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3.16 Wildfire

The California Department of Forestry and Fire Protection (CAL FIRE) has assigned a “Very High Fire Hazard Severity Zone” rating throughout Shasta County (Shasta County, 2016). Round Mountain, Montgomery Creek, and Burney all are listed as communities at risk by CAL FIRE’s Office of the State Fire Marshal (CAL FIRE, 2019a). This section identifies and evaluates issues related to wildfire in the context of 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.

The Shasta County Fire Department provided initial input and recommendations related to fire prevention for the County’s environmental review process shortly after the CUP application was filed for the Project (Shasta County Fire Department, 2018). Later, in response to the issuance of notice of intention to prepare this Draft EIR, the County received scoping input noting that existing conditions are windy and the terrain is steep (up to 25 percent grade), and that there is a history of lightning strikes and fires, both natural and human-caused, in the area. Options for ingress and egress are limited. Furthermore, the existing forest, which was planted after the Fountain Fire, is mostly pine. Trees are approximately 20 to 30 feet tall and grow 3 to 4 feet apart, deer brush and manzanita grow in the understory, and years’ worth of pine needles cover the forest floor. Input as to potential impacts and mitigation measures also was received.

All scoping input received, including regarding Wildfire, is provided in Section 4.1 of the Scoping Report, a copy of which is provided as **Appendix J**, *Scoping Report*.

3.16.1 Setting

3.16.1.1 Study Area

The study area comprises the Project Site and the surrounding areas that could be affected by wildland fire as a result of the Project or an alternative. Information provided in this section is based on existing publications, including CAL FIRE’s Shasta-Trinity Unit (SHU) 2018 Strategic Fire Plan, the Shasta County Community Wildfire Protection Plan, and the Shasta County General Plan. The Project would be located within SHU Battalion 2, as defined in CAL FIRE’s SHU 2018 Strategic Fire Plan, which describes the areas surrounding the Project Site that could be affected by wildland fire. Battalion 2 generally is located south of the Pit River arm of Shasta Lake, east of Interstate 5 (I-5) and the City of Redding, north of Whitmore Road, and west of Hatchet Mountain. During the fire season, the CAL FIRE Shasta Trinity Unit has access to 19 engines, 3 dozers, 12 hand crews, 1 air tactical plane, and 2 air tankers (CAL FIRE, 2018).

3.16.1.2 Environmental Setting

Fire History and Historical Fire Regime

Shasta County has experienced several major fires in the last 30 years. The largest and most recent fire was the Carr Fire in 2018, which burned a total of 229,651 acres; this occurred outside

of the study area and to the west of Redding (the Project Site is located east of Redding) (CAL FIRE, 2020). Within the “Timber East” area of the county, large fires have included the 1998 Burney Fire (3,264 acres), the 1992 Fountain Fire (60,290 acres), the 2012 Ponderosa Fire (27,676 acres), and the 2014 Eiler Fire (32,416 acres) (CAL FIRE, 2018). The Fountain Fire originated approximately 1.5 miles away from the Project Site at Round Mountain. As seen in this portion of Shasta County’s fire history, with heavy fuel loading, hot temperatures, critically low humidity, and strong north winds, the study area has the potential to face a major wildfire threat (Shasta County, 2016).

The continued urbanization of the Shasta-Trinity Unit’s wildland areas is expected to significantly increase both the ignition potential of and damage from wildfires. About 90 percent of major fires in the county have human-related ignition sources include burning of debris, equipment use, vehicle, and arson. Lightning causes the remaining 10 percent of wildfires in Shasta County (Shasta County, 2018). Periodic droughts contribute to the increase in fires due to drier than normal fuel conditions. The heavy fuel loading, hot temperatures, critically low humidity, and strong north winds characteristic of Shasta County contribute to the ongoing major wildfire potential (Shasta County, 2016).

Wildfire Behavior and Fire Hazard Mapping

Wildfire behavior is dependent on a number of biophysical (climate, topography, and vegetation) and anthropogenic (human-influenced) factors. The biophysical variables include fuels (vegetation composition, cover, and moisture content), climate (weather, wind velocity and humidity), topography (slope and aspect), and ignition sources (e.g., lightning). Anthropogenic variables consist of human activities (e.g., arson, smoking, and power lines) and management (wildfire prevention and suppression efforts). These factors are described below.

Temperature, Humidity, and Precipitation

Shasta County’s climate generally is characterized by warm, dry summers and cool, wet winters. The average temperature and precipitation vary greatly within the watershed due to elevation ranges from 340 to 7,300 feet above sea level. Elevations within and near the Project Site range from approximately 3,000 to 6,600 feet (Stantec and Pacific Wind Development, LLC, 2018). The average high temperatures in July range from 80°F (at high elevations) to 99°F in the valley. The average low temperatures in December range from 21°F to 55°F. Relative humidity during the summer months is usually less than 30 percent during the day and rises to about 50 percent at night. Winter humidity usually exceeds 50 percent (Shasta County, 2016). Humidity affects the moisture level of vegetation (fuels), and low humidity levels lead to dry fuels that can ignite more easily and burn more quickly than when humidity levels are high (NPS, 2017).

Moderate to heavy amounts of snowfall are common above 3,000 feet. As described in Section 3.12, *Hydrology and Water Quality*, annual total precipitation (including rain and snow) measured at Round Mountain (3 miles west of the Project Site) is 63 inches on average (WRCC, 2020a). By contrast, the annual average precipitation measured in Burney (approximately 6 miles east of the Project Site) is just 28 inches, with annual totals of less than 11 inches in some recent drought years (WRCC, 2020b). Thus, eastern portions of the county, including some eastern

locations within the Project Site, are likely to receive considerably less precipitation due to rain shadow effects associated with the mountainous terrain, and when drought conditions are present in Shasta County, total annual precipitation can be relatively very low.

Wind

Winds are generally out of the west, southwest 5 to 12 miles per hour (mph). Occasionally light east winds occur in the morning, and winds then shift to a west/southwest direction in the afternoon and can reach speeds of 15 to 20 mph, generally up slope and up canyon. North wind events occur periodically throughout the fire season and can reach the 10 to 40 mph range with associated higher gusts. These winds frequently switch to the northeast and strengthen after dark, with occasional stronger winds reaching 50 mph in the Hillcrest/Round Mountain area between 2:00 am and sunrise (CAL FIRE and Shasta County Fire, 2018).

Topography

Topography and elevation vary greatly in the study area, which consists of several mountainous ridgelines, rugged and steep terrain, and elevations above 3,000 feet (CAL FIRE and Shasta County Fire, 2018). Within the Project Site, steep slopes are present along the North Fork of Little Cow Creek, on the south side of Lookout Mountain, along Cedar Creek, along the South Fork of Montgomery Creek, and along the North Fork of Montgomery Creek. Terrain type has a strong influence over fire behavior, and steep terrain can encourage the spread of fire when other factors such as fuels also are present. Fires can spread quickly up vegetated slopes because fuels are pre-heated by rising hot air from the active fire below (NPS, 2017).

Fuels

Fuels are made up of various components of vegetation, live and dead, that occur on a given site. Wildfire is a natural component in the evolution of vegetation of Shasta County. As described in Section 3.4, *Biological Resources*, the majority of the Project Site includes mixed conifer forests including ponderosa pine, white fir, and douglas fir. The size of these trees varies depending on whether the forest burned or was recently logged. The density of understory varies but is composed of mostly understory shrub and herbaceous vegetation that helps create ladder fuels and difficult firefighting conditions (Shasta County, 2016). Chaparral and woodland are found interspersed among the mixed conifer forest.

The SHU 2018 Strategic Fire Plan classifies the forested area east of Redding, where the study area is located, as “Timber East,” a mixed species conifer forest mostly managed for timber production. Slash (coarse and fine woody debris generated during logging operations) and brush (undergrowth) are part of the fuel component. Fire behavior fuel model 9 (Hardwood or Long Needle Pine Timber Litter) and National Fire Danger Rating System (NFDRS) fuel model U are used in this area. Fire behavior fuel model 9 is described in the following way: “Fires run through the surface litter faster than in model 8 and have longer flame lengths. Both long-needle conifer and hardwood stands are typical. Closed stands of long-needled pine like ponderosa, Jeffrey, and sugar pine and hardwood stands of oak, madrone and tanoak are grouped in this model. Concentrations of dead-down woody material will contribute to possible torching of trees, spotting, and crowning” (Anderson, 1982). Out of the Timber group fuel models, fuel model 9 is

ranked in the middle (between fuel model 8 and fuel model 10) in terms of the rate of fire spread and flame length.

Fuel model U is described as follows: “Closed stands of western long needled pines where ground fuels are primarily litter and small branchwood. Grass and shrubs are absent except in natural openings” (National Wildfire Coordinating Group, 2015). These fuel models describe typical conditions over large areas, and location-specific conditions can vary within areas assigned these models. However, overall, they accurately describe the fuel types in the study area.

