

## 3.8 Hazards and Hazardous Materials

This section describes the regulatory and environmental setting for hazards and hazardous materials in the program and project areas. It describes impacts involving hazards and hazardous materials that would result from implementation of the program and two individual projects. It also addresses general issues of public safety related to potential accidents, upset conditions including transport of materials, and airport-related safety hazards. Mitigation measures are prescribed where feasible and appropriate.

As defined by Section 25501 of the California Health and Safety Code (HSC), hazardous materials are those “that, because of their quantity, concentration, or physical or chemical characteristics, pose a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment.”

Hazardous waste is a subset of hazardous materials and defined as:

[W]astes that, because of their quantity, concentration, or physical, chemical, or infectious characteristics, may either cause, or significantly contribute to, an increase in mortality or an increase in serious illness, or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed (HSC 101075).

Hazardous materials can be categorized as nonradioactive chemical materials, radioactive materials, and biohazardous materials. Nonradioactive chemical materials typically fall within the definitions of hazardous materials and hazardous waste, as defined above.

### 3.8.1 Existing Conditions

#### Regulatory Setting

##### Federal

##### Hazardous Materials and Waste Handling

The federal Resource Conservation and Recovery Act of 1976 (RCRA) established a “cradle-to-grave” regulatory program governing the generation, transportation, treatment, storage, and disposal of hazardous waste. Under RCRA, individual states may implement their own hazardous waste programs in lieu of RCRA as long as the state program is at least as stringent as federal RCRA requirements. In California, the Department of Toxic Substances Control (DTSC) regulates the generation, transportation, treatment, storage, and disposal of hazardous material waste. The hazardous waste regulations establish criteria for identifying, packaging, and labeling hazardous wastes; dictate the management of hazardous waste; establish permit requirements for hazardous waste treatment, storage, disposal, and transportation; and identify hazardous wastes that cannot be disposed of in landfills. These regulations also require hazardous materials users to prepare written plans, such as a Hazardous Materials Business Plan, that describe hazardous materials inventory information, storage and secondary containment facilities, emergency response and evacuation procedures, and employee hazardous materials training programs. A number of agencies participate in enforcing hazardous materials management requirements, including DTSC, the

Regional Water Quality Control Boards, and the Alameda County Department of Environmental Health's Hazardous Materials/Waste Program.

### **Transportation of Hazardous Materials and Oversized Loads**

The U.S. Department of Transportation regulates hazardous materials transportation on all interstate roads. Within California, the state agencies with primary responsibility for enforcing federal and state regulations and for responding to transportation emergencies are the California Highway Patrol (CHP) and the California Department of Transportation (Caltrans). Together, federal and state agencies determine driver-training requirements, load-labeling procedures, and container specifications. Although special requirements apply to transporting hazardous materials, requirements for transporting hazardous waste are more stringent, and hazardous waste haulers must be licensed to transport hazardous waste on public roads.

Caltrans has the discretionary authority to issue special permits for the movement of vehicles/loads exceeding statutory limitations on the size, weight, and loading of vehicles contained in Division 15 of the California Vehicle Code. Requests for such special permits require the completion and application for a Transportation Permit.

### **Aviation Hazards**

Federal Aviation Administration (FAA) Regulations (14 CFR 77) establish standards for what constitutes an obstruction to navigable airspace. Obstructions include any object if it is: (1) 500 feet above ground level; (2) 200 feet above ground level or above the established airport elevation, whichever is higher, within 3 nautical miles of an airport; and (3) above a height within a terminal obstacle clearance area or en route obstacle clearance area. In addition, California Public Utilities Code section 21659 prohibits hazards near airports (as defined by 14 CFR 77) unless a permit allowing the construction is issued by the Caltrans Division of Aeronautics. FAA requires a developer to file a Notice of Proposed Construction (Form 7460) for any structure greater than 200 feet above ground level. The form requires a proposal for marking and lighting of wind turbines and towers. FAA determines if the proposed project would create a hazard to navigable airspace and issues either a Determination of No Hazard or a Notice of Presumed Hazard.

### **State of California**

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

### **Worker Safety**

Occupational safety standards exist in federal and state laws to minimize worker safety risks from both physical and chemical hazards in the work place. The California Division of Occupational Safety and Health (Cal/OSHA) and the federal Occupational Safety and Health Administration are the agencies responsible for assuring worker safety in the workplace.

Cal/OSHA assumes primary responsibility for developing and enforcing standards for safe workplaces and work practices within the state. At sites known to be contaminated, a site safety

plan must be prepared to protect workers. The site safety plan establishes policies and procedures to protect workers and the public from exposure to potential hazards at the contaminated site.

### **Fire Protection**

The California Public Resources Code (Section 4101 et seq.) includes fire safety requirements for which the Department of Forestry and Fire Protection (CAL FIRE) has adopted regulations (for example, Chapters 6 and 7 of Chapter 1.5 of 14 CCR) that apply to state responsibility areas (SRAs). As the name implies, SRAs are areas where CAL FIRE has primary responsibility for fire protection. During the fire hazard season, these regulations: (a) restrict the use of equipment that may produce a spark, flame, or fire; (b) require the use of spark arrestors<sup>1</sup> on equipment that has an internal combustion engine; (c) specify requirements for the safe use of gasoline-powered tools in fire hazard areas; and (d) specify fire-suppression equipment that must be provided onsite for various types of work in fire-prone areas.

SRAs include much of the wildlands in unincorporated Alameda County. According to CAL FIRE's hazards area mapping, the program area is located in a zone that has a moderate to high risk for wildland fire hazards within the SRA (California Department of Forestry and Fire Protection 2007).

### **Local**

#### **Alameda County General Plan**

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

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

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

#### **Goal 4. Minimize residents' exposure to the harmful effects of hazardous materials and waste.**

**P1.** Uses involving the manufacture, use or storage of highly flammable (or toxic) materials and highly water reactive materials should be located at an adequate distance from other uses and should be regulated to minimize the risk of on-site and off-site personal injury and property damage. The transport of highly flammable materials by rail, truck, or pipeline should be regulated and monitored to minimize risk to adjoining uses.

#### **East County Area Plan**

The ECAP contains the following goals, policies, and implementation programs related to fire protection.

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<sup>1</sup> A spark arrestor is a device that prohibits exhaust gases from an internal combustion engine from passing through the impeller blades where they could cause a spark. A carbon trap commonly is used to retain carbon particles from the exhaust.

### **Hazard Zones**

**Goal: To minimize the risks to lives and property due to environmental hazards.**

**Policy 134:** The County shall not approve new development in areas with potential natural hazards (flooding, geologic, wildland fire, or other environmental hazards) unless the County can determine that feasible measures will be implemented to reduce the potential risk to acceptable levels, based on site-specific analysis.

### **Environmental Health and Safety**

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

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

### **Alameda County Department of Environmental Health**

The Alameda County Department of Environmental Health (ACDEH) is the Certified Unified Program Agency (CUPA) for Alameda County. This certification by the California Secretary of Environmental Protection authorizes the ACDEH to implement the Unified Hazardous Waste and Hazardous Materials Management Regulatory Program specified in Health and Safety Code Chapter 6.11 of Division 20 (beginning with Section 25404). As the CUPA, ACDEH oversees the regulatory programs for Hazardous Materials Business Plans, underground and aboveground storage tanks, onsite treatment of hazardous waste, hazardous waste generators, and California Accidental Release Prevention.

