as reported in Brown et al. (2016).

[e] Golden Hills mortality rates were not available at the time the PEIR was prepared. Golden Hills mortality rates extrapolated to the Program area. Estimates are based on 2 years of monitoring as reported in H. T. Harvey & Associates (2018a, 2018b).

[f] As noted in Table 5, the range of credible estimates for the Golden Hills project were used in this analysis to estimate average annual fatalities.

[g] NA = not applicable: a percent decrease cannot be calculated because there were no fatalities reported at nonrepowered turbines.

American Kestrel. As shown in Table 3.4-4, the repowered 450 MW Program would be expected to result in an estimated 41–126 American kestrel fatalities per year—a 35–79% decrease compared to nonrepowered rates at 329 MW of installed capacity. Considering the fatality monitoring information available since the PEIR was published, the final Vasco Wind monitoring results (Brown et al. 2016) resulted in a slightly lower estimated mortality rate for American kestrel (0.28 fatality/MW/year) compared to the mortality rate reported in the PEIR (0.30 fatality/MW/year). The average mortality rate for the first 2 years of the Golden Hills project (H. T. Harvey & Associates 2018a, 2018b) was significantly lower than the nonrepowered rated reported in the PEIR (0.17 fatality/MW/year versus 0.59 fatality/MW/year). The calculated average and weighted average mortality rates across all repowering projects, applied to the 450 MW Program was 77.6 fatalities per year (a 60% decrease) to 72.0 fatalities per year (a 63% decrease), respectively.

The PEIR stated that the overall program could decrease annual fatalities of American kestrel by 31–79%, consistent with the results of this analysis, which considers recently available fatality monitoring results from the Golden Hills and Vasco Winds projects. Consequently, the mortality estimates of the PEIR remain unchanged relative to the Project's potential effects on American kestrel.

Barn Owl. As shown in Table 3.4-4, the repowered 450 MW Program would be expected to result in an estimated 9–27 barn owl fatalities per year—a 66–89% decrease compared to nonrepowered rates at 329 MW of installed capacity. The PEIR noted that barn owl populations are stable to possibly declining within the state; it also noted uncertainty as to what effect repowering may have on local barn owl populations. The PEIR also noted that higher RSA of repowered turbines may reduce the risk of turbine collision because barn owls typically hunt in low quartering flights at about 1.5–4.5 meters (5–15 feet) above the ground. The proposed Project is generally consistent with the higher RSA of the recent Vasco Winds and Golden Hills projects, with rotor heights of 13–22 meters (43–75 feet) above the ground, depending on the make and model of turbine selected for the Project.

Considering the fatality monitoring information available since the PEIR was published, the final Vasco Wind monitoring results (Brown et al. 2016) were in line with the results of monitoring at Diablo Winds (0.02 fatality/MW/year) reported in PEIR, while the Golden Hills mortality rate was slightly higher (0.06 barn owl fatality/MW/year). The PEIR estimated that the overall program could decrease annual fatalities of barn owl by 81–89%, consistent with the results of this analysis, which considers the recently available fatality monitoring results from the Golden Hills and Vasco Winds projects. The calculated average and weighted average mortality rates across all repowering projects, applied to the 450 MW Program was 11.3 fatalities per year (an 86% decrease) to 9.7 fatalities per year (an 88% decrease), respectively. Consequently, the mortality estimates of the PEIR remain unchanged relative to the Project's potential effects on barn owl.

Burrowing Owl. As shown in Table 3.4-4, the repowered 450 MW Program would be expected to result in an estimated 27–378 burrowing owl fatalities per year—a change ranging from an 89% decrease to a 48% increase compared to nonrepowered rates at 329 MW of installed capacity. Considering the fatality monitoring information available since the PEIR was published, the final Vasco Wind monitoring results (Brown et al. 2016) resulted in a slightly higher estimated mortality rate for burrowing owl (0.06 fatality/MW/year) than the rate reported in the PEIR (0.05 fatality/MW/year). The average mortality rate for the first 2 years of the Golden Hills project (H. T. Harvey & Associates 2018a, 2018b) was significantly higher than the rate reported in the PEIR (0.58

fatality/MW/year); however, it was still less than the rates reported in the PEIR for Diablo Winds (0.84 fatality/MW/year) and nonrepowered turbines (0.78 fatality/MW year). The calculated average and weighted average mortality rates across all repowering projects, applied to the 450 MW Program was 166.5 fatalities per year (a 35% decrease) to 191.8 fatalities per year (a 24% decrease), respectively.

The PEIR noted that "A growing body of circumstantial evidence indicates that many of the burrowing owl fatalities found during fatality surveys are due to predation rather than turbine collision…." It concluded that "… the potential reduction in turbine-related burrowing owl fatalities may be underestimated because of the inability to distinguish fatalities resulting from predation from those caused by turbine collision." Just after the PEIR was published, the Alameda County avian monitoring team, with approval of the Scientific Review Committee, began a study of background mortality (ICF 2016). The study was prompted by the finding that substantial numbers of small bird carcasses—including burrowing owls—continued to accumulate in the search area around turbines during the period of seasonal shutdown, even though turbines were not operating (ICF 2016). Overall, the study reported that the patterns were relatively clear for small birds potentially subject to predation, but they were not as clear for burrowing owls. The authors of the study noted that California was in the fourth year of a historic drought, and anecdotal information suggested that the burrowing owl population was rapidly declining. Additionally, as H. T. Harvey & Associates (2018b) noted in their recent monitoring report for the Golden Hills project "… the fact that 84% of the Year 2 burrowing owl fatalities were found as feather spots or carcass remnants, mostly around burrows and along erosion-control wattles, suggests that predation was the primary cause of fatalities for this species …." Thus, substantial uncertainty still remains surrounding burrowing owl mortality rates.

The PEIR stated that the overall program could decrease annual burrowing owl fatalities by 91% or could increase them by 48% compared to nonrepowered rates at 329 MW of installed capacity. The potential reductions or increases in fatalities described in the PEIR are nearly identical to the results of this analysis. This information, when considered in the context of the additional information on background mortality, suggests that effects on burrowing owls may be similar to those described in the PEIR.

Golden Eagle. As shown in Table 3.4-4, the repowered 450 MW Program would be expected to result in between 5–59 fatalities per year and 5–68 fatalities per year, depending on the fatality estimation methods used—from an 83% decrease to a 154% increase in fatalities compared to nonrepowered rates at 329 MW of installed capacity. Considering the fatality monitoring information available since the PEIR was published, the final Vasco Wind monitoring results (Brown et al. 2016) indicated a slightly higher estimated mortality rate for golden eagle (0.06 fatality/MW/year) than the rate reported in the PEIR (0.03 fatality/MW/year). The average mortality rate for the first 2 years of the Golden Hills project (0.013–0.15 fatality/MW/year depending on the estimation method used) was significantly higher than the rate reported in the PEIR (H. T. Harvey & Associates 2018a, 2018b). The calculated average and weighted average mortality rates across all repowering projects, applied to the 450 MW Program was 25.9 fatalities per year (a 3% reduction) to 20.1 fatalities per year (a 24% reduction), respectively.

The PEIR stated that the overall program could decrease annual golden eagle fatalities by 32–83%. The additional monitoring results from Vasco Winds support this determination, while the Golden Hills monitoring results do not. As noted in Tables 3.4-2 and 3.4-5, there is some uncertainty regarding the appropriate mortality rate; however, the Golden Hills mortality rates are generally

higher than those of other recent repowering projects. Consequently, although the updated results from some previous repowering projects, such as the updated Vasco Winds results, indicate that repowering does reduce golden eagle fatalities, as has been observed during the majority of monitoring studies and years, the recent results at the Golden Hills project renders the outcome of repowering less clear for this species than was indicated in the PEIR, although average estimates across projects, both standard and weighted, still suggest a reduction. At this point, the predictors of high-versus low-level golden eagle mortality rates at a given wind project remain unknown.

Red-Tailed Hawk. As shown in Table 3.4-4, the repowered 450 MW Program would be expected to result in an estimated 45–288 red-tailed hawk fatalities per year—from a 69% decrease to a 99% increase compared to nonrepowered rates at 329 MW of installed capacity. Considering the fatality monitoring information available since the PEIR was published, the final Vasco Wind monitoring results (Brown et al. 2016) resulted in a slightly lower estimated mortality rate for red-tailed hawk (0.21 fatality/MW/year) than the mortality rate reported in the PEIR (0.25 fatality/MW/year). The average mortality rate for the first 2 years of the Golden Hills project (H. T. Harvey & Associates 2018a, 2018b) was significantly higher than the rate reported in the PEIR (0.64 fatality/MW/year). The calculated average and weighted average mortality rates across all repowering projects, applied to the 450 MW Program was 129.4 fatalities per year (a 10% reduction) to 111.1 fatalities per year (a 23% reduction), respectively.

The PEIR stated that the overall program could decrease annual fatalities of red-tailed hawks by 23–69% compared to nonrepowered rates at 329 MW of installed capacity. The additional monitoring results from Vasco Winds support this determination, while the Golden Hills monitoring results do not. Reviewing the Golden Hills monitoring results further, the first-year mortality rate for red-tailed hawk (0.91 fatality/MW/year) was more than twice as high as the second-year mortality rate (0.37 fatality/MW/year). The authors of the Golden Hills report, H. T. Harvey & Associates (2018a:xi), noted that results for red-tailed hawk may have been skewed by perching and nesting opportunities created by nearby old turbines. The second-year report did not discuss this factor further, although the removal of old generation turbines, which is ongoing in the APWRA, may have had an effect on the second-year mortality rate. Consequently, the recently available information suggests that although reductions in red-tailed hawk fatalities from repowering have been observed during the majority of monitoring studies and years, the outcome of repowering is less clear for this species than was indicted in the PEIR, although average estimates across projects, both standard and weighted, still suggest a reduction. The final year of monitoring at the Golden Hills project may provide additional insight into these effects.

Loggerhead Shrike. As shown in Table 3.4-4, the repowered 450 MW Program would be expected to result in an estimated 0–32 loggerhead shrike fatalities per year—up to a 49% decrease compared to nonrepowered rates at 329 MW of installed capacity. The PEIR noted that no documented fatalities of loggerhead shrikes had occurred at any of the repowered projects in the APWRA at the time the PEIR was prepared. As noted in Table 3.4-4, the final 2 years of monitoring at Vasco Winds did not result in any documented loggerhead shrike fatalities. The recent Golden Hills project documented a single fatality of this species, resulting in an estimated mortality rate of 0.07 fatality/MW/year for that project, a reduction from the nonrepowered mortality rate provided in the PEIR (0.19 fatality/MW/year). The calculated average and weighted average mortality rates across all repowering projects, applied to the 450 MW Program was 7.9 fatalities per year (an 87% decrease) to 4.8 fatalities per year (a 92% decrease), respectively.

The PEIR noted that the lack of documented fatalities suggests that there may be a reduced level of fatality from repowered turbines. The recent Golden Hills monitoring results, which documented a single fatality, also support the conclusion that repowering may reduce fatalities compared to nonrepowered baseline rates. Consequently, the conclusions of the PEIR remain unchanged relative to the Project's potential effects on loggerhead shrike.