At lower elevations outside of the Project Site, stands are often composed of ladder fuels, creating the potential for the initiation of crown fires.¹ Vegetation along the southwest area of Battalion 2 (i.e., closer to Redding) include grass and oak woodland up to 1,000 to 1,500 feet in elevation. Vegetation within the elevations of 1,000 to 2,000 feet consists of predominantly chaparral or dense shrubland habitat (i.e., manzanita), which typically occurs on steep hillsides and are prone to burning intensely. The chaparral brush then transitions into mixed conifer and oak in the communities of Hillcrest and Oak Run (CAL FIRE and Shasta County Fire, 2018). The mixed conifer habitat extends along steep slopes, including evergreen oaks, such as Interior live oak or Canyon live oak, and pines, such as Foothill pine or Ponderosa pine. Thus, there is some potential for fires ignited offsite to spread to the Project Site or nearby areas at similar elevations.

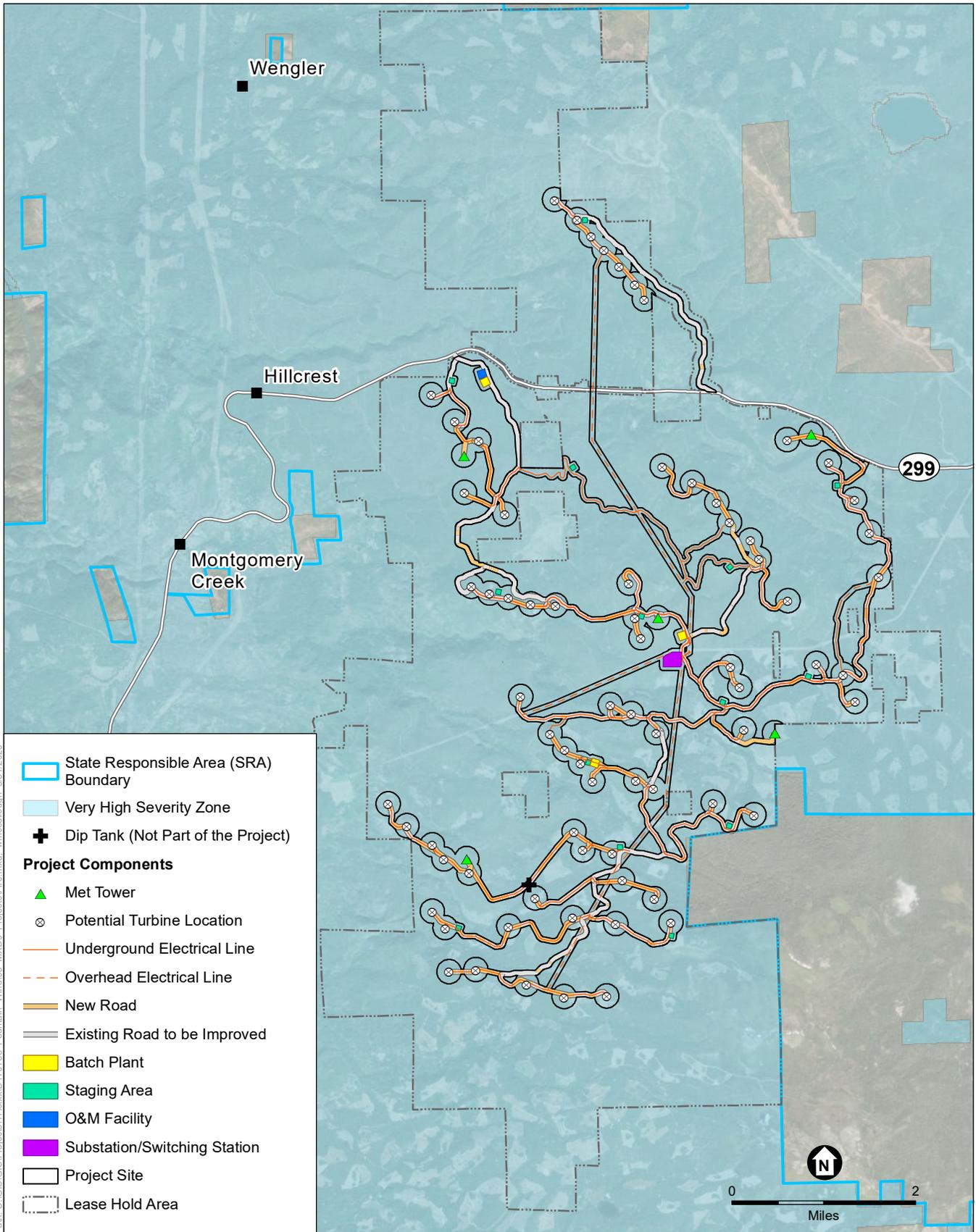
CAL FIRE Hazard Severity Zones

CAL FIRE has adopted Fire Hazard Severity Zone (FHSZ) mapping for State Responsibility Area (SRA) throughout the state. These maps rate wildfire hazards as “moderate,” “high,” or “very high” based on fuel loading, slope, fire weather, and other relevant factors. As shown in **Figure 3.16-1**, *CAL FIRE Fire Hazard Severity Zones*, the entire Project Site is within an SRA that is mapped as a very high FHSZ. No part of the Project Site would be located within a Local Responsibility Area (LRA).

California Public Utilities Commission–Designated Wildlife Hazard Zones

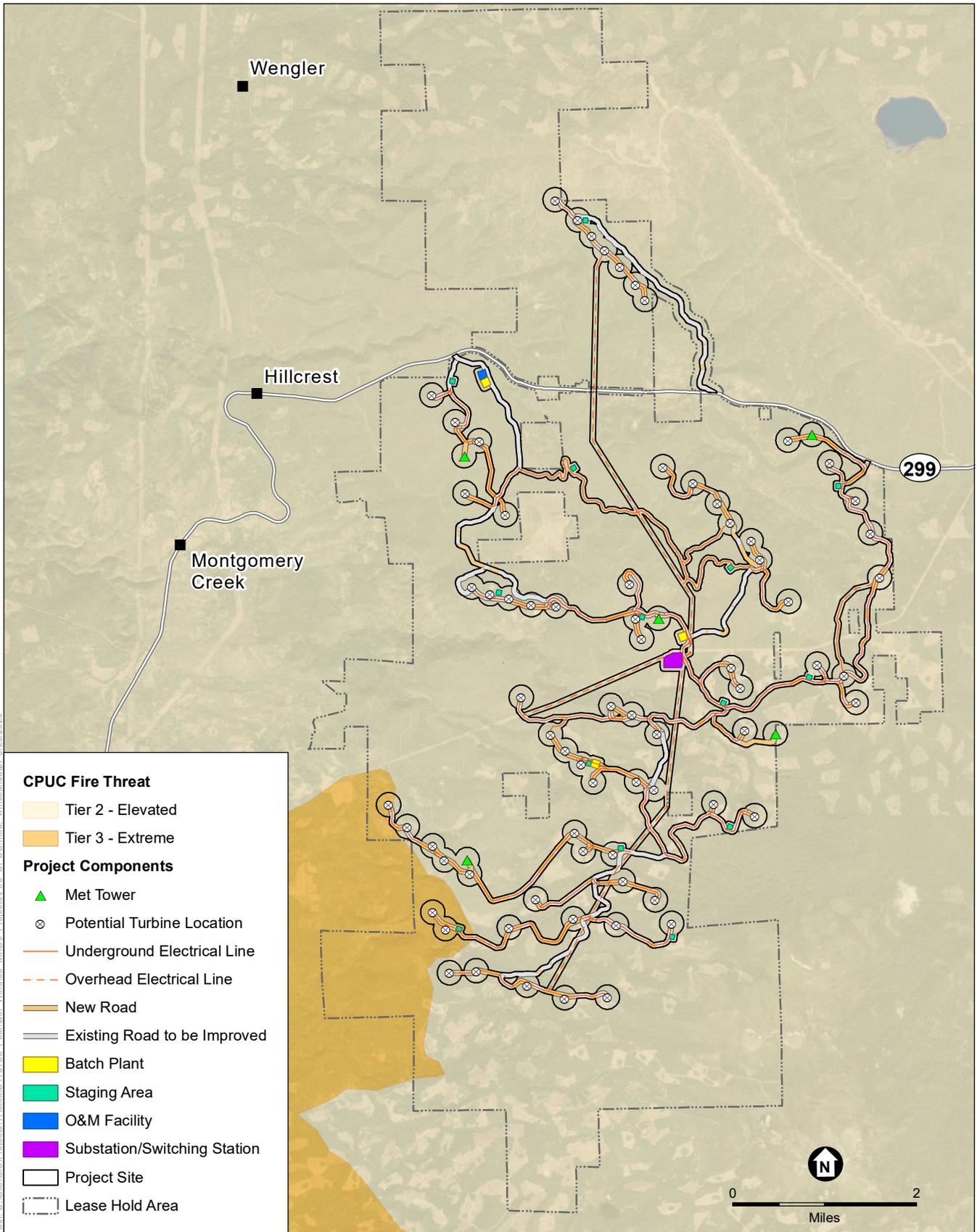
In response to Fire Safety Rulemaking of the California Public Utilities Commission (CPUC), the CPUC mapped high fire threat areas where more stringent inspection, maintenance, vegetation clearance, and wire clearance requirements (as required by CPUC General Orders 95, 165, and 166, described below) would be implemented due to the elevated risk for a devastating wildfire and damage to electrical lines. The CPUC High Fire Threat District Map identifies three tiers of elevated risk for fires associated with utilities. As shown in **Figure 3.16-2**, *CPUC Fire Threat*, the entire Project Site is located within Tier 2 Fire Threat District except for turbine locations M03, N01, and N01A which are within a Tier 3 fire district. Tier 2 areas are defined as areas “where there is an elevated risk (including likelihood and potential impacts on people and property) from wildfires associated with overhead utility power lines. Tier 3 areas are defined as areas “where there is an extreme risk (including likelihood and potential impacts on people and property) from utility associated wildfires” (CPUC, 2020).

