

Chapter 4

Alternatives Analysis

According to Section 15126.6 of the State CEQA Guidelines, an EIR must describe a reasonable range of feasible alternatives to the project or project location that could feasibly attain most of the basic project objectives and that would avoid or substantially lessen any of the significant impacts of the proposed project. Accordingly, alternatives that do not avoid or substantially lessen significant impacts of a project do not need to be analyzed in an EIR. Additionally, the State CEQA Guidelines require analysis of the No-Project Alternative to allow decision makers to compare the impacts of project approval with the impacts of not approving the project. The EIR must evaluate the comparative merits of the alternatives. The EIR must identify the environmentally superior alternative other than the No-Project Alternative.

An EIR is not required to present the alternatives analysis at the same level of detail as the assessment of the project, and it is not required to consider every conceivable alternative to a project. Rather, an EIR must consider a reasonable range of potentially feasible alternatives that will foster informed decision making.

This chapter is organized into the sections listed below.

- *Alternatives Screening Process* describes the program and project objectives, significant impacts of the project, and the alternatives considered.
- *Alternatives Analyzed* presents a qualitative analysis comparing the alternatives considered with the proposed project.
- *Environmentally Superior Alternative* presents the alternative that would result in the least amount of environmental impacts.

4.1 Alternatives Screening Process

CEQA requires that an EIR describe a reasonable range of feasible alternatives to the project, or to the location of the project, that could substantially reduce one or more of the project's significant environmental impacts while meeting most or all of the project's objectives. The EIR is required to analyze the potential environmental impacts of each of the alternatives, although not at the same level of detail as that at which the project is analyzed. There must be sufficient detail to facilitate comparing the respective merits of the alternatives.

Key provisions of the State CEQA Guidelines (Section 15126.6) pertaining to the alternatives analysis are summarized below.

- The discussion of alternatives will focus on alternatives to the project or its location that are feasible, meet most or all of the project objectives, and would substantially reduce one or more of the project's significant effects.
- The range of alternatives must include the *No-Project* alternative. The no-project analysis will discuss the existing conditions at the time the notice of preparation was published, as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved based on current plans and consistent with available infrastructure and community

services. The No-Project alternative is not required to be feasible, meet any of the project objectives, or reduce the project's expected impacts to any degree.

- The range of alternatives required in an EIR is governed by a *rule of reason*; therefore, the EIR must evaluate only those alternatives necessary to permit a reasoned choice. An EIR is not required to analyze every conceivable alternative to a project.
- An EIR need not consider an alternative whose effects cannot be reasonably ascertained, whose implementation is remote and speculative, or that would not achieve the basic project objectives.

4.1.1 Screening Criteria

A range of potential alternatives was subjected to screening criteria to eliminate those potential alternatives that do not qualify as alternatives under CEQA. As discussed above, there was no attempt to include every conceivable alternative in this range. Rather, the County selected a number of representative alternatives to consider. The screening criteria for the potential alternatives are relatively simple.

- Does the alternative meet most or all of the program and project objectives?
- Is the alternative potentially feasible?
- Would the alternative substantially reduce one or more of the significant effects associated with the program or project?

4.1.2 Project Objectives

As described in Chapter 2, *Program Description*, the two primary objectives of the program are to facilitate efficient wind energy production through repowering and to avoid and minimize impacts on terrestrial and avian wildlife caused by repowered wind turbine construction, operation, and maintenance in the program area. The specific program objectives are listed below.

- Allow for appropriate and compatible repowering and operation of wind turbines consistent with existing repowering timeline requirements set forth in the existing CUPs, related agreements, and project-specific power purchase agreements.
- Reduce avian mortality caused by wind energy generation in the program area through repowering.
- Meet the County's goals to provide environmentally sensitive, clean-renewable wind energy for the twenty-first century as identified in the ECAP (Policies 168–175 and Programs 73–76).
- Help meet the Governor's Executive Order S-14-08 in meeting the Renewables Portfolio Standard (RPS) target that all retail sellers of electricity serve 33% of their load with renewable energy by 2020.
- Contribute to state progress toward air quality improvement and greenhouse gas emission reduction goals, as set forth in Assembly Bill 32.
- Improve habitat quality in the program area through removal of roads and existing wind turbines and their supporting infrastructure, resulting in lower overall operational footprint, and providing a wide range of habitat benefits to sensitive terrestrial and avian species.

4.1.3 Feasibility

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

4.1.4 Significant Impacts

Table 4-1 lists the significant impacts of the program alternatives identified in Chapter 3, *Impact Analysis*.

The impacts of program Alternatives 1 and 2 were found to be very similar. Because turbines were assumed to be installed in projects consistent with the size typically proposed, approximately 80 MW per project, construction on a daily and seasonal basis would be the same. Because the number of turbines associated with program Alternative 2 would be a maximum of 21 more than that associated with program Alternative 1 (using the smallest nameplate capacity—1.6 MW—under consideration), the additional construction period would not be much longer than under Alternative 1. Therefore, impacts related to construction, such as air emissions and traffic, would be the same.

Because program Alternative 2 would result in the construction of more turbines, generating more power, that alternative would have a greater impact related to bird and bat mortality, an impact found to be significant and unavoidable under all alternatives with the exception of the No Project alternative. Other impacts that may be higher under program Alternative 2 than under program Alternative 1, such as impacts related to cultural or paleontological resources, visual resources, or impacts related to erosion, could all be reduced to a less-than-significant level by the same mitigation measures as those provided for program Alternative 1. For these reasons, the impacts presented in Table 4-2 represent the impacts of both program Alternative 1 and program Alternative 2.

Impacts related to the following topics would remain significant with implementation of mitigation.

- **Air Quality:** Construction emissions of ROG and NO_x for program Alternatives 1 and 2 are greater than the BAAQMD thresholds after implementation of Mitigation Measures AQ-1 and AQ-2 (Table 3.3-11); accordingly, cumulative construction impacts would be significant and unavoidable. For the Golden Hills and the Patterson Pass projects individually, construction emissions of NO_x would be greater than the BAAQMD thresholds after implementation of Mitigation Measures AQ-1 and AQ-2 (Tables 3.3-16 and 3.3-21); accordingly, cumulative construction impacts would be significant and unavoidable.
- **Biological Resources:** Operation of the either program alternative, as well as the Golden Hills and Patterson Pass projects individually, would result in avian and bat mortality associated with turbine collisions, including effects on raptors, other birds, and bats migrating through and wintering in the program area. Although mitigation can reduce these impacts, the likelihood of ongoing turbine-related mortality would constitute a significant and unavoidable impact.
- **Cumulative Traffic Impacts:** Cumulative impacts on traffic operation, safety hazards, emergency access, and bicycle facilities could result from program and project construction activities if they take place concurrently with construction of the Sand Hill Repowering Project, which has been identified as resulting in a significant and unavoidable traffic impact.

