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3.11 Hazards and Hazardous Materials

This section identifies and evaluates potential issues related to Hazards and Hazardous Materials in the context of implementing the Project and alternatives. It includes information about the physical and regulatory setting and identifies the criteria used to evaluate the significance of potential impacts, the methods used in evaluating these impacts, and the results of the impact assessment. Data related to existing conditions present in the study area is based largely on a Phase I Environmental Site Assessment (Phase I) that was prepared for the Project by Stantec Consulting Services (Stantec) (**Appendix F1**, *Environmental Records Review*). The County independently reviewed the Phase I and found it to be suitable for reliance in combination with other sources of data in this analysis.

In response to its notice of intention to prepare this Draft EIR, the County received scoping input that suggests consideration of Shasta County's local hazard mitigation plan, which addresses wildfires and other hazards, and that identify potential causes or contributors to hazards (i.e., increased truck traffic on Moose Camp roads, activities that would disturb natural deposits of arsenic which could be released to surface waters and equipment that could leak toxic chemicals or flammable materials (e.g., transformers, turbines, or batteries). See **Appendix J**, *Scoping Report*. However, no sources of information regarding the presence of arsenic were provided and none were identified during follow-up research conducted by the EIR preparers (identified in Chapter 5, *Report Preparation*).

3.11.1 Setting

3.11.1.1 Study Area

The study area for this evaluation of hazards and hazardous materials includes the Project Site and transportation routes used to deliver or remove any hazardous materials or equipment.

3.11.1.2 Environmental Setting

Hazardous Materials

A hazardous material is defined as any material that, because of quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment (Health and Safety Code §25501[o]). The term "hazardous materials" refers to both hazardous substances and hazardous wastes. Under federal and state laws, any material, including wastes, may be considered hazardous if it is specifically listed by statute as such or if it is toxic (causes adverse human health effects), ignitable (has the ability to burn), corrosive (causes severe burns or damage to materials), or reactive (causes explosions or generates toxic gases).

Hazardous wastes are hazardous substances that no longer have practical use, such as materials that have been spent, discarded, discharged, spilled, contaminated, or are being stored until they can be disposed of properly (22 Cal. Code Regs. §66261.10). Soil that is excavated from a site containing hazardous materials is a hazardous waste if it exceeds specific regulatory criteria

(22 Cal. Code Regs. §§66261.20–66261.24). While hazardous substances are regulated by multiple agencies, as described in Section 3.11.1.3, *Regulatory Setting*, cleanup requirements of hazardous wastes are determined on a case-by-case basis according to the agency with lead jurisdiction over the release.

Potential Receptors/Exposure

The sensitivity of potential receptors in areas of known or potential hazardous materials contamination depends on several factors. The primary factor is the potential pathway for human exposure. Exposure pathways include dermal exposure, inhalation, and ingestion of contaminated soil, air, water, or food. The magnitude, frequency, and duration of human exposure can cause a variety of health effects, from short-term acute symptoms to long-term chronic effects, depending on the specific material.

Hazardous Materials Database Search

The Phase I included a database search report consistent with ASTM Standard Practice E1527-13. The database search includes a thorough review of environmental databases that are maintained by various federal, state, and local agencies to identify sites with releases of hazardous materials or documented uses of hazardous materials. According to the findings of the search, the Project Site was not listed on any of the databases reviewed. The closest site to the Project Site listed in any of the search results is Whitmore Gap Filler Annex, a "gap filler radar" facility that deployed in the late 1950s to alleviate the need for civilians to scan the skies for enemy bombers (MilitaryMuseum.org, 2020). The Whitmore Gap Filler Annex is located on the peak of Clover Mountain, approximately 0.84 mile southeast of the Project Site. The site has been decommissioned; its current status is listed as requiring no further action (Appendix F1; DTSC, 2014).

An independent review of the Department of Toxic Substances Control (DTSC) EnviroStor and State Water Resources Control Board (SWRCB) GeoTracker hazardous materials databases confirms the findings of the database search report by Stantec; there are no active or closed hazardous materials sites within the Project Site boundary. Both GeoTracker and EnviroStor databases further confirm the Whitmore Gap Filler Annex site as the closest listed site to the Project Site (SWRCB, 2020; DTSC, 2020).

Schools and Day Care Centers

The nearest school to the Project Site is the Montgomery Creek Elementary School. It is located approximately 1.5 miles from the western boundary of the Project Site.

Airports

There are three public airports in Shasta County: The Redding Municipal Airport, Benton Airpark, and Fall River Mills Airport. Shasta County also is home to one private airport Tews Field-CA53. The nearest airport to the Project Site, the Fall River Mills Airport, is located approximately 20 miles northeast of the Project Site.

Blasting

As described in Section 2.4.5.1, blasting may be required in advance of excavation for the installation of trenches, for example, depending on the subsurface conditions. Federal, state and local agencies regulate the use, storage, packaging, labeling, and transportation and other aspects of blasting, including, but not limited to, the Occupational Safety and Health Administration (OSHA); the federal Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF); the U.S. Department of Transportation (USDOT); California Division of Occupational Safety and Health (Cal/OSHA), and Shasta County. Local and state laws regulating explosives may be more restrictive than federal requirements. The Applicant's prime construction contractor(s) and any pertinent sub-contractors would comply with the most stringent provisions of applicable federal, state, and local laws governing explosives, and that the plan would address at least the following: safety measures relating to any onsite storage, protection of people and property, fire safety, and transportation; environmental protection measures that avoid or minimize impacts to sensitive environmental resources (including biological resources, cultural resources, wells and springs, and nearby residents, e.g., from vibration, dust or noise.

3.11.1.3 Regulatory Setting

Federal

Hazardous Materials Management

The primary federal agencies with responsibility for hazardous materials management include the U.S. Environmental Protection Agency (USEPA), U.S. Department of Labor Occupational Safety and Health Administration (OSHA), and the U.S. Department of Transportation (DOT). With respect to hazardous materials, state and local agencies often have either parallel or more stringent regulations than federal agencies. In most cases, state law mirrors or overlaps federal law and enforcement of these laws is the responsibility of the state or of a local agency to which enforcement powers are delegated. For these reasons, the requirements of the law and its enforcement are discussed under either the state or local agency section.

Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act of 1976 (RCRA, 42 USC §6901 et seq.) is the principal law governing the management and disposal of hazardous wastes. RCRA regulates the generation, transportation, treatment, storage, and disposal of hazardous waste, referred to as from "cradle to grave." 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 and is approved by the USEPA. The USEPA approved California's RCRA program, referred to as the Hazardous Waste Control Law (Health and Safety Code §25100 et seq.) in 1992.

Hazardous and Solid Waste Act

The Hazardous and Solid Waste Act (HSWA) amended RCRA in 1984, affirming and extending the "cradle to grave" system of regulating hazardous wastes. The amendments specifically prohibit the use of certain techniques for the disposal of some hazardous wastes.