Prairie Falcon. As shown in Table 3.4-4, the repowered 450 MW Program would be expected to result in 0–5 fatalities per year—up to a 32% decrease compared to nonrepowered rates at 329 MW of installed capacity. Considering the fatality monitoring information available since the PEIR was published, a prairie falcon fatality was documented in the third year of Vasco Wind monitoring (Brown et al. 2016), resulting in an average mortality rate of 0.01 fatality/MW/year. A single prairie falcon was recorded "on-plot" as a documented fatality in the second year of the Golden Hills project (H. T. Harvey & Associates 2018b), also resulting in an average mortality rate of 0.01 fatality/MW/year. Both mortality rates are half the nonrepowered rate provided in the PEIR (0.02 fatality/MW/year). The calculated average and weighted average mortality rates across all repowering projects, applied to the 450 MW Program was 2.3 fatalities per year (a 65% decrease) to 1.7 fatalities per year (a 74% decrease), respectively.

The PEIR noted that fatality estimates at repowered sites were not available because no fatalities had been documented at repowered turbines at the time the PEIR was prepared. The PEIR also concluded that a lack of documented fatalities suggests that there may be a reduced level of fatality from repowered turbines, as well as a potentially lower risk to this species. The recent Vasco Winds and Golden Hills monitoring results support this conclusion.

Tricolored Blackbird. As shown in Table 3.4-4, the repowered 450 MW Program could be expected to result in 0–9 fatalities per year. The calculated average and weighted average mortality rates across all repowering projects, applied to the 450 MW Program was 4.5 to 3.5 fatalities per year, respectively. At the time the PEIR was prepared, tricolored blackbird had not been recorded as a fatality either at nonrepowered turbines or at repowered turbines. Since that time, the Vasco Winds and Golden Hills projects have each reported one fatality, resulting in an average mortality rate of 0.02 fatality/MW/year at each facility (Brown et al. 2016; H. T. Harvey & Associates 2018a, 2018b). These recently available monitoring results suggest a relatively low mortality rate for this species, but a potential for fatalities under the 450 MW Program remains.

White-tailed kite. As shown in Table 3.4-4, the repowered 450 MW Program could be expected to result in 0–9 fatalities per year. The calculated average and weighted average mortality rates across all repowering projects, applied to the 450 MW Program was 2.3 to 1.4 fatalities per year, respectively. At the time the PEIR was prepared, white-tailed kite had not been recorded as a fatality either at nonrepowered turbines or at repowered turbines. Since that time, the Golden Hills project reported one fatality in 2017 that was excluded from the fatality estimation methods (H. T. Harvey & Associates 2018a) and one fatality in 2018 (H. T. Harvey & Associates 2018b), resulting in an average mortality rate of 0.02 fatality/MW/year. These recently available monitoring results suggest a relatively low mortality rate for this species, but a potential for fatalities under the 450 MW Program remains.

Swainson's Hawk. As noted in the PEIR, there is only one recorded Swainson's hawk fatality in the APWRA (nonrepowered turbines), resulting in an annual estimated mortality rate of approximately zero (Table 3.4-4). No Swainson's hawk fatalities have been detected at Diablo Winds, Buena Vista, Vasco Winds, or Golden Hills. Based on the low (effectively zero) estimated mortality rate from

nonrepowered sites, the lack of fatalities detected at repowered sites, and the relatively low number of detections during avian use surveys conducted by the County's avian fatality monitoring team, it is expected that the mortality rate for Swainson's hawk would remain at or near zero at the repowered Project. The PEIR stated that adverse effects on the local Swainson's hawk population were unlikely to occur, and recently available information supports this conclusion.

Raptors. As shown in Table 3.4-4, the repowered 450 MW Program would be expected to result in an estimated 140–783 raptor fatalities per year—a 2–83% decrease compared to nonrepowered rates at 329 MW of installed capacity. Considering the fatality monitoring information available since the PEIR was published, the raptor mortality rate remained unchanged in the final Vasco Wind monitoring report (Brown et al. 2016) at 0.64 fatality/MW/year. The recent Golden Hills project documented an average estimated mortality rate for raptors of 1.74 fatalities/MW/year, a reduction from the nonrepowered mortality rate provided in the PEIR (2.43 fatalities/MW/year). The calculated average and weighted average mortality rates across all repowering projects, applied to the 450 MW Program was 438.8 fatalities per year (a 45% decrease) to 428.5 fatalities per year (a 46% decrease), respectively. The recently available monitoring results continue to support the conclusion that repowering will reduce effects on raptors as a species group.

Native non-raptors. As shown in Table 3.4-4, the repowered 450 MW Program would be expected to result in an estimated 455–2,421 native non-raptor fatalities per year—from a 69% decrease to a 63% increase compared to nonrepowered rates at 329 MW of installed capacity. Considering the fatality monitoring information available since the PEIR was published, the native non-raptor mortality rate remained nearly unchanged in the final Vasco Wind monitoring report (Brown et al. 2016) at 2.04 fatalities/MW/year. The recent Golden Hills project documented an average estimated mortality rate for raptors of 5.38 fatalities/MW/year, a modest increase from the nonrepowered mortality rate provided in the PEIR (4.50 fatalities/MW/year). The calculated average and weighted average mortality rates across all repowering projects, applied to the 450 MW Program was 1,230.8 fatalities per year (a 17% decrease) to 1,123.6 (a 24% decrease) fatalities per year, respectively.

Rooney Ranch—Proposed Project

The estimated changes associated with the proposed Project are shown in Table 3.4-5 and are discussed following the table.

Table 3.4-5. Estimated Annual Avian Fatalities for Existing and Repowered Rooney Ranch Project Area (updated from Tables 3.4-13 and 3.4-14 [project-specific tables] in the PEIR)

	Estimated Annual Fatalities for the Rooney Ranch Wind Repowering Project[a]								
	Nonrepowered Rooney Ranch Project	Repowered Rooney Ranch Project Using Average Mortality rates from Comparable Projects							
		Diablo Winds[b]		Buena Vista[c]		Vasco Winds[d]		Golden Hills[e]	
Species	Average Annual Fatalities	Average Annual Fatalities	% Decrease	Average Annual Fatalities	% Decrease	Average Annual Fatalities	% Decrease	Average Annual Fatalities	% Decrease
American kestrel	11.2	2.3	80%	3.8	66%	7.0	37%	4.3	62%
Barn owl	4.6	0.5	89%	0.0	100%	0.5	89%	1.5	67%
Burrowing owl	14.7	21.1	-44%	0.0	100%	1.5	90%	14.6	1%
Golden eagle	1.5	0.3	84%	1.0	34%	1.3	18%	3.3-3.8[f]	-114 to -147%[f]
Loggerhead shrike	3.6	0.0	100%	0.0	100%	0.0	100%	1.8	51%
Prairie falcon	0.4	0.0	100%	0.0	100%	0.3	34%	0.3	34%
Red-tailed hawk	8.3	5.0	40%	2.5	70%	5.3	36%	16.1	-94%
Tricolored blackbird	0.0	0.0	0%	0.0	0%	0.5	NA[g]	0.5	NA[g]
White-tailed kite	0.0	0.0	0%	0.0	0%	0.0	0%	0.5	NA[g]
Swainson's hawk	0.0	0.0	0%	0.0	0%	0.0	0%	0	0%
All raptors	46.0	30.4	34%	7.8	83%	16.1	65%	43.7	5%
All native non-raptors	85.1	63.0	26%	25.4	70%	51.2	40%	135.0	-59%

Note: mortality rates reflect annual fatalities (95% confidence interval).

[a] All estimates based on an existing capacity of 18.9 MW and a proposed capacity of 25,1 MW for the Rooney Ranch project area.

[b] Diablo Winds mortality rates extrapolated to the Rooney Ranch Project area.

[c] Buena Vista mortality rates extrapolated to the Rooney Ranch Project area.

[d] Vasco Winds mortality rates extrapolated to the Rooney Ranch Project area. Estimates are based on the mortality rates from 2 additional years of monitoring completed since the PEIR was prepared, as reported in Brown et al. (2016).

[e] Golden Hills mortality rates were not available at the time the PEIR was prepared. Golden Hills mortality rates extrapolated to the Rooney Ranch Project area. Estimates are based on 2 years of monitoring as reported in H. T. Harvey & Associates (2018a, 2018b).

[f] As noted in Table 5, the range of credible estimates for the Golden Hills project were used in this analysis to estimate average annual fatalities.

[g] NA = not applicable: a percent decrease cannot be calculated because there were no fatalities reported at nonrepowered turbines.

American Kestrel. As shown in Table 3.4-5, the repowered 25.1 MW Project would be expected to result in an estimated 2-7 American kestrel fatalities per year—a 37–80% decrease compared to nonrepowered rates. Considering the fatality monitoring information available since the PEIR was published, the final Vasco Wind monitoring results (Brown et al. 2016) resulted in a slightly lower estimated mortality rate for American kestrel (0.28 fatality/MW/year) than the mortality rate reported in the PEIR (0.30 fatality/MW/year). The average mortality rate for the first 2 years of the Golden Hills project (H. T. Harvey & Associates 2018a, 2018b) was significantly lower than the nonrepowered rated reported in the PEIR (0.17 fatality/MW/year versus 0.59 fatality/MW/year). The calculated average and weighted average mortality rates across all repowering projects, applied to the Project was 4.3 fatalities per year (a 61% decrease) to 4.0 fatalities per year (a 64% decrease), respectively.

The PEIR stated that the overall program could decrease annual fatalities of American kestrel by 31–79%, consistent with the results of this analysis, which considers recently available fatality monitoring results from the Golden Hills and Vasco Winds projects. Consequently, the mortality estimates of the PEIR remain unchanged relative to the Project's potential effects on American kestrel.

Barn Owl. As shown in Table 3.4-5, the repowered 25.1 MW Project would be expected to result in an estimated 1-2 barn owl fatalities per year—a 67–89% decrease. The PEIR noted that barn owl populations are stable to possibly declining in the state and that it was uncertain what effect repowering may have on local barn owl populations. The PEIR also noted that the higher RSA of repowered turbines may reduce the risk of turbine collision because barn owls typically hunt in low quartering flights at about 1.5–4.5 meters (5–15 feet) above the ground. The proposed Project is generally consistent with the higher RSA of the recent Vasco Winds and Golden Hills projects, with rotor heights of 13–22 meters (43–75 feet) above the ground, depending on the make and model of turbine selected.

Considering the fatality monitoring information available since the PEIR was published, the final Vasco Wind monitoring results (Brown et al. 2016) were in line with the results of monitoring at Diablo Winds (0.02 barn owl fatality/MW/year) reported in PEIR, while the Golden Hills mortality rate was slightly higher (0.06 barn owl fatality/MW/year). The PEIR estimated that the overall program could decrease annual fatalities of barn owl by 81–89%, consistent with the results of this analysis, which considers the recently available fatality monitoring results from the Golden Hills and Vasco Winds projects. The calculated average and weighted average mortality rates across all repowering projects, applied to the Project was 0.6 fatalities per year (a 86% decrease) to 0.5 fatalities per year (a 88% decrease), respectively. Consequently, the mortality estimates of the PEIR remain unchanged relative to the Project's potential effects on barn owl.