Table 4-1. Summary of Significant Impacts and Required Mitigation Measures

Impact	Significance before Mitigation	Mitigation	Significance after Mitigation
Aesthetics			
AES-1: Temporary visual impacts caused by construction activities	S	AES-1: Limit construction to daylight hours	LTS
AES-2: Have a substantial adverse effect on a scenic vista	S	AES-2a: Require site development review AES-2b: Maintain site free of debris and restore abandoned roadways AES-2c: Screen surplus parts and materials	LTS
AES-3: Substantially damage scenic resources, including but not limited to trees, rock outcroppings, and historic buildings along a scenic highway	S	AES-2a: Require site development review AES-2b: Maintain site free of debris and restore abandoned roadways AES-2c: Screen surplus parts and materials AES-3: Do not construct turbines on the undeveloped portion of the Golden Hills project area along Flynn Road	LTS
AES-4: Substantially degrade the existing visual character or quality of the site and its surrounding	S	AES-2a: Require site development review AES-2b: Maintain site free of debris and restore abandoned roadways AES-2c: Screen surplus parts and materials AES-3: Do not construct turbines on the undeveloped portion of the Golden Hills project area along Flynn Road	LTS
AES-5: Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area	S	AES-5: Analyze shadow flicker distance and incorporate changes into project design to address shadow flicker if necessary	LTS
AES-6: Consistency with state and local policies	S	AES-2a: Require site development review AES-2b: Maintain site free of debris and restore abandoned roadways AES-2c: Screen surplus parts and materials	LTS

Impact	Significance before Mitigation	Mitigation	Significance after Mitigation
		AES-3: Do not construct turbines on the undeveloped portion of the Golden Hills project area along Flynn Road AES-5: Analyze shadow flicker distance and incorporate changes into project design to address shadow flicker if necessary	
Agricultural and Forestry Resources			
AG-1: Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to nonagricultural use	S	AG-1: Avoid conversion of Prime Farmland	LTS
AG-5: Involve other changes in the existing environment that, due to their location or nature, could result in conversion of Farmland to nonagricultural use or conversion of forest land to non-forest use	S	AG-1: Avoid conversion of Prime Farmland	LTS
Air Quality			
AQ-2: Violate any air quality standard or contribute substantially to an existing or projected air quality violation	S	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	SU
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)	S	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	SU
AQ-4: Expose sensitive receptors to substantial pollutant concentrations	S	AQ-2a: Reduce construction-related air pollutant emissions by implementing applicable BAAQMD Basic Construction Mitigation Measures	LTS

Impact	Significance before Mitigation	Mitigation	Significance after Mitigation
Biological Resources			
<p>BIO-1: Potential for ground-disturbing activities to result in adverse effects on special-status plants or habitat occupied by special-status plants</p>	S	<p>AQ-2b: Reduce construction-related air pollutant emissions by implementing measures based on BAAQMD's Additional Construction Mitigation Measures</p> <p>BIO-1a: Conduct surveys to determine the presence or absence of special-status plant species</p> <p>BIO-1b: Implement best management practices to avoid and minimize impacts on special-status species</p> <p>BIO-1c: Avoid and minimize impacts on special-status plant species by establishing activity exclusion zones</p> <p>BIO-1d: Compensate for impacts on special-status plant species</p> <p>BIO-1e: Retain a biological monitor during ground-disturbing activities in environmentally sensitive areas</p>	LTS
<p>BIO-2: Adverse effects on special-status plants and natural communities resulting from the introduction and spread of invasive plant species</p>	S	<p>BIO-2: Prevent introduction, spread, and establishment of invasive plant species</p>	LTS
<p>BIO-3: Potential mortality of or loss of habitat for vernal pool branchiopods and curved-footed hygrotus diving beetle</p>	S	<p>BIO-1b: Implement best management practices to avoid and minimize impacts on special-status species</p> <p>BIO-1e: Retain a biological monitor during ground-disturbing activities in environmentally sensitive areas</p> <p>BIO-3a: Conduct preconstruction surveys for habitat for special-status wildlife species</p> <p>BIO-3b: Implement measures to avoid, minimize, and mitigate impacts on vernal pool branchiopods and curved-footed hygrotus diving beetle</p>	LTS
<p>BIO-4: Potential disturbance or mortality of and loss of suitable habitat for valley elderberry longhorn beetle</p>	S	<p>BIO-1b: Implement best management practices to avoid and minimize impacts on special-status species</p> <p>BIO-1e: Retain a biological monitor during ground-disturbing activities in environmentally sensitive areas</p>	LTS

Impact	Significance before Mitigation	Mitigation	Significance after Mitigation
		<p>BIO-3a: Conduct preconstruction surveys for habitat for special-status wildlife species</p> <p>BIO-4a: Implement measures to avoid or protect habitat for valley elderberry longhorn beetle</p> <p>BIO-4b: Compensate for direct and indirect effects on valley elderberry longhorn beetle</p>	
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	S	<p>BIO-1b: Implement best management practices to avoid and minimize impacts on special-status species</p> <p>BIO-1e: Retain a biological monitor during ground-disturbing activities in environmentally sensitive areas</p> <p>BIO-3a: Conduct preconstruction surveys for habitat for special-status wildlife species</p> <p>BIO-5a: Implement best management practices to avoid and minimize effects on special-status amphibians</p> <p>BIO-5b: Compensate for loss of habitat for special-status amphibians</p> <p>BIO-5c: Restore disturbed annual grasslands</p>	LTS
BIO-6: Potential disturbance or mortality of and loss of suitable habitat for western pond turtle	S	<p>BIO-1b: Implement best management practices to avoid and minimize impacts on special-status species</p> <p>BIO-1e: Retain a biological monitor during ground-disturbing activities in environmentally sensitive areas</p> <p>BIO-3a: Conduct preconstruction surveys for habitat for special-status wildlife species</p> <p>BIO-6: Conduct preconstruction surveys for western pond turtle and monitor construction activities if turtles are observed</p>	LTS
BIO-7: Potential disturbance or mortality of and loss of suitable habitat for Blainville's horned lizard, Alameda whipsnake, and San Joaquin coachwhip	S	BIO-1b: Implement best management practices to avoid and minimize impacts on special-status species	LTS

Impact	Significance before Mitigation	Mitigation	Significance after Mitigation
		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	
BIO-8: Potential construction-related disturbance or mortality of special-status and non-special-status migratory birds	S	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	LTS
BIO-9: Permanent and temporary loss of foraging habitat for western burrowing owl, tricolored blackbird, and other special-status and non-special-status birds	S	BIO-5b: Compensate for loss of habitat for special-status amphibians BIO-5c: Restore disturbed annual grasslands BIO-9: Compensate for the permanent loss of foraging habitat for western burrowing owl	LTS
BIO-10: Potential injury or mortality of and loss of habitat for San Joaquin kit fox and American badger	S	BIO-1b: Implement best management practices to avoid and minimize impacts on special-status species	LTS

Impact	Significance before Mitigation	Mitigation	Significance after Mitigation
BIO-11: Avian mortality resulting from interaction with wind energy facilities	S	<p>BIO-1e: Retain a biological monitor during ground-disturbing activities in environmentally sensitive areas</p> <p>BIO-3a: Conduct preconstruction surveys for habitat for special-status wildlife species</p> <p>BIO-5c: Restore disturbed annual grasslands</p> <p>BIO-10a: Implement measures to avoid and minimize potential impacts on San Joaquin kit fox and American badger</p> <p>BIO-10b: Compensate for loss of suitable habitat for San Joaquin kit fox and American badger</p>	SU
BIO-12: Potential mortality or disturbance of bats from roost removal or disturbance	S	<p>BIO-1b: Implement best management practices to avoid and minimize impacts on special-status species</p> <p>BIO-3a: Conduct preconstruction surveys for habitat for special-status wildlife species</p> <p>BIO-12a: Conduct bat roost surveys</p>	LTS

