

16 PUBLIC SERVICES AND UTILITIES

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16 PUBLIC SERVICES AND UTILITIES

This chapter describes the existing public services and utilities and applicable regulations in the project area, evaluates the potential impacts from the construction and operation of the proposed Montezuma II Wind Energy Project, and considers mitigation measures to address the impacts found to be significant.

16.1 PUBLIC SERVICES AND UTILITIES SETTING

The proposed Montezuma II Energy Project would be located in the Montezuma Hills region of southeast Solano County. The Montezuma Hills region is unincorporated and includes two small towns, Birds Landing and Collinsville, both to the west of the project area. Dry-land farming and wind energy generation in the area support a small rural population. Given the dry, grassy environment, the Montezuma Hills area has a high risk for grass fires (Solano County 2008b). The area is not connected to public sewers, and residents manage their own septic systems and supply most of their own water from wells. The County provides police, fire, emergency medical, and educational services to the Montezuma Hills area, and private entities provide solid waste disposal and gas and electric utility services. Communication systems in the area include microwave, radio/television, and aircraft navigation signals

The existing wind turbines in the Montezuma Hills, including the approximately 200 small wind turbines and related facilities that are currently in the project area, place few demands on these public services and have been located to avoid interference with microwave and other communication systems.

16.1.1 Public Services

Public services in the Montezuma II Wind Energy Project Area include police, fire, emergency medical, and educational services.

Police

The Solano County Sheriff's Office has two locations, Vallejo and Fairfield. The Solano County Sheriff's Office provides a variety of law enforcement services for unincorporated sections of Solano County, including the project area. The Solano County Sheriff's Office Dispatch Center dispatches law enforcement and fire services for the Solano County Sheriff's Office, Rio Vista/Delta Fire Districts, and Montezuma/Ryer Island Fire Protection District on a 24-hour basis (Solano County 2010). The nearest city police department is in Rio Vista, approximately 5.5 miles east of the nearest project area boundary. The Solano County Office of Emergency Services (OES) is in charge of protecting lives and property of Solano County residents in the event of natural or man-made disasters. OES trains and responds to disasters and any emergency-related function that supports the Sheriff's Office (Solano County 2010).

Fire

The Montezuma Fire Protection District provides fire and rescue services to the project area. The district operates four fire stations equipped for grass fires, including one at Birds Landing Road, one on Collinsville Road, near Collinsville, one on Shiloh Road, and one in Rio Vista. The Fire District is in the process of building a new fire station at the intersection of Birds Landing Road and

Collinsville Road. The Fire District covers an area of approximately 150 square miles, with an estimated population of 1,200, and maintains a staff of 34 trained professionals (Montezuma Hills Fire District 2006; Montezuma Fire Protection District 2010). The Montezuma Fire Protection District does not report their average response times (Solano County 2008a). The Rio Vista Fire Department also provides fire and rescue services to the City of Rio Vista and surrounding areas, including the project area. The department's serves an area of approximately 100 square miles, with an estimated population of 8,500 (City of Rio Vista 2010). The Solano County Sheriff's Department dispatches the fire department and receives as-needed support from the County and State OES.

Emergency Medical

Major hospitals within Solano County are located in Fairfield, Vacaville, and Vallejo (Solano County Administrator's Office 2003). The Solano Emergency Medical Services Cooperative (SEMSC) handles emergency response in the County, including the project area. The cooperative includes six of the county's seven cities and portions of the unincorporated area. As a joint party agreement, the SEMSC provides pre-hospital emergency care for any person within the jurisdiction of the agency through a single ambulance service that employs both paramedics and Emergency Medical Technicians. Fire departments and districts respond with emergency medical services personnel to reduce response times (Solano County 2008b). The Rio Vista Fire Department also provides a minimum of emergency medical technician-level care 24 hours per day (City of Rio Vista 2010).

Education

Public educational services in Solano County include six K-12 school districts and Solano County Community College serving approximately 85,257 students collectively (Solano County 2010). There are also many private schools and home or independent study programs (Solano County Office of Education 2006). Students in the project area are typically enrolled in the River Delta Unified School District; the Fairfield-Suisun School District serves students in nearby Collinsville (U.S. Census Bureau 2009). The River Delta Unified School District provides school bus service to the project area, as does the special education program of the County, although only for qualifying students (River Delta Unified School District 2010). Colleges in the County include four Solano County Community College campuses, University of Phoenix in Suisun City, California Maritime Academy in Vallejo, Touro University on Mare Island, Saint Mary's College Extended Program in Fairfield, and Chapman University at Travis Air Force Base (AFB) and in Fairfield (Solano County 2010).

16.1.2 Public Utilities

Public utilities in the project area include solid waste disposal, gas, and electricity.

