3.16 Wildfire Prevention and Suppression

3.16.1 Introduction

This section describes effects on wildfire prevention and suppression that would be caused by implementation of the TRTP. The following discussion addresses existing environmental conditions in the affected area, identifies and analyzes environmental impacts for a range of Project alternatives, and recommends measures to reduce or avoid adverse impacts anticipated from Project construction and operation. In addition, existing laws and regulations relevant to wildfire prevention and suppression are described. In some cases, compliance with these existing laws and regulations would serve to reduce or avoid certain impacts that might otherwise occur with the implementation of the Project.

Scoping Issues Addressed

During the scoping period for the EIR/EIS (August-October 2007), a series of scoping meetings were conducted with the public and government agencies, and written comments were received by agencies and the public that identified issues and concerns. The following issues related to wildfire prevention and suppression that were raised during scoping are addressed in this section:

- No smoking allowed on the PHLNHPA properties. Coordination with fire rangers on fire prevention measures.
- Towers affect the ability of firefighters to use "air power" to fight fires. Placing higher towers along the corridor will make it more restrictive for aerial firefighting.
- Transmission lines pose a fire and safety hazard near homes and in the Angeles National Forest (ANF).
- The upgraded and/or new transmission lines may have an impact on Los Angeles County Fire Department Facilities and existing structures within 100 feet of drip lines. All new electrical structures and supply cables within Consolidated Fire Protection District shall be in compliance with Title 32 of the County code.

Summary and Comparison of Alternatives

Table 3.16-1 on the following page presents some key factors related to wildfire prevention and suppression for each alternative. It is important to note that the "Environmental Issues" indicated in Table 3.16-1 are not impact statements, but rather selected information items that provide a comparison between the alternatives. Specific impact statements that have been identified for the Project and alternatives, in accordance with the significance criteria introduced in Section 3.16.4.1 (Criteria for Determining Impact Significance), are described in Sections 3.16.5 through 3.16.11.

3.16.2 Affected Environment

The fire and fuels management study area is delimited for the purposes of this report by two, unique wildfire risk areas: the high fire risk Tehachapi Fireshed, and the low fire risk Project areas. The Tehachapi Fireshed, shown in Figure 3.16-1 (at the end of this section), is defined as the areas that:

- Have experienced multiple, large fires (at least 300 acres in extent) over a 50-year history (up to and including 2006),
- Are generally categorized as being located in High or Very High Fire Hazard Severity Zones as defined by Cal Fire,
- Contain surface fuels capable of carrying a large wildfire, and
- Are within the Santa Ana wind influence area in relation to potential ignitions from the proposed Project or alternatives.

Table 3.16-1. Summary Comparison of Environmental Issues – Wildfire Prevention and Suppression

Environmental Issues	Alternative 1 (No Project/Action)	Alternative 2 (SCE's Proposed Project)	Alternative 3 (West Lancaster)	Alternative 4 (Chino Hills)	Alternative 5 (Partial Underground)	Alternative 6 (Max. Heli. Construction in ANF)	Alternative 7 (66-kV Subtransmission)
Construction and/or maintenance activities would reduce the effectiveness of firefighting (Impact F-1)	Construction of a T/L in place of TRTP could interfere with emergency response vehicles during the construction phase through wildland areas with high-risk fuels.	Interference with emergency response vehicles during the construction phase through the ANF and Puente Hills Landfill Natural Habitat Authority (PHLNHPA) lands.	Same as Alternative 2.	Increased number of narrow, unpaved wildland access roads that would be potentially obstructed by emergency service vehicles in the event of a wildfire in Chino Hills State Park (CHSP).	Same as Alternative 2.	Same as Alternative 2.	Same as Alternative 2.
Presence of new or higher overhead transmission line would reduce the effectiveness of firefighting (Impact F-2)	Presence of a T/L in place of TRTP in a new corridor could substantially increase the obstruction to firefighting operations.	Increased height of transmission structures in existing corridors along several segments, creating a marginal increased burden on aerial firefighting operations.	Same as Alternative 2.	Increased height of transmission structures in existing corridors along several segments, and increased length of new linear firefighting obstacles on the landscape, creating an increased burden on aerial firefighting operations.	Same as Alternative 2.	Same as Alternative 2.	Same as Alternative 2.
Construction and/or maintenance activities would increase the risk of wildfire (Impact F-3)	Construction of a T/L in place of TRTP in a new corridor could substantially increase the risk of ignitions.	Wildfire ignition risks during the construction phase through wildland areas with high-risk fuels.	Same as Alternative 2.	Increased transmission line increase through the high-risk Tehachapi Fireshed, thereby increasing the potential for construction and operational ignitions. Mileage of transmission line increase: Alternative 4A - 2.3 miles; Alternative 4B - 4.5 miles; Alternative 4C - 5.6 miles; Alternative 4D – 5.2 miles. Alternative 4D would also add new linear element to a high-risk fuel-laden landscape that, in combination	Same as Alternative 2.	Reduced construction-related ignitions compared with Alternative 2.	Same as Alternative 2.

Table 3.16-1. Summary Comparison of Environmental Issues – Wildfire Prevention and Suppression

Environmental Issues	Alternative 1 (No Project/Action)	Alternative 2 (SCE's Proposed Project)	Alternative 3 (West Lancaster)	Alternative 4 (Chino Hills)	Alternative 5 (Partial Underground)	Alternative 6 (Max. Heli. Construction in ANF)	Alternative 7 (66-kV Subtransmission)
				with other transmission lines, would create an indefensible space of approximately 2,000 acres. This would increase potential interference with fire suppression efforts.			
Construction and/or maintenance activities would increase the risk of personnel injury or death in the event of fire (Impact F-4)	Construction and maintenance of a T/L in place of TRTP would have a similar risk of personnel injury or death of constructed through wildland areas with high-risk fuels and limited ingress/egress.	Increased risk of personnel injury or death due to presence of personnel in access-limited wildlands that are highly susceptible to wildfire.	Same as Alternative 2.	Same as Alternative 2.	Same as Alternative 2.	Same as Alternative 2 after implementation of additional mitigation measures.	Same as Alternative 2.
Presence of the overhead transmission line would increase the risk of wildfire (Impact F-5)	Presence of a T/L in place of TRTP would have a similar risk of long-term ignitions if constructed through high-risk fuels for a similar length.	Same risk of igniting fire in fire-prone areas of route as existing T/L the Project would replace.	Same as Alternative 2.	Would incrementally increase risk of igniting wildfire in Chino Hills and CHSP.	Same as Alternative 2.	Same as Alternative 2.	Same as Alternative 2.
Project activities would introduce non-native plants, which would contribute to an increased ignition potential and rate of fire spread (Impact F-6)	Construction of a T/L in place of TRTP through wildland areas could have similar effects on fire behavior resulting from the introduction of non-native plants.	Introduces non-native plants, which would contribute to a change in fuel characteristics and fire behavior that could worsen the effects of fire.	Same as Alternative 2.	Introduces incrementally more non-native plants than Alt. 2, which would contribute to a change in fuel characteristics and fire behavior that could worsen the effects of fire.	Same as Alternative 2.	Introduces incrementally fewer non-native plants than Alt. 2 as a result of fewer roads (approx. 42 miles less) being constructed.	Same as Alternative 2.