### **Alameda County Construction and Debris Management Ordinance**

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

### **Contra Costa County Airport Land Use Compatibility Plan**

The Contra Costa Airport Land Use Compatibility Plan (ALUCP) is designed to promote compatibility between the airports in Contra Costa County and surrounding land uses. The ALUCP, as adopted by the Contra Costa County Airport Land Use Commission (ALUC), designates compatibility criteria applicable to local agencies in their preparation or amendment of land use plans and ordinances and to land owners in their design of new development.

The ALUCP is primarily concerned with land uses near the two public-use airports in the county, Buchanan Field Airport and Byron Airport.

Policies applicable to the program are excerpted below (Contra Costa County 2000).

### **6.5 Compatibility Zone “C1” Criteria**

6.5.4 *Height Limitations* – Unless specific exemption is granted (see Countywide Policy 4.3.2), the height of objects within Compatibility Zone C1 shall be limited in accordance with the Byron Airport Airspace Protection Surfaces drawing (Figure 4A).

- (a) Generally, there is no concern with regard to any object up to 100 feet tall unless it is located on high ground or it is a solitary object (e.g., an antenna) more than 35 feet taller than other nearby objects.
- (b) ALUC review is required for any proposed object taller than 100 feet.

### **6.7. Compatibility Zone “D” Criteria**

6.7.4. Height Limitations — See criteria for Compatibility Zone C1.

### **6.8 Height Exception Overlay Zone**

6.8.1. *Height Limitations* — Unless a specific exemption is granted (see Countywide Policy 4.3.2), the height of objects within the Height Exception Overlay Zone shall be limited in accordance with the Byron Airport Airspace Protection Surfaces drawing (Figure 4A).

- (a) Objects within this zone may exceed the height limits established in accordance with federal airspace protection standards if the height is less than that of nearby objects or terrain.
- (b) Generally, there is no concern with regard to any object up to 50 feet tall unless it is located on high ground or it is a solitary object (e.g., an antenna) more than 35 feet taller than other nearby objects.
- (c) ALUC review is required for any proposed object taller than 50 feet.

6.8.2. Other Development Conditions

- (a) Dedication of an aviation easement to Contra Costa County shall be required as a condition for approval of any development in this zone having a height in excess of 50 feet. See Countywide Policy 4.3.3.
- (b) All other criteria of the underlying compatibility zone shall apply.

### **Best Management Practices**

As discussed under Chapter 3.6, *Geology and Soils*, any future project that would disturb 1 or more acres of soil, or would disturb less than 1 acre but is part of a larger common plan of development must obtain coverage under General Permit Order 2010-0014-DWQ. Coverage under the General Permit requires development and implementation of a Stormwater Pollution Prevention Plan (SWPPP). The SWPPP must include plans for erosion and sediment control and would adhere to the County’s grading ordinance and BMPs. Typical construction erosion control BMPs are listed below.

- Perform clearing and earth moving activities only during dry weather.
- Limit construction access routes and stabilize designated access points.
- Prohibit cleaning, fueling, and maintaining vehicles onsite, except in a designated area where washwater is contained and treated.
- Properly store, handle, and dispose of construction materials/wastes to prevent contact with stormwater.
- Train and provide instruction to all employees/subcontractors on construction BMPs.

- Control and prevent discharge of all potential pollutants, including pavement cutting wastes, paints, concrete, petroleum products, chemicals, washwater or sediments, rinse water from architectural copper, and non-stormwater discharges to storm drains and watercourses.

### **Alameda County Wind Farm Standard Conditions**

As discussed in Chapter 2, *Program Description*, there is no ordinance dictating setback conditions in Alameda County. Setback requirements originally developed for Alameda County windfarms in the 1980s and 1990s were typically applied to wind projects using older generation turbines; however, these requirements have been deemed inappropriate 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.

### **Professional Standards for Environmental Site Assessments**

The American Society of Testing and Materials (ASTM) established ASTM E 1527-00 Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process (Phase I ESA). The purpose of the ASTM standards is to identify, to the extent feasible, recognized environmental conditions in connection with a subject property. ASTM defines *recognized environmental condition* as the presence or likely presence of hazardous substances as defined by the federal Comprehensive Environmental Response, Compensation, and Liability Act, as well as conditions that indicate an existing release, a past release, or a material threat of a release of petroleum products into the ground, groundwater, or surface water.

According to ASTM, the Phase I ESA is a comprehensive assessment and is to be performed by an environmental professional. The duties of the environmental professional include three tasks: interviews and site reconnaissance, review and interpretation of information, and oversight of writing the report.

An environmental professional is defined as someone with at least one of the qualifications listed below.

- A current Professional Engineer's or Professional Geologist's license or registration from a state or U.S. territory with 3 years equivalent full-time experience.
- A Baccalaureate or higher degree from an accredited institution of higher education in a discipline of engineering or science and 5 years equivalent full-time experience.
- The equivalent of 10 years full-time experience.

## **Environmental Setting**

### **Blade Throw**

One potential hazard of wind turbine operation is blade throw. Blade throw can occur if all or part of a rotor blade detaches from the turbine, typically as a result of equipment failure or an extreme event such as lightning strike or high winds. The distance a blade is thrown depends on several factors: turbine height, topography, blade or blade fragment length, rotor speed, wind speed, and departure angle (Larwood and van Dam 2006). Blade fragments have the potential to fly farther than complete blades because the initial velocity at failure tends to be higher for a fragment than for a full blade. In general, blade throw takes place predominantly in the plane of rotation, not

downwind; however, because turbine nacelles turn to face the wind, the potential hazard zone is considered as a radius of the potential blade throw distance with the tower as center point.

The average wind turbine height in the program area ranges from 18 to 55 meters for existing first- and second-generation turbines and from 65 to 88 meters for third-generation turbines. The turbine height of fourth-generation turbines proposed for repowering ranges from 121 to 153 meters. Using the setback requirements above, the minimum distance to ensure safety from blade throw hazard would be 459 meters from building sites and 918 meters from I-580 for the taller wind turbines.

Examination of the existing wind energy facilities indicates that approximately seven existing wind turbines are less than three times the turbine height from human structures (e.g., county roads and residences).

## Nearby Schools and Airports

The nearest school to the project is Mountain House Elementary (3950 Mountain House Road, Byron), approximately 0.48 mile east of the APWRA. San Joaquin Delta College (2073 South Central Parkway) is approximately 0.5 mile east of the APWRA.

The nearest public use airport to the project areas is Byron Airport, 1.26 mile north of the APWRA, and the nearest private airstrip is Meadowlark Airfield, 3.16 miles south of the APWRA.

## Fire Protection

### Fire Protection Providers

The closest CAL FIRE station to the project area is the Castle Rock Station at 16502 Schulte Road in the city of Tracy, approximately 3 miles east of the eastern program area boundary. The Castle Rock Station is part of the CAL FIRE's Santa Clara Unit. This is a seasonal station generally operating during fire season, which typically extends from the middle of May through the end of October.

Crews and equipment from several different locations respond to wildland fires in the APWRA. According to Mike Martin (pers. comm. 2013), Battalion Chief of CAL FIRE Battalion 4, Santa Clara Unit, a typical CAL FIRE response to a full wildland dispatch would involve the resources listed below.

- Six 4-wheel-drive engines dispatched from Tracy, East Contra Costa, Sunol, and Patterson, each capable of holding 500 gallons of water.
- Two airtankers, each capable of holding 1,200 gallons of water.
- One helicopter from the Santa Clara Unit with a 6-person crew.
- One battalion chief.
- One to three water tender trucks, each capable of holding 2,000 gallons of water.
- Two bulldozers.
- 21 five-person hand crews dispatched from Delta Camp in Fairfield.
- One air tactical aircraft, a fixed-wing aircraft used as aerial command and control of aircraft on wildland fires, dispatched from Hollister.