Impact	Significance before Mitigation	Mitigation	Significance after Mitigation
		BIO-12b: Avoid removing or disturbing bat roosts	
BIO-14: Turbine-related fatalities of special-status and other bats	S	<p>BIO-14a: Site and select turbines to minimize potential mortality of bats</p> <p>BIO-14b: Implement postconstruction bat fatality monitoring program for all repowering projects</p> <p>BIO-14c: Prepare and publish annual monitoring reports on the findings of bat use of the project area and fatality monitoring results</p> <p>BIO-14d: Develop and implement a bat adaptive management plan</p> <p>BIO-14e: Compensate for expenses incurred by rehabilitating injured bats</p>	SU
BIO-15: Potential for road infrastructure upgrades to result in adverse effects on alkali meadow	S	BIO-15: Compensate for the loss of alkali meadow habitat	LTS
BIO-16: Potential for road infrastructure upgrades to result in adverse effects on riparian habitat	S	BIO-16: Compensate for the loss of riparian habitat	LTS
BIO-18: Potential for road infrastructure upgrades to result in adverse effects on wetlands	S	BIO-18: Compensate for the loss of wetlands	LTS
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	S	<p>BIO-1b: Implement best management practices to avoid and minimize impacts on special-status species</p> <p>BIO-1e: Retain a biological monitor during ground-disturbing activities in environmentally sensitive areas</p> <p>BIO-3a: Conduct preconstruction surveys for habitat for special-status wildlife species</p> <p>BIO-4a: Implement measures to avoid or protect habitat for valley elderberry longhorn beetle</p> <p>BIO-5a: Implement best management practices to avoid and minimize effects on special-status amphibians</p> <p>BIO-5c: Restore disturbed annual grasslands</p>	SU

Impact	Significance before Mitigation	Mitigation	Significance after Mitigation
		<p>BIO-7a: Implement best management practices to avoid and minimize effects on special-status reptiles</p> <p>BIO-8a: Implement measures to avoid and minimize potential impacts on special-status and non-special-status nesting birds</p> <p>BIO-8b: Implement measures to avoid and minimize potential impacts on western burrowing owl</p> <p>BIO-10a: Implement measures to avoid and minimize potential impacts on San Joaquin kit fox and American badger</p> <p>BIO-11b: Site turbines to minimize potential mortality of birds</p> <p>BIO-11c: Use turbine designs that reduce avian impacts</p> <p>BIO-11d: Incorporate avian-safe practices into design of turbine-related infrastructure</p> <p>BIO-11e: Retrofit existing infrastructure to minimize risk to raptors</p> <p>BIO-11i: Implement an avian adaptive management program</p> <p>BIO-12a: Conduct bat roost surveys</p> <p>BIO-12b: Avoid removing or disturbing bat roosts</p> <p>BIO-14a: Site and select turbines to minimize potential mortality of bats</p> <p>BIO-14d: Develop and implement a bat adaptive management plan</p>	
BIO-20. Conflict with local plans or policies	S	<p>BIO-1a: Conduct surveys to determine the presence or absence of special-status species</p> <p>BIO-1b: Implement best management practices to avoid and minimize impacts on special-status species</p> <p>BIO-1c: Avoid and minimize impacts on special-status plant species by establishing activity exclusion zones</p> <p>BIO-1d: Compensate for impacts on special-status plant species</p>	LTS

Impact	Significance before Mitigation	Mitigation	Significance after Mitigation
		<p>BIO-1e: Retain a biological monitor during ground-disturbing activities in environmentally sensitive areas</p>	
		<p>BIO-3a: Implement measures to avoid, minimize, and mitigate impacts on vernal pool branchiopods and curved-footed hygrotus diving beetle</p>	
		<p>BIO-4a: Implement measures to avoid or protect habitat for valley elderberry longhorn beetle</p>	
		<p>BIO-4b: Compensate for direct and indirect effects on valley elderberry longhorn beetle</p>	
		<p>BIO-5a: Implement best management practices to avoid and minimize effects on special-status amphibians</p>	
		<p>BIO-5b: Compensate for loss of habitat for special-status amphibians</p>	
		<p>BIO-5c: Restore disturbed annual grasslands</p>	
		<p>BIO-7a: Implement best management practices to avoid and minimize effects on special-status reptiles</p>	
		<p>BIO-7b: Compensate for loss of habitat for special-status reptiles</p>	
		<p>BIO-8a: Implement measures to avoid and minimize potential impacts on special-status and non-special-status nesting birds</p>	
		<p>BIO-8b: Implement measures to avoid and minimize potential impacts on western burrowing owl</p>	
		<p>BIO-9: Compensate for the permanent loss of foraging habitat for western burrowing owl</p>	
		<p>BIO-10a: Implement measures to avoid and minimize potential impacts on San Joaquin kit fox and American badger</p>	
		<p>BIO-10b: Compensate for loss of suitable habitat for San Joaquin kit fox and American badger</p>	
		<p>BIO-15: Compensate for the loss of alkali meadow habitat</p>	

Impact	Significance before Mitigation	Mitigation	Significance after Mitigation
		BIO-16: Compensate for the loss of riparian habitat BIO-18: Compensate for the loss of wetlands	
Cultural Resources			
CUL-1: Cause a substantial adverse change in the significance of a historical resource	S	CUL-1a: Avoid historic resources CUL-1b: Appropriate recordation of historic resources	LTS
CUL-2: Cause a substantial adverse change in the significance of an archaeological resource	S	CUL-2a: Conduct a preconstruction cultural field survey and cultural resources inventory and evaluation CUL-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	LTS
CUL-3: Disturb any human remains, including those interred outside of formal cemeteries	S	CUL-3: Stop work if human remains are encountered during ground-disturbing activities	LTS
Geology and Soils			
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	S	GEO-1: Conduct site-specific geotechnical investigation and implement design recommendations in subsequent geotechnical report	LTS
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	S	GEO-1: Conduct site-specific geotechnical investigation and implement design recommendations in subsequent geotechnical report	LTS
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	S	GEO-1: Conduct site-specific geotechnical investigation and implement design recommendations in subsequent geotechnical report	LTS
GEO-4: Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death, as a result of landsliding	S	GEO-1: Conduct site-specific geotechnical investigation and implement design recommendations in subsequent geotechnical report	LTS

Impact	Significance before Mitigation	Mitigation	Significance after Mitigation
GEO-6: Be located on expansive soil, creating substantial risks to life or property	S	GEO-1: Conduct site-specific geotechnical investigation and implement design recommendations in subsequent geotechnical report	LTS
GEO-7: Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature	S	GEO-1: Conduct site-specific geotechnical investigation and implement design recommendations in subsequent geotechnical report	LTS
Greenhouse Gas Emissions			
GHG-2: Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases	S	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 GHG-2d: Comply with construction and demolition debris management ordinance	LTS
Hazards and Hazardous Materials			
HAZ-4: Location on a hazardous materials site, creating a significant hazard to the public or the environment	S	HAZ-4: Perform a Phase I Environmental Site Assessment prior to construction activities and remediate if necessary	LTS
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	S	HAZ-5: Coordinate with the Contra Costa ALUC prior to final design	LTS
HAZ-7: Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan	S	TRA-1: Develop and implement a construction traffic control plan	LTS
Hydrology and Water Quality			
WQ-1: Violate any water quality standards or waste discharge requirements	S	WQ-1: Comply with NPDES requirements	LTS
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	S	WQ-1: Comply with NPDES requirements	LTS