¹ Crown fires are fires that burns in the crowns of trees and shrubs, and are usually ignited by a surface fire. Crown fires are common in coniferous forests and chaparral-type shrublands.



Fountain Wind Project

Figure 3.16-1
CalFire - Fire Hazard Severity Zones



Fountain Wind Project

Figure 3.16-2
CPUC Fire Threat

Factors Contributing to Impacts from Wildfire

Land Use Planning and Population

Land use in the Project Site is exclusively managed forest lands. Surrounding the Project Site, land use includes mostly managed forest lands and scattered rural communities, including Moose Camp (75 people, adjacent to the Project Site), Montgomery Creek (163 people, 2 miles west of the Project Site), and Round Mountain (155 people, 5 miles southwest of the Project Site). Each of these communities is located within a Wildland-Urban Interface (WUI) Intermix area, defined as an area with greater than 6.18 houses per square kilometer and greater than or equal to 50 percent cover of wildland vegetation (USFS, 2015). Therefore, the Project Site is located adjacent to an area designated as a WUI Intermix. Burney, while not considered a WUI Intermix area, is the largest town in the Project vicinity with a population of just over 3,000. It is located approximately 5.5 miles east of the Project Site.

Transportation and Emergency Access

As described in Section 3.14, *Transportation*, the primary road within the Project Site is State Route (SR) 299, which has one travel lane in each direction and paved shoulders. In the event of an evacuation from any of the communities listed above, SR 299 would be the primary evacuation route. Moose Camp residents would typically use Moose Camp Road for egress to SR 299, but if necessary could use G Line Road, which runs through the Project Site, for alternative access to SR 299. No other communities would use roads internal to the Project Site for evacuation.

Impact of Wildfire on Air Quality

As wildfires burn fuel, large amounts of carbon dioxide, black carbon (a pure carbon component of fine particulate matter typically present in soot), brown carbon (along with black carbon, a heat-trapping substance that contributes to climate change), and ozone precursors are released into the atmosphere. Additionally, wildfires emit a substantial amount of volatile and semi-volatile organic materials and nitrogen oxides that form ozone and organic particulate matter. These emissions can lead to harmful exposures for first responders, nearby residents, and populations in regions that are farther from wildfire (NOAA, 2018). Exposure to these pollutants can cause asthma attacks, coughing, and shortness of breath. Chronic exposure to these pollutants can increase the risk of developing chronic health conditions such as heart disease, diabetes, and cancer (Hamers, 2018; Milman, 2018). The pollutants that contribute to adverse human health effects are described in more detail in Section 3.3, *Air Quality*. The pollutants that contribute to climate change are described in Section 3.10, *Greenhouse Gas Emissions*.

Hydrology, Drainage, and Landslide Potential

As described in detail in Section 3.12, *Hydrology and Water Quality*, there are approximately 8 miles of streams, creeks, and intermittent streams within the Project Site. Multiple surface waters generally flow from east to west/northwest through the Project Site. While the Project Site is located in an area of minimal flood risk, there is potential for flood flows within the Project Site to be flashy in the winter months, with substantial surface runoff flowing across the Project Site toward streams that ultimately feed into the Sacramento River. Timber harvesting activities

in the region have affected surface waters through delivery of silt, sediment, and increasing turbidity through runoff; therefore, it can be expected that vegetation losses due to fire may also result in erosion potential and contribute silt and sediment to local waters.

As described in Section 3.9, *Geology and Soils*, the Shasta County General Plan mentions that landslides are known to occur throughout the county, and are especially prevalent in its northern and eastern areas. Available geologic mapping shows no landslide deposits within the Project Site (Dupras, 1997). However, according to topographic maps provided by the U.S. Geological Survey (USGS), the Project Site includes relatively steep slopes (USGS, 2018a, 2018b) where landslides, debris flows, or rock falls could occur.

3.16.1.3 Regulatory Setting

Federal

National Fire Plan

The National Fire Plan (NFP) was created to address fire protection strategies for rural communities. Together, the USDA Forest Service and the Department of the Interior are working to successfully implement key points outlined in the NFP, including firefighting, rehabilitation, hazardous fuels reduction, community assistance, and accountability (USDA, 2002).

National Cohesive Wildland Fire Management Strategy

The Federal Wildland Fire Management Policy is intended to provide strategic consistency among federal agency fire management programs. The *Guidance and Implementation of Federal Wildland Fire Management Policy* (USFS et al., 2009) replaces the *Interagency Strategy for the Implementation of Federal Wildland Fire Management Policy* (National Association of State Foresters et al., 2003) and clarifies changes that have occurred since 2003, while providing revised direction for consistent implementation of the *Review and Update of the 1995 Federal Wildland Fire Management Policy* (USDOJ, 2001).

North American Electric Reliability Corporation Standards

To improve the reliability of regional electric transmission systems, the North American Electric Reliability Corporation (NERC) developed a transmission vegetation management program for all transmission lines operated at 200 kilovolts (kV) and above, and to lower voltage lines designated by the Regional Reliability Organization as critical to the reliability of the regional electrical system. Developed in 2006, requirements of the program govern clearances between vegetation and any overhead, ungrounded supply conductors must be identified and documented, while considering transmission line voltage; effects of ambient temperature on conductor sag under maximum design loading; fire risk; line terrain and elevation; and effects of wind velocity on conductor sway. The clearances identified must be no less than those set forth in Institute of Electrical and Electronics Engineers Standard 516-2003.

State

2018 Strategic Fire Plan for California

Developed by the Board of Forestry and Fire Protection (the Board), the Strategic Fire Plan outlines goals and objectives to implement CAL FIRE's overall policy direction and vision. The 2018 Plan demonstrates CAL FIRE's focus on: (1) fire prevention and suppression activities to protect lives, property, and ecosystem services; and (2) natural resource management to maintain the State's forests as a resilient carbon sink to meet California's climate change goals and to serve as important habitat for adaptation and mitigation.

Through the Strategic Plan, CAL FIRE implements and enforces the policies and regulations set forth by the Board and carries forth the mandates of the Governor and the Legislature (CAL FIRE and Shasta County Fire, 2018). The plan focuses on promoting interagency coordination, participating in the development of regional and local planning efforts, sharing risk assessment data, integrating fuels management practices across jurisdictions, and providing the appropriate level of resources and preparedness to enable fire suppression activities and post-fire recovery at the unit level. The goals and objectives of the Plan would not directly apply to the Project.

Unit Plans are developed and updated in order to implement the programs and goals of the 2018 Strategic Fire Plan. The 2018 Shasta-Trinity Unit Strategic Fire Plan outlines strategies for how the Shasta-Trinity Unit will implement and meet the goals in the overall Strategic Fire Plan (CAL FIRE and Shasta County Fire, 2018). The Shasta-Trinity objectives focus on coordination with relevant stakeholders, increasing communication and planning coordination within communities, and improving the prescribed burning program. The goals and objectives would not be directly applicable to the Project.

California Public Utilities Commission General Orders

The California Public Utilities Commission (CPUC) regulates private investor-owned utilities in the state of California, including electric power companies like PG&E as well as natural gas, telecommunications, and water companies. Rules established by the CPUC are called "General Orders" or "GOs." PG&E's construction of the electrical connections to its infrastructure (as described in Section 2.4.3, *Project Substation, Switching Station and Interconnection Facilities*). Would be subject to the CPUC General Orders summarized below because PG&E is an investor-owned utility. Aspects of the Project to be constructed by the Applicant, such as the switching station and collector lines) would not be subject to the General Orders because the Applicant is not an investor-owned utility.

General Order 95

CPUC General Order 95 applies to construction and reconstruction of overhead electric lines. The replacement of poles, towers, or other structures is considered reconstruction and requires adherence to all strength and clearance requirements of this order. CPUC Decision 17-12-024 created enhanced requirements under Rule 18A, Rule 35, and Rule 38, which apply to overhead electric lines located in Tier 2 or Tier 3 High Fire Threat Districts (HFTDs). The CPUC has promulgated various rules to implement the fire safety requirements of General Order 95, including the following (CPUC, 2018):

- Rule 18A, which requires utility companies take appropriate corrective action to remedy Safety Hazards and General Order 95 nonconformances. Additionally, this rule requires that each utility company establish an auditable maintenance program.
- Rule 31.2, which requires that lines be inspected frequently and thoroughly.
- Rule 35, which requires that vegetation management activities be performed in order to establish necessary and reasonable clearances. These requirements apply to all overhead electrical supply and communication facilities that are covered by this General Order, including facilities on lands owned and maintained by state and local agencies.
- Rule 38, which establishes minimum vertical, horizontal, and radial clearances of wires from other wires.