Burrowing Owl. As shown in Table 3.4-5, the repowered 25.1 MW Project would be expected to result in an estimated 2–21 burrowing owl fatalities per year—a change ranging from a 90% decrease to a 44% increase. Considering the fatality monitoring information available since the PEIR was published, the final Vasco Wind monitoring results (Brown et al. 2016) resulted in a slightly higher estimated mortality rate for burrowing owl (0.06 fatality/MW/year) than the mortality rate reported in the PEIR (0.05 fatality/MW/year). The average mortality rate for the first 2 years of the Golden Hills project (H. T. Harvey & Associates 2018a, 2018b) was significantly higher than the rate reported in the PEIR (0.58 fatality/MW/year); however, it was less than the rates reported in the PEIR for Diablo Winds (0.84 fatality/MW/year) and nonrepowered turbines (0.78 fatality/MW

year). The calculated average and weighted average mortality rates across all repowering projects, applied to the Project was 9.3 fatalities per year (a 37% decrease) to 10.7 fatalities per year (a 27% decrease), respectively.

The PEIR noted that "A growing body of circumstantial evidence indicates that many of the burrowing owl fatalities found during fatality surveys are due to predation rather than turbine collision." It concluded that "… the potential reduction in turbine-related burrowing owl fatalities may be underestimated because of the inability to distinguish fatalities resulting from predation from those caused by turbine collision." Just after the PEIR was published, the Alameda County avian monitoring team, with approval of the Scientific Review Committee, began a study of background mortality (ICF 2016). The study was prompted by the finding that substantial numbers of small bird carcasses—including burrowing owls—continued to accumulate in the search area around turbines during the period of seasonal shutdown, even though turbines were not operating (ICF 2016). Overall, the study reported that the patterns were relatively clear for small birds potentially subject to predation, but they were not as clear for burrowing owls. The authors of the study noted that California was in the fourth year of a historic drought, and anecdotal information suggested that the burrowing owl population was rapidly declining. Additionally, as H. T. Harvey & Associates (2018b) noted in their recent monitoring report for the Golden Hills project "… the fact that 84% of the Year 2 burrowing owl fatalities were found as feather spots or carcass remnants, mostly around burrows and along erosion-control wattles, suggests that predation was the primary cause of fatalities for this species…." Thus, uncertainty still remains surrounding burrowing owl mortality rates.

The PEIR stated that the overall program could decrease annual fatalities of burrowing owl by 91% or could increase them by 48%. The potential reduction in fatalities described in the PEIR is nearly identical to the results of this analysis. However, this analysis demonstrates a lower potential increase in burrowing owl fatalities (44%) compared to the PEIR (48%). This information, when considered in the context of the additional information on background mortality, suggests that effects on burrowing owls may be reduced from those described in the PEIR.

Golden Eagle. As shown in Table 3.4-5, the repowered 25.1 MW Project would be expected to result in between 1–3 fatalities per year and 1–4 fatalities per year, depending on the fatality estimation methods used)—from an 84% decrease to an 147% increase. Considering the fatality monitoring information available since the PEIR was published, the final Vasco Wind monitoring results (Brown et al. 2016) indicated a slightly higher estimated mortality rate for golden eagle (0.06 fatality/MW/year) than the mortality rate reported in the PEIR (0.03 fatality/MW/year). The average mortality rate for the first 2 years of the Golden Hills project (H. T. Harvey & Associates 2018a, 2018b) was significantly higher than the rate reported in the PEIR (0.013–0.15 fatality/MW/year, depending on the estimation method used). The calculated average and weighted average mortality rates across all repowering projects, applied to the Project was 1.4 fatalities per year (a 5% decrease) to 1.1 fatalities per year (a 27% decrease), respectively.

The PEIR stated that the overall program could decrease annual fatalities of golden eagle by 32–83%. The additional monitoring results from Vasco Winds support this determination, while the Golden Hills monitoring results do not. As noted in Tables 3.4-2 and 3.4-5, there is some uncertainty regarding the appropriate mortality rate; however, the Golden Hills mortality rates are generally higher than those of other recent repowering projects. Consequently, although the results from some previous repowering projects, such as the updated Vasco Winds results, indicate that reductions in golden eagle fatalities from repowering are still possible, and in fact have been observed during the majority of monitoring studies and years, the outcome of repowering is less

clear for this species than indicated in the PEIR because of the recent results at the Golden Hills project, although average estimates across projects, both standard and weighted still suggest a reduction. At this point, the predictors of high-versus low-level golden eagle take rates at a given wind project remain unknown.

Red-Tailed Hawk. As shown in Table 3.4-5, the repowered 25.1 MW Project would be expected to result in an estimated 3-16 red-tailed hawk fatalities per year—from a 70% decrease to a 94% increase. Considering the fatality monitoring information available since the PEIR was published, the final Vasco Winds monitoring results (Brown et al. 2016) resulted in a slightly lower estimated mortality rate for red-tailed hawk (0.21 fatality/MW/year) than the mortality rate reported in the PEIR (0.25 fatality/MW/year). The average mortality rate for the first 2 years of the Golden Hills project (H. T. Harvey & Associates 2018a, 2018b) was significantly higher than the rated reported in the PEIR (0.64 fatality/MW/year). The calculated average and weighted average mortality rates across all repowering projects, applied to the Project was 7.2 fatalities per year (a 13% decrease) to 6.2 fatalities per year (a 25% decrease), respectively.

The PEIR stated that the overall program could decrease annual fatalities of red-tailed hawks by 23–69%. The additional monitoring results from Vasco Winds support this determination, while the Golden Hills monitoring results do not. Reviewing the Golden Hills monitoring results further, the first-year mortality rate for red-tailed hawk (0.91 fatality/MW/year) was more than twice the second-year mortality rate (0.37 fatality/MW/year). The authors of the Golden Hills report, H. T. Harvey & Associates (2018a:xi), noted that results for red-tailed hawk may have been skewed by perching and nesting opportunities created by nearby old turbines. The second-year report did not discuss this factor further, although the removal of old-generation turbines, which is ongoing in the APWRA, may have had an effect on the second-year mortality rate. Consequently, the recently available information suggests that although reductions in red-tailed hawk fatalities from repowering have been observed in the majority of monitoring studies and years, the outcome of repowering is less clear for this species than was indicated in the PEIR, although average estimates across projects, both standard and weighted, still suggest a reduction. The final year of monitoring at the Golden Hills project may provide additional insight into these effects.

Loggerhead Shrike. As shown in Table 3.4-5, the repowered 25.1 MW Project would be expected to result in an estimated 0–2 loggerhead shrike fatalities per year—a 100-51% decrease. The PEIR noted that no documented fatalities of loggerhead shrikes had occurred at any of the repowered projects in the APWRA at the time the PEIR was prepared. As noted in Table 3.4-5, the final 2 years of monitoring at Vasco Winds did not result in any documented loggerhead shrike fatalities. The recent Golden Hills project documented a single fatality of this species, resulting in an estimated mortality rate of 0.07 fatality/MW/year for that project, a reduction from the nonrepowered rate provided in the PEIR (0.19 fatality/MW/year). The calculated average and weighted average mortality rates across all repowering projects, applied to the Project was 0.4 fatalities per year (a 88% decrease) to 0.3 fatalities per year (a 92% decrease), respectively.

The PEIR noted that the lack of documented fatalities suggests that there may be a reduced level of fatality from repowered turbines. The recent Golden Hills monitoring results, which documented a single fatality, also support the conclusion that repowering may reduce fatalities compared to nonrepowered rates. Consequently, the conclusions of the PEIR remain unchanged relative to the Project's potential effects on loggerhead shrike.

Prairie Falcon. As shown in Table 3.4-5, the repowered 25.1 MW Project would be expected to result in zero to less than 1 fatality per year—a 34–100% decrease. Considering the fatality monitoring information available since the PEIR was published, a prairie falcon fatality was observed in the third year of the Vasco Winds monitoring (Brown et al. 2016), resulting in an average mortality rate of 0.01 fatality/MW/year. A single prairie falcon was recorded "on-plot" as a documented fatality in the second year of the Golden Hills project (H. T. Harvey & Associates 2018b), also resulting in an average mortality rate of 0.01 fatality/MW/year. Both mortality rates are half of the nonrepowered rate provided in the PEIR (0.02 fatality/MW/year). The calculated average and weighted average mortality rates across all repowering projects, applied to the Project was 0.1 fatalities per year (a 88% decrease) to 0.1 fatalities per year (a 88% decrease), respectively.

The PEIR noted that fatality estimates at repowered sites were not available because no fatalities had been documented at repowered turbines at the time the PEIR was prepared. The PEIR also concluded that a lack of documented fatalities suggests that there may be a reduced level of fatality from repowered turbines, as well as a potentially lower risk to this species. The recent Vasco Winds and Golden Hills monitoring results support this conclusion.

Tricolored Blackbird. As shown in Table 3.4-5, the repowered 25.1 MW Project could be expected to result in 0–1 fatalities per year. The calculated average and weighted average mortality rates across all repowering projects, applied to the Project was 0.3 to 0.2 fatalities per year, respectively. At the time the PEIR was prepared, tricolored blackbird had not been recorded as a fatality either at nonrepowered turbines or at repowered turbines. Since that time, the Vasco Winds and Golden Hills projects have each reported one fatality, resulting in an average mortality rate of 0.02 fatality/MW/year at both facilities (Brown et al. 2016; H. T. Harvey & Associates 2018a, 2018b). These recently available monitoring results suggest a relatively low mortality rate for this species, but a potential for fatalities at the Project.

White-Tailed kite. As shown in Table 3.4-5, the repowered 25.1 MW Project would be expected to result in 0–1 fatalities per year. The calculated average and weighted average mortality rates across all repowering projects, applied to the Project was 0.1 to 0.1 fatalities per year, respectively. At the time the PEIR was prepared, white-tailed kite had not been recorded as a fatality either at nonrepowered turbines or at repowered turbines. Since that time, the Golden Hills project reported one fatality in 2017 that was excluded from the fatality estimation methods (H. T. Harvey & Associates 2018a) and one fatality in 2018 (H. T. Harvey & Associates 2018b), resulting in an average mortality rate of 0.02 fatality/MW/year. These recently available monitoring results suggest a relatively low mortality rate for this species, but a potential for fatalities at the Project remains.

Swainson's Hawk. As noted in the PEIR, there is only one recorded Swainson's hawk fatality in the APWRA (nonrepowered turbines), resulting in an annual estimated mortality rate of approximately zero (Table 3.4-5). No Swainson's hawk fatalities have been detected at Diablo Winds, Buena Vista, Vasco Winds, or Golden Hills. Based on the low (effectively zero) estimated mortality rate from nonrepowered sites, the lack of fatalities detected at repowered sites, and the relatively low number of detections during avian use surveys conducted by the County's avian fatality monitoring team, it is expected that the mortality rate for Swainson's hawk would remain at or near zero at the repowered Project. The PEIR stated that adverse effects on the local Swainson's hawk population were unlikely to occur, and recently available information supports this conclusion.

Raptors. As shown in Table 3.4-5, the repowered 25.1 MW Project would be expected to result in an estimated 8-44 raptor fatalities per year—a 5-83% decrease. Considering the fatality monitoring information available since the PEIR was published, the raptor mortality rate remained unchanged in the final Vasco Wind monitoring report (Brown et al. 2016) at 0.64 fatality/MW/year. The recent Golden Hills project documented an average estimated mortality rate for raptors of 1.74 fatalities/MW/year, a reduction from the nonrepowered mortality rate provided in the PEIR (2.43 fatalities/MW/year). The calculated average and weighted average mortality rates across all repowering projects, applied to the Project was 24.5 fatalities per year (a 47% decrease) to 23.9 fatalities per year (a 48% decrease), respectively. The recently available monitoring results continue to support the conclusion that repowering will reduce effects on raptors as a species group.