Water

Because land in the project area is suitable for dry-land farming and grazing activities, the farms do not require irrigation or other large-scale water use. According to the Solano County 2008 General Plan FEIR, rural residential landowners in the unincorporated areas of the County provide most of their own water for domestic uses, largely from individual shallow groundwater wells (Solano County 2008a).

The Rio Vista Water Supply System serves customers in and around Rio Vista and includes eight wells within the City of Rio Vista, 18 miles of pipe, and two reservoir tanks with a combined storage capacity of four million gallons. The City of Rio Vista provides over one billion gallons of water each year to an estimated 4,364 customer accounts (City of Rio Vista 2008, 2010).

Sewage

The majority of residences and establishments in unincorporated areas of the County, including the project area, largely maintain their own sewer systems (e.g., stand alone septic tanks) under the authority of the County Environmental Health Services Division (Solano County 2008b, Solano County 2010).

Solid Waste Disposal

Disposal of nonrecyclable solid wastes generated in the unincorporated county are directed to one of two privately owned landfills: the Potrero Hills Landfill, located near State Route (SR) 12 and Suisun City approximately 10 miles from the western project boundary, and the Hay Road Landfill, located on SR 113 east of Vacaville approximately 12 miles from the northern project boundary (Solano County 2008b). State law (Assembly Bill 939) requires at least 50 percent diversion of solid waste from landfills to recycling facilities. The unincorporated county does not have its own recycling facility; however, recyclable materials from unincorporated areas are accepted by recycling facilities located in the cities (Solano County 2008b). While Rio Vista does not have a drop-off recycling center, Mount Diablo Recycling in Pittsburg, Recycle It in Fairfield, and Alco Iron and Metal Company in Vallejo accept specific recyclable materials depending on the facility (Solano County 2010).

Gas and Electricity

Pacific Gas and Electric (PG&E) supplies electricity to Solano County, including the project area. Gas and electrical use in the project area is mainly residential, and many gas pipelines are present for distribution. The project area contains the Montezuma I and High Winds substations and over 200 turbines that are part of the enXco V project. Nearby facilities include the Shiloh II substation and the substation shared by Solano Wind and enXco V, and the PG&E Birds Landing switchyard. Power lines and towers cross the project area, including the PG&E 230 and 500 kV transmission lines the PG&E 230 kV Gen-Tie line, PG&ER distribution lines and service connections, and aboveground and underground collector lines from the other wind projects in the Montezuma Hills.

Frequency-Based Communications

In addition to gas and electric utilities, frequency-based communication signals traverse the project area. These include microwave, radio/television, and aircraft navigation signals. Because of the height of the turbines and disturbance caused by the wind turbines, the blades may affect signal transmission and reception. Background information regarding these means of communication is below, followed by identification of frequency-based communication paths in the project area.