General Order 165

General Order 165 establishes requirements for the inspection of electric distribution and transmission facilities that are not contained within a substation. Utilities must perform “Patrol” inspections, defined as a simple visual inspection of utility equipment and structures that is designed to identify obvious structural problems and hazards, at least once per year for each piece of equipment and structure. “Detailed” inspections, where individual pieces of equipment and structures are carefully examined, are required every 5 years for all overhead conductor and cables, transformers, switching/protective devices, and regulators/capacitors. By July 1 of each year, each utility subject to this General Order must submit an annual report of its inspections for the previous year under penalty of perjury (CPUC, 2017a).

General Order 166

General Order 166 Standard 1.E requires that Investor Owned Utilities (IOUs)² such as PG&E develop a Fire Prevention Plan, which describes measures that the electric utility will implement to mitigate the threat of power line fires generally. Additionally, this standard requires that IOUs outline a plan to mitigate power line fires when wind conditions exceed the structural design standards of the line during a Red Flag Warning³ in a high fire threat area. Fire Prevention Plans created by IOUs are required to identify specific parts of the utility’s service territory where the conditions described above may occur simultaneously. Standard 1 also requires that utilities prepare an emergency response plan. PG&E’s Emergency Response Plan, prepared in compliance with Standard 1, is described below. Standard 11 requires that utilities report annually to the CPUC regarding compliance with General Order 166 (CPUC, 2017b). In compliance with Standard 1.E of this General Order, PG&E adopted a Fire Prevention Plan on September 30, 2017.

PG&E Company Emergency Response Plan

PG&E’s Company Emergency Response Plan describes and formalizes PG&E’s in-place plans and protocols for response to emergencies. The identifies potential hazards, available resources to respond to emergencies, internal communication protocols, and operational structure. Additionally, PG&E’s Wildfire Safety Operations Center operates 24-hours a day during wildfire season (PG&E, 2018).

² Investor-owned utilities (IOUs) are private electricity and natural gas providers. The CPUC oversees IOUs.

³ A Red Flag Warning is issued by the National Weather Service to alert fire departments of the onset, or possible onset, of critical weather and dry conditions that could lead to rapid or dramatic increases in wildfire activity.

PG&E Fire Prevention Plan

PG&E prepared a Fire Prevention Plan in compliance with CPUC Decision 12-01-032 (Fire Safety Order), Standard 1.E of General Order 166, and Senate Bill 1028. The Fire Prevention Plan summarizes PG&E's fire prevention and safety procedures and programs which include, but are not limited to: fire threat and risk area mapping, fire prevention pre-planning, enhanced fire detection efforts, building resiliency (including a wood pole test and treat program), operational practices to reduce the risk of fires, overhead inspections and patrols, fire prevention outreach and training programs, as well as pro-active responses to fire incidents (PG&E, 2017).

PG&E's operational practices consider environmental conditions such as vegetation type, vegetation moisture content, relative humidity, temperature, and wind conditions. Considering these variables, PG&E created Utility Standard S1464, "Fire Danger Precautions in Hazardous Fire Areas," which includes operational requirements for working and operating in areas that are considered high fire risk during the fire season (these areas are designated in Attachment 3 to the Fire Prevention Plan as either "Extreme" or "Very High" fire danger). According to Attachment 3, the Project is proposed in an area rated as "Very High." Utility Standard S1464 requires that crews working in these areas in the fire season carry firefighting equipment; prohibits personnel traveling in these areas from burning, welding, blasting, smoking, and driving off cleared road; and restricts testing any section of line that relays until the line has been patrolled and all trouble cleared.

California Emergency Response Plan

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. The plan is administered by the State Office of Emergency Services (OES). OES coordinates the responses of other agencies, including the United States Environmental Protection Agency, California Highway Patrol, California Department of Fish and Wildlife, the Regional Water Quality Control Boards (RWQCBs) (for this Project, the Central Valley RWQCB), the local air districts (for this Project, the Shasta County Air Quality Management), 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.

Fire Protection in California Fire Code and Public Resources Code

The California Fire Code is contained within Title 24, Part 9 of the California Code of Regulations. Based on the International Fire Code, the California Fire Code is created by the California Buildings Standards Commission and regulates the use, handling, and storage requirements for hazardous materials at fixed facilities. Similar to the International Fire Code, the California Fire Code and the California Building Code use a hazards classification system to determine the appropriate measures to incorporate to protect life and property.

The California Public Resources Code includes fire safety provisions that apply to SRAs during the time of year designated as having hazardous fire conditions. During the fire hazard season,

these regulations restrict the use of equipment that may produce a spark, flame, or fire; require the use of spark arrestors on equipment that has an internal combustion engine; specify requirements for the safe use of gasoline-powered tools in fire hazard areas; and specify fire-suppression equipment that must be provided on-site for various types of work in fire-prone areas. Additional codes require that any person who owns, controls, operates, or maintains any electrical transmission or distribution line must maintain a firebreak clearing around and adjacent to any pole, tower, and conductors that carry electric current as specified in Pub. Res. Code §§4292 and 4293. Section 4292 requires that a 10-foot zone around the base of poles be cleared of all flammable vegetation. The State's Fire Prevention Standards for Electric Utilities (14 Cal. Code Regs. §§1250–1258) provide specific exemptions from electric pole and tower firebreak and electric conductor clearance standards and specifies when and where standards apply.

Pub. Res. Code §4119 authorizes CAL FIRE or its authorized agent to inspect properties to determine whether they comply with state forest and fire laws, regulations, or use permits. Section 4427 limits the use of any motor, engine, boiler, stationary equipment, welding equipment, cutting torches, tarpots, or grinding devices which may generate a spark or flame if the equipment is located on or near forested land or land covered in bush or grass. Section 4427 establishes requirements such as clearing flammable material within 10 feet of the area of operation, as well as carrying of fire response equipment such as a shovel, backpack pump water type fire extinguisher.

Pub. Res. Code §4428 limits industrial operations by requiring certain firefighting equipment to be used when operating internal combustion engines on or near land covered by forest bush or grass between April 1 and December 1 of any year, or other times when ground litter and vegetation could sustain combustion and facilitate the spread of fire. Section 4428 requires that such work provide and maintain the following tools:

- A sealed box of tools containing a backpack pump-type fire extinguisher filled with water, two axes, two McLeod fire tools, and a shovel for each worker onsite must be in near the operating area in a manner that would be accessible in the event of a fire.
- At least one serviceable chainsaw or timber felling tools must be provided and maintained.
- Each passenger vehicle must be equipped with a shovel and an ax, and every other vehicle or tractor must have a shovel.

Pub. Res. Code §4431 requires users of gasoline-fueled internal combustion-powered equipment located within 25 feet of forest, brush, or grass to keep firefighting tools at the immediate location of use. The Director of Forestry and Fire Protection administers and specifies the type and size of fire extinguisher necessary to provide at least minimum assurance of controlling fire caused by use of portable power tools under various climatic and fuel conditions. In addition, Section 4442 restricts the use and operation of any internal combustion engine that uses hydrocarbon fuels on any forest, brush, or grass areas unless the engine is equipped with a spark arrestor, as defined in Pub. Res. Code §4442(c) and pursuant to §4443.

Defensible Space and the Fire Safe Regulations

State law requires a minimum clearance (defensible space) of 100-feet around structures (Pub. Res. Code §§4290, 4291). Implementing regulations (the “Fire Safe Regulations”) provide

related requirements to be implemented in a SRA including road standards for fire equipment access (14 Cal. Code Regs. §1273 et seq.); standards for signs identifying streets, roads, and buildings (14 Cal. Code Regs. §1274 et seq.); requirements for minimum private water supply reserves for emergency fire use (14 Cal. Code Regs. §1275 et seq.); and requirements for fuel breaks such as defensible space and greenbelts (14 Cal. Code Regs. §§1272, 1276 et seq.).

Forest Practice Act and the Forest Practice Rules

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 with respect to wildfire. For example, Rule 938.4 governs smoking and matches (14 Cal. Code Regs. §938.4) and Rule 938.7 governs blasting and welding (14 Cal. Code Regs. §938.7).

Local

Shasta County General Plan

Shasta County General Plan Element 5.4, Fire Safety and Sheriff Protection, “discusses conditions and issues relevant to the protection of public health and safety from fire damage” (Shasta County, 2018). The following applicable objectives and policies guide County planning with regard to fire safety.

Objectives:

FS-1: Protect development from wildland and non-wildland fires by requiring new development projects to incorporate effective site and building design measures commensurate with level of potential risk presented by such a hazard and by discouraging and/or preventing development from locating in high risk fire hazard areas.

FS-2: Protection of life and property from crime by encouraging new development projects to incorporate effective defensible space design techniques.

Policies:

FS-a: All new land use projects shall conform to the County Fire Safety Standards.

FS-b: Known fire hazard information should be reported as part of every General Plan amendment, zone change, use permit, variance, building site approval, and all other land development applications subject to the requirements of the California Environmental Quality Act (CEQA).