Although the APWRA is under CAL FIRE jurisdiction, the Alameda County Fire Department (ACFD) would also respond to any wildland fire in the program area. The ACFD is a Consolidated Department with a total of 30 fire stations serving the unincorporated areas of Alameda County; the cities of San Leandro, Dublin, Newark, Union City; the Lawrence Berkeley National Laboratory; and the Lawrence Livermore National Laboratory. Services include fire suppression, arson investigation, hazardous materials mitigation, paramedic services, urban search and rescue, fire prevention, and public education.

Stations 20 and 8 are the two ACFD stations closest to the program area. Station 20 is located at the Lawrence Livermore Laboratory at 7000 East Avenue in Livermore, approximately 3 miles from the program area's western boundary. Station 20 employs two crews comprising eight firefighters, one Type III engine, two Type IV apparatus (patrols), a hazardous materials unit, and an ambulance (Alameda County Fire Department 2012). In addition to the Lawrence Livermore Laboratory, areas of responsibility include the Altamont Pass area to the city of Tracy boundaries and the eastern edge of the county (Alameda County Fire Department n.d.[a]).

Station 8, at 1617 College Avenue in the middle of Livermore, serves about 250 square miles of unincorporated rural area in east Alameda County and is responsible, in part, for the vast unincorporated area of the Altamont Pass. Typically, Station 8 would dispatch four engines, a 3,000-gallon water tender, and a battalion chief.

Engines hold 500–700 gallons of water and refill from the water tender (Berdan pers. comm.). If more water is needed, the water tender would locate the nearest fire hydrant which, depending of where the fire is located, could be as far as the city of Livermore (Berdan pers. comm.). There are also 5,000-gallon water tanks on some of the properties in the Altamont Pass (Alameda County Fire Department n.d.[b]). Finally, if necessary, helicopters could retrieve water from several reservoirs (e.g., Bethany, Clifton Court Forebay, Los Vaqueros) in and near the APWRA (Berdan pers. comm.).

The ACFD has an automatic aid agreement with the Livermore/Pleasanton Fire Department (LPFD), which will respond together with the ACFD if needed (Berdan pers. comm.). There is also a mutual aid agreement between the ACFD and the Tracy Rural Fire Department (TRFD) for the areas east of Grant Line Road on the eastern edge of the county line (Alameda County Fire Department n.d.[b]).

### **Fire Hazards**

Five general categories of fire origin are associated with wind generators: hardware and conductor failures of power collection lines, dropping of collection lines, turbine malfunction or mechanical failure, construction-related accidents, and avian related incidents.

Wildfires related to power collection lines and malfunction or mechanical failure of turbines can result from turbine overload, bearing overheating, or pendant cable failure; such incidents occur primarily on older units. (A pendant cable is a collection of low-voltage and communication cables, which drop through the top of the turbine support structure and connect to a weather head or junction box at a lower level on the tower.) If not properly maintained, these cables may twist and bind or rub and cause an electrical short, emitting sparks or flames. On un-enclosed towers the sparks can escape the structure more easily. Avian-related incidents (i.e., electrocuted birds) involving birds catching fire and falling to the ground have also been a source of wind generator-related fires in the program area.

Fire prevention is required under the existing CUPs. Exhibit C of the 2005 CUPs describes the Altamont Pass Wind Farms Fire Requirements. The main mechanism for fire prevention is the



maintenance of a 30-foot-wide firebreak around buildings and structures, including turbines, riser poles, and substations. Fire breaks around turbines may be constructed around a turbine string rather than individual turbines. Electrical lines require a 20-foot clearance of flammable vegetation. In Alameda County, this is accomplished by application of herbicide in October or November. A mechanism for fire prevention on turbines is the provision of a yaw damper or other approved method to prevent the over-twisting of pendant cables and the use of insulated and conductive materials to prevent avian electrocution. Exhibit C also requires year-round water supplies of at least 5,000 gallons to be provided for firefighting purposes in strategic locations throughout the subject project area as well as the preparation of an annual fire prevention plan. The fire prevention plan includes a map of facilities, water supply locations, and access routes.

In view of the fire hazard zoning and the state's jurisdiction over the program area related to fire protection, the statutory and regulatory public safety requirements to minimize the risk of wildland fire that are described above would apply to the program.

## 3.8.2 Environmental Impacts

### Methods for Analysis

Evaluation of hazards and hazardous materials is based on information from published maps, reports, Alameda County general plan documents, the County's updated setback requirements, telephone interviews with fire protection agencies, and other documents that describe the potential for hazards and hazardous materials occurrence in the APWRA. No fieldwork or hazardous materials sites database searches were conducted for the proposed program. The analysis assumes that existing turbine facilities will continue to be operated consistent with the 2005 CUPs (and the 2007 CUP Amendments) until such time as each site is repowered or decommissioned.

### Determination of Significance

In accordance with Appendix G of the State CEQA Guidelines, program Alternative 1, program Alternative 2, the Golden Hills project, or the Patterson Pass project would be considered to have a significant effect if it would result in any of the conditions listed below.

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
- 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.
- Emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.
- Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment.
- Be located within an airport land use plan area or, where such a plan has not been adopted, be within two miles of a public airport or public use airport, and result in a safety hazard for people residing or working in the project area.

- Be located within the vicinity of a private airstrip and result in a safety hazard for people residing or working in the project area.
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.
- 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.

## Impacts and Mitigation Measures

This section describes potential impacts related to hazards and hazardous materials that could result from implementation of the proposed program and projects.

### **Impact HAZ-1a-1: Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials—program Alternative 1: 417 MW (less than significant)**

Construction associated with Alternative 1 would involve small quantities of commonly used materials, such as fuels and oils, to operate construction equipment. However, because standard construction BMPs would be implemented to reduce pollutant emissions during construction, this impact is considered less than significant.

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

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

Once construction is complete, there would be little use of hazardous materials or potential exposure associated with program Alternative 1. Dielectric fluid to be used in transformers is biodegradable, contains no PCBs, and is not considered a hazardous material. Accordingly, under this alternative the potential for hazardous materials to endanger the public or the environment is less than significant and no mitigation is required.

**Impact HAZ-1a-2: Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials—program Alternative 2: 450 MW (less than significant)**

Construction associated with Alternative 2 would involve small quantities of commonly used materials, such as fuels and oils, to operate construction equipment. However, because standard construction BMPs would be implemented to reduce pollutant emissions during construction, this impact is considered less than significant.

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

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

Once construction is complete, there would be little use of hazardous materials or potential exposure associated with program Alternative 2. Dielectric fluid to be used in transformers is biodegradable, contains no PCBs, and is not considered a hazardous material.

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

**Impact HAZ-1b: Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials—Golden Hills Project (less than significant)**

Construction of the proposed project would involve small quantities of commonly used materials, such as fuels and oils, to operate construction equipment. However, because standard construction BMPs would be implemented to reduce pollutant emissions during construction, this impact is considered less than significant.

During construction, hazardous materials would be stored at one of the staging areas (use of extremely hazardous materials is not anticipated). Staging areas would be cleared of vegetation, graded, and covered with gravel. 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 SPCC plan that would be prepared and implemented for the proposed project (40 CFR 112), including engineering standards (e.g., secondary containment); administrative standards (e.g., training with special emphasis on spill prevention, standard operating procedures, inspections); and BMPs.

A Hazardous Materials Business Plan will be developed for the proposed project. The HMBP would contain specific information regarding the types and quantities of hazardous materials associated with project activities, as well as their production, use, storage, spill response, transport, and disposal.