Firesheds are conceptually analogous to watersheds. An ignition that escapes containment at the top of the fireshed could spread to the limits of the fireshed under extreme weather conditions. Furthermore, an individual fireshed encompasses areas with similar fire risk and where a similar prevention and response strategy could influence the wildfire outcome. The Tehachapi Fireshed encompasses portions of Los Angeles, San Bernardino, Orange, and Ventura Counties. Although neither the proposed Project nor any alternatives would be located in Ventura County, the Tehachapi Fireshed encompasses a portion of this county because it is located within the wildfire influence area of the proposed Project, and wildfires that occur in any portion of the fireshed could spread to any other downwind portion of the fireshed.

The low fire risk Project areas include the proposed Project and alternatives ROWs, construction laydown areas, pull sites, and any other areas where Project-related personnel are active or equipment is in use or stored outside of the Tehachapi Fireshed boundary. Low fire risk Project areas do not have sufficient fuels to carry a large fire and are considered low risk from a wildfire prevention and suppression perspective. The low fire risk Project areas are shown in Figure 3.16-1 (at the end of this section), and include portions of Kern, Los Angeles, and San Bernardino Counties.

Cal Fire's Fire and Resource Assessment Program (FRAP) assesses the amount and extent of California's forests and rangelands, analyzes their conditions, and identifies alternative management and policy guidelines. The FRAP has allowed for the collection of spatial data on wildfire history and the generation of spatial information on current wildfire hazard levels. FRAP spatial data are used in delineating the Tehachapi Fireshed area, in summarizing the environmental setting relevant to fire and fuels management in the Project area, and in evaluating impacts.

Surface fuels are vegetative materials near the ground through which fire will spread. These materials range from downed woody material (leaf litter, dead branches and logs) to brush and grass. The amount, size and moisture content of surface fuels determine how fast a fire spreads, how hot it burns and how high flames reach. Surface fuel types across Kern, Los Angeles, San Bernardino, Orange and Ventura Counties were obtained from the FRAP database, which summarizes vegetative cover information from various sources, and converts vegetation types into "fuel models". Surface fuel models are used to predict fire behavior, provide an input to fire behavior models, and are an important component of various hazard assessment methodologies.

3.16.2.1 Regional Setting

The regional setting for the proposed Project and alternatives includes parts of Kern County, the Angeles National Forest (ANF), Los Angeles County (incorporated and unincorporated), and San Bernardino County (incorporated and unincorporated). The Project is also located within one-half mile of Riverside County (at Mira Loma Substation) and Orange County (along the proposed ROW for Segment 8A).

The wildfire influence area of the proposed Project and alternatives is defined by the Tehachapi Fireshed, shown in Figure 3.16-1 (at the end of this section) and described in Section 3.16.2 above, and also includes portions of Ventura County. The behavior and characteristics of wildfires are dependent on a number of biophysical and anthropogenic (human-caused) factors. The biophysical variables are fuels (including composition, cover, and moisture content), weather conditions (particularly wind velocity and humidity), topography (slope and aspect), and ignitions (e.g., lightning). The anthropogenic variables are ignitions (e.g., arson, smoking, power lines) and management (wildfire prevention and suppression efforts). The wildfire history of the region is an indicator of future wildfire behavior. This section

describes these factors that influence wildfire behavior and characteristics and the indicators of future wildfire behavior.

Fuels

The Tehachapi Fireshed consists of several different fuel types but is dominated by chaparral (38.4 percent) and grassland fuels (37.1 percent) with small stands of low-density timber (10.3 percent; Cal Fire, 2005). The various categories of surface fuels that occur within the fireshed are described in detail, below, summarized in Table 3.16-2, and shown graphically in Figure 3.16-2 (at the end of this section).

Grass (13.0%). This fuel category is composed primarily of native and non-native annual and perennial grasses and associated vegetation. Very little shrub or timber is present, generally less than one third of the area. Fire spread is governed by the fine, very porous, and continuous herbaceous fuels that have less than 30 percent fuel moisture content during the fire season. Surface fires move rapidly through the dry grasses and associated material (Anderson, 1982).

Pine/Grass (24.1%). This fuel category is composed of conifer litter and understory[1] grass, with up to two thirds of the area covered by open shrublands, conifer stands, or scrub oak stands. Fire spread during the fire season is primarily through the fine herbaceous fuels, either live with low moisture content or dead. These are surface fires where the herbaceous material, in addition to litter and dead downed wood from the open shrub or timber overstory[2], contribute to the fire intensity (Anderson, 1982).

Tall Chaparral (4.9%). This fuel category is composed of stands of mature shrubs, six feet and taller. Besides flammable foliage, dead woody material in the stands significantly contributes to a high year-round fire intensity (Anderson, 1982).

Brush (28.3%). This fuel category is composed of stands of low, dense chaparral shrubs and taller stands of young, green chaparral with poor burning properties because of live vegetation. During the fire season, fire is generally carried in the surface fuels that are made up of litter cast by the shrubs and the grasses or forbs in the understory. Fires are generally of low intensity because surface fuel loads are light, shrubs are young with little dead material, and the foliage contains little volatile material (Anderson, 1982).

Dormant Brush (5.2%). This fuel category is composed of moderate density chaparral of intermediate age and height. Moderate winds will carry fires through the shrub layer, and fires will drop to the ground at low wind speeds or at openings in the stand (Anderson, 1982).

Hardwood/Lodgepole Pine (7.0%). This fuel category is composed of closed canopy stands of short-needle conifers and oaks that support fire in the compact litter layer. This layer is mainly needles, leaves, and occasionally twigs because little undergrowth is present in the stand. Slow-burning ground fires with low flame lengths are generally the case, although the fire may encounter an occasional heavy fuel concentration that can flare up. Only under severe weather conditions involving high temperatures, low humidities, and high winds do the fuels pose fire hazards (Anderson, 1982).