Shasta County Fire Safety Standards

The Shasta County Board of Supervisors has adopted Fire Safety Standards for development projects in Shasta County. The standards meet or exceed the State’s standards and are inclusive of “State Responsibility Area Fire Safe Regulations.” These development standards address access, road widths, bridges, building construction, and hydrant and water systems and include a section on mitigation measures. All standards would be administered and implemented by the County Fire Warden, any designees, and as otherwise authorized by the Board of Supervisors by adoption of the standards (Shasta County, 2017).

Western Shasta Community Wildfire Protection Plan

The Western Shasta Resource Conservation District (WSRCD) has established a Community Wildfire Protection Plan (CWPP) for areas within Battalion 2. The goal of the CWPP is to reduce the destruction and associated costs from wildfire by creating shaded fuel breaks, increase homeowner and fire department access and egress, watershed restoration and public information and education on developing Firewise Communities. Several shaded fuel breaks along county roads and SR 299 East surrounding the communities of Oak Run, Hillcrest, Montgomery Creek, and Round Mountain have been initiated by WSRCD (Shasta County, 2016). However, according to Map 1 in the CWPP, only a small southern portion of the Project Site would be located within the CWPP designated area in Cow Creek. The majority of the northern portion of the Project Site would be undesignated within the CWPP (Shasta County, 2016).

Shasta County Multi-Jurisdictional Hazard Mitigation Plan

The Shasta County Multi-Jurisdictional Hazard Mitigation Plan (SCHMP) includes resources and information to assist in planning for hazards. The SCHMP provides a list of actions that may assist participating jurisdictions in reducing risk and preventing loss from future hazard events, and addresses wildfire hazards (Shasta County and City of Anderson, 2017).

3.16.2 Significance Criteria

A project proposed to be located in or near state responsibility areas or lands classified as very high fire hazard severity zones would result in a significant impact related to wildfire if it would:

- a) Substantially impair an adopted emergency response plan or emergency evacuation plan;
- b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations or a significant risk of loss, injury or death from a wildfire or the uncontrolled spread of a wildfire;
- c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment; or
- d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.

3.16.3 Direct and Indirect Effects

3.16.3.1 Direct and Indirect Effects of the Project

- a) **Whether the Project would substantially impair an adopted emergency response plan or emergency evacuation plan.**

Impact 3.16-1: The Project would, unless mitigated, substantially impair an adopted emergency response plan or emergency evacuation plan. (*Less than Significant with Mitigation Incorporated*)

There are no specifically designated evacuation routes described in the Community Wildfire Protection Plan or the Shasta County General Plan. However, because the Project would be

developed in a rural area, the number of access roads to and exit routes from the site is limited. The main access road and potential evacuation route would be SR 299, which bisects the Project Site. The three Project driveways, as described in Section 2.1.1.1, *Access Roads*, and in Section 3.14, *Transportation*, would allow adequate egress/ingress to and through the Project Site in the event of an onsite emergency. Additional onsite access roadways also would be constructed within the Project Site, which would provide additional access for firefighting purposes and serve as man-made, maintained firebreaks.

The Project would not require closures of public roads, which could inhibit access by emergency vehicles. However, the presence of oversized construction vehicles on local roads (such as SR 299, or G Line Road in the event of an emergency requiring use of that road to evacuate Moose Camp) could cause blockage that may impede other traffic if a wildfire were to occur in the area during the construction or decommissioning periods, resulting in a potentially significant impact.

The implementation of Mitigation Measure 3.14-3 (provided in Section 3.14) would ensure that emergency access would be maintained during construction and decommissioning and thus would reduce this impact to less than significant.

Mitigation Measure 3.16-1a: Implement Mitigation Measure 3.14-3 (Traffic Management Plan)

Significance after Mitigation: Less than significant.

Mitigation Measure 3.14-3 would ensure that the Project's 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. The Traffic Management Plan would require consultation with emergency service providers, Caltrans, and residents in the vicinity and would specify timing of oversized vehicle travel. Advance notices would also be given to local fire departments and to the sheriff's department to ensure that response times could be maintained. Additionally, all oversize load permits and related requirements would be complied with. Mitigation Measure 3.14-3 would reduce the impact to emergency response and evacuation plans to less than significant with mitigation incorporated.

As described in Section 3.16.1.3, *Regulatory Setting*, the 2018 Strategic Fire Plan for California outlines overarching goals for CAL FIRE, and the 2018 Shasta Trinity Unit Strategic Fire Plan identifies strategies for unit implementation of the statewide plan. Also as described in the Regulatory Setting, the CWPP would not apply to those areas of the Project Site that it does not encompass. Furthermore, the CWPP does not explicitly outline any emergency response or evacuation plans. Because these plans do not directly apply to the Project, the Project would not conflict with or impair the implementation of either of these plans.

As described in Section 3.16.1.1, the CAL FIRE Shasta-Trinity Unit has access to firefighting aircraft which drop either fire retardant or water in strategic locations to fight spreading fires. Firefighting aircraft need to fly at low elevations (between 150 feet and 500 feet from the ground) to have accurate drops of retardant or water (CAL FIRE, 2019b; AHSFA, 2020). Within the

Project Site, peaks and buttes present existing obstacles for aerial firefighting. Near the Project Site, the Hatchet Wind Project includes vertical turbines that are approximately 420 feet tall. These turbines are existing vertical structures that could be obstacles for aerial firefighting. As described in Section 2.4.1, *Wind Turbine Generators*, the turbines could have heights of up to 679 feet. Some research on the impact of wind turbines on aerial firefighting concludes that wind turbines “do not cause aircraft concern in aviation operations for [firefighting]” and that “Where vertical obstructions exist in the airspace around a fire such as power lines, weather masts, radio and television transmission towers, tall trees and wind turbines, a dynamic risk assessment is undertaken prior to the aircraft being committed to fire-bombing operations” (Commonwealth of Australia, 2015).

Due to the spacing between rows of turbines, aerial firefighting operations are likely to have enough space even with the proposed Project to continue aerial firefighting operations within the Project Site. However, due to the height of the turbines, construction and operation of the Project could interfere with aerial firefighting operations, a potentially significant impact. To ensure that impacts related to aerial firefighting during construction and operation are reduced to less than significant, implementation of **Mitigation Measure 3.16-1b** (Pre-Construction Coordination with CAL FIRE) would be required.

Mitigation Measure 3.16-1b: Pre-Construction Coordination with CAL FIRE

Prior to construction, the Applicant shall provide GIS files or other maps of the Project layout to CAL FIRE to facilitate aerial fire-fighting planning. The Applicant shall notify CAL FIRE of any changes to the Project layout or any maintenance that would require the use of helicopters or the use of equipment not previously identified on maps provided to CAL FIRE that could present a new, previously unidentified vertical obstacle to aerial firefighting.

Significance after Mitigation: With implementation of Mitigation Measure 3.16-1b, CAL FIRE would have the information necessary to plan for aerial firefighting with the Project in place. This would allow CAL FIRE to identify locations for retardant or water drops within the Project Site and would allow for the planning of flight plans around the Project Site. With the implementation of Mitigation Measure 3.16-1b, impacts would be reduced to a less-than-significant level.

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- b) Due to slope, prevailing winds, and other factors, whether the Project would exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations or a significant risk of loss, injury or death from a wildfire or the uncontrolled spread of a wildfire.**

Impact 3.16-2: The Project would, unless mitigated, exacerbate wildfire risks and expose people to pollutant concentrations or a significant risk of loss, injury or death from a wildfire or the uncontrolled spread of a wildfire. (*Less than Significant with Mitigation Incorporated*)

The Project is not intended for and would not be used for human occupation; therefore, no occupants would be exposed to increased risks associated with wildfire. However, the Project Site

is located near existing communities. Therefore, the following analysis focuses on the potential for Project Site preparation, construction, operation and maintenance (O&M), and decommissioning to increase the exposure of the occupants of these communities to wildfire risks.

As discussed in Section 3.16.1, *Environmental Setting*, and shown on Figure 3.16-1, the entire Project is located within a very high fire hazard severity zone. Approximately 4,353 acres of the Project Site are located in a CPUC Tier 2 Fire Threat District and 110 acres are located within a Tier 3 Fire Threat District. The primary fire hazards from Project activities during construction and decommissioning would involve the use of vehicles and equipment. Heat or sparks from vehicles and equipment could ignite dry vegetation and cause a fire, particularly during drier, warmer conditions.

Additionally, construction activities that could result in sparks, such as blasting, welding, or grinding, have a greater likelihood of creating a source of ignition. For example, the Ranch Fire in 2018 was determined by CAL FIRE to have been caused by an individual hammering a metal stake into concrete (Sacramento Bee, 2019).

The Project would result in increased vehicle activity on local and regional roads due to trucks and vehicles delivering equipment to the site, which could result in an increased potential for ignitions. Therefore, depending on the time of year (as seasonality may affect climate conditions, prevailing winds, and vegetation/fuels) and the location of construction activities, the increase in sources of potential ignition associated with Project construction or decommissioning could exacerbate the risk of wildfire in the area. As discussed in the Environmental Setting, wildfires release large amounts of air pollutants, which can lead to harmful exposure for first responders, nearby communities, and populations that are located farther away. Therefore, due to the increase in potential sources of ignition, Project construction and decommissioning could increase the risk of surrounding communities' exposure to pollutant concentrations from wildfire and the uncontrolled spread of wildfire to a level that is substantially higher than existing than baseline conditions, which would result in a potentially significant impact.