Impact	Significance before Mitigation	Mitigation	Significance after Mitigation
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	S	WQ-1: Comply with NPDES requirements	LTS
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	S	WQ-1: Comply with NPDES requirements	LTS
WQ-6: Otherwise substantially degrade water quality	S	WQ-1: Comply with NPDES requirements	LTS
WQ-10: Contribute to inundation by seiche, tsunami, or mudflow	S	WQ-1: Comply with NPDES requirements	LTS
Noise			
NOI-1: Exposure of residences to noise from new wind turbines	S	NOI-1: Perform project-specific noise studies and implement measures to comply with County noise standards	LTS
NOI-2: Exposure of residences to noise during decommissioning and new turbine construction	S	NOI-2: Employ noise-reducing practices during decommissioning and new turbine construction	LTS
Transportation/Traffic			
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	S	TRA-1: Develop and implement a construction traffic control plan	LTS
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	S	TRA-1: Develop and implement a construction traffic control plan	LTS

Impact	Significance before Mitigation	Mitigation	Significance after Mitigation
TRA-5a-1: Result in inadequate emergency access due to construction-generated traffic	S	TRA-1: Develop and implement a construction traffic control plan	LTS
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	S	TRA-1: Develop and implement a construction traffic control plan	LTS

S = significant; LTS = less than significant; SU = significant and unavoidable.

4.1.5 Alternatives Subjected to Screening

The following alternatives were considered and subjected to the screening process described above. All of these alternatives are program alternatives. Alternatives to the two specific projects proposed (Golden Hills and Patterson Pass) were not specifically considered for the following reasons:

- Project site alternatives for either project could be either the other project site or another site within the Program Area. Impacts of construction of a windfarm project at either of the project sites or at other locations in the Program Area are considered and presented in this EIR.
- The alternatives considered for the Program would also apply to the projects. For example, an alternative to the Golden Hills or Patterson Pass project could be no repowering and reauthorization of the existing turbines at those project sites. The impacts of such an alternative on a comparative level are presented in this EIR.

No Project—No Repowering, Reauthorization of Existing CUPs

Under the No Project—No Repowering, Reauthorization of Existing CUPs alternative, there would be no decommissioning of the existing turbines. The existing first- and second-generation turbines would continue to operate and no new repowered turbines would be installed. This alternative would require that new CUPs be authorized.

No Repowering, Full Decommissioning

Under the No Repowering, Full Decommissioning alternative, no repowering would occur and the wind turbines in the program area would be decommissioned at the expiration of the existing CUPs. The existing windfarms would continue operating using the existing facilities until the CUPs from the County expire. Decommissioning efforts would begin with the expiration of the first CUP. Following expiration of all CUPs and decommissioning of the existing wind turbines, the program area would be restored to pre-permit conditions.

Fewer New Turbines

Under this alternative, there would be fewer new turbines and a smaller nameplate capacity than under the proposed program. The program area boundaries would be the same as under the proposed program, and all existing first- and second-generation turbines would be decommissioned.

Reduced Footprint

Under the Reduced Footprint alternative, the same number of new turbines would be installed as under the proposed program within a reduced program area boundary. Because there would be the same number of turbines in a smaller area, turbine density would be greater under this alternative than under the proposed program.

Avoid Specific Biologically Sensitive / Constrained Areas

This alternative would prescribe a turbine layout that would avoid placing new turbines in areas that would necessitate the construction of new roads traversing biologically sensitive or constrained areas. This alternative's perimeter and the total maximum number of wind turbines would be the same as under the proposed program.

No New Roads

This alternative would entail the same number of turbines in the same program area as the proposed program. However, no road improvements would be made. Although new roads are not required for the decommissioning of existing turbines, larger and longer trucks and cranes would be required for transport and installation of repowered turbine components. Because the existing roads would not 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.

Shrouded (Smaller) Turbines

Under this alternative, the existing first- and second-generation turbines would be replaced with shrouded turbines. The shrouded turbines would be smaller and shorter than the turbines proposed under the program. Experimental technologies are being developed involving such turbines. The turbines would have nameplate capacities of approximately 100 kW and would be mounted on free-standing smooth exterior finished towers. These turbines would have an approximate hub height of 120 feet, rotor/shroud diameter of 66 feet, and total tower height of 153 feet. A test project to install 40 shrouded turbines and evaluate their effectiveness at reducing avian mortality on three sites in the APWRA is the subject of a separate EIR (Sand Hill Wind Project, SCH no. 2013032016), and an additional 300 such turbines may be installed in the future depending on the evaluation of the first phase.

Airborne Wind Turbines

Under this alternative, the existing first- and second-generation wind turbines would be replaced with airborne wind turbines (AWTs). A conceptual AWT has been proposed, operation as a tethered airfoil with a wingspan of approximately 28 meters (91.9 feet) and a generation capacity of 600 kW. The wing would launch and land by hovering like a helicopter. The AWT operates in vertical loops from its tether, like the tip of a conventional wind turbine blade, completing each rotation in about 1–2 minutes. The altitude of the AWT during operation ranges from 459 to 1,067 feet.

4.1.6 Alternatives Considered but Eliminated from Further Analysis

Alternatives that Do Not Meet the Program Objectives

Alternatives that do not avoid or substantially lessen significant impacts of the project or that do not meet the project objectives do not need to be analyzed in an EIR. Most of the alternatives screened, other than the no-project alternatives, would meet the program objectives because each alternative would repower the existing wind turbines with current-generation turbines, with the intent of reducing avian mortality and creating clean and renewable energy consistent with the County's goals for wind energy and the Governor's Renewable Portfolio Standard target. However, at this time there is no evidence or information indicating that shrouded turbines or the AWTs would reduce avian mortality. Accordingly, because the Shrouded (Smaller) Turbine alternative and the Airborne Wind Turbine alternative would not meet all the program objectives; these alternatives are not considered further in this PEIR.

Infeasible Alternatives

Infeasible alternatives are not required to be considered in the EIR. The Reduced Footprint alternative would not be feasible. Alameda County has developed an updated list of turbine setback requirements, based on multiples of the total height of the wind turbine, including the blade (i.e., the taller the turbine, the larger the setback). Setback requirements, in conjunction with technological considerations (e.g., distance between turbines to prevent turbulence effects), would not allow the same number of wind turbines in a smaller area. Therefore, this alternative is considered infeasible and is not considered further in this PEIR.

4.2 Alternatives Analyzed in the EIR

Of the eight alternatives considered in alternative screening, three were screened out, as described above. The following five alternatives were evaluated in comparison to the proposed program in this PEIR.

- No Project—No Repowering, Reauthorization of Existing CUPs
- No Repowering, Full Decommissioning
- Fewer New Turbines
- Avoid Specific Biologically Sensitive / Constrained Areas
- No New Roads

In several cases, the severity of the impact may be the same under the alternatives as measured against the CEQA significance thresholds (e.g., both the program and a given alternative would result in a less-than-significant impact). However, the actual magnitude of the impact may be slightly different, providing the basis for a conclusion of greater or lesser impacts, even though both are considered less than significant. Table 4-2 presents a summary matrix of the program impacts in comparison with the five alternatives.