Emergency Planning and Community Right-to-Know Act

The Emergency Planning and Community Right-to-Know Act (EPCRA, 42 USC §11001 et seq.) from the Superfund Amendments and Reauthorization Act (SARA) Title III improved community access to information regarding chemical hazards and facilitated the development of business chemical inventories and emergency response plans. EPCRA also established reporting obligations for facilities that store or manage specified chemicals. EPCRA applies to this Project because the contractors who would be called upon to properly manage hazardous materials and, if needed, to clean up accidental spills, remove hazardous materials from the Project Site, and/or to construct remediation systems would be required to prepare and implement written emergency response plans in accordance with EPCRA.

Hazardous Materials Transportation Act

The Hazardous Materials Transportation Act of 1975 (49 USC §§5101–5127) empowered the Secretary of Transportation to designate as hazardous materials that may pose an unreasonable risk to health and safety or property. The DOT, in conjunction with the USEPA, is responsible for enforcement and implementation of federal laws and regulations pertaining to safe storage and transportation of hazardous materials. DOT Regulations implementing the Act (49 CFR Parts 171–180) regulate the transportation of hazardous materials, types of material defined as hazardous, and the marking of vehicles transporting hazardous materials. This Act applies to this Project because contractors who participate in its development, operation, maintenance and decommissioning would be required to comply with its storage and transportation requirements to reduce the possibility of spills. 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.

Occupational Safety and Health Act

Requirements of the Occupational Safety and Health Act (29 USC § 651 et seq.) are administered by OSHA, the agency responsible for assuring worker safety in the handling and use of chemicals in the workplace. The federal regulations pertaining to the safety and health of construction workers are contained in Part 1926 of Title 29 of the Code of Federal Regulations (29 CFR §1926.1 et seq.). They provide standards for safe workplaces and work practices, including standards relating to hazardous materials handling. At sites known or suspected to have soil or groundwater contamination, construction workers must receive training in hazardous materials operations and a site health and safety plan must be prepared. The health and safety plan establishes policies and procedures to protect workers and the public from exposure to potential hazards at the contaminated site.

Oil Pollution Prevention

Under the authority of Clean Water Act Section 311, the Oil Pollution Prevention regulations (40 CFR Part 112) establish procedures, methods, equipment, and other requirements to prevent discharges from non-transportation-related onshore and offshore facilities into the waters of the United States. These regulations require facilities with a single tank or cumulative aboveground storage capacities of 1,320 gallons or greater of petroleum to prepare and implement a Spill

Prevention, Control, and Countermeasure (SPCC) Plan (40 CFR §112.1). The purpose of an SPCC Plan is to form a comprehensive federal/state spill prevention program that minimizes the potential for discharges. The SPCC Plan must address all relevant spill prevention, control, and countermeasures necessary at the specific facility for which the SPCC Plan is written. These regulations are relevant to the Project because more than 5,000 gallons of diesel fuel would be stored in aboveground tanks on the Project Site during construction and operation, and because a comparable amount also could be present during decommissioning and site restoration.

Federal Aviation Administration Regulations on Objects Affecting Navigable Airspace

The Federal Aviation Administration (FAA) is the federal agency that identifies potential impacts related to air traffic and related safety hazards. The FAA's Federal Aviation Regulations (FAR) establish standards and notification requirements for objects affecting navigable airspace (see Advisory Circular [AC] 70/7460-1L) and also helipads (AC 150/5390-2C). Specifically regarding the marking and lighting of obstructions that have been deemed to be a hazard to air navigation, FAA standards and Advisory Circular 70/7460-1L (FAA, 2018) generally require any temporary or permanent structure, including appurtenances, that exceeds an overall height of 200 feet (61 m) above ground level (AGL) to meet the requirements to be marked and/or lighted. For this Project, the requirements would apply to the proposed meteorological evaluation towers (METs) and wind turbines.

State

The Z'Berg-Nejedly Forest Practice Act of 1973 (Pub. Res. Code §§4511–4360.2) and its implementing regulations, the Forest Practice Rules (14 Cal. Code Regs. §895 et seq.), govern the management of privately owned forestlands in California, including the servicing of logging equipment, disposal of refuse, litter, trash and debris. Rule 914.5, 934.5, 954.5, for example, establishes the following performance standard in connection with the servicing of logging equipment: "Equipment used in timber operations shall not be serviced in locations where servicing will allow grease, oil, or fuel to pass into lakes or watercourses" (14 Cal. Code Regs. §914.5, 934.5, 954.5).

California Department of Toxic Substances Control

The California Department of Toxic Substances Control (DTSC) is responsible for regulating the use, storage, transport, and disposal of hazardous substances in the state. The hazardous waste regulations establish criteria for identifying, packaging, and labeling hazardous wastes; prescribe management of hazardous waste; establish permit requirements for hazardous waste treatment, storage, disposal, and transportation; and identify hazardous waste that cannot be disposed of in landfills. DTSC also maintains a Hazardous Waste and Substances Site List for site cleanup. This list is commonly referred to as the Cortese List. Government Code Section 65962.5 requires the California Environmental Protection Agency (CalEPA) to update the Cortese List at least annually. DTSC is responsible for a portion of the information contained in the Cortese List. Other state and local government agencies are required to provide additional hazardous material release information for the Cortese List.

State Water Resources Control Board

The State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Boards (RWQCBs) administer the requirements of the Clean Water Act that regulate pollutant discharges into waterways of the U.S. The Project is proposed within the jurisdiction of the Central Valley RWQCB, Redding Office.

Construction of the Project would disturb more than 1 acre of land surface, and so could affect the quality of stormwater discharges into waters of the U.S. The Project therefore would be subject to the Construction General Permit, more formally known as the National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (Order 2009-0009-DWQ, NPDES No. CAS000002; as amended by Orders 2010-0014-DWQ and 2012-006-DWQ). See Section 3.12, *Hydrology and Water Quality*, for additional details about the Construction General Permit.

Unified Hazardous Waste and Hazardous Materials Management Regulatory Program

Regulations implementing a Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program) address six elements: hazardous waste generators and hazardous waste on-site treatment; underground storage tanks; aboveground storage tanks; hazardous materials release response plans and inventories; risk management and prevention programs; and Unified Fire Code hazardous materials management plans and inventories. The Certified Unified Program Agency (CUPA) is the local agency responsible for the implementation of the Unified Program. The Shasta County Environmental Health Division is the designated CUPA, and would serve in this capacity for the Project.

Hazardous Materials Release Response Plans and Inventory Law

The California Hazardous Materials Release Response Plan and Inventory Law of 1985 (Business Plan Act, Health and Safety Code §25500 et seq.) requires businesses that store or use hazardous materials to prepare a Hazardous Materials Business Plan (HMBP) and submit it to the CUPA, discussed above. An HMBP includes details of a facility and business conducted at the site, an inventory of hazardous materials that are handled and stored on-site, an emergency response plan, and a safety and emergency response training program for new employees with an annual refresher course.