Native non-raptors. As shown in Table 3.4-5, the repowered 25.1 MW Project would be expected to result in an estimated 25-135 native non-raptor fatalities per year—from a 70% decrease to a 59% increase. Considering the fatality monitoring information available since the PEIR was published, the native non-raptor mortality rate remained nearly unchanged in the final Vasco Wind monitoring report (Brown et al. 2016) at 2.04 fatalities/MW/year. The recent Golden Hills project documented an average estimated mortality rate for raptors of 5.38 fatalities/MW/year, a modest increase from the nonrepowered mortality rate provided in the PEIR (4.50 fatalities/MW/year). The calculated average and weighted average mortality rates across all repowering projects, applied to the Project was 68.6 fatalities per year (a 19% decrease) to 62.7 fatalities per year (a 26% decrease), respectively.

Conclusions

The PEIR stated that repowering would result in significant and unavoidable impacts associated with avian mortality, although it anticipated that mortality rates may decrease with the transition from old-generation to new-generation turbines. This conclusion was based on combined estimates of avian mortality from three different repowering projects in the APWRA, given as a rate of bird deaths per MW per year, in various combinations of species (all raptor species, each of eight individual raptor species, and all native non-raptor species). These estimates indicated reductions of 32–83% in raptor fatalities (e.g., 31–79% fewer American kestrel fatalities for buildout of 450 MW in the APWRA). The PEIR acknowledged, however, that the avian mortality estimates were uncertain, stating that: "… while repowering is intended to reduce fatalities, enough uncertainty remains in light of project- and site-specific data to warrant a conservative approach in the impact analysis. Accordingly, the continued or increased loss of birds (including special-status species) *at a rate potentially greater than the existing baseline fatality rates* is considered a significant and unavoidable impact" [emphasis added] (Alameda County Community Development Agency 2014:3.4-103).[4]

[4] Similar statements are repeated throughout the PEIR; see page 3.4-121:

> As described above, for all avian focal species analyzed, a fully repowered program area would be expected to reduce estimated fatality rates. However, fatalities would still be expected to result from the operation of the repowered turbines, and uncertainty surrounding the accuracy of the estimated fatality rates and the types of species potentially affected remains. Considering this information, and despite the anticipated reductions in avian impacts compared to the baseline rates, the County has determined to use a conservative approach for the impact assessment, concluding that turbine related fatalities could constitute a substantial adverse effect on avian species because the rates for some or all of the species could be greater than the baseline rates. This impact would be significant. Implementation of Mitigation Measures BIO-11a through BIO-11i would reduce this impact, but not to a less-than-significant level; accordingly, this impact is considered significant and unavoidable.

The PEIR recognized the uncertainty of its avian mortality estimates, as well as the consideration of inter-annual and inter-project variation in mortality rates, and concluded that mortality rates under the 450 MW repowering program could exceed baseline, nonrepowered mortality rates (Alameda County Community Development Agency 2014). More specifically, while the PEIR used the "best available" data from three repowering projects to estimate a possible reduction of fatalities under the repowering program, the PEIR's impact conclusion for the 450 MW repowering program expressly acknowledged the uncertainty inherent in such data.

Thus, while the PEIR presented mortality estimates that looked promising, those estimates were uncertain and ultimately were not relied upon as the basis for its impact conclusion. Like the recent Golden Hills reports, the PEIR stated that more data were needed: "[p]ostconstruction monitoring, once the turbines are in operation, will provide data to quantify the actual extent of change in avian fatalities from repowering and the extent of avian fatality for projects in the program area …" (Alameda County Community Development Agency 2014:3.4-119). In light of this uncertainty, the PEIR required adaptive management for any repowering project where "… fatality monitoring … results in an estimate that exceeds the preconstruction baseline fatality estimates (i.e., estimates at the nonrepowered turbines as described in this PEIR) … to ensure that the best available science is used to minimize impacts to below baseline" (Alameda County Community Development Agency 2014:3.4-116).

While the PEIR set forth multiple measures to address avian mortality, it stated that these measures would not reduce the impact to a less-than-significant level. This conclusion holds true for the Rooney Ranch Project, and although it remains difficult to estimate mortality rates with certainty, continued monitoring will contribute to the body of knowledge informing this effort. Implementation of the combined program of mitigation measures—BIO-11a, Prepare a project-specific avian protection plan; BIO-11b, Site turbines to minimize potential mortality of birds; BIO-11c, Use turbine designs that reduce avian impacts; BIO-11d, Incorporate avian-safe practices into design of turbine-related infrastructure; BIO-11e, Retrofit existing infrastructure to minimize risk to raptors; BIO-11f, Discourage prey for raptors; BIO-11g, Implement postconstruction avian fatality monitoring for all repowering projects; BIO-11h, Compensate for the loss of raptors and other avian species, including golden eagles, by contributing to conservation efforts; and BIO-11i, Implement an avian adaptive management program—remains appropriate to reduce impacts as anticipated for the Project, but these measures would still not reduce impacts to a less-than-significant level considering recently available information. This conclusion for the proposed Project is consistent with the analysis presented in the PEIR.

Impact BIO-12: Potential mortality or disturbance of bats from roost removal or disturbance (less than significant with mitigation)

The PEIR identified two special-status bat species—pallid bat (*Antrozous pallidus*) and Townsend's big-eared bat (*Corynorhinus townsendii*)—as having the potential to roost in the program area. Rock outcrops in the study area provide potential roosting habitat for pallid and Townsend's big-eared bats, as well as other bat species. Although the project has been designed to avoid direct effects on rock outcrops, several outcrops are alongside access roads that would be used to transport project components and materials. Passage of heavy vehicles delivering turbine components have the potential to disturb maternity roosts and hibernacula, if any are present. Implementation of Mitigation Measures BIO-12a, Conduct bat roost surveys; and BIO-12b, Avoid removing or disturbing bat roosts, would reduce this impact to a less-than-significant level. This conclusion is

consistent with the analysis presented in the PEIR, and the mitigation measures set forth in the PEIR would address this impact.

Impact BIO-13: Potential for construction activities to temporarily remove or alter bat foraging habitat (less than significant)

The PEIR concluded that while construction activities could degrade foraging habitat, the overall repowering effort, by decommissioning numerous old-generation turbines, would offset the loss of habitat associated with installation of new turbines and infrastructure. This impact would be less than significant, and no mitigation is required. This conclusion is consistent with the analysis presented in the PEIR.

Impact BIO-14: Turbine-related fatalities of special-status and other bats (significant and unavoidable)

Analysis Methods

As of the preparation of the PEIR, five species of bats had been documented as fatalities in the APWRA: little brown bat, California myotis, western red bat, hoary bat, and Mexican free-tailed bat (Table 3.4-6 in the PEIR). Since the PEIR, additional monitoring results from Vasco Winds and Golden Hills have detected two additional bat species, big brown bat, and silver-haired bat (Table 3.4-6, updated from Table 3.4-6 in the PEIR, 1 unadjusted fatality for each species).

Table 3.4-6. Raw Bat Fatalities by Species Detected in Standardized Searches at Various APWRA Monitoring Projects (Updated Table 3.4-6 in the PEIR)

Species	2005-2007	2008-2010	2012-2015	2017-2018
APWRA Monitoring[a]				
Hoary bat	3	2		
Mexican free-tailed bat	2	2		
Western red bat	2	1		
Little brown bat	0	2		
Unidentified bat	3	4		
Total bats	10	11		
Buena Vista				
Hoary bat		9		
Mexican free-tailed bat		3		
California myotis		1		
Total bats		13		
Hoary bat			**24**	
Mexican free-tailed bat			**29**	
Western red bat			**2**	
California myostis			**1**	
Total bats			**56**	

Species	2005-2007	2008-2010	2012-2015	2017-2018
Golden Hills [d]				
Hoary bat				**106**
Mexican free-tailed bat				**155**
Western red bat				**5**
Big brown bat				**1**
California myotis				**1**
Silver-haired bat				**1**
Unidentified bat				**2**
Total bats				**271**

The PEIR estimated total numbers of annual bat fatalities for the two Program alternatives and the two individual projects. The analysis methods in the PEIR used for the Program alternatives and the two projects were identical, and methods used to conduct the analysis were similar to those used to assess the potential impacts on avian species. The total installed capacity at the time the NOP for the PEIR was filed was used to estimate the baseline number of fatalities that would occur if the old-generation turbines were to continue operating without any repowering. This value was multiplied by the mortality rate for bats provided by Smallwood and Karas (2009:1066) using data from the Altamont Fatality Monitoring Team for the 2005–2007 bird years to obtain estimates of total bat fatalities per year for the Program and the two projects. These numbers were compared to the number of fatalities expected to occur if old-generation turbines were replaced with newer, modern turbines. The number of fatalities expected to occur as a result of repowering was based on the nameplate capacity for each of the Program alternatives and each of the projects.

Estimates of bat mortality rates from several sources were used to provide a range of bat fatality estimates that could result from repowering. The primary source, Vasco Winds, was supplemented with bat mortality rate estimates from the two other repowering projects in the APWRA—Diablo Winds and Buena Vista—both of which used turbines smaller than those used in current and future repowering projects. Bat mortality rates from the nearby Montezuma Hills Wind Resource Area were also used because this is the nearest area—other than Vasco Winds—where fourth-generation turbines are in operation. The resultant range of possible mortality rates was compared to the baseline estimates of total fatalities for the two project areas and the Program area.

The PEIR described potential biases in the bat fatality analysis methods. Like potential avian analysis biases, the biases surrounding bats are useful to consider and revisit as new information becomes available. The PEIR disclosed that although the best available evidence was used to estimate the number of bat fatalities potentially resulting from implementation of the proposed Program and projects, there was more uncertainty in these estimates than there was for bird fatality estimates. Because the Alameda County Avian Fatality Program was not designed to count bats, the baseline mortality rate was likely underestimated. Moreover, because Vasco Winds is not representative of the entire Program area, the PEIR cautioned that extrapolation of results from this site to other areas should be interpreted with caution. Finally, the nearby Montezuma Hills Wind Resource Area, while sharing some land use characteristics (e.g., grazing), supports more dryland farming than the APWRA and has a different topographical profile. The recently available information does not change or further illuminate any of these biases.

In addition to the biases described in the PEIR, the recently available information adds some additional biases and issues to consider when reviewing the bat fatality analysis methods. While not specifically a bias, the information in this report confirms that the PEIR erroneously used a mortality rate from the Vasco Winds project first-year report that was later corrected or adjusted in the final Vasco Winds report. Although the corrected mortality rate is still lower than the second rate used from the Montezuma Hills Wind Resource Area, this change essentially results in a narrower range of estimated fatalities using the methods in the PEIR. Secondly, and perhaps most significantly, the Golden Hills monitoring program used scent-detection dogs to conduct fatality searches, the first and only project to use these methods to date. The authors of the Golden Hills report (H. T. Harvey & Associates 2018b) note that the use of scent-detection dogs as well as the shorter 7-day search interval "… clearly resulted in our detecting far greater numbers of bat fatalities than previously reported in the APWRA." The authors of the Golden Hills report also conclude that "… additional years of post-repowering data from different APWRA projects will be necessary before a confident assessment of the patterns and magnitudes of impacts on bats can be confidently assessed." Together, all these factors and biases illustrate the continued challenges associated with estimating bat fatalities for repowering projects.