Mixed Conifer Light (3.2%). This fuel category is composed of long-needle conifer and hardwood stands. Surface fires run rapidly through surface litter, and concentrations of dead downed woody material can lead to spot and crown fires (Anderson, 1982).

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1 Understory is the term for the area of a forest which grows in the shade of the emergent or canopy forest canopy.

2 Overstory is the term for the area of a forest which is made up of the very tallest trees that stand over the rest of the plants, and is also referred to as the canopy.

Mixed Conifer Medium (0.1%). This fuel category is composed of conifer forests with a heavy load of dead downed materials resulting from over-maturity (due to an extended period of fire exclusion) or natural events that create a large load of dead material on the forest floor. Crowning out, spotting, and torching of individual trees are more frequent in this fuel situation, leading to potential fire control difficulties (Anderson, 1982).

Desert Fuel (0.01%). Desert fuels consist of patchy, dry fuels that have a low burn intensity due to their sparse nature. During years of high precipitation, however, non-native, invasive grasses can create a continuous fine fuel bed within desert plant communities that can propagate fires.

Urban Fuel (8.5%). Urban fuels consist of patchy ornamental plants, which generally lack continuity and therefore do not propagate fires. During extreme firestorms, however, homes and ornamental plants can act as fuels at the wildland-urban interface.

Agricultural Lands (4.6%). Well irrigated and weed-free agricultural lands are generally poor fuels for propagating fires. However, orchards with a grass understory layer can sometimes propagate fires.

Water and Barren/Rock/Other (0.5%). These categories do not contain surface fuels and do not carry wildfires. The category "Other" includes paved surfaces (Scott & Burgan, 2005).

Table 3.16-2. Tehachapi Fireshed Surface Fuel Cover

Fuel Group	Fuel Model Code[1]	Surface Fuel	Fuel Percent Cover	Group Percent Cover
Grass group	1	Grass	13.0	37.1
	2	Pine/Grass	24.1	
Shrub group	4	Tall Chaparral	4.9	38.4
	5	Brush	28.3	
	6	Dormant Brush	5.2	
Timber group	8	Hardwood/Lodgepole Pine	7.0	10.3
	9	Mixed Conifer Light	3.2	
	10	Mixed Conifer Medium	0.1	
Non-wildland fuels	15[1]	Desert Fuel	0.01	13.1
	28[2]	Urban Fuel	8.5	
	97[2]	Agricultural Lands	4.6	
No fuel present	98	Water	0.6	1.1
	99	Barren/Rock/Other	0.5	

Source: Cal Fire, 2005.

[1] Fuel model codes 1 through 10 are standard fuel models as defined by Anderson, 1982. Codes 89 and 99 are standard models as defined by Scott & Burgan, 2005.

[2] Cal Fire custom fuel model code.

Fuels in the low-risk Project areas consist primarily of urban fuels, grasses, and agricultural lands, or are devoid of fuels.

Certain invasive plants, like cheatgrass, medusa head and Saharan mustard, can contribute to changes in wildfire frequency, timing and spread (Cal-IPC, 2007). Cheatgrass and medusa head, for example, dry out earlier in the season than native grasses, extending the length of the fire season and creating fine fuels that are easily ignited. These fine fuels contribute to wildfires igniting earlier in the year and an increased level of fire recurrence. In addition, non-native grasslands have a "spotting" effect during a wildfire, where embers from these grasslands are blown ahead of the fire line, contributing to an increased rate of fire spread. Invasive annual grasses also influence fire spread by creating a fine fuel continuum between

patchy, perennial shrubs allowing wildfires to expand further into otherwise sparsely vegetated wildlands (Wiedinmyer and Neff, 2007).

Weather and Topography

The climate in the Tehachapi Fireshed supports dense, drought-adapted shrublands that are highly flammable, especially in the fall as fuel moistures reach very low levels. Most critically, winds originating from the Great Basin, locally known as Santa Anas, create extreme fire weather conditions characterized by low humidity, sustained high-speed winds, and strong gusts. Santa Ana winds typically blow from the northeast over the Peninsular Range. As the air is forced through coastal mountain passes, wind speeds of 40 mph can be maintained for hours with gusts from 70 to 115 mph possible (Schroeder et al., 1964). Santa Ana winds create extremely dangerous fire conditions and have been the primary driver of most of California's catastrophic wildfires. Santa Ana winds are at their peak during fall and early winter months, which marks the height of fire season. Because of the presence of dense, dry fuels and periodic Santa Ana winds, southern California has been characterized as having one of the most fire-prone landscapes in the world.

Under extreme weather conditions, the National Weather Service issues Red Flag Warnings for all affected areas. For the purposes of analysis, extreme weather conditions are defined as the Red Flag Warning criteria for the National Weather Service region encompassed by the Tehachapi Fireshed (the Los Angeles/Oxnard region)[3].

Large southern California fires generally occur between October and January during Santa Ana wind events. Most fires occur within early to middle afternoon hours when ambient temperature and fuel moisture levels are conducive to ignition.

Topography also plays a major role in determining the patterns of fire. The influence of topography on fire behavior escalates as the slope steepens and increases in complexity (USFS, 2003). Steep slopes promote significant preheating of fuels which leads to rapid upslope fire spread. Aspect, or slope orientation also influences fire behavior. Northeast-facing slopes have greater exposure to Santa Ana winds. Together, extreme weather and complex topography have interacted in the Tehachapi Fireshed to rapidly propel fires through the landscape.

Topography in the low-risk Project areas is primarily flat.

Fire History

The Tehachapi Fireshed is approximately 1,450,000 acres in extent, covering portions of Los Angeles, San Bernardino, Orange, and Ventura Counties. Although it is unlikely that a fire ignited in the vicinity of the proposed Project would spread throughout the entire fireshed, when fuel and weather conditions are right, a wildfire ignited in the vicinity of the proposed Project could burn through tens of thousands of acres within the fireshed boundary. The largest fire to burn within the Tehachapi Fireshed in the last 50 years was the 1970 Clampitt Fire, which was a power line-ignited fire that burned 113,000 acres within the fireshed and the second largest was the 2003 Simi Fire, which burned 106,000 acres within the

[3] Red Flag Warning criteria for the Los Angeles/Oxnard region are as follows. For all zones except the Antelope Valley, dry fuels plus any one of the following: 1) relative humidity 15 percent or less with wither sustained winds of 25 mph or greater or frequent gusts of 35 mph or greater (for a duration of 6 hours or more), 2) relative humidity 10 percent or less for an extended period of time (for a duration of 10 hours or more, 3) widespread and/or significant dry lightning. For the Antelope Valley, dry fuels plus relative humidity 15 percent or less with sustained winds of 25 mph (for a duration of 8 hours or more). (National Weather Service, 2008)

fireshed (Cal Fire, 2007). The source of ignition of the Simi Fire is under investigation. The human-ignited 2006 Day Fire was 163,000 acres in extent, but the area burned within the Tehachapi Fireshed was limited to 30,000 acres. In addition to these three fires, 12 other fires burned at least 25,000 acres within the Tehachapi Fireshed over a 50-year history (1957-2006). Table 3.16-3 summarizes these fires.