Hazardous Materials Transportation

In addition to DOT regulations, the State regulates the transportation of hazardous waste originating in the State and passing through the State. Both regulatory programs apply in California. The two state agencies with primary responsibility for enforcing federal and state regulations and for responding to hazardous materials transportation emergencies are the California Highway Patrol (CHP) and California Department of Transportation (Caltrans). The CHP enforces hazardous materials and hazardous waste labeling and packing regulations to prevent leakage and spills of material in transit and to provide detailed information to cleanup crews in the event of an accident. Vehicle and equipment inspection, shipment preparation, container identification, and shipping documentation are the responsibility of the CHP, which conducts regular inspections of licensed transporters to assure regulatory compliance. Caltrans has emergency chemical spill

identification teams at as many as 72 locations throughout the state that can respond quickly in the event of a spill.

Occupational Safety

The California Department of Industrial Relations Division of Occupational Safety and Health (Cal/OSHA) has primary responsibility for developing and enforcing workplace safety regulations in California. Because California has a federally approved OSHA program, state regulations are at least as stringent as those found in Title 29 of the CFR.

Cal/OSHA regulations concerning the use of hazardous materials in the workplace require employee safety training, safety equipment, accident and illness prevention programs, hazardous substance exposure warnings, and emergency action and fire prevention plan preparation. Cal/OSHA enforces hazard communication program regulations, which contain training and information requirements, including procedures for identifying and labeling hazardous substances, and communicating hazard information relating to hazardous substances and their handling. The hazard communication program also requires that Safety Data Sheets (SDSs) be available to employees, and that employee information and training programs be documented. These regulations also require preparation of emergency action plans, such as escape and evacuation procedures, rescue and medical duties, alarm systems, and training in emergency evacuation.

Emergency Response

Pursuant to the Emergency Services Act (Government Code §8550 et seq.), California has developed an Emergency Plan to coordinate emergency services provided by federal, state, and local governmental agencies and private persons. Response to hazardous materials incidents is one part of this plan. The plan is administered by the State Office of Emergency Services (OES). The OES coordinates the responses of other agencies, including the USEPA, CHP, California Department of Fish and Wildlife (CDFW), the RWQCBs (in this case, the Central Valley RWQCB), the local air districts (in this case, the Shasta County Air Quality Management District) and local agencies. The State Emergency Plan defines the "policies, concepts, and general protocols" for the proper implementation of the California Standardized Emergency Management System (SEMS). The SEMS is an emergency management protocol that agencies within the State of California must follow during multi-agency response efforts whenever state agencies are involved.

Local

Shasta County General Plan

Section 5.6, *Hazardous Materials,* of the Shasta County General Plan describes the following objectives and policies regarding hazardous materials as they related to the Project (Shasta County, 2004).

Objectives:

***HM-1*:** Protection of life and property from contact with hazardous materials through site design and land use regulations and storage and transportation standards.

***HM-2*:** Protection of life and property in the event of the accidental release of hazardous materials through emergency preparedness planning.

Policies:

HM-a: The County shall make every effort to inform applicants for discretionary and nondiscretionary projects which are located within potential border zone property of known hazardous waste facilities that they must comply with State requirements regarding hazardous waste facilities. A map shall be prepared and maintained which identifies these areas.

HM-b: Shasta County shall maintain an emergency preparedness plan for hazardous materials.

HM-c: Shasta County shall adopt policies for hazardous materials use, transportation, storage and disposal as required by State laws.

HM-d: Shasta County shall adopt policies for the protection of life and property from contact with hazardous materials through site design and land use regulations.

HM-e: Any proposal for development of a disposal site for hazardous wastes in Shasta County shall be reviewed closely to ensure that no significant environmental impacts will result from the project. Review of such project may include a determination of what type of hazardous wastes may be disposed of at the site.

Emergency Response

The Shasta County Sheriff's Office of Emergency Services (OES) coordinates with Federal, State, and local agencies to prepare, respond, and recover from emergencies and natural disasters. OES is responsible for maintaining and updating the County Emergency Operation Plan (EOP), which is an all hazards plan for Shasta County. The Shasta County Multi-Jurisdictional Hazard Mitigation Plan (SCHMP) was approved in November 2017 and includes resources and information to assist in planning for hazards (Shasta County and City of Anderson, 2017). The SCHMP provides a list of actions that may assist the jurisdictions in reducing risk and preventing loss from future hazard events.

3.11.2 Significance Criteria

CEQA Guidelines Appendix G Section IX identifies considerations relating to hazards and hazardous materials. See Section 3.1.4, *Environmental Considerations Unaffected by the Project or Not Present in the Project Area*, as it relates to the County's analysis of the potential impacts of this Project to the considerations suggested in CEQA Guidelines Appendix G Section IX. Otherwise, for purposes of this analysis, a project would result in a significant impact to Hazards or Hazardous Materials if it would:

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;

b) 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;

c) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

CEQA Guidelines Appendix G Section IX(g) suggests that a project also would result in a significant impact to Hazards or Hazardous Materials if it would expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fire. Potential impacts relating to wildland fire are analyzed in Section 3.16, *Wildfire*.

3.11.3 Direct and Indirect Effects

3.11.3.1 Methodology

The following analysis is based on existing conditions as determined by the Project-specific Phase I and publicly available information from various local, state, and federal agencies.

3.11.3.2 Direct and Indirect Effects of the Project

a) Whether the Project would create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.

Impact 3.11-1: The Project could create a significant hazard to the public or environment through the routine transport, use, or disposal of hazardous materials or wastes. (*Less-than-Significant Impact*)

Project implementation would require the use of common hazardous substances, such as gasoline and diesel fuel, oils and lubricants, hydraulic fluid, and solvents to maintain vehicles and motorized equipment. See Table 2-3*,* Hazardous Materials, which lists the hazardous materials that are expected to be used during site preparation and construction, operation and maintenance, and decommissioning and site restoration phases of the Project. Routine uses of any of these substances could pose a hazard to people or the environment and would be considered potentially significant.

Fuel tanks would be maintained and operated according to all local, state, and federal regulations during construction and operation, and hazardous material storage would be detailed in the Spill Prevention, Countermeasure, and Control (SPCC) Plan. Refueling and general maintenance for construction equipment, such as changing fluids and lubricating parts, would also be subject to sufficient containment capabilities and according to measures outlined in the SPCC Plan.

In accordance with requirements contained in the Health and Safety Code and the California Code of Regulations, the Applicant would prepare a Hazardous Materials Business Plan/Spill Prevention Control and Countermeasures Plan (HMBP/SPCC) prior to construction. The HMBP would include best management practices (BMPs) for the transport, storage, use, and disposal of hazardous materials and waste. The HMBP also would include information regarding construction activities, worker training procedures, and hazardous materials inventory procedures. Prior to operation, the Applicant would update the HMBP (including the BMPs) with information about the types of hazardous materials that would be used during operation.