To ensure that wildland fire impacts during construction and decommissioning are reduced to less than significant, implementation of **Mitigation Measure 3.16-2a** (Fire Safety) would be required. The implementation of a Project-specific Fire Prevention Plan would reduce potential sources of ignition and require immediate and effective suppression measures. The plan would specify that when the National Weather Service issues a Red Flag Warning (an alert that high winds and dry conditions could lead to rapid or dramatic increases in wildfire activity), the Applicant and its contractor must cease all non-emergency work to respond to changes in fire risk. Additionally, the plan would prepare work crews with emergency suppression equipment and plans to respond quickly to any onsite incidents caused by construction activities.

The implementation of Mitigation Measure 3.16-2a would reduce the potential for an onsite ignition during construction by limiting the types of acceptable work during Red Flag Warnings, requiring that vegetation clearances be maintained, and ensuring that potential ignitions sources are minimized. Additionally, Mitigation Measure 3.16-2a would provide the construction crews

with the training and tools necessary to respond quickly to a potential fire, preventing the spread of fire. The incorporation of a Project-specific Fire Prevention Plan would reduce the risk of the spread of wildfire from Project construction and decommissioning to near baseline conditions. This would reduce Project impacts to a less-than-significant level.

The Project would include the O&M of up to 72 turbines, underground and aboveground collector systems, and a substation and switching station. Project O&M would increase the potential for accidental ignition due to mechanical failures such as turbine overload, the overheating of moving parts, a collector line failure, or a structure fire involving the substation. Sparks created by any of these mechanical failures could ignite surrounding flammable material. Additionally, due to the height of the turbines, lightning strikes also could result in the ignition of a fire within the turbine.

In accordance with applicable firebreak clearance requirements (Pub. Res. Code §4292; 14 Cal. Code Regs. §1254), the Applicant would trim or remove flammable vegetation in the area surrounding power lines to reduce potential fire and other safety hazards. Also, in accordance with tree and power line clearance requirements (Pub. Res. Code §4293; 14 Cal. Code Regs. §1256), the Applicant would regularly inspect vegetation and trim trees to manage fire and safety hazards and ensure electrical reliability for all Project collector lines constructed overhead. As described in Section 2.4.1, *Wind Turbine Generators*, a 15-foot gravel ring would be placed around the base of the foundation of turbines and maintained free of vegetation and an area of between 65 and 95 feet in diameter (depending on site conditions) would be removed from timber production and maintained as low-growing vegetation.

As described in Section 2.4.2.2, *Overhead Collector System*, an approximately 80-foot-wide corridor would be maintained around the overhead collector system and cleared of tall woody vegetation. Additionally, as described in Section 2.4.4.2, *Temporary Construction and Equipment Areas*, prior to operation, the Applicant would prepare a Vegetation Management Plan that would outline vegetation management procedures to be implemented onsite pursuant to all applicable state regulations listed above pertaining to electrical systems, and would include vegetation management for all other components of the Project as well.

Compliance with the above operational and vegetation clearance requirements would reduce the risk of exposing surrounding communities to exacerbated risk of the uncontrolled spread of a wildfire during Project operation. However, operation of the Project would introduce new energy facilities and activities that could result in sparks or flames that could result in a wildfire that could spread beyond the Project site. This risk would create a potentially significant impact with regard to the spread of wildland fire.

Mitigation Measure 3.16-2a requires that a Fire Prevention Plan be developed and implemented during the Project's construction, operation, and decommissioning periods. Mitigation Measure 3.16-2a requires that maintenance activities include appropriate fire prevention measures. Additionally, Mitigation Measure 3.16-2a requires that the Fire Prevention Plan identify meteorological monitoring systems to identify fire-prone conditions, requires inspection of turbines and electrical infrastructure, and requires a protocol for disabling reclosers and de-

energizing the electrical distribution system. **Mitigation Measure 3.16-2b** would require that all turbines be equipped with fire detection and prevention technology compatible with manufacturers operating requirements, and will be maintained in good working order throughout the life of the Project. Finally, **Mitigation Measure 3.16-2c** would require that the Applicant create and coordinate an emergency response plan with local emergency responders.

The implementation of these mitigation measures would reduce the risk of ignition resulting from operation of the Project to near baseline levels by requiring Project turbines to be fitted with fire detection equipment, fire extinguishment equipment, and an automatic shutdown system. The incorporation of these features into turbine design would reduce the potential of a fire igniting within a turbine. Additionally, implementation of these measures would provide the full-time operation workers with the tools and training necessary to respond to a potential fire and prevent it from spreading.

Therefore, the implementation of Mitigation Measures 3.16-2b and 3.16-2c would reduce the risk of such an ignition spreading wildfire and/or wildfire-related pollution to surrounding communities. With the implementation of Mitigation Measure 3.16-2a, Mitigation Measure 3.16-2b, and Mitigation Measure 3.16-2c, impacts would be less than significant.

Mitigation Measure 3.16-2a: Fire Safety.

The Applicant and/or its contractors shall prepare and implement a Project-specific Fire Prevention Plan (FPP) to prevent an exacerbation of wildfire risk during both the Project construction and operation and maintenance phases. Prior to construction, the Applicant shall contact and consult with the Shasta Trinity Unit of CAL FIRE and the Shasta County Fire Department to determine the appropriate amounts of fire equipment to be carried on the vehicles and appropriate prevention measures to be taken. The Applicant shall submit verification of its consultation with the appropriate fire departments to Shasta County. The Applicant shall submit a draft FPP to the Shasta County Department of Resource Management, Planning Division for approval when the building permit application is submitted. The County shall have an opportunity to make comments on and revisions to the FPP, which the Applicant shall incorporate into a revised FPP for approval. The Applicant shall make the approved FPP available to all construction crew members prior to construction of the Project. The FPP shall list fire safety measures including fire prevention and extinguishment procedures, as well as specific emergency response and evacuation measures that would be followed during emergency situations; examples are listed below. The FPP also shall provide fire-related rules for smoking, storage and parking areas, usage of spark arrestors on construction equipment, and fire-suppression tools and equipment. The FPP shall include or require, but not be limited to, the following:

- Prior to construction, the Project applicant shall designate primary and alternate Fire Coordinators such that a Fire Coordinator is present at all times during Project construction. The Fire Coordinator shall be responsible for ensuring that crews have sufficient fire suppression equipment, communication equipment, shall lead and coordinate fire patrols, ensure that the required clearances are followed onsite, and ensure that all crew members receive training on the FPP and its components.
- For vehicles within control of the contractor, the contractor shall require vehicle drivers to conduct a visual inspection of the vehicle for potential sparking risks prior to operation of the vehicle. This inspection should include, but not be limited to a

check of tire pressure and an inspection for chains or other vehicle components that could drag while driving. For subcontractors or vendors where vehicles are not within the control of the contractor, the contractor or Applicant shall develop a standard brochure to send to vendors that shall provide educational materials about fire risks associated with vehicles and shall provide an inspection checklist.

- The Applicant and/or its contractors shall have water tanks, water trucks, or portable water backpacks (where space or access for a water truck or water tank is limited) sited/available in the study area for fire protection.
- During construction of the Project the Applicant and/or its contractors shall implement ongoing fire patrols during construction hours and for 1 hour after the end of daily construction and hotwork.
- All construction crews and inspectors shall be provided with radio and/or cellular telephone access that is operational within the Project Site to allow communications with other vehicles and construction crews. All fires shall be reported immediately upon detection.
- Require that all internal combustion engines, stationary and mobile, be equipped with spark arresters in good working order.
- Require that light trucks and cars with factory-installed mufflers be used only on roads where the roadway is cleared of vegetation.
- Require that equipment parking areas and small stationary engine sites are cleared of all extraneous flammable material.
- Include a fire conditions monitoring program to monitor meteorological data during construction and operation.
- Include a monitoring and inspection protocol for turbines and electrical infrastructure.
- Include protocol for disabling re-closers and de-energizing portions of the electrical collection and transmission systems
- Prohibit smoking in wildland areas, with smoking limited to paved areas or areas cleared of all vegetation.
- All construction vehicles shall have fire suppression equipment.
- The Applicant shall ensure that all construction workers receive training on the implementation of the FPP including how to conduct a fire patrol, proper use of fire-fighting equipment and procedures to be followed in the event of a fire, vegetation clearance and equipment usage requirements, turbine, and electrical equipment inspections.
- As construction may occur simultaneously at several locations, each construction site shall be equipped with fire extinguishers and fire-fighting equipment sufficient to extinguish small fires.
- The Applicant shall enforce a requirement that construction personnel park any vehicles within roads, road shoulders, graveled areas, and/or cleared areas (i.e., away from dry vegetation) wherever such surfaces are present at the construction site.