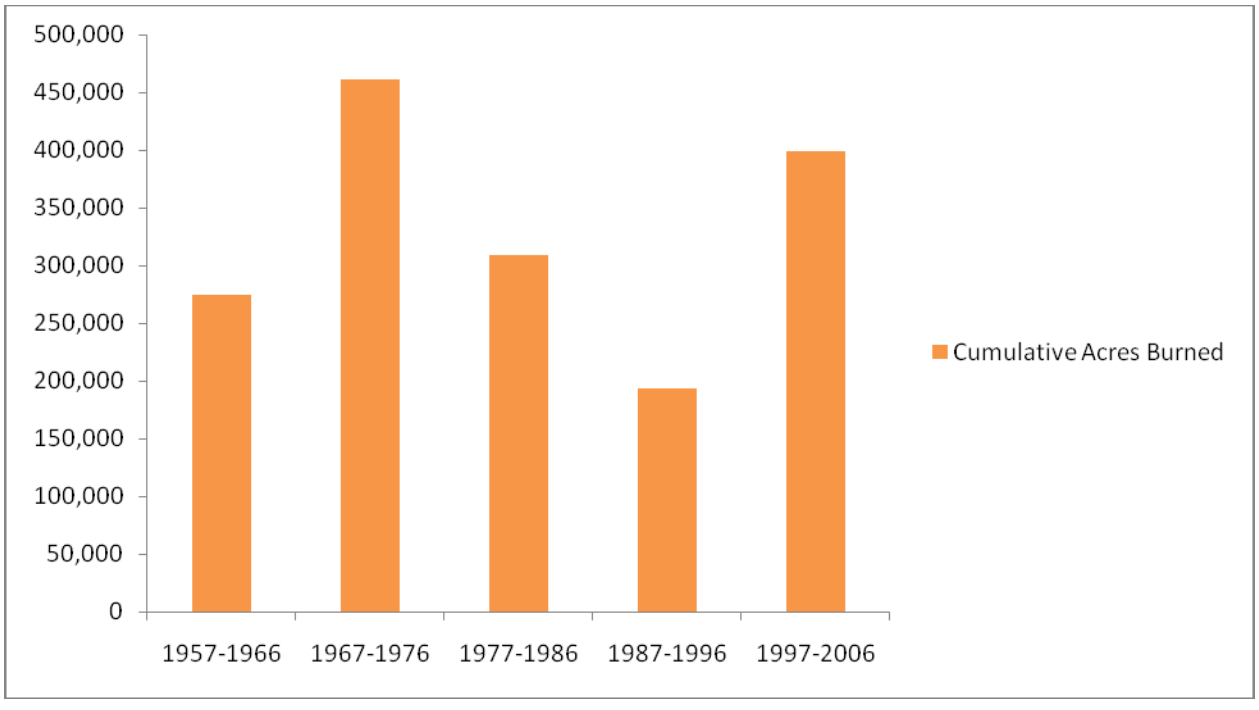
Table 3.16-3. Tehachapi Fireshed 50-year Fire History

Name	Year	Ignition Source	Acres Burned
Day Fire	2006	Debris	30,000
Piru Fire	2003	Unknown	59,000
Simi Fire	2003	Unknown	106,000
Green Meadows Fire	1993	Unknown	38,000
Dayton Canyon Fire	1982	Unknown	43,000
Sage Fire	1979	Unknown	29,000
Kanan Fire	1978	Unknown	25,000
Mill Fire	1975	Unknown	51,000
Wright Fire	1970	Unknown	28,000
Clampitt Fire	1970	Power line	113,000
Liebre Fire	1968	Unknown	48,000
Unnamed	1960	Unknown	28,000

Source: Cal Fire, 2008a

A cumulative total of between 200,000 acres and 450,000 acres have burned per decade throughout the Tehachapi Fireshed over the last 50 years, equivalent to between 20 percent and 45 percent of the fireshed area per decade. Figure 3.16-3 shows the cumulative acres burned per decade in the Tehachapi Fireshed for a 50-year period from 1957 to 2006. Fires that burned in the low-risk Project areas over the same 50-year period were limited to relatively small areas.

Figure 3.16-3. Tehachapi Fireshed: Cumulative Acres Burned per Decade, 1957-2006



Source: Cal Fire, 2008b

The ignition sources of these fires are largely unknown (92.2 percent). However, known ignition sources include lightning (3 ignitions), equipment use (23 ignitions), smoking (3 ignitions), campfire (3 ignitions), debris (1 ignition), arson (20 ignitions), playing with fire (8 ignitions), vehicle (3 ignitions), power lines (2 ignitions), non-firefighter training (1 ignition), aircraft (2 ignitions), and miscellaneous (59 ignitions).

Fires Caused by Power Lines

Fires can be started by power lines in the following ways:

- Vegetation contact with conductors
- Exploding hardware such as transformers and capacitors
- Floating or wind-blown debris contact with conductors or insulators
- Conductor-to-conductor contact
- Component failures as a result of corrosion or other weaknesses
- Accidents during maintenance
- Wood support poles being blown down in high winds
- Dust or dirt on power line insulators
- Bullet, airplane, and helicopter contact with conductors or support structures
- Other third-party contact, such as Mylar balloons, kites, and wildlife.

There is a public perception that all power lines can be a direct cause of wildfire ignitions, but power line-caused fires are much more prevalent for distribution and lower-voltage transmission lines compared with higher-voltage transmission lines such as the proposed Project. The energized conductors on distribution and lower-voltage transmission lines are much closer together (35 to 47 feet for 500 kV, depending on structure type; 16 to 23 feet for 220 kV, depending on structure type) (SCE, 2007). Fallen or wind-blown tree limbs and debris can more easily come into contact with and bridge two distribution conductor phases[4], which can cause electrical arcs[5] that can set fire to woody debris. Because higher voltage transmission line conductors are spaced much further apart, this phenomenon is extremely rare on 230- and 500-kV transmission lines. Arcing from a single conductor to ground through vegetation contact can also occur, but conductors are generally much further from the ground than they are from one another, and therefore arcing between conductor phases is more likely than between a conductor and the ground.