During construction, waste disposal and collection receptacles would be located onsite to ensure proper disposal of hazardous materials in accordance with regulatory requirements.

Project construction activity would be subject to the Construction General Permit and its required SWPPP, which include BMPs to control hazardous materials used for construction.

Operation, maintenance, and decommissioning of the Project would result in the transportation, storage, use or disposal of fewer hazardous materials compared to construction or decommissioning. During operation, relatively limited quantities of hazardous materials would be stored in the O&M facility and storage sheds in accordance with regulatory requirements and the HMBP. Batteries may be stored at the substation. Monthly inspections would occur to check for leaks and spills. Routine maintenance activities are expected to include, but not be limited to: checking torque on tower bolts and anchors; checking for cracks and other signs of stress on the turbine tower and other turbine components; inspecting for leakage of lubricants, hydraulic fluids and other hazardous materials, and replacing them as necessary; inspecting the grounding cables, wire ropes and clips, and surge arrestors; cleaning; and repainting. Compliance with applicable federal, state, and local regulations and the applicable BMPs and HMBP would ensure that any potential impact would be less than significant during Project operation and maintenance.

The impacts of transportation, storage, use and disposal of hazardous materials would be substantially the same during decommissioning as during construction. As such, the requirements and regulations applicable to the construction phase also would apply during decommissioning to adequately control potential impacts.

Compliance with applicable federal, state, and local requirements summarized in Section 3.11.1.3, *Regulatory Setting*, and related BMPs and plans would ensure that the Project does not create a significant hazard to the public through the routine transport, use, or disposal of hazardous materials. Therefore, this impact would be less than significant.

Mitigation: None required.

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b) Whether the Project would 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.

Impact 3.11-2: The Project could create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. (*Less-than-Significant Impact*)

During all Project phases, activities may involve the transportation, storage, use, or disposal of a variety of hazardous materials, including batteries, hydraulic fluid, diesel fuel, gasoline, propane, antifreeze, dielectric fluids, explosives, herbicides, grease, lubricants, paints, solvents, and adhesives. Ground disturbing activities also could inadvertently release naturally occurring arsenic in the form of fugitive dust or sediment in stormwater if arsenic is present on the Project Site.

The HMBP/SPCC would include BMPs for these activities as well as spill control and spill response measures. In the unlikely event that a spill did occur, the SPCC would include appropriate measures to ensure that workers cease work activities to contain any release and enact the protocols for cleanup including the notification of appropriate agencies and the use of materials stored onsite such as absorbent pads to minimize the spread or exposure.

Accidents or mechanical failure involving heavy equipment could result in the accidental release of fuel, lubricants, hydraulic fluid, or other hazardous substances. These types of spills on construction sites are typically in small quantities, localized, and cleaned up in a timely manner. Construction contractors are contractually responsible for their hazardous materials and are required under their contract to properly store and dispose of these materials in compliance with state and federal laws, including implementing a HMBP/SPCC. As discussed, the Project would require coverage under the Construction General Permit, and so would be subject to the protections included in a SWPPP, which would outline BMPs to contain a potential release and to prevent any such release from reaching an adjacent waterway or stormwater collection system (e.g., erosion control, sediment control, and waste management). Therefore, implementation of the SWPPP would minimize potential adverse effects to groundwater and soils.

Because, compliance with applicable federal, state, and local regulations and the applicable BMPs and HMBP/SPCC plan would ensure that the Project would not result in significant hazards to the public or environment related to accidental release of hazardous materials the impact would be less than significant.

Arsenic is found widely in nature, in trace amounts, including in rocks and sediments (Vaughn, 2006; USEPA, 1998). Inorganic arsenic occurs naturally in many types of rocks (USEPA, 1998), including basaltic and andesitic rocks (Vaughn, 2006; Smedley and Kinniburgh, 2002), which are present at the Project Site. However, there is no available data to suggest that there are elevated concentrations of arsenic within the Project Site. For this reason, the Project would result in a less-than-significant impact relating to the potential creation of a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of naturally occurring arsenic into the environment. If arsenic is present in abundance in the rocks at the Project Site, then construction activities could inadvertently release arsenic into the air. As discussed in Section 3.3, *Air Quality*, the implementation of Mitigation Measure 3.3-2c (Fugitive Dust Controls) to address Impact 3.3-2c would provide further assurance that any fugitive dust emissions containing naturally occurring arsenic would be less than significant. As stated in Section 3.9, *Geology and Soils*, the depth to groundwater is more than 230 feet below ground surface; therefore, the potential risk of Project-caused transport of naturally occurring arsenic to groundwater would be remote. The SWPPP discussed in Section 3.12, *Hydrology and Water Quality*, would provide further assurance that any construction runoff that might contain naturally occurring arsenic in the rocks would not contaminate the groundwater. Additionally, any naturally occurring arsenic in the rock would be present prior to any Project-related ground disturbance, and so the Project would not exacerbate the existing conditions, and would not expose people or the environment to a significant risk associated with arsenic contamination.

Mitigation: None required.

Impact 3.11-3: During normal operation, equipment failure or an extreme event could lead to turbine failure, resulting in a potential hazard. (*Less-than-Significant with Mitigation Incorporated*)

"Tower failure" refers to the collapse of a wind turbine or meteorological tower. "Rotor failure," also known as "blade throw," refers to the disconnection of a wind turbine blade or blade fragment from the tower, typically due to equipment failure or an extreme event such as a lightning strike. Other potential causes could include failure of turbine control/safety system, human error, design error, or poor manufacturing quality (Larwood, 2005).

Tower failure and blade throw are rare. Available documentation indicates that blade failure probability is in the range of 1-in-100 to 1-in-1000 per turbine per year (Larwood, 2005). Further, based on independent research, the EIR preparers were unable to identify any reported injury to a member of the public from a turbine or meteorological tower failure or blade throw. This is consistent with information disseminated by the American Wind Energy Association (AWEA), which reports that "no member of the public has ever been injured by a turbine" (AWEA, 2020). Nonetheless, persons and facilities within a tower failure or blade throw hazard zone could be at risk of damage, injury or death if struck. If a blade or fragment of a blade detaches from the hub, the distance it travels is dependent upon a number of factors including the release velocity (which is a function of the turbine tip speed), tower height, topographic setting, blade or blade fragment length, rotor speed, wind speed, and departure angle.