Microwave

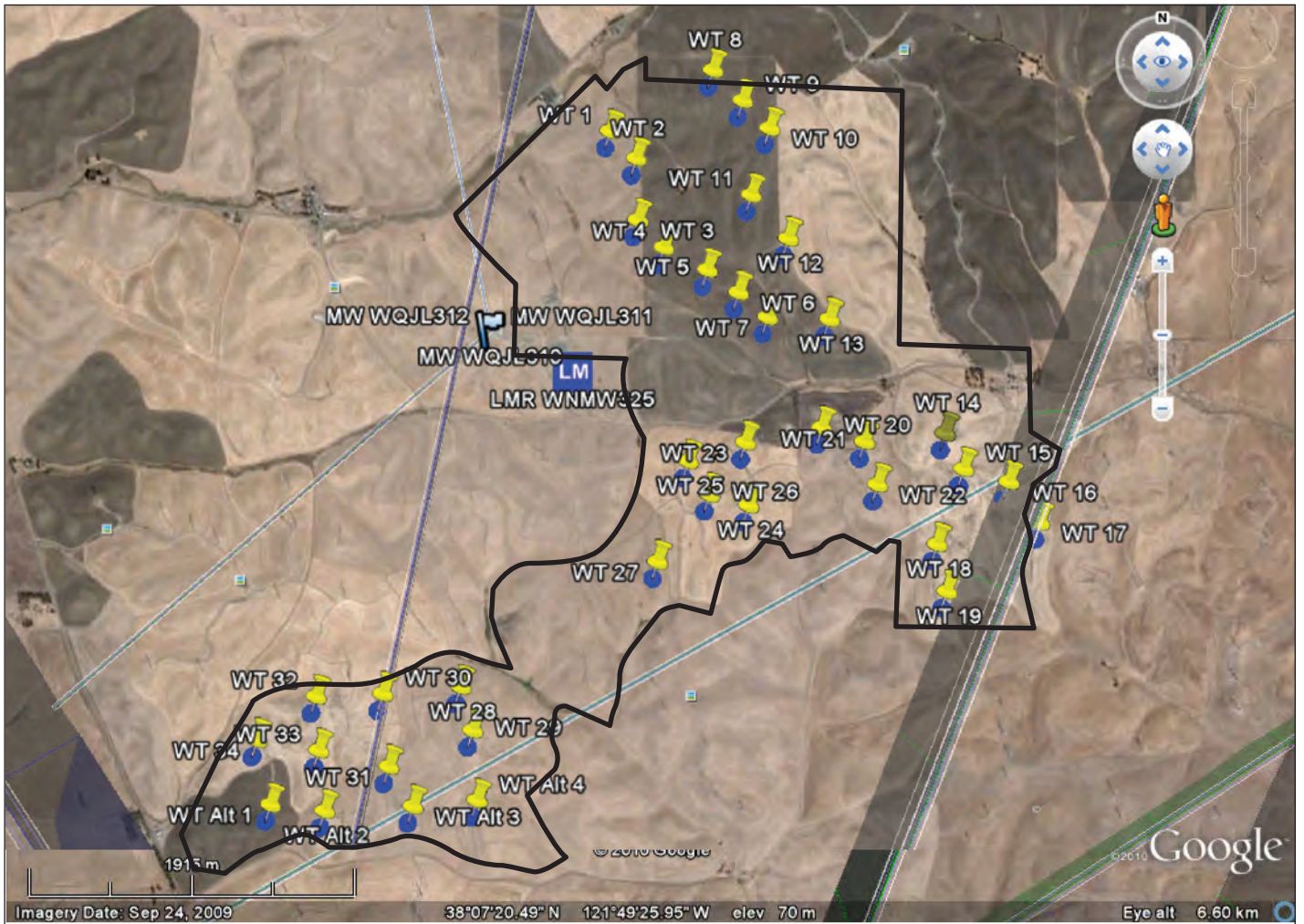
Microwaves are electromagnetic waves that carry telephone, video, digital, and other information to users. Cellular telephone towers are typical examples of microwave communication system components. Microwave signals transmit along clear lines of sight, providing reliable point-to-point and highly directional communication, particularly for the telecommunications industry.

Microwaves also use a higher frequency band, which increases the capacity and efficiency of the microwave networks. Microwaves are relayed by a series of dish- or antenna-equipped stations. These stations receive and transmit in one direction so as to minimize conflict with other microwave frequencies.






Wind turbines can cause a distortion of communication signals by creating physical obstructions to the clear line of sight conditions. Therefore, reliability of the transmission is reduced when obstructions are located between transmitters. Microwave paths can be identified within a project area through a licensed Microwave Search and Worst Case Fresnel Zone (WCFZ) Analysis. This analysis provides a map with the location of microwave paths and the WCFZ around each path. Microwave transmission can be obstructed if structures, such as wind turbines, are located within a WCFZ (American Wind Energy Association 2008). Figure 16.1-1, Microwave Paths in the Project Area, depicts in the microwave paths in the project area.

Electromagnetic interference (EMI) is another common problem in microwave communication. EMI can result from contact between microwave signals and metallic structures such as house siding, large trucks, power lines, other microwave communication stations, and wind turbines.

On behalf of the Applicant, Evans Associates conducted a study of existing frequency-based communication paths in the Montezuma Hills and surrounding area that indicated several microwave path profiles in the vicinity of the Project (Evans Associates 2010). The August 18, 2010 Evans study used an earlier version of the turbine layout to evaluate potential turbine impacts to microwave paths and identified three active microwave paths that pass through the project area. The Applicant has since revised the turbine layout and the boundaries of the project area and dropped one of the proposed turbine models; Evans Associates updated their report accordingly. Appendix G includes both the August 18, 2010 and the updated October 12, 2010 Evans Associates studies. As currently proposed, the project area would only intersect two active microwave paths identified in the report. In the report update, Evans Associates referred to the current proposed turbine layout to evaluate which turbines would be located within or near the Worst Case Fresnel Zone (WCFZ) of a microwave path, the zone where siting of obstructions should be avoided. According to the updated study, three turbines would be located near the WCFZ of a microwave path, but provided the licenses for the microwave links are accurate, none of proposed turbines would be located within a WCFZ.