Power lines at voltages of 69 kV are subject to conductor-to-conductor contact, also known as “mid-line slap” hazard, which occurs when extremely high winds force two conductors on a single pole to oscillate so excessively that they contact one another. This can result in sparks that can ignite nearby vegetation. Transmission lines at this voltage are often supported by wood poles, which can typically withstand a lower level of wind loading compared with steel monopoles and lattice steel towers. Wood poles have a higher potential for structural failure during extreme wind events like Santa Ana events. Multiple wood pole failures on a single 69-kV line can result in conductors contacting the ground and igniting nearby vegetation or the wood poles themselves.

System component failures and accidents during maintenance activities can cause line faults that result in fires on transmission lines of any voltage, depending on system components. Examples are static line failure due to high winds and corrosion at the point of attachment, insulator flashovers during washing,

[4] Multiple conducting wires on a single transmission or distribution line are clustered in groups of three wires that carry currents alternating at different phases. This arrangement has the safety effect of cancelling the electromagnetic field that would otherwise be created.

[5] Electrical arcing is an electric discharge that occurs when electrons are able to jump a gap in a circuit.

guy wire failure and subsequent conductor contact, broken crossarms causing conductor-to-conductor contact, and pole or tower collapse. In addition, poor maintenance that allows dirt to build up on insulators can result in flashovers and ignitions.

Transmission line protection and control systems are designed to detect faults (such as arcing from debris contacting the line) and rapidly shut off power flow in 1/60 to 3/60 of a second. Distribution systems are designed to be more tolerant to line faults. In an effort to "keep the lights on," distribution line protection and control systems allow faults to last longer and are sometimes set to automatically re-energize a faulted line after a very brief delay (a second or so) in the event that the fault has cleared. If a fault is related to debris tangled in the conductors, immediate re-energizing can cause repeated sparks and ignite nearby vegetation. Because higher voltage lines are designed to be more sensitive to faults, they are typically mounted on very tall structures to provide adequate distance from vegetation. However, foreign objects such as balloons, kites, and aircraft may contact conductors and result in ignitions.

Distribution lines are mounted with devices, such as transformers and capacitors that may fail in an explosive manner resulting in an ignition of nearby vegetation. Transmission lines are not mounted with these devices because transmission lines are not used to directly serve customer loads.

Both distribution and transmission systems are designed to withstand high winds, and it is extremely rare for higher-voltage transmission structures to blow over. When this rare event does occur, the protection system on a transmission line is designed to shut off power flow in a fraction of a second. Distribution structure failures are also infrequent but due to their placement in narrower corridors in close proximity to trees and other tall vegetation they may be pushed down in storms by wind-blown trees. Assisted by high winds, distribution line ignitions have caused three of the 20 largest wildfires (measured by acreage burned) in California's history from 1932 to 2006 (CAL FIRE, 2008b). These fires were the Clampitt (1970), Laguna (1970), and Campbell Complex (1990) fires. In the case of the Clampitt Fire, high winds blew down a section of the distribution line, and the Laguna and Campbell Complex Fires were ignited when trees fell across the distribution lines.

Wildfires related to power lines can also be ignited by wildlife, primarily large birds. Bird-caused flashovers[6] are possible on low-voltage distribution and transmission lines where conductors are closely spaced. Birds perched on power poles or flying between poles can simultaneously contact two conductors, causing an electrical flashover. This electrocutes the bird and occasionally causes the feathers to catch fire. The bird may fall to the ground and ignite nearby vegetation. The primary ignition threats associated with higher-voltage transmission lines like the proposed Project are indirect, consisting of human-caused accidents during construction and maintenance activities and as a result of increased access to wildlands. Construction and maintenance activities that may ignite fires include blasting, welding, the use of equipment such as chainsaws, and the presence of personnel who may inadvertently ignite fires while smoking. The introduction of transmission line access roads can provide increased access to wildlands by members of the public, which may increase ignitions from smoking, campfires, and arson.

Failure to trim or remove trees located very close to transmission line conductors can result in wildfire ignitions when trees or branches are blown onto conductors. California law requires minimum clearances for high-voltage transmission lines; these clearance requirements are discussed in Section 3.16.3.2.

[6] A flashover is an unintended electric arc.

Environmental Effects of Large Wildfires

Although fires are a natural process in the chaparral ecosystems that occur within the Tehachapi Fireshed, wildfires can have damaging effects on natural resources including air quality, biological resources, and water quality.

Air Quality

Emissions from Fires. Smoke from a wildfire is made up of carbon dioxide (CO_2), water vapor, carbon monoxide, particulate matter, hydrocarbons and other organics, nitrogen oxides, ozone, and trace minerals. The composition of smoke varies with fuel type: different types of vegetation are composed of varying amounts of cellulose, lignin, tannins and other polyphenolics, oils, fats, resins, waxes, and starches that produce different compounds when burned. Hazardous air pollutants and toxic air contaminants are also present in smoke, the most common being acrolein, benzene, and formaldehyde. In general, particulate matter is the major pollutant of concern from wildfire smoke (Thierrault, 2001; USDA, 2002).

Particulate matter is a general term for a mixture of solid particles and liquid droplets found in the air. Particulate distribution from smoke tends to be highest at two diameters: around 10 microns (ash and partially burned plant matter) and around 0.3 microns (carbon, tar, and liquids). Emissions from wildfires depend on the quantity of wildland fuels, meteorological conditions, and topographic features that interact to modify the burning behavior as the fire spreads. Variability in fuel type, fuel loading, and moisture content affects the combustibility of fuels. Emission quantities are probably directly related to the intensity and direction (relative to the wind) of the wildfire and indirectly related to the rate at which the fire spreads; however, much of these data are obtained from laboratory experiments because of the difficulties in safely monitoring emissions close to a wildfire (U.S. EPA, 1996). It is not known whether these laboratory conditions correspond to field conditions.

Fires release large quantities of pollutants over very short time periods. Air quality during major events is often reduced to hazardous levels, and air quality can sometimes remain impaired for many days after an event.

Greenhouse Gases. In California, the annual averaged level of CO_2 emissions from fires is approximately 24 million metric tons CO_2 ($MMTCO_2$) per year or about six percent of the fossil fuel burning emission estimates for the State. This wildfire emission rate is subject to large seasonal variation, with the ratio of carbon dioxide emissions from wildfire to emissions from fossil fuel burning in September and October reaching 50 percent in many years (Wiedinmyer and Neff, 2007).