The method used in the PEIR was used to calculate the number of bat fatalities expected to result from the Project using updated average annual mortality rates for the full monitoring period of the Vasco Winds project (3 years). Additionally, and for added context, the average annual mortality rates for the 2 years of the Golden Hills project were also calculated and presented.

Analysis Results

As noted in the PEIR, resident and migratory bats flying in and through the Project area may be killed by collision with wind turbine blades or other interaction with the wind turbine generators. Repowering in the Project area would introduce increased fatality risk, particularly to migratory bats.

Extrapolating from existing fatality data and from trends observed at other wind energy facilities where fourth-generation turbines are in operation, it appears likely that fatalities would occur predominantly in the late summer to mid-fall migration period; that fatalities would consist mostly of migratory bats, particularly Mexican free-tailed bat and hoary bat; that fatalities would occur sporadically at other times of year; and that fatalities of one or more other species would occur in smaller numbers. As shown in Table3.4-7 (updated from Table 3.4-15 in the PEIR), annual estimated bat fatalities in the Project area are anticipated to increase from the current estimate of 38 (under baseline) to 463–566 fatalities.

Table 3.4-7. Estimated Range of Annual Bat Fatalities (updated from Table 3.4-15 in the PEIR)

Study Area	Capacity (MW)	Baseline Fatalities[a]	Predicted Fatalities[b]
Existing program area	329	87	–
Program Alternative 1	417	110	**1,337–1,635 (700-1,635)**
Program Alternative 2	450	118	**1,443–1,764 (756-1,764)**
Golden Hills[c]	85.9	23	**284–347 (148-347)**
Patterson Pass[d]	19.8	5	**64–78 (33-78)**
Rooney Ranch	18.9	5	**80-98**

Notes: **Information in bold text is changed or new predicted number of fatalities based on information available since the PEIR was prepared. Information in parenthesis is the predicted fatalities indicated in the PEIR.**

[a] Estimate of total baseline fatalities are based on the Smallwood and Karas fatality rate of 0.263 fatalities/MW/year derived from 2005–2007 monitoring at the APWRA.

[b] Estimate of total predicted fatalities are based on corrected fatality rates from the Vasco Winds repowering project (Brown et. al. 2016) (3.207 fatalities/MW/year), and from the multiyear average rates from the Shiloh I project in the Montezuma Hills WRA (3.92 fatalities/MW/year).

[c] Golden Hills was identified in the PEIR as up to 88.4 MW but 85.9 MW were ultimately constructed.

[d] The Patterson Pass project was authorized but has not been constructed.

The PEIR noted that "insufficient data are currently available to develop accurate fatality estimates for bats (Alameda Community Development Department 2014; p.3.4-18). The PEIR provided several hypotheses for evidence of an increased collision risk of repowered turbines, but noted several times that there was a "high degree of uncertainty in bat fatality estimates". The corrected fatality rates for the Vasco Wind project presented in Table 3.4-6, as well as results from the recent Golden Hills project, may serve to lessen the uncertainty in bat fatality estimates.

Conclusions

The PEIR concluded that "Insufficient data are currently available to develop accurate fatality estimates for individual bat species." The PEIR described potential impacts on five species of bats, but noted that two species, Mexican free-tailed bats and hoary bats, were most vulnerable. Indeed, despite the finding that two additional species of bats were detected as fatalities at repowered projects, the additional information discussed in this analysis further supports the conclusion that Mexican free-tailed bats and hoary bats constitute most of the fatalities. The PEIR noted that information available at the time indicated that bat collision risk increases substantially when old-generation turbines are replaced by newer, larger turbines. The PEIR further noted that "Turbines used in future repowering projects are likely to be similar in size to Vasco Winds turbines but much larger than the Diablo Winds and Buena Vista turbines in both overall size and rated nameplate capacity." The proposed Rooney Ranch turbines are moderately larger than Diablo Winds in terms of physical dimensions but are substantially larger in rated nameplate capacity. As noted in this analysis, the larger nameplate capacity of the Rooney Ranch turbines essentially results in a need for fewer turbines to meet the same nameplate capacity. Overall, the PEIR found that "Despite the high level of uncertainty in estimates of bat fatality rates, all available data suggest that repowering would result in a substantial increase in bat fatalities." The recently available information further supports this conclusion in the PEIR and does not alter its significance with regard to the proposed Project.

While the PEIR set forth multiple measures to address bat mortality, it concluded that these measures would not reduce the impact to a less-than-significant level. This conclusion holds true for the Project, and although it remains difficult to estimate bat mortality rates with certainty, continued monitoring will contribute to the body of knowledge informing this effort, as noted in the recent H. T. Harvey & Associates (2018a, 2018b) monitoring reports. Implementation of the combined program of mitigation measures—BIO-14a, Site and select turbines to minimize potential mortality of bats; BIO-14b, Implement postconstruction bat fatality monitoring program for all repowering projects; BIO-14c, Prepare and publish annual monitoring reports on the findings of bat use of the project area and fatality monitoring results; BIO-14d, Develop and implement a bat adaptive management program; and BIO-14e, Compensate for expenses incurred by rehabilitating injured bats—remain appropriate to reduce impacts but would not reduce them to a less-than-significant level considering recently available information. This conclusion is consistent with the analysis presented in the PEIR.

Impact BIO-15: Potential for road infrastructure upgrades to result in adverse effects on alkali meadow (no impact)

The PEIR concluded that road infrastructure upgrades—especially those involving crossings—could result in adverse effects on alkali meadow. However, the aquatic resources delineation surveys conducted in support of the project did not identify any alkali meadow in the survey area. Accordingly, there would be no impact, and no mitigation is required. This conclusion is consistent with the analysis presented in the PEIR.

Impact BIO-16: Potential for road infrastructure upgrades to result in adverse effects on riparian habitat (no impact)

While the PEIR identified several categories of riparian habitat in the program area, the surveys conducted in support of the Biological Resources Evaluation identified no riparian habitat in the project area. Therefore, there would be no impact on riparian habitat, and no mitigation is required. This conclusion is consistent with the analysis presented in the PEIR.

Impact BIO-17: Potential for ground-disturbing activities to result in direct adverse effects on common habitats (less than significant)

The PEIR concluded that ground-disturbing activities would result in the permanent and temporary loss of common habitats—primarily annual grasslands. However, because of the extent of these habitats regionally available and the reclamation activities that are part of the project, this impact would be less than significant, and no mitigation is required. This conclusion is consistent with the analysis presented in the PEIR.

Impact BIO-18: Potential for road infrastructure upgrades to result in adverse effects on wetlands (less than significant)

The PEIR concluded that road infrastructure upgrades would result in placement of fill at crossings, as well as possible hydrologic alteration. However, because the proposed project has been designed to avoid all aquatic resources, and because no access roads would involve crossings of such features, this impact would be less than significant, and no mitigation is required. This conclusion is consistent with the analysis presented in the PEIR.

Impact BIO-19: Potential impact on the movement of any native resident or migratory wildlife species or established native resident or migratory wildlife corridors, and the use of native wildlife nursery sites (significant and unavoidable)

The PEIR concluded that construction activities could interfere with wildlife movement through introduction of barriers to passage; moreover, as discussed in Impacts BIO-11 and BIO-14, turbine operations could interfere with movement of birds and bats through turbine-related mortality. This would constitute a significant impact. Implementation of Mitigation Measures BIO-1b, BIO-1e, BIO-3a, BIO-4a, BIO-5a, BIO-5c, BIO-7a, BIO-8a, BIO-8b, BIO-10a, BIO-11b, BIO-11c, BIO-11d, BIO-11e, BIO-11i, BIO-12a, BIO-12b, BIO-14a, and BIO-14d would reduce this impact but not to a less-than-significant level. This conclusion is consistent with the analysis presented in the PEIR, and the mitigation measures set forth in the PEIR would adequately address this impact.

Impact BIO-20: Conflict with local plans or policies (less than significant with mitigation)

As described in the PEIR, the East County Area Plan has several policies related to windfarms, including establishing a mitigation program to minimize the impacts of wind turbine operations on bird populations. Loss of special-status species and their habitat, loss of alkali meadow, loss of riparian habitat, and loss of existing wetlands as a result of implementing the program would be in conflict with these policies. Because the conditions in the project area and features and characteristics of the proposed project are consistent with those contemplated in the PEIR, the impact would be the same, except that alkali meadow and riparian habitat are not present in the project area, and the project has been designed to avoid all aquatic resources. This impact would be significant; however, implementation of Mitigation Measures BIO-1a through BIO-1e, BIO-3a, BIO-4a, BIO 5a through 5c, BIO-7a, BIO-7b, BIO-8a, BIO-8b, BIO-9, BIO 10a, and BIO-10b would reduce this impact to a less-than-significant level. This conclusion is consistent with the analysis presented in the PEIR, and the mitigation measures set forth in the PEIR would adequately address this impact.

Impact BIO-21: Conflict with provisions of an adopted habitat conservation plan/natural community conservation plan or other approved local, regional, or state habitat conservation plan (no impact)

Because there are no adopted habitat conservation plans (HCPs)/natural community conservation plans (NCCPs) for the program area and the program would not conflict with the EACCS, there would be no impact. The same is true for the project area. This conclusion is consistent with the analysis presented in the PEIR.

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3.5 Cultural Resources

The following analysis is based on cultural resources investigations conducted for the proposed project (Appendix C). Impacts relative to cultural resources depend primarily on project scope and area. The footprint of individual turbines would be the same as described in the PEIR.

3.5.1 Existing Conditions

As directed by Mitigation Measure CUL-2a, Conduct a preconstruction cultural field survey and cultural resources inventory and evaluation, in the PEIR, investigations were conducted for the proposed project. These investigations identified three unrecorded potential resources within the area of potential effects (APE) and one just outside the APE.

None of the four resources has been evaluated for eligibility for inclusion in the National Register of Historic Places (NRHP)/California Register of Historic Resources (CRHR). Under current project design, one of the resources (RR-1) is located in an area that could be used for a temporary laydown area. The four resources identified in or near the APE are briefly characterized below.

- **RR-1—**The remains of a historic foundation and assorted debris were identified in the west central portion of the APE. Preliminary inspection suggests that this resource could date to the late nineteenth or early twentieth century.
- **RR-2—**A collapsed barn was identified in the northern portion of the APE. Ranch features—part of a corral, a wooden fence, and a standing garage—were associated with it.
- **RR-3—**Two metal stakes and assorted metal refuse were identified in the southern portion of the APE.
- **RR-4—**Remains of the Summit School, originally constructed as a church in the late nineteenth century, were identified 30 feet outside the northernmost portion of the APE.

The Native American Heritage Commission (NAHC) was contacted in January 2018 to request a sacred lands file database search and to solicit any new information since the PEIR cultural resources investigations were conducted. To date, no response has been received.

3.5.2 Environmental Impacts and Mitigation Measures

Impact CUL-1: Cause a substantial adverse change in the significance of a historical resource (less than significant with mitigation)

The PEIR identified 19 historic architectural cultural resources in the program area and concluded that repowering projects could result in an adverse change on such resources in the program area. Four potential historic resources were identified in or immediately adjacent to the Rooney Ranch APE, of which one could potentially be affected by a temporary laydown area. This resource was not formally evaluated for eligibility in either the NRHP or the CRHR, and based on initial survey results, it does not appear to be eligible for inclusion. Implementation of Mitigation Measures CUL-1a, Avoid historic resources; and CUL-1b, Appropriate recordation of historic resources, would reduce this impact to a less-than-significant level. This conclusion is consistent with the analysis presented in the PEIR.