Legend

-  Project Location
-  Wind Turbines
-  Microwave Links
-  Vertical Plane between Microwaves and the Ground
-  Land Mobile Base Station

Source: Evans Associates



Figure 16.1-1
**Microwave Paths in the
 Project Area**
 Montezuma II Wind Energy Project
 Solano County, California

Fixed Radio Facilities

Four Land Mobile Base Stations are located near the project area. The nearest Land Mobile Base Station would be over 3,280 feet from the nearest turbine. Evans Associates determined that the proposed Project would have no impact on any of the four nearby stations. An FCC database search did not reveal cellular or personal communications service antennae in the project area. Evans Associates notified the National Telecommunication Information Agency (NTIA) to give government agencies the opportunity to identify telecommunications concerns within the project area. In October, 2010, Evans Associates received a response from the NTIA that stated that no federal agencies had identified concerns about radio frequency interference from the proposed Project.

Radio/Television

The project area receives television and radio signals from Bay Area and Sacramento stations, although signal strength varies depending on receptor location in relation to hills. Radio and TV stations in Sacramento and Stockton primarily serve the project area the transmitters are closer than San Francisco and Oakland stations. Residences in or near the project boundary, specifically those that point their outdoor antennas through the turbine area, utilize “rabbit ear” antennas, or older DTV receivers, could potentially experience video disruption. Residents of the Montezuma Hills often use satellites to supplement cable for television access.

Man-made structures and natural geographic features can result in distortion or reduction of TV signal reception. Multipath interference, which occurs when signals reflected by the blades or other obstacles arrive at the viewer’s TV antenna at the same time as the direct signal, can occasionally cause pixilation or freezing of digital pictures. Newer HDTV receivers typically experience less multipath interference than analog TV sets (analog TV transmission ended in 2009) and older digital models (Evans Associates 2010). Multipath interference is especially of concern if the receiver location is in a valley or a place of low elevation. According to the report, the topography of the Montezuma Hills causes so much multipath interference that any additional disturbance from the proposed Project would be insignificant.

A search of the Federal Communications Commission’s (FCC) database revealed that no AM (amplitude modulation) broadcast facilities are located within three kilometers (km) of the project area boundary. The closest FM radio station is KVHS in Concord, approximately 18 km (11 miles) from the project area (Evans Associates 2010).

Unlike microwave and television signal disruption, wind turbines generally do not affect radio broadcast signals because the signal spreads out in several directions. Therefore, a single structure such as a wind turbine would not obstruct a radio broadcast signal; however, obstruction of a radio broadcast signal can occur if the wind turbine is located in close proximity to a broadcast antenna (Evans Associates 2010).

Aircraft Navigation

Invented more than 50 years ago, very high frequency omni-directional range (VOR) navigational systems enable pilots to navigate easily from one location to the next. Land-based VOR stations

emit high frequency signals that aircraft receive and use to determine their bearing and distance from the station. Typically, VOR signals are received above altitudes of 1,000 feet (304.8 meters) and operate on frequencies between 108 and 118 megahertz (Wood 2004). Recently, global positioning system (GPS) data supplements the VOR network.

The Federal Aviation Administration (FAA) maintains VOR stations at Travis AFB, Concord, Skaggs Island, Sausalito, and Oakland, from approximately 9 to 38 miles from the project area. Radar and other military communication systems are also installed at Travis AFB and the U.S. Navy's Mare Island, which are located approximately 9 and 22 miles, respectively, from the Project. Chapter 18, Transportation, discusses the airport surveillance radar system at Travis AFB.

16.2 PUBLIC SERVICES AND UTILITIES REGULATORY SETTING

Federal, state, and local laws, agencies, and plans regulating public services and utilities apply to the proposed Project.

16.2.1 Federal

The National Telecommunications Information Administration has procedures that address potential interference with government communications systems.

National Telecommunications Information Administration

Most technical specifications for government communication systems are not available to the public. In order to determine whether a project would interfere with federal government microwave communication systems, an applicant must notify the National Telecommunications Information Agency (NTIA). The NTIA manages the operation of radio frequencies for federal government use and maintains the Government Master File (GMF), a classified database that contains all of the government telecommunications systems. When an applicant notifies the NTIA regarding a proposed project, the NTIA then notifies Federal agencies operating telecommunications systems in areas nearby.

The notification process includes site maps and a letter that contains a description of the wind energy project, the type of turbines, and turbine locations, if known. The NTIA issues the letter to the Interdepartmental Radio Advisory Committee (IRAC). IRAC consists of government agencies, such as the Department of Defense, Department of Justice, FAA, and the Department of Homeland Security, that operate radar or telecommunication systems. After 45 to 60 days, the IRAC issues a determination of impact and the NTIA responds to the applicant. The NTIA response would state that government telecommunications concerns within the project area have not been identified or it would identify potential impacts that would have to be addressed in coordination with the relevant agencies. The IRAC consultation process may not reach all relevant federal entities, and it is possible that a federal agency may raise concerns about radar system impacts outside of the IRAC process (American Wind Energy Association 2008).