The large short-term release of CO_2 is offset over longer time scales (decades) by the uptake of atmospheric carbon associated with forest regrowth (Wiedinmyer and Neff, 2007). Fires and fossil fuel emissions therefore have entirely different effects on atmospheric CO_2 levels, as the short-term rise carbon dioxide levels from fires are counteracted by CO_2 sequestered by plants and trees over the long-term through post-fire forest regrowth. In contrast, carbon emissions from fossil fuels results in a net increase in atmospheric carbon over these time scales. Increased fire frequency, however, can postpone carbon sequestration by cutting short forest regrowth, resulting in a net increase in atmospheric carbon from fire over many decades.

Biological Resources

Chaparral shrublands that dominate the area within the Tehachapi Fireshed are acclimated to frequent large wildfires; however, increasingly frequent large fires have resulted in impacts to biological resources in recent decades.

Flora. Chaparral is highly tolerant to the disturbance fire provides, and will generally dominate a burned site several decades after a fire. Early successional plant species, including native and non-native grasses and herbs will generally dominate a burned site for the first several years after a fire. Therefore, increased fire frequency on the same site tends to favor vegetative type conversion to early successional species such as native and non-native grasses and herbs (Johnson et al., 2006). Changes in dominant vegetation communities dramatically affect habitats for plant and animal species, and may impact special status species. For example, the coastal California gnatcatcher is dependent primarily on coastal sage scrub vegetation which, if burned too many times, can convert to non-native grassland or disturbed habitat that would preclude its use by the gnatcatcher.

Fauna. Despite the perception by the general public that wildland fire is devastating to animals, fires generally kill and injure a relatively small proportion of wild animal populations. The habitat changes caused by fire affect faunal populations and communities much more profoundly than fire itself. Fires often cause a short-term increase in productivity, availability, or nutrient content of forage and browse. These changes can contribute to substantial increases in herbivore populations, but potential increases are moderated by animals' ability to thrive in the altered, often simplified, structure of the post-fire environment. Large, high-intensity fires that denude a landscape of many shrubs and trees reduce habitat quality for species that require dense cover and improve it for species that prefer open sites. (USDA, 2000).

Desert Ecosystems. In many desert and semi-desert habitats where fire historically burned infrequently because of sparse fuels, invasion of weedy species has changed the vegetation so that burns occur much more frequently. Many animals in these ecosystems are poorly adapted to avoid fire or use resources in post-fire communities (USDA, 2000).

Water Quality

Water quality can be impacted as a result of the occurrence of fire through increased rates of erosion and sedimentation from denuded hillsides, increased water temperature from decreased vegetative stream shade, changes in water chemistry and increases in chemical pollutants, and impacts to aquatic biota as a result of the use of fire retardants in fire suppression. These impacts have become more severe as fire extent and frequency have increased.

Erosion and Sedimentation. Watersheds that have been severely denuded of vegetation by wildfire are vulnerable to accelerated rates of soil erosion and, therefore, can yield large amounts of post-fire sediment. Post-fire increases in suspended sediment concentrations and turbidity can result from erosion and overland flow, channel scouring because of the increased streamflow discharge, and creep accumulations in stream channels after a fire. Post-fire turbidity levels in stream water are affected by the steepness of the burned watershed, with steeper slopes depositing higher sediment levels (USDA, 2005).

Water Temperature. The removal of streambank vegetation by burning can cause water temperature to rise, causing thermal pollution to occur. When riparian (streamside) vegetation is removed by fire or other means, the stream surface is exposed to direct solar radiation, and stream temperatures increase (USFS, 2005).

Water Chemistry. The acidity of water can be increased by ash depositions immediately after a fire, sometimes to levels that violate water quality standards. Dissolved nitrogen can increase after fires due to accelerated mineralization and nitrification, but the level of nitrogen is generally low and does not generally violate water quality standards. Low but increased levels of dissolved phosphorus, sulfur, chloride, and total dissolved solids can also follow fires, but studies have shown no violations of water quality standards where standards exist (USFS, 2005).

Fire Retardant. The water quality impacts of fire retardant are not a direct result of fire, but the use of fire retardant to suppress wildfires in an effort to protect communities is commonplace in San Diego County. Ammonium-based fire retardants used in fire suppression efforts (diammonium phosphate, monoammonium phosphate, ammonium sulfate, or ammonium polyphosphate) can affect water quality and be toxic to aquatic biota (USFS, 2005).

Fire Prevention and Suppression

Fire Prevention

Fuelbreaks or fuel treatments break the continuity of dense fuels across the landscape in an effort to prevent damages during wildfire events. Fuel treatments can be effective in providing a firefighting advantage by reducing the rate of spread and intensity of a fire, particularly if fuelbreaks are placed at strategic topographical locations such as ridge tops and areas shielded by high winds. Fuelbreaks also provide strategic control points for fire suppression operations. Fuel treatments can include such methods of reducing surface fuel loading as mechanical slashing and chipping and prescribed burns. Treatments must be maintained over time to be effective, as chaparral vegetation can reach high fuel loading within 10 to 15 years after treatment. Fuel treatments can be particularly effective in assisting firefighters in protecting communities at the wildland-urban interface. It should be noted that fuelbreaks alone cannot stop the progression of large, wind-driven fires. They are a management tool that may be implemented in advance of the fire season to help prevent losses of life and property from a large wildfire.

Fire Suppression

Fire agencies in the Tehachapi Fireshed have the goal of containing all wildfires that threaten life and property. Depending on the biophysical characteristics of the landscape and the presence of Santa Ana winds, fires can be contained during several phases. The first attempt at control and suppression is called the initial attack. If fires are not controlled within the first 2 or 3 hours, additional firefighting resources are usually called in, beginning the extended attack phase. With the onset of evening, fire intensity is typically reduced, assisting firefighters in containing the fire within a single burning period. When extended attack fails and thousands of acres burn, the incident is classified as a major event.

Fires controlled during either the initial or extended attack phase almost always occur during moderate fire weather conditions, often during the summer. Major events that involve thousands of acres and do the most damage usually occur between October and January during severe weather conditions involving Santa Ana winds. Another peak in Santa Ana winds can occur in late February through early April. Wind-driven major events typically run their course until weather conditions change as they are so difficult to contain regardless of firefighting resources. Since wind-driven embers can travel a mile or more in front of the head of a fire, multiple spot fires ignite and increase the rate of spread dramatically in high winds. Fire suppression activities during this time are usually only effective along the flanks, or sides of the fire. An incident commander's highest priority is protection of firefighter safety, and therefore firefighters will not be deployed into indefensible landscapes or into an area under indefensible weather

conditions. Firefighting objectives during a major event often focus on evacuation efforts until wind conditions change.

Efficient wildfire suppression is dependent upon a quick and aggressive initial attack, which is ultimately dependent on the availability of firefighting resources, success in coordination among responding fire agencies, the existence of defensive fuel breaks across the landscape, and—most critically—weather conditions.