Table 4-2. Comparison of Program Alternatives to the Program

Environmental Topic Area	Level of Program Impact	Impact Compared to Proposed Program				
		No Project—No Repowering, Reauthorization of Existing CUPs	No Repowering, Full Decommissioning	Fewer New Turbines	Avoid Specific Biologically Sensitive / Constrained Areas	No New Roads
Aesthetics	Less than significant with mitigation	Less	Less	Similar but slightly less	Similar	Greater
Agricultural and Forestry Resources	Less than significant with mitigation	Less	Less	Similar	Similar	Similar
Air Quality	Significant and unavoidable	Less	Similar but slightly less	Similar	Similar	Similar but slightly greater
Biological Resources	Significant and unavoidable	Greater	Less	Less	Similar but slightly less	Similar but slightly less
Cultural Resources	Less than Significant with mitigation	Less	Similar but slightly less	Similar but slightly less	Similar	Similar but slightly less
Geology, Soils, Mineral Resources, and Paleontology	Less than significant with mitigation	Less	Similar but slightly less	Similar	Similar	Similar
Greenhouse Gas Emissions	Less than significant with mitigation	Less	Greater	Similar but slightly greater	Similar	Greater
Hazards and Hazardous Materials	Less than significant with mitigation	Less	Similar but slightly less	Similar but slightly less	Similar	Similar
Hydrology and Water Quality	Less than significant with mitigation	Less	Less	Similar but slightly less	Similar	Similar but slightly less
Land Use and Planning	Less than significant	Similar	Similar	Similar	Similar	Similar
Noise (Short-term)	Less than significant with mitigation	Less	Similar but slightly less	Similar	Similar	Similar but slightly greater
Noise (Long-term)	Less than significant with mitigation	Similar but slightly greater	Less	Less	Similar	Similar

Environmental Topic Area	Level of Program Impact	Impact Compared to Proposed Program				
		No Project—No Repowering, Reauthorization of Existing CUPs	No Repowering, Full Decommissioning	Fewer New Turbines	Avoid Specific Biologically Sensitive / Constrained Areas	No New Roads
Population and Housing	Less than significant	Less	Less	Similar but slightly less	Similar	Similar
Public Services	Less than significant	Less	Similar but slightly less	Similar	Similar	Similar
Recreation	No impact	Similar	Similar	Similar	Similar	Similar
Traffic/Transportation	Less than significant with mitigation	Less	Similar but slightly less	Similar	Similar	Similar but slightly less
Utilities and Service Systems	Less than significant	Less	Similar but slightly less	Similar	Similar	Similar

Note: Although the alternatives may result in lesser or greater impacts compared with the proposed program, the difference may be incremental and would not change the significance conclusion or requirement for mitigation.

4.2.1 No Project—No Repowering, Reauthorization of Existing CUPs

Aesthetics

Under the No Project—No Repowering, Reauthorization of Existing CUPs alternative, there would be neither a temporary nor any permanent change to current views, visual character, daytime glare or nighttime lighting. Therefore, impacts on visual/aesthetics would be less under this alternative than under the proposed program.

Agricultural and Forestry Resources

As described in Section 3.2, *Agricultural and Forestry Resources*, there are 24.21 acres of Prime Farmland and 0.36 acre of Farmland of Statewide Importance in the program area. Because there would be no construction or change in land use, there would be no potential conversion of Prime Farmland or Farmland of Statewide Importance to a nonagricultural use under the No Repowering—Reauthorization of Existing CUPs alternative. Therefore, the impacts on Agricultural and Forestry Resources under this alternative would be less than under the proposed program.

Air Quality

The No Project—No Repowering, Reauthorization of Existing CUPs alternative would not generate short-term construction-related emissions that would result from construction of the proposed program. Therefore, this alternative would avoid the significant and unavoidable impacts related to construction emissions, and impacts on air quality would be less than under the proposed program.

Biological Resources

Because the No Project—No Repowering, Reauthorization of Existing CUPs alternative would not entail ground-disturbing activities, the effects on terrestrial biological resources would be less than under the program. However, because a key objective of the program (which could be accomplished by the replacement of older wind turbines with newer designs) is the reduction of avian fatalities, avian fatalities would likely be greater under this alternative than under the program.

Cultural Resources

Several cultural resources are present in the program area. The potential disruption to historic and archaeological resources associated with the program would not occur under this alternative because there would be no ground disturbance. Therefore, the impacts on cultural resources under this alternative would be less than under the program.

Geology, Soils, Mineral Resources, and Paleontological Resources

The No Project—No Repowering, Reauthorization of Existing CUPs alternative would not result in any of the geologic/soils impacts associated with construction and operation of new turbines. Mitigation measures are identified in this EIR that would reduce potential geology and soils impacts to a less-than-significant level. This alternative would have no need for such mitigation. Therefore,

the impacts on geology, soils, mineral resources, and paleontological resources under this alternative would be less than under the program.

Greenhouse Gas Emissions

The No Project—No Repowering, Reauthorization of Existing CUPs alternative would not generate any short-term construction-related GHG emissions. However, the full annual GHG emissions reduction of approximately 97,000 metric tons of CO₂e associated with the proposed program would not occur under this alternative, although wind energy would still be generated and GHG emissions would be reduced concomitant with the amount of wind energy generated by those turbines. This alternative would have no significant impact on GHG emissions.

Hazards and Hazardous Materials

Because the No Project—No Repowering, Reauthorization of Existing CUPs alternative would entail no new construction activities, construction workers would not be exposed to potentially hazardous materials associated with construction materials, ground disturbance, or decommissioning older turbines. Operational impacts associated with hazards and hazardous materials would be similar to those under the proposed program, with the exception of potential blade throw hazards. The potential blade throw hazard would be greater, because the existing old-generation turbines are subject to higher rates of structural failure than are new-generation turbines. Consequently, impacts related to hazards and hazardous materials under this alternative would be greater than under the proposed program.

Hydrology and Water Quality

Under this alternative, there would be no polluted runoff or changes to water quality because there would be no construction. There would be no changes to the impermeable surfaces, and the existing drainage pattern would remain unchanged. Consequently, impacts related to hydrology and water quality under this alternative would be less than under the proposed program.

Land Use and Planning

The No Project—No Repowering, Reauthorization of Existing CUPs alternative would result in the continuation of the existing uses in the program area. The effects of this alternative would be similar to those under the proposed program as both are consistent with the existing land use plans, policies, and regulations.

Noise

Under the No Project—No Repowering, Reauthorization of Existing CUPs alternative it is possible that substantial degradation of a wind turbine or group of wind turbines could lead to an increase of noise levels above the existing operating noise levels as a result of aging or a lack of maintenance of the existing turbines. Additionally, the new turbines that would be installed under the proposed program are expected to be quieter than the existing turbines. Although construction noise would not occur, operational noise would be higher than under the proposed program. Under this alternative, impacts related to noise would be less than under the proposed program in the short term, and similar but slightly greater in the long term.

Population and Housing

The No Project—No Repowering, Reauthorization of Existing CUPs alternative would have no effect on the local labor pool and there would be no indirect effect on population or housing. Therefore, the impacts on population and housing under this alternative would be less than under the proposed program.

Public Services

Under this alternative, there would be no changes in demand on service providers and, therefore, no impacts. Therefore, impacts on public services under this alternative would be less than impacts under the proposed program.