16.2.2 State

The California Integrated Waste Management Board policies apply to public services and utilities in the project area.

California Integrated Waste Management Board

The California Integrated Waste Management Board (CIWMB) is under the umbrella of the California Environmental Protection Agency. The CIWMB is responsible for the oversight, management, and tracking of California's solid waste. The Integrated Waste Management Act of 1989 (Assembly Bill 939) mandates that California's jurisdictions divert 50 percent of their solid waste from landfills (CEPA 2009).

California Safe Drinking Water Act

The California Safe Drinking Water Act, in the California Health and Safety Code, establishes water quality standards and permitting requirements for drinking water. Under this Act, any entity that serves drinking water to 25 or more people for at least 60 days in a year is a public water system and must obtain domestic water supply permit from the California Department of Public Health, Division of Drinking Water (California Department of Public Health 2001).

California Water Code

The California Water Code regulates water resources in the state of California. Section 10910 of the water code implements Senate Bill 610, which requires a project subject to CEQA to identify the source of any water that may be used and to evaluate that source to determine whether there is sufficient capacity to serve the water demands of the project.

16.2.3 Local

Solano County programs applicable to the public services and utilities impacts of the Project include the General Plan and zoning requirements.

Solano County General Plan

The Resources Chapter of the Solano County General Plan specifies requirements for use permit applications within wind resource areas. Submittal requirements include "notification of application filing to microwave communications link owners within 2 miles of the proposed installation" (Solano County 2008b).

In addition, the Public Facilities and Services Chapter of the General Plan identifies the following policies and implementation programs:

- **PF.P-2:** Require new development and redevelopment to pay its fair share of infrastructure and public service costs.
- **PF.P-8:** Notify the appropriate agencies (e.g., school districts, public safety, water) of new development applications within their service area early in the review process to allow sufficient time to assess impacts on facilities.
- **PF.P-20:** Minimize the consumption of water in all new development.
- **PF.I-29:** Expand waste minimization efforts, including household recycling, food waste and green waste recycling, business paper recycling, and construction and demolition recycling. Require commercial and industrial recycling. Require building projects to recycle or reuse a minimum of 50 percent of unused or leftover building materials.

- **PF.I-35:** Coordinate with the fire districts and CAL FIRE during project review to ensure that all new development incorporates appropriate fire-safety techniques, including fire-safe building materials, early-warning systems, adequate clear spaces and fuel reduction, adequate escape routes and facilities, fire breaks, and sufficient water supply systems for fire suppression.
- **PF.P-41:** In the review and approval of County and City projects, identify and consider the law enforcement needs generated by the project.
- **PF.I-55:** Encourage local utility companies to provide high speed wireless internet access for all residents; prioritize developing transmission lines for solar, wind, and other alternative energy sources; and ensure resiliency and redundant access to the utility grid.

Solano County Sewage Disposal Standards

Chapter 6.4 of the Solano County Code, Solano County Sewage Disposal Standards, requires sewage disposal site testing by a California licensed professional engineer, registered environmental health specialist, geologist, or soil scientist in coordination with the County Environmental Health Division and approval by the Division of on-site sewage disposal system designs.

Solano County Zoning Ordinance

Section 28-5(b)(4)(d) requires that wind turbine generators be filtered and/or shielded to prevent radio frequency energy emission and thereby reduce the likelihood of interference with radio and/or television broadcasting or reception. This section also permits alternative mitigation to reduce the impacts of turbines on microwave paths and facilities.

16.3 SIGNIFICANCE CRITERIA FOR PUBLIC SERVICES AND UTILITIES IMPACTS

The evaluation of potential impacts of the Project on public services and utilities considered the following criteria. The Montezuma II Wind Energy Project would be considered to have an impact on public services and utilities if it would:

- Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities—or the need for new or physically altered governmental facilities, the construction of which would cause significant environmental impacts—in order to maintain acceptable service ratios, response times or other performance objectives for police protection, fire protection, medical and educational services;
- Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board;
- Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which would cause significant environmental effects;
- Require or result in the construction of new storm water drainage facilities or the expansion of existing facilities, the construction of which could cause significant environmental effects;
- Require new or expanded entitlements for water supplies;

- Result in a wastewater treatment provider which serves or may serve the Project having inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments;
- Be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs;
- Conflict with federal, state, and local statutes and regulations related to solid waste;
- Interfere with existing microwave communication;
- Cause degradation in existing television and radio reception;
- Interfere with existing civilian or military navigation systems; or
- Conflict with local, state, or federal statutes and regulations related to public services and utilities.