Wildland fire suppression operations are extremely complex and expensive. Fire suppression in the wildland-urban interface typically involves a multi-agency firefighting response that involves hundreds of firefighters participating in coordinated air and ground operations. The firefighting capabilities of the agencies that could be involved in firefighting in the area of the proposed Project and alternatives are described for each segment in the following section. During the fire season, the availability and response time for these resources may vary according to the number of other emergencies in the area and the availability of volunteer firefighters.

Helicopters and airplanes are often the fastest resources to reach a wildfire. Almost anywhere in California, a firefighting aircraft can reach a wildfire within 20 minutes, depending on wind conditions that can ground aircraft if too strong (CAL FIRE, 2008c). It can take an hour or more for fire engines to reach a wildland fire, especially in remote areas. Aerial attacks principally work in conjunction with firefighters on the ground. Aerial firefighting attacks are effective during initial attacks for extinguishing small fires and protecting homes (AHSAFA, 2007). On large fires, aerial attacks are used for specific tactical suppression objectives such as reinforcing an established fire line. Identifying and extinguishing spot fires outside the fire line is another critical job done by aircraft. Where overhead power lines are present, aerial and ground attacks are restricted. Aerial operations are complicated by the risk of aircrafts and/or water buckets colliding with towers or conductors during smoky, reduced-visibility conditions. Conditions are especially hazardous when transmission lines are placed on ridge tops, reducing the proximity of fire retardant and water drops that aerial firefighting crews can achieve safely.

During a wildland fire, it is recommended that ground attacks not be made within at least 500 feet of a power line conductor and ground-based firefighters maintain a clearance from downed, energized power lines equal to the distance between two towers (NIOSH, 2002). Wildland firefighters working around energized power lines are exposed to electrical shock hazards including: direct contact with downed power lines, contact with electrically charged materials and equipment due to broken lines, contact with smoke that can conduct electricity between lines, and the use of solid-stream water applications around energized lines. Between 1980 and 1999 in the U.S., there were 10 firefighter fatalities due to electrical structure contact during wildfire suppression (NFPA, 2001). Maintaining a minimum 500-foot safety buffer greatly reduces the risk of electrical structure contact, but it also reduces the effectiveness of ground-based frontal attacks.

3.16.2.2 Alternative 2: SCE's Proposed Project

Segment 4

Segment 4 would pass through areas of unincorporated Kern and Los Angeles Counties and the City of Lancaster. Fire protection in Kern County is the responsibility of the Kern County Fire Department. Fire protection in Los Angeles County and the City of Lancaster falls under the jurisdiction of the Los Angeles County Consolidated Fire Department (LACFD), which is composed of nine divisions and has fire protection jurisdiction over 57 incorporated and unincorporated communities throughout the county. The City of Lancaster is a federally listed community at risk of fire.

This segment would pass through the low risk Project area for its entire length of approximately 20 miles. Fuels in the low risk Project area are sparse and consist primarily of grasslands and urban and agricultural lands. The northernmost portion of Segment 4 passes through tall chaparral for approximately two miles.

Segment 5

Segment 5 would pass through unincorporated Los Angeles County and the Cities of Lancaster and Palmdale, all of which are under the fire protection jurisdiction of the LACFD. Both Lancaster and Palmdale are federally listed communities at risk of fire.

Approximately 4.1 miles of Segment 5 would pass through the low fire risk Project area. Fuels within the low fire risk area of this segment are sparse and consist primarily of grasses. The remaining 13.7 miles of Segment 5 would be located in the Tehachapi Fireshed. Fuels in this portion of the fireshed are primarily grasslands with conifer litter and low, dense chaparral (see Figure 3.16-2 at the end of this section).

Segment 6

Segment 6 would pass through unincorporated Los Angeles County, the City of Duarte, and the ANF. Los Angeles County and the City of Duarte are under the fire protection jurisdiction of LACFD, and ANF provides its own fire protection services. The City of Duarte is a federally listed community at risk of fire.

Segment 6 falls entirely within the Tehachapi Fireshed boundary, and fuels that occur along the Segment 6 alignment consist primarily of tall chaparral intermixed with small stands of low density conifers and oaks. The northern portion passes through a small grassland (see Figure 3.16-2 at the end of this section). Approximately 4 ANF-maintained fuelbreaks would be crossed roughly perpendicularly by the path of Segment 6 through the ANF.

Segment 6 would substantially increase the maximum height of transmission lines in the shared ROW through the Tehachapi Fireshed from S6 MP 0 to S6 MP 4.8 and from S6 MP 6.85 to S6 MP 9.5 by replacing single-circuit 220-kV structures with single-circuit 500-kV structures. This increase would be up to 113 feet taller based on a maximum single-circuit 500-kV structure height of 193 feet and a minimum single-circuit 220-kV structure height of 80 feet.

Segment 7

Segment 7 would pass through the community of Avocado Heights in unincorporated Los Angeles County, and the Cities of Baldwin Park, Duarte, Industry, Irwindale, Montebello, Monterey Park, Rosemead, and South El Monte. All of these fall under the jurisdiction of LACFD except for the City of Montebello, which is protected by the Montebello Fire Department, and the City of Monterey Park, which is protected by the Monterey Park Fire Department. The City of Duarte is a federally listed community at risk of fire.

The first 0.8 mile of Segment 7 would be located within the Tehachapi Fireshed and the rest of the 16-mile segment would be located within the low risk Project area. Fuels along the low risk Project area portion of the Segment 7 route are sparse and consist primarily of grasslands intermixed with urban areas. Fuels in the immediate vicinity of the Tehachapi Fireshed portion of Segment 7 consist primarily of low, dense brush (see Figure 3.16-2 at the end of this section). Segment 7 would substantially increase the maximum height of transmission lines in the shared ROW through the Tehachapi Fireshed from S7 MP 0 to S7 MP 0.8 by replacing double-circuit 220-kV structures with double-circuit 500-kV structures. This

increase would be up to 162 feet taller based on a maximum double-circuit 500-kV structure height of 262 feet and a minimum double-circuit 220-kV structure height of 100 feet.

Segment 8

Segment 8 would pass through areas of unincorporated Los Angeles County including the communities of Hacienda Heights and Rowland Heights and the Cities of Chino, Chino Hills, Industry, La Habra Heights, Montebello, Monterey Park, Ontario, Pico Rivera, Rosemead, and Whittier. All of these areas are under the jurisdiction of the LACFD except for the Cities of La Habra Heights, Montebello, Monterey Park, and Ontario, each of which is protected by a municipal fire department of the same name, and the Cities of Chino and Chino Hills, which are protected by the Chino Valley Independent Fire District Operations Division. Rowland Heights and the Cities of Chino, La Habra Heights, and Ontario are federally listed communities at risk of fire.