Recreation

Like the program, this alternative would not result in an increase in the use of existing neighborhood and regional parks and would not include recreational facilities. Therefore, impacts on recreation under this alternative would be similar to those under the proposed program.

Traffic/Transportation

The No Project—No Repowering, Reauthorization of Existing CUPs alternative would not generate construction-related truck traffic. Therefore, the impacts on traffic and transportation under this alternative would be less than under the proposed program.

Utilities and Service Systems

The No Project—No Repowering, Reauthorization of Existing CUPs alternative would not result in any change in water consumption, wastewater generation, stormwater drainage, or solid waste during construction or operation. Therefore, the impacts on utilities and service systems under this alternative would be less than under the proposed program.

4.2.2 No Repowering, Full Decommissioning

Aesthetics

The temporary impacts on aesthetics associated with decommissioning the existing windfarm facilities would be similar to those under the proposed program. Once all the turbines are removed, the program area would be returned to pre-permit conditions and would not contain any development. Therefore, the impacts on aesthetics under this alternative would be less than under the program because the program area would be returned to pre-project conditions.

Agricultural and Forestry Resources

As described previously, there are 24.21 acres of Prime Farmland and 0.36 acre of Farmland of Statewide Importance in the Program area. Under this alternative, there would be no conversion of Prime Farmland or Farmland of Statewide Importance to a nonagricultural use. Therefore, the impacts on agricultural and forestry resources under this alternative would be less than under the proposed program.

Air Quality

As shown in Section 3.3, *Air Quality*, Table 3.3-5, the amount of ROG and NO_x emissions from decommissioning and foundation removal would exceed the BAAQMD significance thresholds. Implementation of mitigation identified in Chapter 3 would reduce emissions of ROG during the decommissioning and foundation removal phase, but emissions of NO_x would still exceed the BAAQMD threshold, resulting in a significant and unavoidable impact. Therefore, impacts on air quality under this alternative would be similar to, but slightly less than those under the proposed program.

Biological Resources

Decommissioning activities associated with this alternative would result in the same impacts on terrestrial resources as those associated with the proposed program; however, there would be no disturbance associated with new construction. Moreover, because no new turbines would be installed, there would be a complete elimination of turbine-related avian and bat fatalities. The impacts on biological resources under this alternative would be less than those under the proposed program.

Cultural Resources

Decommissioning the existing wind turbines under this alternative could result in disruption of known or unknown archaeological resources or human remains, but would likely not affect historic resources. Because no new wind turbines would be installed, there would be no potential disruption to cultural resources during installation. Consequently, the impacts on cultural resources under this alternative would be similar to, but slightly less than those under the proposed program.

Geology, Soils, Mineral Resources, and Paleontological Resources

Like the proposed program, this alternative could result in soil erosion or impacts on paleontological resources during decommissioning of the existing wind turbines. However, because there would be no installation of new turbines, there would be no impacts related to the potential placement of turbines near active faults or in areas with potential to experience strong ground shaking, seismic-related ground failure, or placement on expansive soils. Therefore, impacts related to geology, soils, mineral resources, and paleontological resources under this alternative would be similar to but slightly less than those under the proposed program.

Greenhouse Gas Emissions

Emissions associated with decommissioning the existing windfarm would be similar to those under the proposed program. However, the annual GHG emissions reduction of approximately 97,000 metric tons of CO₂e would not occur under this alternative. Accordingly, this alternative would have greater impacts than the proposed program.

Hazards and Hazardous Materials

Under this alternative, construction workers would not be exposed to any hazardous materials once decommissioning is complete. Once all wind turbines are decommissioned, operational impacts under this alternative would be less than under the proposed program because there would be no wind turbines in the program area and there would be no O&M workers. Consequently, impacts

related to hazards and hazardous materials under this alternative would be similar to but less than those under the proposed program.

Hydrology and Water Quality

Under this alternative, decommissioning activities could result in increased erosion and discharge of sediment to surface waters, similar to such impacts under the proposed program. Once all turbines are decommissioned, there would be a decrease in impermeable surfaces, thereby improving the existing drainage patterns. Therefore, impacts related to hydrology and water quality under this alternative would be less than those under the proposed program.

Land Use and Planning

The impacts under the No Repowering, Full Decommissioning alternative would be similar to those under the proposed program because both alternatives involve uses that are consistent with the existing land use plans, policies, and regulations.

Noise

The No Repowering, Full Decommissioning alternative would result in short-term noise impacts during decommissioning that would be similar to those under the proposed program. There would be no construction-related noise and no operational noise. Therefore, impacts related to noise in the short term would be similar to but slightly less than those under the proposed program; long-term noise impacts would be substantially less than under the proposed program.

Population and Housing

The No Repowering, Full Decommissioning alternative would require construction workers to decommission the existing turbines, but would require no construction workers for installation of repowered turbines or associated facilities. This alternative would not require any operations and maintenance workers. Therefore, the impacts on population and housing under this alternative would be less than under the proposed program.

Public Services

Like the proposed program, this alternative would not result in substantial increases in demand for any public services during decommissioning activities. This alternative could result in a decreased demand for police or fire services once all the turbines are decommissioned. Accordingly, impacts on public services under this alternative would be similar to but slightly less than those under the proposed program.

Recreation

Like the proposed program, this alternative would not result in an increase in the use of existing neighborhood and regional parks and would not include recreational facilities. Therefore, recreation impacts under this alternative would be similar to those under the proposed program.

Traffic/Transportation

Under this alternative, construction traffic from decommissioning the existing turbines would be similar to that under the proposed program, but there would be no traffic associated with installation of new turbines. There would be no operational traffic because there would no longer be O&M activities. Because this alternative would involve truck traffic related to decommissioning the existing wind turbines, the impacts on traffic and transportation under this alternative would be similar to but substantially less than those under the proposed program.

Utilities and Service Systems

Under this alternative, decommissioning activities could result in impacts on water consumption, wastewater generation, stormwater drainage, and solid waste similar to those under the proposed program. There would be no operational impact on utilities because there would no longer be O&M activities. Accordingly, the impacts on utilities and service systems under this alternative would be similar to but slightly less than those under the proposed program.

4.2.3 Fewer New Turbines

Aesthetics

This alternative would have short-term construction impacts similar to those of the proposed program. Under this alternative, the type of turbine would be the same as under the proposed program, but there would be fewer turbines distributed across the landscape. Consequently, there would be fewer turbines detracting from the natural landscape in the program area. Therefore, impacts on aesthetics under this alternative would be similar to but slightly less than those under the proposed program.

Agricultural and Forestry Resources

This alternative would entail fewer new turbines in the program area. Although there would be fewer new turbines than under the proposed program, there would be potential for the new turbines to be located on Prime Farmland or Farmland of Statewide Importance, thereby converting the land to a nonagricultural use. Consequently, this alternative would require the same mitigation measure that would be required for the proposed program, and impacts related to agricultural and forestry resources would be similar to those under the proposed program.

Air Quality

This alternative would include the decommissioning of the existing wind turbines, but would entail fewer new turbines. As shown in Table 3.3-5 in Section 3.3, *Air Quality*, ROG and NO_x emissions during program construction exceed the BAAQMD significance thresholds. This alternative would result in the same emissions as the proposed program during the decommissioning and foundation removal phase. However, emissions associated with construction of roads and turbine foundations, batch plant operations, and truck and worker trips could be less than under the proposed program. Installing fewer turbines could avoid the significant and unavoidable impact related to short-term construction-related ROG emissions. However, regardless of the number of turbines installed, NO_x emissions associated with decommissioning activities would still exceed the BAAQMD threshold.