16.4 PUBLIC SERVICES AND UTILITIES IMPACTS AND MITIGATION

Impact PSU-1: Public Services

The Project could increase demand for police, fire, and emergency medical. Impacts regarding recreational services and fire risks are addressed in Chapters 16, Recreation, and Chapter 17, Safety, respectively.

As discussed in Chapter 13, Land Use and Population, direct population growth would not occur during the construction and operation of the Project. Although up to 35 construction contractors would be employed during project construction, it is expected that construction-phase workers would either already live near the Project or in nearby cities and metropolitan areas. Therefore, this temporary increase in persons working in Solano County would not have a noticeable impact on population, and there would be no increase in the population of school-age children in the project area. During operation, the Project would employ a maximum of three employees; and, demands on local school districts are not expected to change. Construction and operation of the Project would not affect the capacity of educational personnel to maintain acceptable service ratios or other performance objectives. The project would have no potentially significant impact on educational services.

During operations, a maximum of three employees would provide maintenance and security for the Project. This small number of workers would not increase the demand for emergency response services above the existing baseline conditions.

During construction, the Applicant has estimated that the Project would employ up to 35 construction workers. The potential influx of up to 35 people during construction could temporarily increase the need for emergency medical services in the project area. This is a potentially significant impact.

Construction and operation in the project area could increase the demand on the Montezuma Fire Protection District and Rio Vista Fire Department. Given the dry, grassy environment, the Montezuma Hills area has a high risk for grass fires (Solano County 2008b). During the construction phase, heavy equipment and passenger vehicles driving on vegetated areas before clearing and grading could increase the danger of fire. Heated mufflers could light surrounding vegetation on fire. In addition, during operation, lightning strikes on wind turbines could create power surges that

might start a fire (Reynolds 2004). Therefore, the construction of the Project has the potential to significantly impact the capacity of fire personnel to maintain acceptable service ratios, response times, or other performance objectives.

Level of Significance: Potentially Significant

Public access to the wind turbines would be restricted to avoid potential safety hazards and vandalism, as further discussed in Chapter 17, Safety (Mitigation Measure SA-3: Limit Public Access to the Project Area). In addition, the Applicant would have all turbine towers locked. These measures would minimize the need for police surveillance and response, so there would be no significant impact on the capacity of the police to maintain acceptable service ratios, response times, or other performance objectives.

To minimize the potential for grass fires, the Project would be required to develop and implement a Grass Fire Control Plan, as described under Mitigation Measure SA-5 (Wind Project Grass Fire Control Plan).

While restricting access to only properly trained personnel would reduce the likelihood of accidents and thus the need for emergency medical care, Mitigation Measure SA-2b (Health and Safety Plan) would require a Health and Safety Plan, which would reduce potential impacts to emergency service capabilities to less than significant. During operation, the small number of full-time staff (up to 3 staff) would result in little change to the existing baseline demand.

Over all, impacts on public services are expected to be less than significant, with the exception of fire and emergency service impacts, as noted above. With the implementation of Mitigation Measures SA-2b and SA-5, these potential impacts would be reduced to a less than significant level.

Level of Significance with Mitigation: Less than Significant

Impact PSU-2: Public Utilities

The Project could increase demand for water, sewage, solid waste disposal, and gas and electrical services.

During construction, an appropriate contractor would provide chemical toilets for use by the construction crews, in accordance with Division of Environmental Health requirements. The toilet contractor would also either replace the chemical toilets periodically or arrange for them to be emptied in the appropriate manner. Construction refuse and solid waste generated from construction activities would be stored at the temporary staging area and periodically disposed of at the Potrero Hills Landfill by the contractor. Because of the temporary nature of construction and the large amount of remaining capacity at the landfill, the Project is not expected to have a significant impact on the landfills' permitted capacity to accommodate the Project's solid waste disposal needs.

The proposed Project would not have a significant impact on drinking water resources. The Applicant would comply with regulations regarding the distribution of drinking water (see Chapter 14, Hydrology, for more detail). Many of the residences in the project area rely on wells for their

drinking water supply. In accordance with the General Plan, all of the proposed turbine locations are a distance of at least three times the turbine height from any residence. Construction of the Project would not damage or disrupt on-site wells supplying domestic water.

Water for construction would arrive by truck from the nearest metered distribution point on the Rio Vista water system. During the five-month construction period, the Applicant would use approximately 5.4 million gallons of water for dust control, cement mixing, and other purposes. Pursuant to section 10912 of the California Water Code, the Project is exempt from requirements to prepare a water assessment because the City of Rio Vista is a small public water system with less than 5,000 service connections, and the Project would cause a relatively small increase in water demand. According to section 10912(a), if a development would not cause an increase of 10 percent or more in the number of service connections, or demand an amount of water equivalent to or greater than a residential development that would represent an increase of 10 percent or more in the number of service connections, the development would not require a water assessment. The proposed Project would demand 5.4 million gallons of water over five months, or 144,375 cubic feet per month. The Rio Vista Water Rate Analysis Final Report estimates that it currently has 4,560 customer accounts and that residential customers use about 2,020 cubic feet of water each month (City of Rio Vista 2008). The Project therefore would demand an amount of water equal to the water used by approximately seven residential customers. The increase in demand would be less than the amount of a 10 percent increase in service connections and, therefore, would not require a new water assessment.