The Applicant proposes to strictly control access to the wind energy facility, limiting access to Project facilities to persons approved for access by the Applicant. Access to the larger Project Area is controlled by the underlying land owner. Where necessary, safety and "No Trespassing" signs would be posted around towers, transformers, other high-voltage facilities, and along roads in accordance with federal and state regulations. This strict control of public access would reduce the risk of exposure of potential Project hazards to members of the public on the Project Site to a less-than-significant level. The Applicant also proposes that the Project operator would monitor turbines through a Supervisory Control and Data Acquisition (SCADA) monitoring system 24 hours a day, seven days a week. This system would allow the Applicant to perform self-diagnostic tests and would allow a remote operator to perform system checks, establish operating parameters, and ensure that the turbines are operating at peak performance. National Renewable Energy Laboratory (NREL) research indicates that continuous monitoring of wind turbine health using a SCADA system can improve turbine reliability by detecting failures before they reach a catastrophic stage (NREL, 2011). The proposed continuous monitoring of the automated SCADA system would be sufficiently protective of the 12 employees who could be onsite while turbines are operating. For these reasons, a less-than-significant impact would result for O&M personnel and for members of the public within the Project Site.

To address the risk of public exposure to thrown fragments from rotor failure beyond project site boundaries, many jurisdictions have adopted "setback requirements," which establish minimum

distances between wind turbines and neighboring property lines, roads, and occupied structures. Neither the State of California nor Shasta County has adopted setback requirements for wind turbines. In other jurisdictions, required setbacks vary, but usually are based on overall turbine height, i.e., the tower height plus the blade radius. For example:

- Kern County requires a minimum wind generator setback of 2 times the overall turbine height or 500 feet, whichever is less, from exterior project site boundaries adjacent to existing parcels of record that contain less than 40 acres; where neighboring property is greater than 40 acres, then the setback must be the lesser of 1.5 times the overall turbine height or 500 feet. Regardless of parcel area, the minimum required setback from any off-site residence is the greater of 1.5 times the overall turbine machine height or 500 feet (Kern County Code of Ordinances Section 19.64.140, Kern County, 2005).
- Solano County requires wind turbine generators to be set back at least 1.25 times the overall turbine height to any property line (Solano County Code of Ordinances §28.80, Solano County, 2012).
- San Bernardino County requires a setback from off-site residence(s) on adjacent parcels that is the greater of 1.5 times the overall turbine height or 1,500 feet (San Bernardino County Code §84.29.030, San Bernardino County, 2010).
- Riverside County requires a setback of 3 times the overall turbine height from the lot line of any lot containing a "habitable dwelling" and 1.1 times the overall turbine height from all other lot lines, and at least 1.25 times the overall turbine height from any public road or highway (Riverside County Code §17.224.040, Riverside County, 2002).
- El Dorado County also requires a setback of the greater of 3 times the overall turbine height or 500 feet (El Dorado County Code Table 130.40.390.2, El Dorado County, 2015).
- Yolo County also requires a setback from any adjacent parcel containing an offsite residence of the greater of 3 times the overall turbine height or 1,000 feet; the setback to any publicly maintained public highway or street, any public access easement, including any public trail, pedestrian easement, or equestrian easement, or railroad right-of-way is the lesser of 1.5 times the overall turbine height or 500 feet (Yolo County Code §8-2.1103[i], Yolo County, 2014).

Informed by multiple other jurisdictions' requirements, this analysis considers a project to have a significant impact relating to turbine or meteorological tower failure or blade throw if it would be set back less than 2 times the overall turbine height (i.e., 1,358 feet) from the lot line of any off-site residence or 1.25 times the overall turbine height (848.75 feet) from any public road or highway based on the maximum overall turbine height of 679 feet as identified in Chapter 2, *Description of Project and Alternatives*.

Based on these thresholds, all of the proposed turbines would be farther from public roads or highways than that threshold. However, two of the proposed turbines (turbines M03 and D05 as shown on Figure 2-2, *Site Plan*) would be located closer to residential lot lines than the threshold. Although the risk of hazard relating to turbine or meteorological tower failure or blade throw from turbines M03 and D05 would be low, the potential consequences of such an event could be high, and so would be significant unless mitigated. Mitigation Measure 3.11-3, if implemented, turbines M03 and D05 would not be constructed.

Mitigation Measure 3.11-3: Mandatory Setbacks.

A minimum wind turbine setback of two times the total tip height shall be maintained from the exterior Project boundaries where the Project Site is adjacent to existing parcels of record that contain an off-site residence.

Significance after Mitigation: Less than significant.

Impact 3.11-4: During normal operation, weather conditions could lead to ice shed from turbine blades, resulting in a potential hazard. (*Less-than-Significant Impact*)

Ice shed can occur as air temperatures rise, causing ice on turbine blade to thaw and for ice fragments to drop from the rotors to the ground near the base of the turbine (Morgan et al., 1998). Ice also can be thrown from an operating turbine due to aerodynamic and centrifugal forces. A Swiss report entitled *Wind Turbine Ice Throw Studies in the Swiss Alps* (Cattin et al., 2014) confirms that underneath the turbine is the most dangerous place for ice-related wind turbine hazards, and cautions that in arctic conditions, approximately 5 percent of ice fragments can land more than 80 meters (approximately 262.5 feet) from the turbine. GE, a wind turbine manufacturer, reported in 2006 that "rotating turbine blades may propel ice fragments some distance from the turbine— up to several hundred meters if conditions are right" (Wahl and Giguere, 2006). The actual distance that ice could be expected to travel would depend on several factors, including turbine dimensions, rotational speed, weather and especially the wind conditions, the instrumentation of the wind turbine's control system, and on the strategy of the control system itself (see, e.g., Seifert et al., 2003).

Based on independent research, the EIR preparers were unable to identify any reported injury as a result of ice throw from wind turbine. This is consistent with information disseminated by the American Wind Energy Association (AWEA), which reports that "no member of the public has ever been injured by a turbine" (AWEA, 2020). Nonetheless, accumulations of ice on wind turbine blades can pose a risk to O&M personnel and, to a much lesser extent, to the general public.

The risk to both groups is considered low predominantly because ice buildup would slow a turbine's rotation, which would be sensed by a turbine's SCADA system, causing the turbine to shut down. As described in Section 2.4.6, *Operation and Maintenance*, the Project operator would monitor turbines through the SCADA system 24 hours a day, seven days a week. Further, risk literature indicates that environmental cues (e.g., observing ice on wind turbines or hearing ice cracking or falling) result in protective action. Nearly all (92.9 percent) of the O&M personnel surveyed as part of a study of perceived risk and response to the wind turbine ice throw hazard (Klaus, 2017) reported that the principal reaction to environmental cues was for the wind farm to reduce exposure risk by issuing "site stand down orders" evacuating the immediate area and suspending all field work. They also reported that their companies had safety procedures in place for wind turbine icing, and a substantial number of workers (79.7 percent) reported that their company's safety procedures were very to extremely effective for protecting them in the event of an ice throw occurrence (Klaus, 2017).

For this Project, members of the public would not have access to the Project facilities and unauthorized access would be discouraged via locked gates and signage. Standard setbacks typically are sufficient to protect against potential dangers to the public from ice throw (AWEA, 2020). In any event, when asked about responses to environmental cues, the most common response of members of the public was to "stay away" or "keep their distance" from the wind turbines (Klaus, 2017). Any potential risk to illegal trespassing members of the public from ice throw would not put a substantial number of people at risk. (See the analysis of Impact 3.3-5 in Section 3.3, *Air Quality*, regarding the low population in the immediate area). For these reasons, the potential for the Project to result in a potential hazard to a substantial number of people due to ice throw would be less than significant.