This alternative would result in a significant and unavoidable impact; impacts on air quality under this alternative would be similar to those under the proposed program.

Biological Resources

Surface disturbance under this alternative would be less than under the proposed program. Similarly, the reduced number of turbines would result in fewer avian and bat fatalities. Consequently, this alternative would have less severe impacts on biological resources than the proposed program.

Cultural Resources

Under this alternative, the likelihood of encountering a cultural resource during installation activities is slightly less than under the proposed program. Therefore, the impacts on cultural resources under this alternative would be similar to but slightly less than under the proposed program.

Geology, Soils, Mineral Resources, and Paleontological Resources

This alternative involves no changes that would reduce the potential impacts on geology and soils than would be associated with the proposed program. Therefore, impacts related to geology, soils, mineral resources, and paleontological resources under this alternative would be similar to those under the proposed program.

Greenhouse Gas Emissions

Under this alternative, GHG emissions resulting from decommissioning the existing windfarm facilities would be similar to those under the proposed program. However, because there would be fewer new turbines, the annual GHG emissions reduction would be less than under the proposed program. Accordingly, this alternative would have an impact similar to but slightly greater than that under the proposed program.

Hazards and Hazardous Materials

Under this alternative, the area of ground disturbance during installation would be less and there would be fewer turbines with the potential for blade throw hazard. However, construction workers and O&M workers would be exposed to the same types of hazards and hazardous materials as under the proposed program. Consequently, impacts associated with hazards and hazardous materials under this alternative would be similar to but slightly less than those under the proposed program.

Hydrology and Water Quality

Under this alternative, the potential for construction activities to result in increased erosion and discharge of sediment to surface waters would be reduced, as would the likelihood of the new turbines being placed in areas that would impede existing drainage patterns. Consequently, the impacts on hydrology and water quality under this alternative would be similar to but slightly less than those under the proposed program.

Land Use and Planning

Impacts under this alternative would be similar to those under the proposed program because both involve uses that are consistent with the existing land use plans, policies, and regulations.

Noise

Under this alternative, short-term noise impacts during construction would be similar to those under the proposed program. Because there would be fewer wind turbines, this alternative would generate less long-term operational noise. Accordingly, short-term impacts related to noise would be similar to those under the proposed program and long-term impacts related to noise would be less than those under the proposed program.

Population and Housing

The Fewer New Turbines alternative would require the same number of construction workers to decommission the existing facilities, but would require fewer workers for new construction and fewer O&M workers because there would be fewer turbines. Like the proposed program, this alternative would not create new jobs and would therefore not induce population growth or an increased demand for housing. Also like the proposed program, this alternative would not involve the demolition or displacement of any existing housing. Therefore, impacts under this alternative would be similar to but slightly less than those under the proposed program.

Public Services

Like the proposed program, this alternative would not result in substantial increases in demand for any public service. Therefore, public services impacts under this alternative would be similar to those under the proposed program.

Recreation

Like the proposed program, this alternative would not result in an increase in the use of existing neighborhood and regional parks and would not include recreational facilities. Therefore, recreation impacts under this alternative would be similar to those under the proposed program.

Traffic/Transportation

Under this alternative, the reduction in the number of new turbines could slightly reduce overall truck traffic. Consequently, impacts related to traffic and transportation under this alternative would be similar to or slightly less than those under the proposed program.

Utilities and Service Systems

This alternative would result in decommissioning, construction, and O&M activities similar to those under the proposed program. Consequently, impacts on water consumption, wastewater generation, stormwater drainage, and solid waste under this alternative would be similar to those under the proposed program.

4.2.4 Avoid Specific Biologically Sensitive / Constrained Areas

Aesthetics

This alternative would result in the same decommissioning of existing turbines and installation of the same number of turbines as the proposed program. Therefore, aesthetic impacts under this alternative would be similar to those under the proposed program.

Agricultural and Forestry Resources

This alternative would entail new turbines in the program area, with the potential to be located in areas of Prime Farmland or Farmland of Statewide Importance, thereby converting the land use to a nonagricultural use. Consequently, this alternative would require the same mitigation measure that would be required for the proposed program, and impacts related to agricultural and forestry resources would be similar to those under the proposed program.

Air Quality

This alternative would result in the same construction and operational air quality emissions as the proposed program. Accordingly, impacts related to air quality under this alternative would be similar to those under the proposed program.

Biological Resources

Because this alternative would avoid biologically sensitive areas, the impacts on terrestrial biological resources would likely be less than under the proposed program. Because the number and size of wind turbines would be the same, avian and bat mortality would likely be the same under this alternative as under the proposed program.

Cultural Resources

This alternative involves no changes that would reduce the potential impacts on cultural resources compared with the proposed program. Therefore, impacts related to cultural resources under this alternative would be similar to those under the proposed program.

Geology, Soils, Mineral Resources, and Paleontological Resources

This alternative involves no changes that would reduce the potential impacts on geology and soils compared with the proposed program. Consequently, impacts related to geology, soils, mineral resources, and paleontological resources under this alternative would be similar to those under the proposed program.

Greenhouse Gas Emissions

This alternative would result in the same construction and operational GHG emissions as the proposed program. Consequently, impacts related to GHG emissions under this alternative would be similar to those under the proposed program.

Hazards and Hazardous Materials

Under this alternative, construction and O&M workers would be exposed to the same types of hazards and hazardous materials as under the proposed program. Consequently, impacts on hazards and hazardous materials under this alternative would be similar to those under the proposed program.

Hydrology and Water Quality

This alternative involves no changes that would reduce the potential impacts on hydrology and water quality compared with the proposed program. Consequently, impacts related to hydrology and water quality under this alternative would be similar to those under the proposed program.

Land Use and Planning

Impacts under this alternative would be similar to those under the proposed program because both involve land uses that are consistent with the existing land use plans, policies, and regulations.

Noise

This alternative involves no changes that would reduce the potential impacts on noise compared with the proposed program. Therefore, impacts related to noise under this alternative would be similar to those under the proposed program.

Population and Housing

This alternative would require the same number of construction workers for decommissioning and installation and the same number of O&M workers because it would entail the same number of turbines as the proposed program. Like the proposed program, this alternative would not create new jobs and would therefore not induce population growth or an increased demand for housing. Also like the proposed program, this alternative would not involve the demolition or displacement of any existing housing. Consequently, impacts on population and housing under this alternative would be similar to those under the proposed program.

Public Services

Like the proposed program, this alternative would not result in substantial increases in demand for any public services. Accordingly, impacts related to public services under this alternative would be similar to those under the proposed program.

Recreation

Like the proposed program, this alternative would not result in an increase in the use of existing neighborhood and regional parks and would not include recreational facilities. Consequently, impacts related to recreation under this alternative would be similar to those under the proposed program.

Traffic/Transportation

This alternative involves no changes that would reduce the potential impacts on traffic and transportation compared with the proposed program. Therefore, impacts related to traffic and transportation under this alternative would be similar to those under the proposed program.

Utilities and Service Systems

Decommissioning and construction activities and O&M activities under this alternative would be similar to those under the proposed program. Consequently, impacts on water consumption, wastewater generation, stormwater drainage, and solid waste under this alternative would be similar to those under the proposed program.