- The Applicant and its contractor shall cease all non-emergency work during Red Flag Warning events.
- The Applicant shall coordinate the finalization of road improvements (i.e. frequency of grading and vegetation clearance) with CAL FIRE and other emergency responders to ensure that sufficient ingress and egress exists onsite.
- Prior to the initiation of construction, a designated inspector from the County and/or Shasta County Fire Department shall inspect the Project Site to ensure that sufficient fire suppression equipment is present onsite, that the required vegetation clearances have been cleared, that a crew member training program has been created, that construction vehicles are equipped with fire suppression equipment, that spark arrestors are installed on construction equipment, that a fire conditions monitoring program has been developed, that a monitoring and inspection protocol has been developed, that a disabling and re-closing protocol has been developed, and that CAL FIRE was appropriately consulted regarding road improvements and ingress and egress.
- During construction, the Applicant shall maintain and provide upon request by the County, CAL FIRE a weekly FPP compliance report that demonstrates the following: fire patrols have been conducted following construction, any new construction workers have received training on the implementation of the FPP, that non-emergency work is being halted appropriately during Red Flag Warnings, and that sufficient fire suppression equipment is present onsite.

Successful implementation of Mitigation Measure 3.16-2a (Fire Safety) would be demonstrated by the development of an FPP in consultation with local fire authorities which is documented and submitted to Shasta County for review, any revisions, and final approval. Additionally, successful implementation of Mitigation Measure 3.16-2a would require that the Applicant and its contractor comply with all components of the FPP, that ignition from Project construction activities is promptly reported to the fire department(s) with jurisdiction, and that when it is safe to do so, any Project-caused ignition is suppressed immediately.

Mitigation Measure 3.16-2b: Nacelle Fire Risk Reduction.

Turbines shall be equipped with fire detection and prevention technology compatible with the manufacturer's operating requirements and will be maintained in good working order throughout the life of the Project. Turbines with electrical equipment in the nacelle shall have safety devices to detect electrical arc and smoke that use the best available technology for fire detection and suppression within turbines. The turbine design shall include the following components:

1. Early fire detection and warning systems;
2. Automatic switch-off and complete disconnection from the power supply system; and
3. Automatic fire extinguishing systems in the nacelle of each wind turbine.
4. Additionally, turbines shall include lightning protection equipment such as grounding equipment, and a lightning measurement system.

Should any of these devices report an out-of-range condition, the device shall command a shutdown of the turbine and disengage it from the electrical collection system, and send a notice through the SCADA. The entire turbine shall be protected by current-limiting switchgear installed at the base of the tower.

In the event of a lightning strike, an electrical inspection shall be conducted on the affected turbine to identify and address any damage to the turbine or electrical system that could result in subsequent fire risk.

Mitigation Measure 3.16-2c: Emergency Response Plan.

Prior to the submission of the building permit application, the Applicant shall prepare an emergency response plan to be reviewed and approved by Shasta County Planning, CAL FIRE, and the Shasta County Fire Department. Following approval of the plan, the Applicant and/or its contractors shall implement the requirements in the plan during all phases of construction and operation, as applicable. The emergency response plan shall describe the likely types of potential accidents or emergencies involving fire that could occur during both construction and operation, and shall include response protocols for each scenario. The plan shall include key contact information and a description of key processes, in the event of an emergency in order to alert relevant responders of the emergency, and how to control the emergency. The plan shall include crew member training in response, suppression, and evacuation. The training shall be coordinated by the designated Fire Coordinators. Prior to construction, the Applicant shall submit to the County a compliance report demonstrating that all crew members have been trained. As new construction crews or operation workers are brought onsite, the Applicant shall submit additional compliance reports demonstrating that they have been received training on the emergency response plan. This plan may be combined with the Fire Prevention Plan (FPP).

Significance after Mitigation: Implementation of Mitigation Measure 3.16-2a (Fire Safety), Mitigation Measure 3.16-2b (Nacelle Fire Risk Reduction), and Mitigation Measure 3.16-2c (Emergency Response Plan) would require the Applicant and its contractors to implement fire safety measures to prevent fire and be prepared to respond immediately if a fire should ignite, and would require collaboration with area fire protection agencies to reduce the risk of wildfire ignition and spread. This impact would be reduced to a less-than-significant level.

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- c) Whether the Project would require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment.**

Impact 3.16-3: The Project would require the installation and maintenance of Project-related infrastructure (such as roads and power lines) that may exacerbate fire risk, and the installation and maintenance of fire suppression infrastructure (such as vegetation clearances and emergency water sources) that may result in temporary or ongoing impacts to the environment. (*Less-than-Significant Impact*)

As described in Section 2.4.4.1, *Access Roads*, existing roads would be used to the extent possible, but new roads are proposed as part of the Project. As described under Impact 3.16-2, the

vehicle activity on these new roads could result in a significant increased potential for ignitions by introducing new potential sources of ignition into vegetated areas that previously were at minimal risk from human-caused ignitions. The transportation-related aspects of Mitigation Measure 3.16-2a would reduce the increase in fire risk from new roads by requiring controls such as visual inspections for ignition sources (e.g., dragging chains) and carrying adequate fire suppression equipment.

The Project's overhead electrical collector systems are described in Section 2.4.2 and would include 34.5 kV collector lines installed on wood poles up to 90 feet tall and wire heights between approximately 20 to 30 feet above the ground (with greater wire clearances as needed). An approximately 80-foot-wide corridor would be maintained free of taller woody vegetation during operation. This vegetation clearance is consistent with or greater than guidance for clearance around power lines (e.g., CPUC General Order 95). The risk of ignition from these collector lines would be low because there would be a low risk of objects such as downed trees striking the lines or poles based on this minimum clearance. As a result, impacts would be less than significant.

The vegetation clearances that would be maintained around roads, collector lines, turbines, and other Project components would aid in reducing wildfire risk and facilitating emergency suppression of fires should they occur, consistent with defensible space guidelines. Because these clearances are part of the Project description, their construction and ongoing maintenance is analyzed as part of the Project where applicable throughout this EIR (e.g., in Section 3.4, *Biological Resources*, as relevant to wildlife habitat that would be removed to maintain clearances). Similarly, the water storage tank at the O&M facility is analyzed as part of the Project and the environmental impacts of the entire O&M facility are analyzed throughout this document on a resource-by-resource basis. No additional analysis of these fire prevention and suppression components of the Project is warranted in this impact discussion.

Mitigation: None required.

d) Whether the Project would expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.

Impact 3.16-4: The Project would, unless mitigated, expose people or structures to significant risks, including adverse water quality effects or downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes. (*Less than Significant with Mitigation Incorporated*)

The Project does not propose and would not require the construction of any housing; therefore, it would not expose people to increased risk associated with flooding, landslides, or post-fire slope instability as a result of locating housing near such existing risks. The following analysis focuses on the potential for the Project to result in post-fire downstream flooding, runoff, or landslides on nearby, downstream and downslope communities such as Moose Camp, Montgomery Creek, and Round Mountain.

As discussed under criterion b), implementation of the Project could increase wildfire risk as a result of increased sources of ignition. The implementation of Mitigation Measure 3.16-2a (Fire Safety), Mitigation Measure 3.16-2b (Nacelle Fire Risk Reduction), and Mitigation Measure 3.16-2c (Emergency Response Plan) would reduce potential sources of ignition and would prepare work crews to respond to incidents caused by construction equipment.

Post-fire conditions influence surface water quality because water flowing through burned areas is likely to carry increased levels of sediment, organic debris, and chemicals (such as residuals from fire suppressants), contributing to degradation of water quality and aquatic resources (Shasta County, 2016). Additionally, post-fire conditions can increase the potential for erosion and flooding due to the loss of vegetation that holds soils in place, causing increased erosion, and the loss of the water-absorbing properties of soils, causing increased runoff.

As identified in Section 3.12, *Hydrology and Water Quality*, criterion c), the implementation of a storm water pollution prevention plan (SWPPP) and best management practices (BMPs) related to erosion control would reduce potential impacts during construction related to drainage patterns to a less-than-significant level. Additionally, following construction, drainage patterns on-site would be relatively similar to existing conditions. Therefore, because the Project would implement fire prevention and suppression measures as well as erosion control and stormwater pollution prevention measures, the Project would not, as a result of post-fire conditions, result in changes to runoff or drainage patterns which could cause adverse water quality impacts or exacerbate downslope or downstream flooding and thereby expose people or structures to associated risks.

Additionally, as discussed in Section 3.9, *Geology and Soils*, under Impact 3.9-3, there are steep slopes and soil types within the Project Site where landslides could occur. In the event that a fire were to be ignited on the Project Site and were to spread outside of the Project Site, if significant amounts of vegetation were burned, the resultant change in drainage and soil stability could result in landsliding in downstream or downslope areas.

Implementation of Mitigation Measure 3.16-2a (Fire Safety), Mitigation Measure 3.16-2b (Nacelle Fire Risk Reduction), and Mitigation Measure 3.16-2c (Emergency Response Plan), would reduce the potential for the Project to result in the uncontrolled spread of wildfire and, therefore, would reduce the potential for landslides as a result of post-fire conditions to a less-than-significant level.

Mitigation Measure 3.16-4: Implement the Fire Safety measures that would be required by Mitigation Measure 3.16-2a; implement the Nacelle Fire Risk Reduction measures that would be required by Mitigation Measure 3.16-2b; and implement the Emergency Response Plan that would be required by Mitigation Measure 3.16-2c.