Mitigation: None required.

Impact 3.11-5: During normal operations, applications of certain pesticides could result in a potential hazard. (*Less-than-Significant Impact*)

Scoping input identified the use of glyphosate weed killers such as Roundup as having potential to cause cancer and/or deoxyribonucleic acid (DNA) disruption, resulting in sterility and deformities. As explained in Section 2.4.8.3, *Hazardous Materials*, "If deemed necessary, herbicides would be brought to the site and applied by a licensed applicator." Glyphosate is generally acknowledged to be the most widely used agricultural pesticide worldwide: It is registered in 130 countries, has been approved for weed control in more than 100 crops, and is present in more than 750 products (Valavanidis, 2018). Thus, while it is possible that an herbicide that does not contain glyphosate could be used if deemed necessary, it also is possible that an herbicide that does contain glyphosate could be used on the Project Site.

The potential carcinogenic and genotoxic properties of glyphosate are widely debated within the scientific community. On one hand, the International Agency for Research on Cancer (IARC), a research arm of the World Health Organization, classified glyphosate as "probably carcinogenic" in March 2015 (IARC, 2015). On the other hand, a host of other agencies and entities have reached the contrary conclusion that there is no convincing evidence that glyphosate poses a risk for various types of cancer in humans and no convincing evidence of direct DNA damage *in vitro* or *in vivo* (Valavanidis, 2018; de Roos et al., 2005). For example, in a 2013 study, the German Institute for Risk Assessment evaluated approximately 450 toxicological studies and considered approximately 900 publications from scientific journals before concluding that "available data do not show carcinogenic or mutagenic properties of glyphosate nor that glyphosate is toxic to fertility, reproduction or embryonal/fetal development in laboratory animals" (BfR, 2013). In the United States, a collaborative effort of investigators from the National Cancer Institute, the National Institute of Environmental Health Sciences, the Environmental Protection Agency, and the National Institute for Occupational Safety and Health resulted in series of studies collectively called the Agricultural Health Study (AHS) (NIH, 2018, 2020). The AHS studies of cancer, reproductive health, and other health outcomes between 1990 and 2015 among 52,394 licensed private pesticide applicators (mostly farmers) and 32,345 of their spouses from Iowa and North Carolina, and 4,916 commercial pesticide applicators. The 2018 update's conclusion that

"Glyphosate use was not associated with overall cancer risk" is consistent with the 2005 AHS research finding that "Glyphosate exposure was not associated with cancer incidence overall or with most of the cancer subtypes we studied" (NIH, 2018; de Roos et al., 2005).

A review undertaken in 2000 (Williams et al., 2000) to evaluate the human health risk of glyphosate showed that glyphosate does not bioaccumulate in animal tissue, and that no significant toxicity occurred in acute, subchronic, or chronic studies. Further, "There was no convincing evidence for direct DNA damage in vitro or in vivo, and it was concluded that Roundup and its components do not pose a risk for the production of heritable/somatic mutations in humans…. There were no effects on fertility or reproductive parameters in two multigeneration reproduction studies with glyphosate. Reviewers concluded that 'under present and expected conditions of new use, there is no potential for Roundup herbicide to pose a health risk to humans.'"

Recognizing the ongoing debate about the use of glyphosate weed killers such as Roundup that is occurring internationally and nationally, and that also is an issue of local concern, the County is persuaded by the detailed, ongoing research conducted in the United States by the National Cancer Institute, the National Institute of Environmental Health Sciences, the Environmental Protection Agency, and the National Institute for Occupational Safety and Health, and concludes that there is insufficient evidence to conclude that the use, if any, of glyphosate weed killers on the Project Site would have potential to cause cancer or other adverse health outcomes. Therefore, the Project would result in a less-than-significant potential impact.

Mitigation: None required.

Impact 3.11-6: During normal operations, alternating changes in light intensity could occur when turbine blades are rotating and result in an adverse health effect. (*Less-than-Significant Impact*)

Scoping comments enquired about and suggested potential impacts associated with the alternating changes in light intensity that could occur when turbine blades are rotating (sometimes referred to as "shadow flicker"), including whether epileptic seizures, migraines or adverse impacts on mental health could be caused. Specific weather, light, timing, operational, and experiential conditions are required: shadow flicker only occurs on sunny days, when the sun is low enough on the horizon that the turbine is between the sun and the viewer (i.e., early in the day or late in the evening), the turbines must be rotating, and the viewer's eyes must be open. Shadow flicker does not occur at night, when fog or clouds obscure the sun, or when turbines are not operating. Shadow flicker also is limited in the distance from a turbine it can be perceived. It is suggested that, during normal operation, the visual flicker of the moving shadows of turbine blades could create a strobe-like phenomenon that could be a nuisance or cause adverse health effects to nearby residents.

No consistent national, state, or local standards exist for allowable frequency or duration of shadow flicker from wind turbines at the Project Site, and the County has not adopted a threshold to evaluate the potential significance of a Project-caused change. As discussed below, this

analysis considers both frequency and duration, relying on the expertise of the Epilepsy Foundation of America, the Chief Medical Officer of Health of Ontario, and the National Institutes of Health in identifying thresholds above which the Project's potential shadow-flicker-related health impacts would be considered significant, and on the expertise of the National Association of Regulatory Utility Commissioners.

The frequency of shadow flicker (i.e., the speed of the flashing light) is a function of the number of times the turbine blades turn per second. It is measured in hertz (Hz). However, the effect normally is considered a nuisance above 2.5 Hz, and more severe impacts can occur at higher frequencies. For example, the Epilepsy Foundation of America reports that exposure to flashing lights at certain intensities can trigger seizures in about 3 percent of epileptics, and that the frequency or speed of flashing light most likely to trigger epileptic seizures is between 5 and 30 Hz (EFA, 2019). Flicker frequency caused by a wind turbine is based on the rotor frequency (i.e., 0.6 to 1.0 Hz), which is in a range that is well below the frequency range for epileptic seizures. This conclusion is consistent with that reached by the Chief Medical Officer of Health of Ontario, Canada who, in a May 2010 report entitled "The Potential Health Impact of Wind Turbines," stated "About 3 per cent of people with epilepsy are photosensitive, generally to flicker frequencies between 5-30Hz. Most industrial turbines rotate at a speed below these flicker frequencies" (CMOH, 2010).