Impact CUL-2: Cause a substantial adverse change in the significance of an archaeological resource (less than significant with mitigation)

No previously documented archaeological resources were identified in or directly adjacent to the APE. No previously undocumented archaeological resources were identified within the APE during the pedestrian survey.

Although the APE and vicinity were used by prehistoric peoples, the nature of this land use would primarily have been resource collection. Consequently, the expected range of prehistoric artifact and feature types in the APE would include projectile points and lithic tools, lithic debitage, bedrock mortars, and grinding stones. Although the area could have been used for upland resource collection activities, the APE is located far from permanent water sources and is, therefore, expected to have moderate to low potential to contain prehistoric archaeological resources.

In the event that archaeological resources are inadvertently uncovered during project construction, implementation of Mitigation Measure CUL-2b, Develop a treatment plan for any identified significant cultural resources; CUL-2c, Conduct worker awareness training for archaeological resources prior to construction; and CUL-2d, Stop work if cultural resources are encountered during ground-disturbing activities, would reduce this impact to a less-than-significant level. This conclusion is consistent with the analysis presented in the PEIR, and the mitigation measures set forth in the PEIR would adequately address this impact.

Impact CUL-3: Disturb any human remains, including those interred outside of formal cemeteries (less than significant with mitigation)

The PEIR concluded that although there is no indication that the program area has been used for human burials, because prehistoric sites are known to be present in the program area, the possibility cannot be discounted entirely. In the unanticipated event that human remains are encountered during project construction, implementation of Mitigation Measure CUL-3, Stop work if human remains are encountered during ground-disturbing activities, would reduce this impact to a less-than-significant level. This conclusion is consistent with the analysis presented in the PEIR, and the mitigation measures set forth in the PEIR would adequately address this impact.

3.6 Geology, Soils, Mineral Resources, and Paleontological Resources

As described in the PEIR, there are no known mineral resources in the program area and it was concluded that the program would not affect mineral resources. Accordingly, this topic is not further considered in this analysis.

3.6.1 Existing Conditions

As described in the PEIR, the program area, known for the frequent occurrence of earthquakes and potential ground shaking, contains two active faults, which are zoned under the Alquist-Priolo Act, and a third fault designated as potentially active. The program area is in steep, hilly terrain known to be susceptible to earthquake-induced landsliding. Although the potential for liquefaction is likely low because of the depth to groundwater and the age of the geologic units in the program area, the risk of lateral spread and differential settlement is not known. Expansive soils occur in much of the program area, particularly in the Fontana-Diablo-Altamont soil association, which characterizes the project area. Geologic units in the program area have the potential to contain paleontological resources; however, the project area is not within the Neroly Formation, a geologic unit particularly sensitive for fossil material.

3.6.2 Environmental Impacts and Mitigation Measures

Impact GEO-1: Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death, as a result of rupture of a known earthquake fault (less than significant with mitigation)

The PEIR identified two active faults and one potentially active fault in the program area; however, none of these intersect the project area. The closest of these to the project area is the Green Fault Zone, approximately 2 miles west of the project area. Because the project area is more removed from identified faults than much of the program area, no impacts beyond those identified in the PEIR would result. Implementation of Mitigation Measure GEO-1, Conduct site-specific geotechnical investigation and implement design recommendations in subsequent geotechnical report, would reduce this impact to a less-than-significant level. This conclusion is consistent with the analysis presented in the PEIR, and the mitigation measures set forth in the PEIR would adequately address this impact.

Impact GEO-2: Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death, as a result of strong seismic ground shaking (less than significant with mitigation)

As disclosed in the PEIR, construction of turbines or power collection systems in areas with the potential to experience strong ground shaking could expose people or structures to potential substantial adverse effects. The turbine could be damaged or collapse and possibly injure personnel or damage property in the immediate area. Implementation of Mitigation Measure GEO-1 would reduce this impact to a less-than-significant level. This conclusion is consistent with the analysis

presented in the PEIR, and the mitigation measures set forth in the PEIR would adequately address this impact.

Impact GEO-3: Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death, as a result of seismic-related ground failure, including landsliding and liquefaction (less than significant with mitigation)

As disclosed in the PEIR, if turbine foundations or power collection systems are not properly designed and sited for the earthquake-induced ground failure conditions present in the program area, they could fail and cause damage to or collapse of the turbine towers or collection system. This damage or collapse could cause harm to personnel or property in the immediate area. Although the potential for liquefaction is likely low because of the depth to groundwater and the age of the geologic units in the program area, the risk of lateral spread and differential settlement is unknown. The potential damage and harm that could result from landsliding, lateral spread, or differential settlement would be a significant impact. Implementation of Mitigation Measure GEO-1 would reduce this impact to a less-than-significant level. This conclusion is consistent with the analysis presented in the PEIR, and the mitigation measures set forth in the PEIR would adequately address this impact.

Impact GEO-4: Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death, as a result of landsliding (less than significant with mitigation)

As disclosed in the PEIR, in addition to seismic-related ground failure discussed in preceding impacts, construction of turbines or power collection systems in areas with potential to experience non-seismic-related landsliding caused by heavy precipitation could also expose people or structures to potential substantial adverse effects. Damage or collapse resulting from landsliding could cause harm to personnel or property in the immediate area.

While the project must comply with existing regulatory requirements (building safety requirements), these requirements may not address all ground failure issues. Implementation of Mitigation Measure GEO-1 would reduce this impact to a less-than-significant level. This conclusion is consistent with the analysis presented in the PEIR, and the mitigation measures set forth in the PEIR would adequately address this impact.

Impact GEO-5: Result in substantial soil erosion or the loss of topsoil (less than significant)

As disclosed in the PEIR, decommissioning and project construction could cause surface disturbance and vegetation removal resulting in soil erosion. However, compliance with federal and local erosion-related regulations (e.g., the SWPPP developed for the project, requirements of the County's Stormwater Quality Management Plan) would ensure that ground-disturbing activities do not result in significant erosion. Moreover, the PEIR requires a reclamation plan with specific measures taken to ensure that repowering sites are regraded and seeded to pre-project conditions. These requirements would ensure that potential impacts of soil erosion would be less than significant, and no mitigation is required. This conclusion is consistent with the analysis presented in the PEIR.

Impact GEO-6: Be located on expansive soil, creating substantial risks to life or property (less than significant with mitigation)

The PEIR disclosed that expansive soils occur in much of the program area, particularly in the Fontana-Diablo-Altamont soil association, which characterizes the project area. Turbine foundations built on expansive soils would be subject to the shrink and swell of these soils, which could damage structures if the subsoil, drainage, and foundation are not properly engineered. However, soil sampling and treatment procedures are addressed by state and local building codes. Compliance with these codes and implementation of Mitigation Measure GEO-1 would reduce this impact to a less-than-significant level. This conclusion is consistent with the analysis presented in the PEIR, and the mitigation measures set forth in the PEIR would adequately address this impact.

Impact GEO-7: Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature (less than significant with mitigation)

According to the PEIR, sedimentary rocks—geologic units with potential to contain paleontological resources—include most units in the program area. Because most of the program area is characterized by geologic units considered to be sensitive for paleontological resources, this analysis assumes the same to be true of the project area. Substantial damage to or destruction of significant paleontological resources would be a significant impact. Implementation of Mitigation Measures GEO-7a, Retain a qualified professional paleontologist to monitor significant ground-disturbing activities; GEO-7b, Educate construction personnel in recognizing fossil material; and GEO-7c, Stop work if substantial fossil remains are encountered during construction, would reduce this impact to a less-than-significant level. This conclusion is consistent with the analysis presented in the PEIR, and the mitigation measures set forth in the PEIR would adequately address this impact.

3.7 Greenhouse Gas Emissions

The proposed project is a subset of the APWRA-wide repowering evaluated in the PEIR. Project-level greenhouse gas (GHG) emissions and associated impacts were assessed using the same methods as described above in Section 3.3, *Air Quality*. Refer to Appendix A for additional modeling detail, including equipment and vehicle assumptions.

3.7.1 Existing Conditions

Because GHG emissions result in global impacts, and because project-specific activities are commensurate with those evaluated in the PEIR, the description of existing conditions presented in the PEIR is incorporated here by reference. Note that since publication of the PEIR, the state has adopted Senate Bill (SB) 32, which requires ARB to ensure that statewide GHG emissions are reduced to at least 40 percent below 1990 levels by 2030. The 2017 Climate Change Scoping Plan presents measures the state will implement to achieve this goal, including furthering the renewables portfolio standard (RPS) to require that 50% of retail electricity sales originate from renewable resources by 2030.

3.7.2 Environmental Impacts and Mitigation Measures

Impact GHG-1: Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment (less than significant)

The PEIR concluded that while repowering the APWRA (an aggregate of all the anticipated repowering projects proposed within the program area) would result in short-term emissions of GHGs, primarily associated with construction activities, and the potential operational emission of sulfur hexafluoride (SF_6), the repowering projects collectively would result in an annual net reduction of more than 100,000 tons of carbon dioxide equivalent emissions (CO_2e). This beneficial impact would be less than significant.

As detailed in Appendix A, the wind energy generated by the proposed project would reduce GHG emissions by approximately 8,700 metric tons CO_2e per year. This would more than offset emissions generated by project construction and O&M. This impact would be less than significant, and no mitigation is required. This conclusion is consistent with the analysis presented in the PEIR.

Impact GHG-2: Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases (less than significant with mitigation)

The PEIR evaluated the repowering of the program area for consistency with the following measures relevant to GHG emissions.

- Assembly Bill (AB) 32 Scoping Plan Measure T-7: Heavy-Duty Vehicle GHG Emission Reduction (Aerodynamic Efficiency)—Discrete Early Action.
- AB 32 Scoping Plan Measure E-3: Renewables Portfolio Standard (RPS)
- AB 32 Scoping Plan Measure H-6: High Global Warming Potential Gas Reductions from Stationary Sources – SF_6 Leak Reduction and Recycling in Electrical Applications.

- Alameda County Climate Action Plan (CAP) Measure E-10**:** Require new construction to use building materials containing recycled content.
- Alameda County CAP Measure WS-2: Strengthen the Construction and Demolition Debris Management Ordinance.

With the exception of Scoping Plan Measure E-3, the PEIR concluded that the repowering projects could potentially conflict with all these measures. However, implementation of Mitigation Measures GHG-2a, Implement best available control technology for heavy-duty vehicles; GHG-2b, Install low SF_6 leak rate circuit breakers and monitoring; GHG-2c, Require new construction to use building materials containing recycled content; and GHG-2d, Comply with construction and demolition debris management ordinance, would reduce this potential impact to a less-than-significant level.

In concept, the proposed project is being pursued to promote sustainability and further alternative energy. Although the measures included in the AB 32 Scoping Plan, 2017 Climate Change Scoping Plan, and Alameda County CAP are necessarily broad, the proposed project is generally consistent with the goals and desired outcomes of the plans. The additional wind energy generated by the project will directly support the decarbonization of the electric power sector, helping California to meet its GHG goals in SB 32 and Executive Order S-3-05.[5] Nevertheless, emissions generated by the project could potentially conflict with applicable measures in the AB 32 Scoping Plan, 2017 Climate Change Scoping Plan, and Alameda County CAP. This conclusion is consistent with the analysis presented in the PEIR, and the mitigation measures set forth in the PEIR would adequately address this impact.