Significance after Mitigation: With implementation of these measures, the risk of flooding, mudslides, and slope instability associated with post-fire conditions would be addressed with a detailed Fire Prevention Plan, fire risk reduction measures in turbines, and an emergency response plan. Therefore, this impact would be less than significant.

3.16.3.2 PG&E Interconnection Infrastructure

Minor modifications or upgrades to the existing 230 kV line may be required to facilitate the Project's interconnection. Upgrades to PG&E facilities are anticipated to include construction and/or reconfiguration of utility line structures and transmission line circuits involving four to six new transmission poles. If required, these new poles would be constructed adjacent to the proposed substation and switching station. The modifications to the PG&E infrastructure would primarily include updating existing infrastructure. These upgrades would likely replace existing equipment with new equipment; this upgrade could slightly reduce the risk of equipment failure. However, the reconfiguration of a transmission line circuit and addition of transmission circuit and poles could result in an increase in fire risk associated with the construction of the modifications and associated transmission line failures resulting in sparks such as downed lines, bird strikes, vegetation contact, arc flashes, and equipment failure. Therefore, the modifications to the PG&E interconnection facilities could increase the risk of wildfire due to the increased risk of ignition during construction and operation of the infrastructure.

Given the inherent potential for ignition risk associated with power lines, it is anticipated that PG&E's Fire Prevention Plan would be applied to the PG&E interconnection facilities, as required by CPUC GO 166. The implementation of operational risk management programs identified in PG&E's Fire Prevention Plan and Wildfire Safety Plan would reduce the risk of an ignition during operation. Relevant programs include enhanced weather monitoring, Utility Standard S1464, the Wood Pole Test and Treat Program, Pro-Active Responses to Fire Incidents, enhancements to PG&E's Storm Outage Prediction Model, the Wildfire Reclosing Disable Program, and the implementation of the PSPS program (PG&E, 2018). Additionally, vegetation along the 230 kV PG&E line would be managed in compliance with NERC Standard FAC-003, Transmission Vegetation Management. The Project also would also be subject to the CPUC vegetation management and clearance requirements (GO 95, GO 165, and GO 166) as well as the portions of the Public Resources Code that identify clearance requirements and requirements for work in SRAs. Compliance with the above operational and vegetation clearance requirements would effectively manage the risk of exposing surrounding communities to exacerbated risk of the uncontrolled spread of a wildfire during construction and operation of the PG&E infrastructure.

Mitigation Measure 3.16-1a (implementation of the Traffic Management Plan described in Mitigation Measure 3.14-3) may be required specific to the PG&E interconnection infrastructure if oversized loads are required for delivery of PG&E equipment which loads could substantially impair emergency ingress or egress. Mitigation Measure 3.16-2b (Nacelle Fire Risk Reduction) would not be required, because the potential impact it would address would be specific to the wind turbines. Mitigation Measure 3.16-2a (Fire Safety) and Mitigation Measure 3.16-2c (Emergency Response Plan) would be required for the PG&E infrastructure to reduce a potential significant impact related to exacerbation of wildfire risks associated with the use of vehicles and equipment during construction, operation, and maintenance of the infrastructure.

3.16.3.3 Direct and Indirect Effects of Alternatives

Alternative 1: South of SR 299

Under Alternative 1, the seven turbines proposed north of SR 299 and approximately 1.5 miles of overhead transmission line would not be constructed, and the 378 acres north of SR 299 would continue to be managed for timber production. Under this alternative, the footprint of construction would be reduced, thereby slightly reducing the potential for a construction- or decommissioning-related ignition. Additionally, the reduction of turbines and associated electrical infrastructure during operation would slightly decrease the potential for an ignition during operation.

However, the overall the risk of wildland fire introduced by Alternative 1 would be substantially similar to the risk introduced by the Project. Keeping the northern part of the Project Site under timber production also may decrease the risk of wildland fire slightly as that portion of the Project Site would be harvested and thinned, preventing excessive fuel build up in the area of the Project Site north of SR 299. While Alternative 1 would reduce the risk of wildland fire slightly when compared to the Project, impact conclusions and mitigation requirements would be the same as for the Project.

Alternative 2: Increased Setbacks

Under the Alternative 2, four fewer turbines would be constructed. This reduction in the number of turbines would be slightly reduced relative to the Project's impacts to wildland fires slightly. Additionally, increasing the setbacks of the turbines from residential properties would provide some additional protection to surrounding communities by increasing the area between residences and the turbines in the event that a turbine fire were to occur. Although Alternative 2 would reduce impacts to wildland fire slightly, impact conclusions and mitigation requirements would be the same as for the Project.

No Project Alternative

If the No Project Alternative is implemented, none of the proposed wind turbines or associated transformers, meteorological towers or other infrastructure, facilities, or structures would be constructed, operated and maintained, or decommissioned on the Project Site. The proposed overhead and underground electrical collector system and communications lines would not be developed; and the onsite collector substation, switching station, and O&M facility would not be constructed. Laydown areas would not be cleared, no new access roads would be constructed, and no existing roads would be improved. No blasting or welding would occur. Project-related trucks and other delivery vehicles, cranes and other equipment, and worker vehicles would not be present on the Project Site. 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 Wildfire.

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 effects. CAL FIRE would review any future timber harvesting proposal to evaluate any potential project-specific, site-specific environmental impacts.

3.16.4 Cumulative Analysis

Depending on the pathway of migration for a wildfire, the geographic scope for cumulative effects related to wildfires would be the air basin, watershed boundary, or extent of adjacent wildlands. Cumulative wildfire hazards could arise at any point during Project site preparation and construction, O&M, or decommissioning.

Potential cumulative projects (including those identified in Section 3.1.2.1, *Cumulative Scenario*) could involve fire ignition causes (such as smoking, vehicle or equipment use, campfires, or electrical power) that could contribute to a cumulative risk of wildfire in the area. Specifically, ongoing impacts of the Hatchet Ridge Wind Project and of past fires would combine with the incremental impacts of the Project, mining projects, and nearby timber harvesting to contribute to the existing cumulative impacts related to wildland fire. One of the cumulative projects (project #10, Landvest Helicopter Dip Tank Installation, in Table 3.1-5, *Other Potentially Cumulative Projects within Shasta County*) would increase fire suppression readiness in the general area by installing helicopter dip tanks to aid in fire suppression. One dip tank currently is proposed within the Project Site where shown in Figure 3.16-1, *CAL FIRE Fire Hazard Severity Zones*. Two other dip tanks are proposed to be installed approximately 20 miles north of the Project Site, west of the community of Pondosa and southeast of the community of Bartle.

The Project would result in a less-than-significant impact regarding the interference with adopted emergency response or evacuation plans. Although the Project would not accommodate occupants, it is located near existing communities. Therefore, the Project has the potential to expose these communities to wildfire risks. As noted in Section 3.16.3, *Direct and Indirect Effects*, the Project Site is located in a very high fire hazard severity zones as well as Tier 2 and Tier 3 CPUC Fire Threat Districts. To ensure that potentially significant wildland fire impacts are reduced to a less-than-significant level during construction, operation, and decommissioning, Mitigation Measure 3.16-2a (Fire Safety), Mitigation Measure 3.16-2b (Nacelle Fire Risk Reduction), and Mitigation Measure 3.16-2c (Emergency Response Plan) would be implemented.

A very large part of Shasta County has been designated as being within a very high fire hazard severity zone (CAL FIRE, 2007, 2009). Since 2000, Shasta County has been subject to a number of large, severe fire events, such as the Carr Fire, Delta Fire, and Hirz Fire (2018). Given the vulnerability of the county to large severe fires, and the presence of other projects near the Project Site that also could be sources of ignition, a significant cumulative impact exists with regard to wildfire.

Section 2.5.3, *Pre-Construction Preparation*, notes that the Project includes access roads and vegetation clearance provisions. The Project would be required to comply with state and federal requirements related to vegetation clearance and fire prevention measures. Additionally, the implementation of Mitigation Measure 3.16-2a (Fire Safety) would ensure that a detailed construction and operation fire prevention plan exists. Mitigation Measure 3.16-2b (Nacelle Fire Risk Reduction) requires that turbines be equipped with fire detection and prevention technology compatible with the manufacturer's operating requirements and will be maintained in good working order. Mitigation Measure 3.16-2c (Emergency Response Plan) requires the development of an emergency response plan in coordination with CAL FIRE. These mitigation measures would reduce Project-specific impacts to a less-than-significant level. With the access roads, vegetation clearance provisions, emergency suppression equipment, etc., that would be incorporated into the Project, its incremental impact would not be cumulatively considerable because the risk of Project-related wildfire ignition would be substantially reduced and ignitions that may occur on the Project Site or due to Project-related vehicle access would be suppressed quickly.

Also as noted in Section 3.16.3, the Project would not include any housing or structures and so would not expose people or structures to any increased level or risk associated with flooding, landslides, or post-fire slope instability. The analysis also notes that the Project would not result in changes to drainage patterns. Additionally, as mitigated, the Project would reduce the risk of the spread of fire to near baseline conditions. Therefore, the potential for post-fire flooding or landslides would be less than significant. Based on this, the Project's incremental less-than-significant impact would not cause or contribute to a significant cumulative impact related to these considerations.

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