Migraines are a recurring type of headache that can cause moderate to severe pulsing or throbbing pain (MedlinePlus, 2019). Migraines affect approximately 12 percent of Americans. Researchers believe they have a genetic cause; flashing or bright lights are identified as among a variety of potential triggering factors (MedlinePlus, 2019). A National Institutes of Health (NIH) study on detection and discrimination of flicker contrast in migraine tested frequencies between 1 and 30 Hz and found that the "greatest sensitivity was seen at and above 10 Hz." No lower bound for sensitivity or effect was reported, and independent research failed to find any medical or peer-reviewed scientific study linking shadow flicker from wind turbines to a statistically significant increase in migraines among those predisposed to experience them. No evidence was found in published, peer-reviewed scientific literature linking the potential for normal operation of a wind turbine to cause flickering and adverse mental health impacts.

In summary, there is a lack of published, peer-reviewed scientific literature linking the flickering that can occur during the normal operation of a wind turbine to epileptic seizure, migraines, or adverse mental health impacts. Accordingly, potential impacts would be less than significant. Even though the Project's potential impacts relating to shadow flicker would be less than significant, the Applicant has proposed, as part of the Project design, to further consider and address the potential annoyance that could be caused by Project-related shadow flicker to those who would not be benefitting personally from the project (i.e., "project participants").

Environmental Design and Research (EDR) prepared a shadow flicker analysis on behalf of the Applicant. A copy of the analysis is provided in **Appendix F2**, *Shadow Flicker Analysis*. The County independently reviewed the shadow flicker analysis and other materials prepared by or on behalf of the Applicant and determined them to be suitable for reliance on (in combination with other materials included in the formal record) in the preparation of this analysis. The analysis

evaluated the largest of the potential project footprints (i.e., 72 Vestas V162 wind turbines, each with a rotor diameter of approximately 531.5 feet [162 meters] and a hub height of approximately 410 feet [125 meters]) within a study area that equates to roughly 10 rotor diameters (approximately 1 mile). Beyond this distance, shadow flicker effects generally are considered negligible (BERR, 2008; Appendix F2).

In its report, EDR modeled potential Project-caused shadow flicker effects at each of the 69 receptor locations within the study area and identified two (i.e., receptor #2 and receptor #58) where the duration of shadow flicker would exceed 30 hours per year – a threshold of significance recommended by the National Association of Regulatory Utility Commissioners in a 2012 report funded by the U.S. Department of Energy (NARUC, 2012). The report distinguishes between "non-participating" and "participating" receptors. Receptor #2 would be "non-participating" while #58 would be "participating." A "non-participating receptor" is a resident who would not benefit personally from the proposal; a participating receptor would receive some personal benefit from the location of turbines in the area. Studies correlating annoyance and wind turbines have found find that project participants are less annoyed by turbines than non-participants. See, e.g., Voicescu et al. (2016) ("Those who did not receive a personal benefit from having [wind turbines] in the area were found to have 4.03 times higher odds of being [highly annoyed by wind turbine shadow flicker] compared to those who did receive personal benefits"); see also Michaud et al. (2016) ("Participants with a high concern for their physical safety had 14 times higher odds of being annoyed by [wind turbine noise]"). The results for receptors #2 and #58 are summarized in **Table 3.11-1**, *Shadow Flicker Results at Receptors Predicted to Exceed 30 Hours*.

TABLE 3.11-1
SHADOW FLICKER RESULTS AT RECEPTORS PREDICTED TO EXCEED 30 HOURS

Receptor ID	Project Status	Predicted Shadow Flicker (days/year)	Predicted Max Daily Shadow Flicker (hh:mm), approximate times[a]	Turbines Contributing to Shadow Flicker
2	Non-participating	119	1:14, 6:45 PM – 8:15 PM	D04, D05
58	Participating	230	0:57, 6:45 AM – 7:30 AM 8:00 AM – 8:45 AM 4:15 PM – 5:45 PM 7:15 PM – 8:30 PM	N02, M08, M10

NOTES:
[a] The times of day represent the range of times during which each receptor could potentially experience shadow flicker throughout the year; however, no receptors will experience shadow flicker every day during all of these hours. See Attachment B for detailed calendars that illustrate the specific time of year and day that each receptor may experience shadow flicker.

SOURCE: Appendix F2, Tables 2 and 3.

Following final turbine model selection and layout, including any micro-siting of locations that may occur as part of the approval process, the Applicant proposes to prepare an updated receptor-specific shadow flicker analysis for non-participating residences. The analysis will account for any screening by existing yard trees, buildings, or proximity to stands of trees and the number and/or orientation of windows in residential receptors. It also will use Project-specific meteorological data to account for wind being below or above generation speeds. If the modeling results show that shadow flicker could exceed 30 hours per year at a non-participating residence,

then the Applicant will work with the landowner to become a Project participant, or to plant trees or install window blinds to block the shadow flicker. These mitigation options could readily be implemented even after the Project has been constructed. These further actions, if determined appropriate based on the updated receptor-specific shadow flicker analysis, would further assure that potential impacts to non-participating residences would be less than specific.

Mitigation: None required.

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c) Whether the Project would impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

Impact 3.11-7: The Project could impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. (*Less than Significant with Mitigation Incorporated*)

As discussed below, the Project would not impair implementation of or, if mitigated, cause a substantial physical interference with Shasta County's EOP, which is the County's all hazards plan. The Project Site is located in a rural area adjacent to State Route (SR) 299, with three Project driveways allowing adequate egress/ingress to the site in the event of an emergency. Additionally, as part of the Project, additional onsite access roadways (internal to the site) would be constructed. During inclement winter months, emergency access could be provided to and through the Project Site via snowcats or ATVs. Therefore, development of the Project would not physically interfere with emergency vehicle access or personnel evacuation from the site in these respects. The Project would not require closures of public roads, which could inhibit access by emergency vehicles. Further, as described in Section 3.14.3.2, which analyzes the direct and indirect transportation effects of the Project, the proposed use of oversized vehicles during construction and decommissioning would not cause a significant adverse impact on emergency access to or near the Project Site if oversize load permit and related requirements are complied with. The implementation of Mitigation Measure 3.11-7 would assure that emergency access would be maintained during construction and decommissioning.

Mitigation Measure 3.11-7: Implement the Traffic Management Plan that would be required by Mitigation Measure 3.14-3.

Significance after Mitigation: Less than significant.

3.11.3.3 PG&E Interconnection Infrastructure

The proposed an onsite collector substation and switching station would increase the voltage of the electricity from the collection system's 34.5 kV to 230 kV to match the voltage of the existing PG&E 230 kV line and the Project would tap into the existing PG&E 230 kV line via an aboveground line tap located directly adjacent to the switching station. Minor modifications or upgrades to the existing 230 kV line may be required to facilitate the Project's interconnection. The work also could require the construction and/or reconfiguration of utility line structures and

transmission line circuits involving four to six new transmission poles. As designed, the Project would protect public safety by restricting public access, enclosing the onsite substation with a chain-link fence, and posting safety and "No Trespassing" signs around towers, transformers, and other high-voltage facilities.