The proposed Project would involve construction of a new Operation and Maintenance (O&M) building with a new septic system to provide wastewater disposal and a well to provide water for the bathroom. The Applicant would design and construct the new septic system in compliance with Solano County sewage disposal standards. The Applicant would obtain a water well construction permit from the Solano County Division of Environmental Health, and if necessary under the California Safe Drinking Water Act, a Domestic Water Supply Permit from the California Department of Public Health, Division of Drinking Water. A new underground power line would span a distance of 1230 feet from the existing off-site High Winds O&M building to supply electricity to the new O&M building. Impacts on water, sewage, and energy services from the construction or operation of the O&M building would be less than significant.

The Applicant would also construct a new substation and switchyard near the existing High Winds and Montezuma I substations and PG&E Birds Landing switchyard. The new switchyard would allow one project to trip without causing any other projects to disconnect. The connection of the proposed Project to the grid through the new switchyard would not cause any disruptions within the PG&E grid or to any residences in the area. The new substation and switchyard would have a less than significant negative impact on electric utilities and additionally, the new switchyard's 6-breaker ring bus would improve reliability of the power supply from the Montezuma Hills area.

Construction and operation of the proposed Project would have no impact, or a less than significant impact on solid waste disposal needs, and water, sewage, and energy services. No mitigation is required.

Level of Significance: Less than Significant

Impact PSU-3: Interference with Microwave Transmissions

Wind turbine towers could interfere with existing microwave communication paths that traverse the project site; however, based on current information, the proposed Project would not be likely to result in impacts to microwave transmissions. As discussed previously in Section 16.1.2, Evans Associates' microwave study found that, provided the microwave licenses in the FCC database are accurate and there are no additional microwave paths in the area, no turbines in the proposed layout would penetrate the WCFZ of a microwave path. Despite the finding that as currently understood, the Project would be unlikely to impact microwave transmissions, the Project could still result in a significant impact due to the uncertainty in the study, and the potential of the Project to change. The study noted that the FCC database may not be complete and that cellular and PCS antennae may be present at the site. If the Applicant were to make any further changes to the turbine layout, a revised evaluation of impacts to microwave transmissions would be necessary. Although the wind turbine blades have been designed to allow some transmission of frequency-based communication, the potential communication pathway interference is a significant impact.

In October 2010, NTIA responded to notification and stated that no federal agencies expressed concerns regarding blockage of radio. Evans Associates concluded that provided licenses are accurate, the Project would not impact any microwave paths or land mobile base stations.

Level of Significance: Potentially Significant

Implementation of Mitigation Measure PSU-3 would reduce potentially permanent, localized impacts on microwave communication to less than significant.

Mitigation Measure PSU-3: Notification and Siting. In order to reduce potential impacts on microwave transmissions and radio frequency facilities, prior to construction the Applicant shall:

- a. If the Applicant revises turbine locations, conduct a revised study and prepare a report on the effect upon nearby FCC licensed microwave and fixed station radio frequency facilities due to the construction of the Project. The report shall describe the results of the study and analysis to determine the locations of FCC microwave and fixed station radio frequency facilities that may be adversely impacted as a result of the construction of wind turbines in the project area.
 - i. The revised study and report shall be prepared by a qualified professional telecommunications and technology design firm with experience evaluating impacts on microwave transmissions and radio frequency facilities.
 - ii. The report shall be based on the final siting plan of the project's turbines and shall describe impact zones and recommendations concerning individual wind turbine siting to avoid impacts.
 - iii. The study shall also evaluate the effect of proposed turbines on radio communication at Sandy Beach Park.