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

Once construction is complete, there would be little use of hazardous materials or potential exposure associated with the project. Lubricants used in the turbine gearbox are potentially hazardous; however, the gearbox would be sealed to prevent lubricant leakage and would be sampled and tested periodically to confirm that it retains adequate lubricating properties. When the lubricants have degraded to the point where they no longer provide the needed lubricating properties, the gearbox would be drained, new lubricant would be added, and the used lubricants would be 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 PCBs 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 oils, hydraulic fluids, and fuels. During operation, O&M vehicles would be serviced and fueled at the existing O&M building (using fuel trucks) or at an offsite location. No storage tanks are located at the existing wind farm, and none are proposed for the proposed project. Accordingly, this impact would be less than significant. No mitigation is required.

**Impact HAZ-1c: Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials—Patterson Pass Project (less than significant)**

Construction of the proposed project would involve small quantities of commonly used materials, such as fuels and oils, to operate construction equipment. However, because standard construction

BMPs would be implemented to reduce pollutant emissions during construction, this impact is considered less than significant.

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

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

Once construction is complete, there would be little use of hazardous materials or potential exposure associated with the program. Dielectric fluid to be used in transformers is biodegradable, contains no PCBs, and is not considered a hazardous material. Accordingly, the potential for hazardous materials to endanger the public or the environment is less than significant, and no mitigation is required.

**Impact HAZ-2a-1: 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—program Alternative 1: 417 MW (less than significant)**

Site workers, the public, and the environment could be inadvertently exposed to preexisting onsite contaminants during project construction. Small quantities of potentially toxic substances (such as petroleum and other chemicals used to operate and maintain construction equipment) would be used in the program area and transported to and from the area during construction. During operation, larger quantities (more than 55 gallons of liquid, 500 pounds of solids, or 200 cubic feet of compressed gases) of fuel could be stored in individual project areas. In addition, fuel and other petroleum products could be stored onsite. Release of these hazardous materials into the environment would be a significant impact.

However, the handling and disposal of these materials would be governed according to regulations enforced by CUPA, Cal/OSHA, and DTSC, as previously discussed. In addition, regulations under the federal Clean Water Act require contractors to avoid allowing the release of materials into surface waters as part of their SWPPP and NPDES permit requirements (see Chapter 9, *Hydrology and Water Quality*, for a discussion of the CWA and SWPPPs). This regulatory scheme would ensure that safety measures and precautions are taken, thereby reducing any potential impacts associated with the accidental upset or release of hazardous materials. This impact would be less than significant, and no mitigation is required.

**Impact HAZ-2a-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—program Alternative 2: 450 MW (less than significant)**

Site workers, the public, and the environment could be inadvertently exposed to preexisting onsite contaminants during project construction. Small quantities of potentially toxic substances (such as petroleum and other chemicals used to operate and maintain construction equipment) would be used in the program area and transported to and from the area during construction. During operation, larger quantities (more than 55 gallons of liquid, 500 pounds of solids, or 200 cubic feet of compressed gases) of fuel could be stored in individual project areas. In addition, fuel and other petroleum products could be stored onsite. Release of these hazardous materials into the environment would be a significant impact.

However, the handling and disposal of these materials would be governed according to regulations enforced by CUPA, Cal/OSHA, and DTSC, as previously discussed. In addition, regulations under the federal Clean Water Act require contractors to avoid allowing the release of materials into surface waters as part of their SWPPP and NPDES permit requirements (see Chapter 9, *Hydrology and Water Quality*, for a discussion of the CWA and SWPPPs). This regulatory scheme would ensure that safety measures and precautions are taken, thereby reducing any potential impacts associated with the accidental upset or release of hazardous materials. This impact would be less than significant, and no mitigation is required.

**Impact HAZ-2b: 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—Golden Hills Project (less than significant)**

Site workers, the public, and the environment could be inadvertently exposed to preexisting onsite contaminants during project construction. Small quantities of potentially toxic substances (such as petroleum and other chemicals used to operate and maintain construction equipment) would be used in the program area and transported to and from the area during construction. During operation, larger quantities (more than 55 gallons of liquid, 500 pounds of solids, or 200 cubic feet of compressed gases) of fuel could be stored in the project area. In addition, fuel and other petroleum products could be stored onsite. Release of these hazardous materials into the environment would be a significant impact.

However, as previously discussed, an 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 production, use, storage, spill response, transport, and disposal of such materials. The handling and disposal of these materials would be governed according to regulations enforced by CUPA, Cal/OSHA, and DTSC, as previously discussed. In addition, regulations under the federal CWA require contractors to avoid allowing the release of materials into surface waters as part of their SWPPP and NPDES permit requirements (see Chapter 9, *Hydrology and Water Quality*, for a discussion of the CWA and SWPPPs). This regulatory scheme would ensure that safety measures and precautions are taken, thereby reducing any potential impacts associated with the accidental upset or release of hazardous materials. This impact would be less than significant, and no mitigation is required.

**Impact HAZ-2c: 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—Patterson Pass Project (less than significant)**

Site workers, the public, and the environment could be inadvertently exposed to preexisting onsite contaminants during project construction. Small quantities of potentially toxic substances (such as petroleum and other chemicals used to operate and maintain construction equipment) would be used in the project area and transported to and from the area during construction. During operation, larger quantities (more than 55 gallons of liquid, 500 pounds of solids, or 200 cubic feet of compressed gases) of fuel could be stored in the project area. In addition, fuel and other petroleum products could be stored onsite. Release of these hazardous materials into the environment would be a significant impact.

However, as previously discussed, an 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 production, use, storage, spill response, transport, and disposal of such materials. The handling and disposal of these materials would be governed according to regulations enforced by CUPA, Cal/OSHA, and DTSC, as previously discussed. In addition, regulations under the federal CWA require contractors to avoid allowing the release of materials into surface waters as part of their SWPPP and NPDES permit requirements (see Chapter 9, *Hydrology and Water Quality*, for a discussion of the CWA and SWPPPs). This regulatory scheme would ensure that safety measures and precautions are taken, thereby reducing any potential impacts associated with the accidental upset or release of hazardous materials. This impact would be less than significant, and no mitigation is required.

**Impact HAZ-3a-1: Emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school—program Alternative 1: 417 MW (no impact)**

There are no public or private K–12 schools within 0.25 mile of the program area. The nearest school is approximately 0.48 mile east of proposed wind facilities and it is unlikely that hazardous materials would be emitted or released within 0.25 mile of any schools. Also, implementation of the SWPPP by contractors would reduce the potential of a hazardous spill incident. There would be no impact.

**Impact HAZ-3a-2: Emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school—program Alternative 2: 450 MW (no impact)**

There are no public or private K–12 schools within 0.25 mile of the program area. The nearest school is approximately 0.48 mile east of proposed wind facilities and it is unlikely that hazardous materials would be emitted or released within 0.25 mile of any schools. Also, implementation of the SWPPP by contractors would reduce the potential of a hazardous spill incident. There would be no impact.

**Impact HAZ-3b: Emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school—Golden Hills Project (no impact)**

There are no public or private K–12 schools within 0.25 mile of the project area. The nearest school is approximately 0.48 mile east of proposed wind facilities and it is unlikely that hazardous materials would be emitted or released within 0.25 mile of any schools. Also, implementation of the SWPPP by contractors would reduce the potential of a hazardous spill incident. There would be no impact.

**Impact HAZ-3c: Emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school—Patterson Pass Project (no impact)**

There are no public or private K–12 schools within 0.25 mile of the project area. The nearest school is approximately 0.50 mile east of proposed wind facilities and it is unlikely that hazardous materials would be emitted or released within 0.25 mile of any schools. Also, implementation of the SWPPP by contractors would reduce the potential of a hazardous spill incident. There would be no impact.