4.2.5 No New Roads

Aesthetics

The No New Roads 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 program area (i.e., residents and recreationists) could perceive the presence of helicopters as a greater visual impact than would occur under the proposed program. Therefore, during construction, impacts on aesthetics under this alternative would be greater than those under the proposed program. Operational impacts would be similar to those under the proposed program, unless helicopters were also required for maintenance activities, in which case impacts would be greater.

Agricultural and Forestry Resources

Because this alternative would involve installation of new turbines in the program area, there would be potential for the new turbines to be located Prime Farmland or Farmland of Statewide Importance, thereby converting the land use to a nonagricultural use. Accordingly, this alternative would require the same mitigation measure that would be required for the proposed program, and impacts related to agricultural and forestry resources would be similar to those under the proposed program.

Air Quality

Air quality emissions associated with decommissioning activities under this alternative would be the same as under the proposed program. Because there would be no new roads, there would be no emissions from road construction. As previously described, because the new turbine towers and blades would be significantly longer than the existing turbine components, larger and longer trucks and cranes would be required for transport and installation. However, because existing roads would not accommodate the trucks required for construction of the repowered wind turbines, helicopters would be used to transport large equipment and turbine components to the program sites for construction. Emissions from helicopter use would be substantially higher than emissions from road construction and truck trips. Because construction emissions are significant and unavoidable under the proposed program, impacts related to air quality under this alternative would be similar to but greater than those under the proposed program.

Biological Resources

Because no new roads would be constructed under this alternative, the extent of ground-disturbing activities would be substantially reduced compared with the activities conducted under the proposed program. However, the level of avian and bat mortality would be the same as under the proposed program.

Cultural Resources

Because no new roads would be constructed under this alternative, the extent of ground-disturbing activities would be substantially reduced; consequently, the likelihood of encountering cultural resources would also be less. Accordingly, impacts related to cultural resources under this alternative would be similar to but less than those under the proposed program.

Geology, Soils, Mineral Resources, and Paleontological Resources

This alternative involves no changes that would reduce the potential impacts on geology and soils compared with those under the proposed program. Because no new roads would be constructed, impacts on paleontological resources could be less than those under the proposed program. Overall, impacts related to geology, soils, mineral resources, and paleontological resources under this alternative would be similar to but slightly less than those under the proposed program.

Greenhouse Gas Emissions

GHG emissions associated with decommissioning activities under this alternative would be the same as under the proposed program. Because there would be no new roads, there would be no emissions associated with road construction. GHG emissions from helicopters used to transport components and equipment would be substantially higher than emissions from road construction and truck trips. This alternative would result in the same reduction in annual GHG emissions as the proposed program, but GHG emissions associated with construction would be much greater. Therefore, impacts related to GHG emissions under this alternative would be greater than those under the proposed program.

Hazards and Hazardous Materials

Under this alternative, construction workers and O&M workers would be exposed to the same types of hazards and hazardous materials as under the proposed program. Therefore, impacts on hazards and hazardous materials under this alternative would be similar to those under the proposed program. However, because new roads would not be constructed, public service suppliers, particularly emergency vehicles, could have reduced access to the program area. Accordingly, this alternative would result in a greater impact on safety pertaining to fire hazards or other situations requiring first responders than would the proposed program.

Hydrology and Water Quality

Under this alternative, no new roads would be constructed and construction activities would be less likely to impede water quality or drainage. Therefore, impacts related to hydrology and water quality under this alternative would be similar to but less than those under the proposed program.

Land Use and Planning

Impacts under this alternative would be similar to those under the proposed program because both involve land uses that are consistent with the existing land use plans, policies, and regulations.

Noise

Under this alternative, because no new roads would be constructed, the new turbines would be transported to the program area using helicopters. Noise generated by helicopters is generally louder than noise generated by trucks. However, the mitigation measures required for the proposed program construction would apply to this alternative, and would reduce impacts from helicopter noise to a less-than-significant level. This alternative would also reduce the amount of noise associated with off-site truck traffic because there would be fewer trucks driving to and from the program area. Operational impacts of this alternative would be the same as those of the proposed program. Therefore, short-term impacts related to noise would be similar to but slightly greater than those under the proposed program, and long-term impacts on noise would be similar to those under the proposed program.

Population and Housing

The No New Roads alternative would require the same number of construction workers for decommissioning and installation activities and the same number of O&M workers because there would be same number of turbines. However, no workers would be needed for road infrastructure improvements because no new roads would be constructed. Like the proposed program, this alternative would not create new jobs and would therefore not induce population growth or an increased demand for housing. Also like the proposed program, this alternative would not involve the demolition or displacement of any existing housing. Accordingly, impacts on population and housing under this alternative would be similar to those under the proposed program.

Public Services

Like the proposed program, this alternative would not result in substantial increases in demand for any public service. Therefore, impacts on public services under this alternative would be similar to those under the proposed program.

Recreation

Like the proposed program, this alternative would not result in an increase in the use of existing neighborhood and regional parks and would not include recreational facilities. Therefore, impacts on recreation under this alternative would be similar to those under the proposed program.

Traffic/Transportation

Under this alternative, the larger pieces of turbine equipment would be transported to the program area by helicopter and there would be fewer truck trips during construction. However, some of the smaller trucks required for construction would still access the program area. Accordingly, the impacts on traffic and transportation under this alternative would be similar to but less than those under the proposed program.

Utilities and Service Systems

Decommissioning, construction, and O&M activities under this alternative would be similar to those under the proposed program. Impacts on water consumption, wastewater generation, stormwater drainage, and solid waste under this alternative would be similar to those under the proposed program.

4.3 Environmentally Superior Alternative

The State CEQA Guidelines require that an environmentally superior alternative be identified. The environmentally superior alternative is the alternative that would avoid or substantially lessen, to the greatest extent, the environmental impacts associated with the project while feasibly attaining most of the major project objectives. If the alternative with the least environmental impact is determined to be the *no project alternative*, the EIR shall also identify an environmentally superior alternative among the other alternatives.

The identification of the environmentally superior alternative results from a comparison of the impacts associated with each alternative to those of the proposed program, as shown in Table 4-2. No feasible alternatives would reduce the significant and unavoidable impacts of the project to a less-than-significant level. Of all of the alternatives evaluated, the No Project—No Repowering, Reauthorization of Existing CUPs alternative would have greater impacts on birds and bats, as older models of turbines would not be replaced with models that reduce bird and bat mortality. The Fewer New Turbines alternative would reduce overall impacts slightly, with the exception of GHG emissions. GHG impacts would be greater, as the benefits of full repowering would be reduced. The No New Roads alternative would reduce impacts associated with grading and road construction but would substantially increase impacts related to air pollutant and GHG emissions, as helicopters would be used for construction. The Avoid Specific Biologically Sensitive / Constrained Areas alternative would have the same impacts of either of the program alternatives, and could be implemented at either the 417MW or 450MW level, but would reduce the significant impacts associated with disturbance of biological resources at specific geographic locations. These impacts are not significant and unavoidable, as they can be reduced to a less-than-significant level by feasible mitigation measures identified in this EIR, but the impacts would be avoided under the Avoid Specific Biologically Sensitive / Constrained Areas alternative.

As shown in Table 4-2, the No Repowering, Full Decommissioning alternative would have the least environmental impacts of all the alternatives analyzed. For this reason, it would be the environmentally superior alternative.