[5] California EO S-03-05 seeks to reduce emissions to at least 80 percent below 1990 levels by 2050.

3.8 Hazards and Hazardous Materials

The PEIR evaluated the potential for impacts relating to hazards and hazardous materials. Because the characteristics of the project area and the activities associated with project construction and operation are the same as those contemplated in the PEIR, existing hazards and hazardous conditions in the project area are generally the same as those analyzed in the PEIR. The use of hazardous materials during project construction, operations, and maintenance activities would be similar. Issues related to the project's proximity to schools and airports are covered under the PEIR as are wildland fire requirements. Due to the larger generation capacity of the project's proposed turbines, fewer turbines would be required. However, they would be larger and would be subject to City review.

3.8.1 Existing Conditions

The project area is in the central portion of the program area between I-580 and Altamont Pass Road. The conditions described in the PEIR also pertain to the project area. The characteristics of the project regarding the type of potential hazards in the area and the type and use of hazardous materials would not differ from those addressed in the PEIR. The potential for and type of blade throw, addressed in the discussion of Impact HAZ-9, would not differ from those hazards considered in the PEIR; however, discussion of the larger turbines is included for purposes of full disclosure.

3.8.2 Environmental Impacts and Mitigation Measures

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

The PEIR concluded that project construction would involve small quantities of commonly used materials, such as fuels and oils, to operate construction equipment. The project would implement standard construction BMPs, as required by the SWPPP, to reduce pollutant emissions during construction. This impact would be less than significant, and no mitigation is required. This conclusion is consistent with the analysis presented in the PEIR.

Impact HAZ-2: Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment (less than significant)

The project would not involve activities or materials beyond those described in the PEIR. Further, the project would not create a significant hazard to the public or the environment through reasonably foreseeable upset or accident conditions involving the release of hazardous materials into the environment. This impact would be less than significant, and no mitigation is required. This conclusion is consistent with the analysis presented in the PEIR.

Impact HAZ-3: Emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school (no impact)

There are no public or private K–12 schools within 0.25 mile of the project area. The two nearest schools, Andrew N. Christensen Middle School and Leo R Croce Elementary School in Livermore, are approximately 4 miles west of the nearest project facilities; accordingly it is unlikely that hazardous materials would be emitted or released within 0.25 mile of any schools. There would be no impact, and no mitigation is required. This conclusion is consistent with the analysis presented in the PEIR.

Impact HAZ-4: Location on a hazardous materials site, creating a significant hazard to the public or the environment (less than significant with mitigation)

A search of relevant databases was conducted to confirm that the project site is not located on or meets the Cortese List requirements (CalEPA 2018a; CalEPA 2018b; DTSC 2018a; DTSC 2018b; SWRCB 2018). The project would involve soil disturbance and, as outlined in the PEIR, the City would require that a Phase I Environmental Site Assessment (and remediation, if necessary) be conducted prior to construction activities. Accordingly, implementation of Mitigation Measure HAZ-4, Perform a Phase I Environmental Site Assessment prior to construction activities and remediate if necessary, would reduce this impact to a less-than-significant level. This conclusion is consistent with the analysis presented in the PEIR, and the mitigation measures set forth in the PEIR would adequately address this impact.

Impact HAZ-5: Location within an airport land use plan area or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, resulting in a safety hazard for people residing or working in the project area (no impact)

The closest public airport to the project area is the Byron Airport, approximately 5.66 miles north-northeast of the project area. Livermore Municipal Airport is approximately 8.7 miles west-southwest of the project area, and Tracy Municipal Airport is approximately 11 miles east-southeast of the project area. Because the project area is not within 2 miles of a public airport, implementation of the project would not result in a safety hazard for people residing or working in the project area. No impact would result. This conclusion is consistent with the analysis presented in the PEIR, and the mitigation measures set forth in the PEIR would adequately address this impact.

Impact HAZ-6: Location within the vicinity of a private airstrip, resulting in a safety hazard for people residing or working in the project area (no impact)

The closest private airport is Meadowlark Airfield, 5 miles south-southwest of the project area. Because the project area is not within 2 miles of a private airport, implementation of the project would not result in a safety hazard for people residing or working in the project area and no impact would result. This conclusion is consistent with the analysis presented in the PEIR. .

Impact HAZ-7: Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan (less than significant with mitigation)

The PEIR concluded that impacts associated with emergency response plans would be temporary, occurring primarily during construction, with the potential to cause a substantial traffic increase on local county roads. Implementation of Mitigation Measure TRA-1, Develop and implement a construction traffic control plan, would reduce this impact to a less-than-significant level. This

conclusion is consistent with the analysis presented in the PEIR, and the mitigation measures set forth in the PEIR would adequately address this impact.

Impact HAZ-8: 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)

The PEIR concluded that while wind turbines can cause fire ignitions, sufficient fire response providers are already in place. Moreover, fewer turbines and the improved safety of newer models associated with repowered projects are anticipated to result in a reduction of potential fire ignitions. The PEIR concluded that the fire-related impact of individual repowering projects would be less than significant, and no mitigation is required. This conclusion is consistent with the analysis presented in the PEIR.

Impact HAZ-9: During normal operation, the effects of bending and stress on rotor blades over time could lead to blade failure and become a potential blade throw hazard (less than significant)

Blade throw impacts as assessed in the PEIR rely largely on the Updated Alameda County Turbine Setback Requirements (Table 2-3), which are calculated on the basis of rotor (blade) length, total turbine height, or a percentage of the general setback, with some setbacks also adjusted for elevation. The proposed turbines would be within the PEIR specifications for rotor type, tower type, tower (hub) height, and total turbine height. However, blade lengths would be up to 15 feet longer than the blades contemplated in the PEIR. The general and alternative minimum setbacks that use rotor length to apply a setback standard would only apply to adjacent parcels (with and without approved wind energy CUPs). Since the blade lengths differ by only 15 feet, this change would add an additional setback distance of 16.5 feet (1.1 times blade length) when applying the setback requirements—a greater (i.e., more protective) setback than that based on the blade lengths envisioned in the PEIR. Prior to final project design, the City would ensure that all requirements of the alternative minimum setbacks are met. Rooney would be required to either meet the County's general setbacks or meet the conditions required to implement alternative minimum setbacks. Adherence to setback requirements would ensure that impacts related to blade throw are maintained at a less-than-significant level, and no mitigation is required. This conclusion is consistent with the analysis presented in the PEIR. Thus, the change to a larger turbine would have no change to the approach or findings regarding setbacks and hazards. There would be no new significant effects or substantial increase in the severity of effects for hazards.

3.8.3 References

California Department of Toxic Substances Control (DTSC). 2018a. List of Hazardous Waste and Substances sites from Department of Toxic Substances Control (DTSC) EnviroStor database. Search conducted on July 18, 2018

California Department of Toxic Substances Control (DTSC). 2018b. List of hazardous waste facilities subject to corrective action pursuant to Section 25187.5 of the Health and Safety Code. Search conducted on July 18, 2018.

California Environmental Protection Agency (CalEPA). 2018a. List of solid waste disposal sites identified by Water Board with waste constituents above hazardous waste levels outside the waste management unit. Search conducted on July 18, 2018

California Environmental Protection Agency (CalEPA). 2018b. List of active CDO and CAO from Water Board. Search conducted on July 18, 2018.

State Water Quality Control Board (SWRCB). 2018. List of Leaking Underground Storage Tank Sites by County and Fiscal year from Waterboard GeoTracker database. Search conducted on July 18, 2018.

3.9 Hydrology and Water Quality

The PEIR contemplated the impacts on hydrology and water quality that could result from construction and operation of wind repowering projects throughout the program area. The only change relevant to this resource topic from the projects considered in the PEIR is the larger capacity of the turbines proposed for use in the proposed project: 3.6–3.8 MW turbines contrasted with a maximum of 3 MW considered in the PEIR. The consequence of this change would be at least one fewer turbine under the proposed project than would have been necessary to achieve the same nameplate capacity (i.e., 25.1 MW) under the turbine specifications considered in the PEIR. Despite the larger generative capacity of the Rooney turbines, their overall dimensions would be within the parameters established in the PEIR—most importantly (pertaining to the introduction of impervious surfaces), the footprint of individual turbines would be the same as described in the PEIR.

3.9.1 Existing Conditions

As disclosed in the PEIR, the project area is southwest of the San Joaquin–Sacramento Delta in the Clifton Court Forebay, Mountain House Creek, and Upper Arroyo Las Positas watersheds, and is in the Tracy groundwater subbasin. The conditions described in the PEIR pertain to the project area.

3.9.2 Environmental Impacts and Mitigation Measures

Impact WQ-1: Violate any water quality standards or waste discharge requirements (less than significant with mitigation)

The project would entail the same types of construction activities as disclosed in the PEIR, and these activities would potentially result in the same range of impacts. Trenching and site preparation create areas of bare soil that can increase sediment discharge to receiving waters. Implementation of Mitigation Measure WQ-1, Comply with NPDES requirements, (e.g., erosion control BMPs, implementation of a SWPPP), would reduce these impacts to a less-than-significant level. This conclusion is consistent with the analysis presented in the PEIR, and the mitigation measures set forth in the PEIR would adequately address this impact.

Impact WQ-2: Substantially deplete groundwater supplies or interfere substantially with groundwater recharge, resulting in a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted) (less than significant)

As disclosed in the PEIR, project construction and operation would entail minimal use of water beyond standard BMPs such as road and worksite dust control measures. Accordingly, demand on groundwater supplies would be negligible. The PEIR also concluded that the relatively small footprints (approximately 0.46 acre for the seven turbines of the proposed project) of the wind turbines would not interfere with groundwater infiltration. Moreover, while the PEIR assumed a maximum turbine capacity of 3 MW, the project contemplates 3.8 MW turbines, requiring seven turbines to achieve the project's 25.1 MW capacity compared to eight turbines under the PEIR

assumptions. The decrease of one turbine would equate to approximately 0.06 acre less of impermeable surface than that considered in the PEIR. The impact would be less than significant, and no mitigation is required. This conclusion is consistent with the analysis presented in the PEIR.

Impact WQ-3: Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation onsite or offsite (less than significant with mitigation)

As disclosed in the PEIR, no turbines would be constructed within existing drainage areas, and project facilities would be designed to avoid any downstream erosion during the rainy season. Implementation of Mitigation Measure WQ-1 would ensure that program-related stormwater runoff would not result in substantial erosion or downstream siltation. This conclusion is consistent with the analysis presented in the PEIR, and the mitigation measures set forth in the PEIR would adequately address this impact.

Impact WQ-4: Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding onsite or offsite (less than significant with mitigation)

The analysis in the PEIR concluded that the most extensive increase in impervious surfaces would result from road improvements necessary to accommodate the new, larger turbines. However, as disclosed in the PEIR, the soils underlying the program area overall are high runoff soils, with a runoff potential comparable to that of compacted gravel roads. Because the roads themselves would not consequently entail introduction of new impervious surfaces, and because the NPDES stormwater Construction General Permit requires postconstruction runoff management measures be implemented if the SWPPP determines that the project could cause an increase in peak runoff flows, implementation of Mitigation Measure WQ-1 would reduce this impact to a less-than-significant level. This conclusion is consistent with the analysis presented in the PEIR, and the mitigation measures set forth in the PEIR would adequately address this impact.