**Impact HAZ-4a-1: Location on a hazardous materials site, creating a significant hazard to the public or the environment—program Alternative 1: 417 MW (less than significant with mitigation)**

It is not known if hazardous materials sites are present. 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. This impact would be significant, but implementation of Mitigation Measure HAZ-4a would reduce this impact to a less-than-significant level.

All projects requiring a CUP from the County would be bound by the program. Therefore, future repowering projects would require County permit approval of new CUPs, and Mitigation Measure HAZ-4 would become a standard condition of approval for the CUP.

**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.

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).

**Impact HAZ-4a-2: Location on a hazardous materials site, creating a significant hazard to the public or the environment—program Alternative 2: 450 MW (less than significant with mitigation)**

It is not known if hazardous materials sites are present. 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. This impact would be significant, but implementation of Mitigation Measure HAZ-4a would reduce this impact to a less-than-significant level.

All projects requiring a CUP from the County would be bound by the program. Therefore, future repowering projects would require County permit approval of new CUPs, and Mitigation Measure HAZ-4 would become a standard condition of approval for the CUP.

**Mitigation Measure HAZ-4: Perform a Phase I Environmental Site Assessment prior to construction activities and remediate if necessary****Impact HAZ-4b: Location on a hazardous materials site, creating a significant hazard to the public or the environment—Golden Hills Project (less than significant with mitigation)**

It is not known if hazardous materials sites are present. 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 the proposed project, any contaminated soil found could represent a significant risk to human health and the environment. This impact would be significant, but implementation of Mitigation Measure HAZ-4a would reduce this impact to a less-than-significant level.

All projects requiring a CUP from the County would be bound by the program. Therefore, the proposed project would require County permit approval of new CUPs, and Mitigation Measure HAZ-4 would become a standard condition of approval for the CUP.

**Mitigation Measure HAZ-4: Perform a Phase I Environmental Site Assessment prior to construction activities and remediate if necessary****Impact HAZ-4c: Location on a hazardous materials site, creating a significant hazard to the public or the environment—Patterson Pass Project (less than significant with mitigation)**

It is not known if hazardous materials sites are present. 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 the proposed project, any contaminated soil found could represent a significant risk to human health and the environment. This impact would be significant, but implementation of Mitigation Measure HAZ-4 would reduce this impact to a less-than-significant level.

All projects requiring a CUP from the County would be bound by the program. Therefore, the proposed project would require County permit approval of new CUPs, and Mitigation Measure HAZ-4 would become a standard condition of approval for the CUP.

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

**Impact HAZ-5a-1: 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—program Alternative 1: 417 MW (less than significant with mitigation)**

The closest public airport to the proposed project is the Byron Airport, located approximately 2.08 miles northeast of the program area boundary. Because the project area is not within 2 miles of a public airport, implementation of the proposed project would not generally result in a safety hazard for people residing or working in the project area. Also, as discussed in Chapter 2, *Project Description*, all repower wind turbines would require FAA lighting as most would be more than 200 feet tall and must be individually lit with obstruction lighting. Through its Notice of Proposed Construction or Alteration (Form 7460.1), the FAA would review the proposed projects prior to construction (14 CFR Part 77). The FAA analysis would include a review of proposed marking (paint scheme) and nighttime lighting to ensure that aircraft could readily identify and avoid the wind turbines. Compliance with FAA requirements would reduce the majority of the projects' potential aviation safety impacts to an acceptable level of risk.

However, the northeastern corner of the program area is within the Byron Airport influence area in Compatibility Zones C-1 and D and the Height Exception Overlay Zone. Applicable policies as previously described specify height limitations for this area. These policies stipulate consultation with and review by the Contra Costa ALUC for any proposed object taller than 100 feet. Construction of structures more than 100 feet above ground level within the airport influence zones could cause an obstruction or hazard to air navigation. Implementation of Mitigation Measure HAZ-5, would reduce this impact to a less-than-significant level.

**Mitigation Measure HAZ-5: Coordinate with the Contra Costa ALUC prior to final design**

If wind turbines are proposed to be constructed within the Byron Airport influence area zones, the project proponent will coordinate and consult with the Contra Costa County Airport Land Use Commission and request review and obtain approval of the final design and placement of wind turbines. In addition, the project proponent will incorporate any ALUC recommendations in to the final design.

**Impact HAZ-5a-2: 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—program Alternative 2: 450 MW (less than significant with mitigation)**

The closest public airport to the proposed project is the Byron Airport, located approximately 2.08 miles northeast of the program area. Because the project area is not within 2 miles of a public airport, implementation of the proposed project would not generally result in a safety hazard for people residing or working in the project area. Also, as discussed in Chapter 2, *Project Description*, all repower wind turbines would require FAA lighting as most would be more than 200 feet tall and

must be individually lit with obstruction lighting. Through its Notice of Proposed Construction or Alteration (Form 7460.1), the FAA would review the proposed projects prior to construction (14 CFR Part 77). The FAA analysis would include a review of proposed marking (paint scheme) and nighttime lighting to ensure that aircraft could readily identify and avoid the wind turbines. Compliance with FAA requirements would reduce the majority of the projects' potential aviation safety impacts to an acceptable level of risk.

However, the northeastern corner of the program area is within the Byron Airport influence area in Compatibility Zones C-1 and D and the Height Exception Overlay Zone. Applicable policies as previously described, specify height limitations for this area. These policies stipulate consultation with and review by the Contra Costa ALUC for any proposed object taller than 100 feet. Construction of structures more than 100 feet above ground level within the airport influence zones could cause an obstruction or hazard to air navigation. Implementation of Mitigation Measure HAZ-5 would reduce this impact to a less-than-significant level.

#### **Mitigation Measure HAZ-5: Coordinate with the Contra Costa ALUC prior to final design**

##### **Impact HAZ-5b: 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—Golden Hills Project (less than significant)**

The closest public airport to the proposed project is the Byron Airport, approximately 6.5 miles northeast of the project area. Because the project area is not within 2 miles of a public airport, implementation of the proposed project would not generally result in a safety hazard for people residing or working in the project area. Also, as discussed in Chapter 2, *Project Description*, all repower wind turbines would require FAA lighting as most would be more than 200 feet tall and must be individually lit with obstruction lighting. Through its Notice of Proposed Construction or Alteration (Form 7460.1), the FAA would review the proposed projects prior to construction (14 CFR Part 77). The FAA analysis would include a review of proposed marking (paint scheme) and nighttime lighting to ensure that aircraft could readily identify and avoid the wind turbines. Compliance with FAA requirements would reduce the majority of the project's potential aviation safety impacts to an acceptable level of risk.

##### **Impact HAZ-5c: 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—Patterson Pass Project (less than significant)**

The closest public airport to the proposed project is the Byron Airport, located approximately 6.5 miles north of the project area. Because the project area is not within 2 miles of a public airport, implementation of the proposed project would not generally result in a safety hazard for people residing or working in the project area. Also, as discussed in Chapter 2, *Project Description*, all repower wind turbines would require FAA lighting as most would be more than 200 feet tall and must be individually lit with obstruction lighting. Through its Notice of Proposed Construction or Alteration (Form 7460.1), the FAA would review the proposed projects prior to construction (14 CFR Part 77). The FAA analysis would include a review of proposed marking (paint scheme) and nighttime lighting to ensure that aircraft could readily identify and avoid the wind turbines.