- iv. If specific turbines are found to adversely impact FCC microwave facilities, the turbines shall be re-sited to avoid impacts.
 - v. If turbines are found to substantially degrade fixed station radio frequency facilities or radio communication at Sandy Beach Park, they shall be re-sited to ensure interference is reduced to acceptable levels. Alternatively, the Applicant shall upgrade or relocate affected radio transmitter equipment to ensure interference is reduced to acceptable levels.
 - vi. All report results shall be submitted to Solano County at least 30 days prior to construction, and are subject to review and approval by the County.
- b. No turbine or meteorological tower shall be installed in any location along the major axis of an existing microwave communications link. Wind turbines and meteorological towers shall be sited outside of microwave paths to avoid potential conflict with microwave communication signals.
- i. The Applicant shall confirm the geographic coordinates and heights of the microwave antennas through a land survey to confirm that all turbine locations would conform to the applicable provisions of the California Building Code with respect to WCFZ.
 - ii. Turbines may require an adjustment in location depending upon the results of the land survey. Prior to construction, the Applicant shall submit a report by a licensed engineer based on the revised turbine locations to the County verifying that no turbines would be located within an existing microwave path.
 - iii. No turbine or meteorological tower shall be installed in any location where its proximity with other fixed broadcast, retransmission or reception antenna for radio, television, internet service, wireless phone, or other communications systems would produce EMI with the signal transmission or reception of such facilities.
- c. Prior to the issuance of building permits, the Applicant shall:
- i. Provide notification of proposed locations and heights of turbine and meteorological towers to all owners of frequency-based communication stations, towers, and microwave station owners as recorded by the FCC, television and radio station owners, and owners of any other unrecorded but physically observed cellular, PCS, or other mobile communications service antennas within 2 miles of the Project.
 - ii. Notify all land mobile licensees identified in the microwave study by letter and describe the specific turbine locations and the estimated project impact.
 - iii. Search all cellular and PCS antennas on site since their locations may not be tabulated in the available FCC records.
 - iv. The Applicant shall resolve any anomalies identified by receiving equipment modifications or installation of satellite dishes in appropriate cases. Additional

options for resolution include installation of a higher-gain outside antenna to increase the strength of the direct wave.

- d. In the event that a complaint is received regarding microwave or land mobile pathway interference, the Applicant shall appropriately and satisfactorily resolve receiver interference through coordination with owners of frequency-based communication stations and towers and is responsible for any remediation necessary to restore the affected communication signal at a minimum to pre-turbine or meteorological tower installed levels. Possible actions include installation of high-performance antennas at nearby microwave sites, if required.

Level of Significance with Mitigation: Less than Significant

Impact PSU-4: Interference with Television or Radio Reception

Wind turbine towers could interfere with existing television or radio signals that traverse the project site. There are 20 television or radio towers in the vicinity of the Project.

One of the facilities, KMA712, would be within range of proposed project turbines that could result in a significant impact. Turbines could have a cascaded effect and result in a minor amount of time variance to the low frequency carrier. The Applicant's study to determine the locations of federally-licensed microwave and fixed station radio frequency facilities that may be adversely impacted by the Project recommended that the licensee of the facility, Hess Communications Corporation, be notified of the nearby turbine construction (Evans Associates 2009).

No sites are registered under Travis AFB or as cellular or PCS sites. All 20 of the towers are located within approximately two miles of one or more of the proposed turbines and can be expected to cause minor time-varying signals for mobile receiver stations within the project area and immediately adjacent to its boundaries.

A search of the FCC's database revealed no AM facilities within the required notification distance of three kilometers (or approximately two miles as stated above) beyond the project boundary. Therefore, there should be no reasonable expectations of disruptions in transmitted radiations on the AM band due to the presence of the turbines. Occasionally, depending upon ground conditions, local AM receivers may experience slight signal changes due to local effects. Signal fluctuations of FM broadcast facilities may be experienced by a few locations due to the signal fluctuations in time with the turbines' blade rotors but receiver automatic gain control should be able to manage these variations (Evans Associates 2010).

The width and height of the wind turbine blades would be a significant fraction of a wavelength at very-high-frequency and ultra-high-frequency levels, which are used for television and radio communication. Significant disruption of land mobile services is not expected. A moderate impact on over-the-air television signals may occur in the project area, but it is expected to affect relatively few receivers and a limited number of television stations. This disruption should dissipate for locations up to 2 – 3 miles away from a turbine. Based on the estimate that 10 percent of receiver locations may be affected to some extent within 3 miles of a large turbine, and conservatively

estimating that 50 percent of the households rely on over-the-air TV programming, approximately 112 HDTV receiving locations may be affected (Evans Associates 2009).

Any anomalies that are encountered should be resolved by receiver equipment modifications or installation of satellite dishes, in extreme cases. The project wind turbines have the potential to cause degradation in existing television and radio reception, and the impacts are significant.

Level of Significance: Potentially Significant

Implementation of Mitigation Measure PSU-3 (Notification and Siting) would reduce this impact to less than significant.

Level of Significance with Mitigation: Less than Significant

Impact PSU-5: Navigational System Interference

The Montezuma II Wind Energy Project would be located more than 11 miles from the VOR station at Travis AFB and would not interfere with the operation of the VOR system.

Level of Significance: Less than Significant

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