Impact WQ-5: Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff (less than significant with mitigation)

As established in the PEIR, the program area does not currently have existing or planned stormwater drainage facilities; accordingly, the project would not exceed capacities of such facilities. Moreover, as previously discussed, implementation of Mitigation Measure WQ-1 would ensure that there would be no increase in the rate of polluted runoff. This conclusion is consistent with the analysis presented in the PEIR, and the mitigation measures set forth in the PEIR would adequately address this impact.

Impact WQ-6: Otherwise substantially degrade water quality (less than significant with mitigation)

Because, as disclosed in the PEIR, the program area does not currently have any substantial water quality issues or drainages that could carry a substantial amount of polluted runoff to receiving waters, project construction is not anticipated to substantially degrade water quality. Moreover, project operation would not result in a substantial amount of additional runoff. Implementation of Mitigation Measure WQ-1 would reduce the potential impacts of construction-related discharges to

a less-than-significant level. This conclusion is consistent with the analysis presented in the PEIR, and the mitigation measures set forth in the PEIR would adequately address this impact.

Impact WQ-7: Place housing within a 100-year flood hazard area, as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map (no impact)

No portion of the project area is within a 100-year flood hazard area.

Impact WQ-8: Place within a 100-year flood hazard area structures that would impede or redirect floodflows (no impact)

No portion of the project area is within a 100-year flood hazard area.

Impact WQ-9: Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam (less than significant)

As disclosed in the PEIR, because the project area is in rolling hills and there are no 100-year floodplains, the likelihood of a flood event in the area is considered minimal. This conclusion is consistent with the analysis presented in the PEIR.

Impact WQ-10: Contribute to inundation by seiche, tsunami, or mudflow (less than significant with mitigation)

As the PEIR concluded, the likelihood of seiche or tsunami is considered minimal. A mudflow is also highly unlikely, but such an event could be possible in rolling hills if proper BMPs are not used during the construction process. Implementation of Mitigation Measure WQ-1 would ensure that project-related stormwater runoff would be properly contained and would drain appropriately to preclude buildup or to cause rills and sedimentation that could result in the potential for a mudflow. This conclusion is consistent with the analysis presented in the PEIR, and the mitigation measures set forth in the PEIR would adequately address this impact.

3.10 Land Use and Planning

Because there are no established communities in the program area that would be bisected by any proposed repowering project, wind energy production is an established and permitted use throughout the APWRA, and the program area is not within an HCP or NCCP area, the PEIR concluded that there would be no impacts on land use and planning associated with repowering projects within the program area. Because the project area is a subset of the program area, the analysis remains valid. Accordingly, this resource topic is not addressed further in this analysis.

3.11 Noise

The results of the analysis conducted for proposed project are presented in *Sound Technical Report for the Rooney Ranch Wind Repowering Project, Alameda County, California* (Sound Technical Report) (Appendix D).

3.11.1 Existing Conditions

The project vicinity is primarily agricultural with some scattered rural residences. Sound sources in the project area are primarily traffic on local and distant roadways and natural sources such as birds and wind blowing through tall grass. The older existing turbines in the project area have been removed. New turbines that have been installed on adjacent properties are a source of sound but are not dominant in the sound environment of the project area.

3.11.2 Environmental Impacts and Mitigation Measures

Impact NOI-1: Exposure of residences to noise from new wind turbines (less than significant)

The PEIR disclosed that exceedances of the 55 A-weighted decibel (dBA) threshold established by the County could affect sensitive receptors, and that such exceedances would constitute a significant impact. However, only two sensitive receptors are present in the project vicinity (R68 and R69), both of which are approximately 2,000 feet from the nearest turbine location. According to the tables in the PEIR, such a distance would preclude noise from turbines reaching the County's threshold. The Sound Technical Report (Appendix D) supports this determination. Consequently, this impact would be less than significant, and no mitigation is required. This conclusion is consistent with the analysis presented in the PEIR.

Impact NOI-2: Exposure of residences to noise during decommissioning and new turbine construction (less than significant with mitigation)

The PEIR concluded that some residences in the program area would be within distances of construction activities that could expose them to noise levels in exceedance of Alameda County noise ordinance standards. The receptors identified as R69 and R68 in the Sound Technical report are within approximately 400 and 1,000 feet of access road construction, respectively. Although most project components are at much greater distances, the noise levels to which these receptors could be exposed during construction of project facilities and infrastructure would constitute a significant impact. As disclosed in the PEIR, implementation of Mitigation Measure NOI-2, Employ noise-reducing practices during decommissioning and new turbine construction, would reduce these impacts to a less-than-significant level. This conclusion is consistent with the analysis presented in the PEIR, and the mitigation measures set forth in the PEIR would adequately address this impact.

3.12 Population and Housing

The PEIR anticipated continuing growth in Alameda County. However, it concluded that the repowering projects constituting the overall APWRA repowering effort would not induce population growth either directly or indirectly. Because the project is a subset of this analysis, the analysis remains valid. The project would not involve creation of any housing units, nor would it displace any existing housing units or people. There would be no impact and no mitigation is required; accordingly, this resource topic is not addressed further in this analysis.

3.13 Public Services

The PEIR concluded that there would be no impacts on public services. Because the reduction in the number of turbines and the improved safety of newer models would result in a reduction of potential fire ignitions, there would be no increase in the demand for fire protection services. Police protection facilities and infrastructure required to protect the program area are already in place to protect the existing wind energy facilities. No residences would be constructed, no schools are present in the project area, and because the PEIR concluded that repowering the APWRA would not induce growth, there would be no increased demand on schools or recreational facilities. There would be no impact and no mitigation is required. This conclusion is consistent with the analysis presented in the PEIR. Because the project area is a subset of the program area, the analysis remains valid. Accordingly, this resource topic is not addressed further in this analysis.

3.14 Recreation

Because there are no recreational facilities in the entire program area and because the repowering program overall would not lead to an increase in use of nearby facilities, the PEIR found that there would be no impact on recreational facilities and no mitigation is required. Because the project area is a subset of the program area, the analysis remains valid. Accordingly, recreation is not further considered in this analysis.

3.15 Transportation/Traffic

The PEIR evaluated traffic impacts for a generic 80 MW project as well as for two specific projects in the program area. No project-specific traffic analysis was necessary for the proposed project because the impacts identified as potentially significant in the PEIR (e.g., increased traffic congestion and traffic hazards) would also apply to the project, and the mitigation measures set forth in the PEIR would adequately address those impacts.

3.15.1 Existing Conditions

The road network and other existing conditions pertaining to traffic and transportation was described in the PEIR for the entire program area, of which the project area is a subset. Most of the project area would be accessed using roads as described in the PEIR (e.g., I-580, Altamont Pass Road). The program-level analysis adequately discloses the potential impacts associated with the proposed project.

3.15.2 Environmental Impacts and Mitigation Measures

Impact TRA-1: Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation, including mass transit and non-motorized travel and relevant components of the circulation system, including, but not limited to, intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit or conflict with an applicable congestion management program, including, but not limited to, level-of-service standards and travel demand measures or other standards established by the county congestion management agency for designated roads or highways (less than significant with mitigation)

The PEIR concluded that construction activities could cause a substantial traffic increase on local county roads that provide direct access to project construction sites, because these roads generally have low traffic volumes. However, these increases, while they could degrade traffic operations, would be of temporary duration. Implementation of Mitigation Measure TRA-1, Develop and implement a construction traffic control plan, would reduce this impact to a less-than-significant level. This conclusion is consistent with the analysis presented in the PEIR, and the mitigation measures set forth in the PEIR would adequately address this impact.

Impact TRA-2: Conflict with an applicable congestion management program, including, but not limited to, level-of-service standards and travel demand measures or other standards established by the county congestion management agency for designated roads or highways (less than significant)

The PEIR concluded that project-related traffic would not substantially degrade the level of service on a congestion management program–designated roadway (i.e., I-580) because it would contribute such a small percentage of total traffic. Accordingly, this impact would be less than significant, and no mitigation is required. This conclusion is consistent with the analysis presented in the PEIR.

Impact TRA-3: Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks (less than significant)

The PEIR concluded that repowering in the program area would not result in a change in air traffic patterns or any increase in related safety risks. Because the project would be within the area analyzed, the project-level impact would also be less than significant, and no mitigation is required. This conclusion is consistent with the analysis presented in the PEIR.

Impact TRA-4: Substantially increase hazards because of a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment) due to construction-generated traffic (less than significant with mitigation)

The PEIR concluded that the presence of large, slow-moving construction and delivery vehicles could increase traffic safety hazards. Additionally, some of these vehicles could exceed roadway load and size limits. Permits from California Department of Transportation District 4 and other relevant jurisdictions would be required for such vehicles. Compliance with permit requirements and implementation of Mitigation Measure TRA-1 would reduce this impact to a less-than-significant level. This conclusion is consistent with the analysis presented in the PEIR, and the mitigation measures set forth in the PEIR would adequately address this impact.

Impact TRA-5: Result in inadequate emergency access due to construction-generated traffic (less than significant with mitigation)

Large, slow-moving construction and delivery vehicles and temporary road and lane closures could delay or obstruct the movement of emergency vehicles, as disclosed in the PEIR. Implementation of Mitigation Measure TRA-1 would reduce this impact to a less-than-significant level. This conclusion is consistent with the analysis presented in the PEIR, and the mitigation measures set forth in the PEIR would adequately address this impact.

Impact TRA-6: Conflict with adopted policies, plans, or programs regarding public transit, bicycle or pedestrian facilities, or otherwise decrease the performance or safety of such facilities (less than significant with mitigation)

The PEIR concluded that no public transit services or pedestrian facilities are present on the project access routes in the program area. However, oversized construction vehicles could potentially disrupt the movement of bicycles traveling on the shoulders of some local access roads (e.g., Altamont Pass Road), and lane or road closures associated with material deliveries could temporarily disrupt bicycle access. Implementation of Mitigation Measure TRA-1 would reduce this impact to a less-than-significant level. This conclusion is consistent with the analysis presented in the PEIR, and the mitigation measures set forth in the PEIR would adequately address this impact.

3.16 Utilities and Service Systems

The PEIR analyzed potential impacts on utilities and service systems and determined that there would be no impacts or that impacts would be less than significant. Similarly, as described in the PEIR, wastewater generation and drainage for the project would not affect capacity of a water or wastewater treatment facility. Because the proposed project would entail one fewer turbine than the same nameplate capacity would require under the assumptions of the PEIR (i.e., a maximum 3 MW turbine), water needs for the project would be equal to or less than those analyzed in the PEIR. Water for construction activities would be provided through an agreement with municipal or private suppliers and would therefore not affect any water supply or require expanded entitlements. Solid waste would be generated primarily during project construction and would not exceed the capacity of landfills. The project would be required to comply with local, state, and federal solid waste regulations. There would be no impact and no mitigation is required. This conclusion is consistent with the analysis presented in the PEIR. Accordingly, this resource topic is not addressed further in this analysis.

Chapter 4
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Appendix A

Air Quality Technical Memorandum

Appendix B

Biological Resources Evaluation Report

Appendix C

Cultural Resources Survey Report

Appendix D

Sound Technical Report