Compliance with FAA requirements would reduce the project's potential aviation safety impacts to an acceptable level of risk and therefore to a less-than-significant level.

**Impact HAZ-6a-1: Location within the vicinity of a private airstrip, resulting in a safety hazard for people residing or working in the project area—program Alternative 1: 417 MW (less than significant)**

The program area boundary is approximately 2.43 miles northeast of the Meadowlark Airstrip, the nearest known private airstrip. Because the program area is not within 2 miles of a private airstrip, implementation of program Alternative 1 would not generally result in a safety hazard for people residing or working in the program area. Also, as discussed in Chapter 2, *Project Description*, all repower wind turbines would require FAA lighting as most would be more than 200 feet tall and must be individually lit with obstruction lighting. Through its Notice of Proposed Construction or Alteration (Form 7460.1), the FAA would review the proposed projects prior to construction (14 CFR Part 77). The FAA analysis would include a review of proposed marking (paint scheme) and nighttime lighting to ensure that aircraft could readily identify and avoid the wind turbines. Compliance with FAA requirements would reduce the projects' potential aviation safety impacts to an acceptable level of risk and therefore to a less-than-significant level.

**Impact HAZ-6a-2: Location within the vicinity of a private airstrip, resulting in a safety hazard for people residing or working in the project area—program Alternative 2: 450 MW (less than significant)**

The program area boundary is approximately 2.43 miles northeast of the Meadowlark Airstrip, the nearest known private airstrip. Because the program area is not within 2 miles of a private airstrip, implementation of program Alternative 2 would not generally result in a safety hazard for people residing or working in the program area. Also, as discussed in Chapter 2, *Project Description*, all repower wind turbines would require FAA lighting as most would be more than 200 feet tall and must be individually lit with obstruction lighting. Through its Notice of Proposed Construction or Alteration (Form 7460.1), the FAA would review the proposed projects prior to construction (14 CFR Part 77). The FAA analysis would include a review of proposed marking (paint scheme) and nighttime lighting to ensure that aircraft could readily identify and avoid the wind turbines. Compliance with FAA requirements would reduce the projects' potential aviation safety impacts to an acceptable level of risk and therefore to a less-than-significant level.

**Impact HAZ-6b: Location within the vicinity of a private airstrip, resulting in a safety hazard for people residing or working in the project area—Golden Hills Project (less than significant)**

The project area is approximately 8 miles northeast of the Meadowlark Airstrip. Because the project area is not within 2 miles of a private airstrip, implementation of the project would not generally result in a safety hazard for people residing or working in the project area. Also, as discussed in Chapter 2, *Project Description*, all repower wind turbines would require FAA lighting as most would be more than 200 feet tall and must be individually lit with obstruction lighting. Through its Notice of Proposed Construction or Alteration (Form 7460.1), the FAA would review the proposed projects prior to construction (14 CFR Part 77). The FAA analysis would include a review of proposed marking (paint scheme) and nighttime lighting to ensure that aircraft could readily identify and avoid the wind turbines. Compliance with FAA requirements would reduce the project's potential aviation safety impacts to an acceptable level of risk and therefore to a less-than-significant level.

**Impact HAZ-6c: Location within the vicinity of a private airstrip, resulting in a safety hazard for people residing or working in the project area—Patterson Pass Project (less than significant)**

The project area is approximately 3.42 miles northeast of the Meadowlark Airstrip. Because the program area is not within 2 miles of a private airstrip, implementation of the program would not generally result in a safety hazard for people residing or working in the program area. Also, as discussed in Chapter 2, *Project Description*, all repower wind turbines would require FAA lighting as most would be more than 200 feet tall and must be individually lit with obstruction lighting. Through its Notice of Proposed Construction or Alteration (Form 7460.1), the FAA would review the proposed projects prior to construction (14 CFR Part 77). The FAA analysis would include a review of proposed marking (paint scheme) and nighttime lighting to ensure that aircraft could readily identify and avoid the wind turbines. Compliance with FAA requirements would reduce the project's potential aviation safety impacts to an acceptable level of risk and therefore to a less-than-significant level.

**Impact HAZ-7a-1: Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan—program Alternative 1: 417 WM (less than significant with mitigation)**

Existing vehicular traffic is associated with operations and maintenance of project facilities and is not anticipated to change under program Alternative 1. Accordingly, operation of the program would have no impact. During construction, there would be an increase in vehicular traffic transporting work crews, equipment, and materials.

As specified in 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 would not be 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. Implementation of Mitigation Measure TRA-1 would reduce potential impacts to a less-than-significant level.

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

**Impact HAZ-7a-2: Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan—program Alternative 2: 450 WM (less than significant with mitigation)**

Existing vehicular traffic is associated with operations and maintenance of project facilities and is not anticipated to change under program Alternative 2. Accordingly, operation of the program would have no impact. During construction, there would be an increase in vehicular traffic transporting work crews, equipment, and materials.

As specified in 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 would not be 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. Implementation of Mitigation Measure TRA-1 would reduce potential impacts to a less-than-significant level.

**Mitigation Measure TRA-1: Develop and implement a construction traffic control plan****Impact HAZ-7b: Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan—Golden Hills Project (less than significant with mitigation)**

Existing vehicular traffic is associated with operations and maintenance of project facilities and is not anticipated to change under the proposed project. Accordingly, operation of the project would have no impact. During construction, there would be an increase in vehicular traffic transporting work crews, equipment, and materials. A Traffic Management Plan would be prepared for the proposed project to reduce hazards that could result from the increased truck traffic, and to ensure that traffic flow on local public roads and highways would not be 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 occur at an irregular, infrequent rate, and would be subject to standard Caltrans regulations. Such conveyance would not hinder emergency access to the project area. Implementation of Mitigation Measure TRA-1 would reduce potential impacts to a less-than-significant level.

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

**Impact HAZ-7c: Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan—Patterson Pass Project (less than significant)**

Existing vehicular traffic is associated with operations and maintenance of project facilities and is not anticipated to change under the proposed project. Accordingly, operation of the project would have no impact. During construction, there would be an increase in vehicular traffic transporting work crews, equipment, and materials. Construction traffic routing would be established in a Construction Traffic Plan, which would include a traffic safety and signing plan prepared by the project engineers in coordination with Alameda County and other related agencies. The plan would define hours, routes, and safety and management requirements. EDF would obtain all necessary permits and regulatory approvals subject to review under applicable law. The proposed project would therefore 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 occur at an irregular, infrequent rate, and would be subject to standard Caltrans regulations. Such conveyance would not hinder emergency access to the project area. Implementation of Mitigation Measure TRA-1 would reduce potential impacts to a less-than-significant level.

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

**Impact HAZ-8a-1: Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands—program Alternative 1: 417 WM (less than significant)**

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

Program Alternative 1 would entail the removal of existing turbines and installation of new turbines. Decommissioning and removing existing wind turbines would require additional work crews, temporarily increasing the number of vehicles in the individual project areas. Climate conditions together with the potential for vehicle-related ignitions make this a concern, especially during the summer months.

The potential for wildland fires already exists in the program area due to the presence of the wind energy facilities. Because CAL FIRE and ACFD already provide fire protection services to the program area, the fire protection facilities and infrastructure required to protect the existing



facilities are in place. The program would not alter the Altamont Pass Wind Farms Fire Requirements as described in Exhibit C of the 2005 CUPs. Consequently, the potential for exposure of people or structures to a significant risk of loss, injury, or death involving wildland fires is less than significant, and no mitigation is required.