No mitigation would be required specific to the PG&E interconnection infrastructure. As part of the Project, construction, operation, maintenance and decommissioning of the PG&E interconnection infrastructure would result in a less-than-significant impact relating to: the creation of a significant hazard to the public or environment through the routine transport, use, or disposal of hazardous materials or wastes, or reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. It also (like the Project) would cause a less-than-significant impact relating to hazards associated with the application of certain pesticides during normal operations. Because no turbines or related oversize loads would be required for the subset of Project activities required to construct, operate, maintain, or decommission the PG&E interconnection infrastructure, neither Mitigation Measure 3.11-3 (Mandatory Setbacks) nor Mitigation Measure 3.11-7 (implementation of the Traffic Management Plan that would be required by Mitigation Measure 3.14-3) would be required in connection with the PG&E interconnection infrastructure, and there would be no impact relating to shadow flicker.

3.11.3.4 Direct and Indirect Effects of Alternatives

Alternative 1: South of SR 299

Under Alternative 1, no turbines would be erected north of SR 299. The elements of Alternative 1 that would be required to comply with applicable hazardous materials storage, transportation, use, and disposal regulations, along with stormwater permitting regulations would be the same as those described for the Project. The Project components also would be the same in type, if fewer in number. Like the Project, Alternative 1 would result in a less-than-significant impact relating to: the creation of a significant hazard to the public or environment through the routine transport, use, or disposal of hazardous materials or wastes, or reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. It also (like the Project) would cause a less-than-significant impact relating to hazards associated with the application of certain pesticides during normal operations. Because turbine construction and operation would be the same as for the project, although restricted to the area south of SR 299, oversize loads would be needed to deliver turbine components. Similar to the Project, Mitigation Measure 3.11-7 (Traffic Management Plan) would be implemented to ensure that emergency access would be maintained during construction and decommissioning reducing impacts to less than significant. Also similar to the Project, there would be a less-than-significant impact relating to shadow flicker.

Similar to the Project, two turbines (M03 and D05) would be located closer to the property lines of private residential lots than 2 times the turbine height, resulting in a significant impact should a blade throw event occur at either of these turbines. This potential impact would be mitigated to less than significant with the implementation of Mitigation Measure 3.11-3 (Mandatory Setbacks) which would prohibit the construction of turbines M03 and M05.

Alternative 2: Increased Setbacks

The elements of Alternative 2 that would be required to comply with applicable hazardous materials storage, transportation, use, and disposal regulations, along with stormwater permitting regulations would be the same as those described for the Project. The Project components also would be the same in type, if fewer in number, as the Project.

Similar to the Project, Alternative 2 would result in a less-than-significant impact relating to: the creation of a significant hazard to the public or environment through the routine transport, use, or disposal of hazardous materials or wastes, or reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. Alternative 2 also (like the Project) would result in a less-than-significant impact relating to hazards associated with the application of certain pesticides during normal operations. Because oversize loads would be needed to deliver turbine components, Mitigation Measure 3.11-7 (Traffic Management Plan) would be required, to ensure emergency access during construction and decommissioning, reducing the impact to less than significant.

Alternative 2 would differ from the Project by precluding the construction, operation and maintenance of turbines within three times the height of the turbine (i.e., within 2,037 feet) of a residential property line and would require setbacks of 1.5 times the height of the turbine (i.e., within 1,018.5 feet) of private as well as public roads. This would result in four of the Project turbines (M03, D05, B01 and K02) not being constructed. As a result, Alternative 2 would result in a less-than-significant impact relative to whether, during normal operation, equipment failure or an extreme event could lead to a turbine failure resulting in a blade throw. Under Alternative 2, Mitigation Measure 3.11-3 (Mandatory Setbacks) would not be required. Given the greater distance between proposed turbines and potential visual receptors, the less-than-significant impact of the Project relating to shadow flicker would be even more remote under Alternative 2 particularly with respect to receptor #2, because turbine D05 (which would contribute to shadow flicker at this location) would not be constructed.

No Project Alternative

If the No Project Alternative is implemented, none of the proposed wind project infrastructure would be constructed, operated and maintained, or decommissioned on the Project Site. No potential hazards to air navigation would be installed on the Project Site, no Project-related vehicles or equipment would be present, and no hazardous materials would be transported, used, or disposed of in connection with the Project. The Project Site would continue to be operated as managed forest timberlands. Because there would be no change relative to baseline conditions, the No Project Alternative would create no impact related to Hazards and Hazardous Materials.

The Project Site is zoned for timber production. Pursuant to regulations implementing the California Timberland Productivity Act (Government Code §51100 et seq.; 14 Cal. Code Regs. §897[a]), there is a legal presumption that "timber harvesting is expected to and will occur on such lands." The regulations further specify that timber harvesting on such lands "shall not be presumed to have a Significant Adverse Impact on the Environment" (14 Cal. Code Regs. §898). Therefore, the No Project Alternative, including anticipated timber harvesting, is not presumed to

result in a significant adverse individual or cumulative effect relating to Hazards or Hazardous Materials. CAL FIRE would review any future timber harvesting proposal to evaluate any potential project-specific, site-specific environmental impacts.

3.11.4 Cumulative Analysis

The geographic scope for cumulative effects relating to hazards and hazardous materials would be the Sacramento Valley Air Basin, watershed and groundwater basin boundaries (see Section 3.12, *Hydrology and Water Quality*), and the Project materials delivery routes, including I-5 (approximately 35 miles to the west of the Project Site), SR 139 (approximately 60 miles to the east of the Project Site), SR 299, Moose Camp Road, and the three existing, gated logging roads that would be used for direct Project access. Cumulative hazards and hazardous materials-related effects could arise at any point during the Project, from the commencement of construction through operation and maintenance and decommissioning-related activities.

The Project would result in a less-than-significant impact regarding the transport, use, disposal of hazardous materials; and upset and accident conditions involving the release of hazardous materials. Current and reasonably foreseeable projects would be required to comply with the same federal, state, and local regulatory requirements described above that would minimize and/or avoid such impacts. Compliance with these regulations is effective in minimizing releases where emissions or accidental releases tend to be localized and do not combine to become cumulatively considerable. Therefore, considering the localized nature of effects, the temporal and geographic variations in occurrences, any emissions or incidents would not combine to cause a significant cumulative impact. Regarding potential impacts that could occur during normal turbine operations, no other turbines could experience tower failure, blade throw or ice shedding. There is no existing cumulative impact to which the project or an alternative could contribute, and the cumulative effect would be less than significant. The potential for the use, if any, of glyphosate weed killers on the Project Site to cause or contribute to a significant cumulative effect also would be less than significant: there is no evidence of an existing significant impact (i.e., cancer, DNA damage, infertility) attributable to the use of glyphosate weed killers in the relevant geographical area, and insufficient evidence to conclude that the use of such products on the Project Site would cause one. Similarly, there is no evidence of an existing significant impact relating to shadow flicker in the relevant geographical area, and insufficient evidence to conclude that the less-than-significant incremental impact of the Project would cause one. Accordingly, the Project would result in less-than-significant cumulative effects related to hazards and hazardous materials.

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