**Impact HAZ-8a-2: 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—program Alternative 2: 450 WM (less than significant)**

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

Program Alternative 2 would entail the removal of existing turbines and installation of new turbines. Decommissioning and removing existing wind turbines would require additional work crews, temporarily increasing the number of vehicles in the individual project areas. Climate conditions together with the potential for vehicle-related ignitions make this a concern, especially during the summer months.

The potential for wildland fires already exists in the program area due to the presence of the wind energy facilities. Because CAL FIRE and ACFD already provide fire protection services to the program area, the fire protection facilities and infrastructure required to protect the existing facilities are in place. The program would not alter the Altamont Pass Wind Farms Fire Requirements as described in Exhibit C of the 2005 CUPs. Consequently, the potential for exposure of people or structures to a significant risk of loss, injury, or death involving wildland fires is less than significant, and no mitigation is required.

**Impact HAZ-8b: 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—Golden Hills Project (less than significant)**

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

The proposed project would entail the removal of existing turbines and installation of new turbines. Decommissioning and removing existing wind turbines would require additional work crews, temporarily increasing the number of vehicles in the project area. Climate conditions together with the potential for vehicle-related ignitions make this a concern, especially during the summer months.

The potential for wildland fires already exists in the project area due to the presence of the wind energy facilities. Because CAL FIRE and ACFD already provide fire protection services to the project

area, the fire protection facilities and infrastructure required to protect the existing facilities are in place. The proposed project would not alter the Altamont Pass Wind Farms Fire Requirements as described in Exhibit C of the 2005 CUPs. Consequently, the potential for exposure of people or structures to a significant risk of loss, injury, or death involving wildland fires is less than significant, and no mitigation is required.

**Impact HAZ-8c: 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—Patterson Pass Project (less than significant)**

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

The proposed project would entail the removal of existing turbines and installation of new turbines. Decommissioning and removing existing wind turbines would require additional work crews, temporarily increasing the number of vehicles in the project area. Climate conditions together with the potential for vehicle-related ignitions make this a concern, especially during the summer months.

The potential for wildland fires already exists in the project area due to the presence of the wind energy facilities. Because CAL FIRE and ACFD already provide fire protection services to the project area, the fire protection facilities and infrastructure required to protect the existing facilities are in place. The proposed project would not alter the Altamont Pass Wind Farms Fire Requirements as described in Exhibit C of the 2005 CUPs. Consequently, the potential for exposure of people or structures to a significant risk of loss, injury, or death involving wildland fires is less than significant, and no mitigation is required.

**Impact HAZ-9a-1: 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—program Alternative 1: 417 MW (less than significant)**

Generally, setback requirements for wind turbines are based on the turbine height. According to a report prepared for CEC (Larwood and van Dam 2006), several studies have been conducted in the last 25 years using various methods to determine the frequency of blade throw. Definitive data, however, are limited—particularly for the current generation of wind turbines in terms of blade throw distances—because typical failure reports do not differentiate between blade throw and other types of failures.

There is no ordinance dictating setback conditions in Alameda County; rather, setbacks are determined on a project-by-project basis in accordance with the standard conditions of approval for a CUP. The *Alameda County Wind Farm Standard Conditions* requires a minimum setback of three times the total height of the turbine (to top of blade), or four times the total height of the turbine if the ground elevation is two or more times the turbine height above County roads, residences, property boundaries, transmission facilities, and railroads. Setback requirements from I-580 are more stringent, requiring a setback of six times the total height of the turbine, or eight times the

total height of the turbine if the ground elevation of the turbine is two or more times the height of the turbine above the traveled way of I-580, but in no case less than 152 meters.

Persons and facilities within the blade throw hazard zone could be at risk of damage, injury, or death if struck by a falling blade. People potentially within the hazard zone include the residences within the program area, recreationalists in and around Bethany Reservoir, and motorists travelling along I-580 and county roads. The important infrastructure in and adjacent to the program area potentially susceptible to damage from blade throw includes PG&E transmission lines and windfarm substations.

The blade throw hazard distance for the existing wind energy facilities indicates that approximately seven existing wind turbines are closer than three times the turbine height to county roads and three residences. These inconsistencies may be because the turbines are located on varied topography and the distance measured along the ground surface is through space or “as the crow flies.” Table 3.8-1 shows the distance of the closest wind turbines to facilities where people are most often present in the APWRA. Elevation ranges are not considered in these numbers.

**Table 3.8-1. Facilities within Specified Setback Distances from Existing Turbines**

Facility Type	Distance from Closest Wind Turbine (meters [feet])
Interstate 580	150 (492)
Dyer Road <sup>a</sup>	173 (568)
Altamont Pass Road <sup>a</sup>	95 (312)
Patterson Pass Road <sup>a</sup>	116 (381)
Vasco Road <sup>a</sup>	404 (1,325)
Residence 1 <sup>a</sup>	163 (535)
Residence 3 <sup>a</sup>	245 (804) (Golden Hills project area)
Residence 25 <sup>a</sup>	213 (699) (Golden Hills project area)
Bethany Reservoir	674 (2,211) (Golden Hills project area)

<sup>a</sup> Closer than three times the turbine height to sensitive receptor.

As described in Chapter 2, *Program Description*, the turbine height for fourth-generation turbines proposed for repowering ranges from 121 to 153 meters. Using the setback requirement above, the minimum safe distance in the context of blade throw hazard zone is, conservatively, 459 meters (1,506 feet) for the taller wind turbines and 918 meters (3,012 feet) from I-580. If existing turbines are replaced with fourth-generation turbines in the same locations, the blade throw hazard zone could possibly encroach into sensitive areas of human occupancy. However, siting of wind turbines would comply with the Standard Conditions, ensuring that no new wind turbines would be sited within the blade throw hazard distance. Consequently—in relation to the seven turbines mentioned above—the program would help reduce impacts relating to blade throw.

Blade throw risks are also reduced as a result of new technologies and engineering design developed over the past decades. Most commercially available turbines, including those proposed for the program, are equipped with safety and engineering features to reduce the risk of blade failure and are designed to ensure safe operation under normal conditions. Fourth-generation rotors include blade pitch controls that regulate the angle of the rotor blade into the wind, and redundant brake mechanisms that can control speed and shutdown or slowdown in response to excessive wind speed.

Repowering would reduce the total number of wind turbines in the program area because of the vastly greater nameplate capacity of fourth-generation turbines. The reduced number of turbines would also reduce the potential for wind turbine-related hazards.

In most of the program area, due largely to the setback standards, any potential for blade throw would occur well within windfarm boundaries—not in areas accessible to the public. Individual windfarm companies strictly control access to the existing wind energy facilities, and overall site access is limited to persons approved for entry by the windfarm operators or landowners. This strict control of public access would further reduce the risk of potential blade strike in the program area. Accordingly, the potential for exposure of people or structures to a significant risk of loss, injury, or death involving blade throw is less than significant, and no mitigation is required.

**Impact HAZ-9a-2: 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—program Alternative 2: 450 MW (less than significant)**

Generally, setback requirements for wind turbines are based on the turbine height. According to a report prepared for CEC (Larwood and van Dam 2006), several studies have been conducted in the last 25 years using various methods to determine the frequency of blade throw. Definitive data, however, are limited—particularly for the current generation of wind turbines in terms of blade throw distances—because typical failure reports do not differentiate between blade throw and other types of failures.

There is no ordinance dictating setback conditions in Alameda County; rather, setbacks are determined on a project-by-project basis in accordance with the standard conditions of approval for a CUP. The *Alameda County Wind Farm Standard Conditions* requires a minimum setback of three times the total height of the turbine (to top of blade), or four times the total height of the turbine if the ground elevation is two or more times the turbine height above County roads, residences, property boundaries, transmission facilities, and railroads. Setback requirements from I-580 are more stringent, requiring a setback of six times the total height of the turbine), or eight times the total height of the turbine if the ground elevation of the turbine is two or more times the height of the turbine above the traveled way of I-580, but in no case less than 152 meters.

Persons and facilities within the blade throw hazard zone could be at risk of damage, injury, or death if struck by a falling blade. People potentially within the hazard zone include the residences within the program area, recreationalists in and around Bethany Reservoir, and motorists travelling along I-580 and county roads. The important infrastructure in and adjacent to the program area potentially susceptible to damage from blade throw includes PG&E transmission lines and windfarm substations.

The blade throw hazard distance for the existing wind energy facilities indicates that approximately seven existing wind turbines are closer than three times the turbine height to county roads and three residences. These inconsistencies may be because the turbines are located on varied topography and the distance measured along the ground surface is through space or “as the crow flies.” Table 3.8-1 shows the distance of the closest wind turbines to facilities where people are most often present in the APWRA. Elevation ranges are not considered in these numbers.

As described in Chapter 2, *Program Description*, the turbine height for fourth-generation turbines proposed for repowering ranges from 121 to 153 meters. Using the setback requirement above, the minimum safe distance in the context of blade throw hazard zone is, conservatively, 459 meters for

the taller wind turbines—918 meters from I-580. If existing turbines are replaced with fourth-generation turbines in the same locations, the blade throw hazard zone could possibly encroach into sensitive areas of human occupancy. However, siting of wind turbines would comply with the Standard Conditions, ensuring that no new wind turbines would be sited within the blade throw hazard distance. Consequently—in relation to the seven turbines mentioned above—the program would help reduce impacts relating to blade throw.

Blade throw risks are also reduced as a result of new technologies and engineering design developed over the past decades. Most commercially available turbines, including those proposed for the program, are equipped with safety and engineering features to reduce the risk of blade failure and are designed to ensure safe operation under normal conditions. Fourth-generation rotors include blade pitch controls that regulate the angle of the rotor blade into the wind, and redundant brake mechanisms that can control speed and shutdown or slowdown in response to excessive wind speed.

Repowering would reduce the total number of wind turbines in the program area because of the vastly greater nameplate capacity of fourth-generation turbines. The reduced number of turbines would also reduce the potential for wind turbine-related hazards.

In most of the program area, any potential for blade throw would occur well within windfarm boundaries—not in areas accessible to the public. Individual windfarm companies strictly control access to the existing wind energy facilities, and overall site access is limited to persons approved for entry by the windfarm operators or landowners. This strict control of public access would further reduce the risk of potential blade strike in the program area. Accordingly, the potential for exposure of people or structures to a significant risk of loss, injury, or death involving blade throw is less than significant, and no mitigation is required.

**Impact HAZ-9b: 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—Golden Hills Project (less than significant)**

There is no ordinance dictating setback conditions in Alameda County; rather, setbacks are determined on a project-by-project basis in accordance with the standard conditions of approval for a CUP. The *Alameda County Wind Farm Standard Conditions* requires a minimum setback of three times the total height of the turbine (to top of blade), or four times the total height of the turbine if the ground elevation is two or more times the turbine height above County roads, residences, property boundaries, transmission facilities, and railroads. Setback requirements from I-580 are more stringent, requiring a setback of six times the total height of the turbine), or eight times the total height of the turbine if the ground elevation of the turbine is two or more times the height of the turbine above the traveled way of I-580, but in no case less than 152 meters.

Persons and facilities within the blade throw hazard zone could be at risk of damage, injury, or death if struck by a falling blade. People potentially within the hazard zone include the residences in the project area and motorists travelling along I-580 and county roads. The important infrastructure in and adjacent to the project area potentially susceptible to damage from blade throw includes PG&E transmission lines and windfarm substations.

NextEra strictly controls access to the existing wind energy facilities, and overall site access is limited to persons approved for entry. This strict control of public access would further reduce the risk of potential blade strike in the project area. Residences in the project area are more than 424

meters (1,391 feet) from the nearest proposed turbine. Moreover, compliance with the minimum setbacks established in the *Alameda County Wind Farm Standard Conditions* would ensure that no turbine is placed within the specified distance from any residence or other identified feature. Accordingly, the potential for exposure of people or structures to a significant risk of loss, injury, or death involving blade throw is less than significant, and no mitigation is required.

**Impact HAZ-9c: 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—Patterson pass Project (less than significant)**

There is no ordinance dictating setback conditions in Alameda County; rather, setbacks are determined on a project-by-project basis in accordance with the standard conditions of approval for a CUP. The *Alameda County Wind Farm Standard Conditions* requires a minimum setback of three times the total height of the turbine (to top of blade), or four times the total height of the turbine if the ground elevation is two or more times the turbine height above County roads, residences, property boundaries, transmission facilities, and railroads. Setback requirements from I-580 are more stringent, requiring a setback of six times the total height of the turbine), or eight times the total height of the turbine if the ground elevation of the turbine is two or more times the height of the turbine above the traveled way of I-580, but in no case less than 152 meters.

Persons and facilities within the blade throw hazard zone could be at risk of damage, injury, or death if struck by a falling blade. People potentially within the hazard zone include motorists travelling along county roads; there are no residences within setback distances in the project area. The important infrastructure in and adjacent to the project area potentially susceptible to damage from blade throw includes PG&E transmission lines and windfarm substations.

EDF RE strictly controls access to the existing wind energy facilities, and overall site access is limited to persons approved for entry. This strict control of public access would further reduce the risk of potential blade strike in the project area. Accordingly, the potential for exposure of people or structures to a significant risk of loss, injury, or death involving blade throw is less than significant, and no mitigation is required.

### 3.8.3 References Cited

#### Printed References

- Alameda County. 1998. *Draft Environmental Impact Report—Repowering a Portion of the Altamont Pass Wind Resource Area*. August. State Clearinghouse #98022024. Hayward, CA: Alameda County Community Development Agency.
- . 2013. *Safety Element of the Alameda County General Plan*. Adopted January 8, 2013. Available: <http://acgov.org/cda/planning/generalplans/index.htm>.
- Alameda County Fire Department. 2012. *Fire Stations and Facilities-ACFD Station 20*. Available: <<http://www.acgov.org/fire/about/station20.htm>>. Accessed: April 22, 2013.
- . n.d.(a) *Company Officer Reference Guide—Station 20*. Division of Training, Alameda County, California.
- . n.d.(b) *Company Officer Reference Guide – Station 08*. Division of Training, Alameda County, California.

California Department of Forestry and Fire Protection 2007. *Fire Hazard Severity Zone*. Map Adopted November 2007. Available: [http://www.fire.ca.gov/fire\\_prevention/fhsz\\_maps\\_alameda.php](http://www.fire.ca.gov/fire_prevention/fhsz_maps_alameda.php). Accessed: April 22, 2013.

Contra Costa County. 2000. *Contra Costa County Airport Land Use Compatibility Plan*. December.

Larwood, S., and C. P. van Dam (California Wind Energy Collaborative). 2006. *Permitting Setback Requirements for Wind Turbines in California*. California Energy Commission, PIER Renewable Energy Technologies. CEC-500-2005-184.

## Personal Communications

Berdan, Chuck. Dispatch Manager of the Alameda County Regional Emergency Communications Center. Alameda County Fire Department, California. May 15, 2013—telephone call with Tina Sorvari, ICF International.

Martin, Mike. Battalion Chief of CAL FIRE Battalion 4, Santa Clara Unit. Cal Fire, California. May 23, 2013—telephone call with Tina Sorvari, ICF International.