Approximately 18.8 miles of Segment 8A would be located in the Tehachapi Fireshed (MP 4.4 through MP 23.2), and 7.2 miles of the route would be located in the low risk Project area. Fuels in the immediate vicinity of the portions of this segment in the low risk Project area are sparse and consist primarily of low, dense brush and grasslands interspersed throughout primarily urban areas. Fuels that occur along the Segment 8A alignment through the Tehachapi fireshed are a mix of low, dense brush, tall chaparral, dormant brush, and grasslands with intermixed urban development (see Figure 3.16-2 at the end of this section). Segment 8A would substantially increase the maximum height of transmission lines in the shared ROW through the Tehachapi Fireshed from S8A MP 4.4 to S8A MP 23.2 by replacing single-circuit 220-kV structures with double-circuit 500-kV structures. This increase would be up to 182 feet taller based on a maximum double-circuit 500-kV structure height of 262 feet and a minimum single-circuit 220-kV structure height of 80 feet.

Segments 8B and 8C would be located entirely in the low risk Project area. Fuels in the immediate vicinity of these segments are extremely sparse, and consist entirely of urban fuels.

Segment 10

Segment 10 would pass through unincorporated Kern County, which is under the fire protection jurisdiction of the Kern County Fire Department. This segment would be located entirely in the low risk Project area. Fuels in the immediate vicinity of this segment are extremely sparse, and consist entirely of urban fuels.

Segment 11

Segment 11 would pass through areas of unincorporated Los Angeles County including the communities of Acton, Altadena, East Pasadena, East San Gabriel, and South San Gabriel, the Cities of La Canada Flintridge, Monterey Park, Pasadena, Rosemead, San Gabriel, and Temple City, and the ANF. The City of San Gabriel is under the fire protection jurisdiction of the San Gabriel Fire Department, the City of Pasadena and the community of East Pasadena are under the protection of the Pasadena Fire Department. The ANF provides its own fire protection services. The City of Monterey Park is served by the Monterey Park Fire Department. The communities of Acton, Altadena, East San Gabriel, and South San Gabriel, and the Cities of La Canada Flintridge, Monterey Park, Rosemead, and Temple City are served by the LACFD. Acton, Altadena, and the Cities of La Cañada Flintridge and Pasadena are federally listed communities at risk of fire.

Approximately 25.4 miles of Segment 11 would pass through the Tehachapi Fireshed before passing into the low risk Project area for 11.6 miles. Fuels in the immediate vicinity of the portion of this segment through the low risk Project area are sparse and consist of patchy brush and grasses through primarily urban areas. Fuels in the immediate vicinity of the portion of this segment through the Tehachapi Fireshed consist primarily of tall chaparral intermixed with small stands of low density conifers and oaks. The northern portion passes through a small grassland, and the southern portion passes through small stands of low, dense brush (see Figure 3.16-2 at the end of this section). Approximately 4 ANF-maintained fuelbreaks would be crossed roughly perpendicularly by the path of Segment 11 through the ANF. Segment 11 would increase the maximum height of transmission lines in the shared ROW through the Tehachapi Fireshed from S11 MP 1 to S11 MP 25 by an average of approximately 50 feet.

3.16.2.3 Alternative 3: West Lancaster Alternative

Alternative 3 is identical to the proposed Project, except for one deviation. It would re-route the new 500-kV T/L in Segment 4 along 115th Street West rather than 110th Street West. This alternative would deviate from the proposed route at approximately S4 MP 14.9,where the new 500-kV T/L would turn south down 115th Street West for approximately 2.9 miles and turn east for approximately 0.5 mile, rejoining the proposed route at S4 MP 17.9. This re-route would increase the overall distance of Segment 4 by approximately 0.4 mile.

The rerouted portion of the West Lancaster Alternative would pass through unincorporated Los Angeles County, which is under the fire protection jurisdiction of the LACFD. The rerouted portion of this alternative would be located entirely in the low risk Project area, and fuels in the immediate vicinity of the alternative consist of open grassland at the foothills of the San Gabriel Mountains. However, the majority of the rerouted portion of this alternative passes through urban areas.

3.16.2.4 Alternative 4: Chino Hills Route Alternatives

Alternative 4, which includes routing Alternatives A, B, C, and D, is identical to the proposed Project, except for a portion of Segment 8. The rerouted portions of all four of the Chino Hills Route Alternatives would be located entirely within the Tehachapi Fireshed, through low chaparral for approximately three miles, at which point they would diverge in different directions all through grasslands with interspersed patches of oak woodland in and around Chino Hills State Park. Chino Hills State Park is a State Responsibility Area.

3.16.2.5 Alternative 5: Partial Underground Alternative

The environmental setting of this alternative would be similar to that of the proposed Project, as described in Section 3.16.2.2. The only difference would be that approximately 3.5 miles of the Alternative 5 route along Segment 8A would be installed underground, resulting in the removal of this portion of overhead transmission line through the low-risk Project area.

3.16.2.6 Alternative 6: Maximum Helicopter Construction in the ANF Alternative

The environmental setting of this alternative is similar to the setting for the proposed Project. The only differences would be that marginally fewer miles of access roads would be constructed, fewer helicopter staging and landing sites would be graded and cleared of vegetation for the construction phase before being restored and revegetated post construction, and the bridge along Fall Creek Road would not be repaired. This bridge, which would provide for the crossing of Tujunga Creek and allow for dual access to Segment 11 under Alternative 2, would not be repaired under Alternative 6, which would therefore

result in only one point of ingress and egress for personnel and firefighting crews at this location in the event of a wildfire.

3.16.2.7 Alternative 7: 66-kV Subtransmission Alternative

Alternative 7 is identical to the proposed Project except that implementation of this alternative would result in:

- installing one mile of the 66-kV portion of Segment 7 underground (from S7- MP 8.9 – S7-MP 9.9)
- rerouting and undergrounding an approximately 0.8-mile portion of Segment 7 underground (from S7- MP 8.9 – S7-MP 9.9), and
- routing the 66-kV subtransmission line around the Whittier Narrows Recreation Area in Segment 8A between the San Gabriel Junction (S8A MP 2.2) and S8A MP 3.8.

The undergrounded and rerouted subtransmission lines would pass through the Cities of Montebello, Pico Rivera, South El Monte, and Industry. Each of these cities is located within the jurisdiction of LACFD except for the City of Montebello, which is protected by the Montebello Fire Department. Similar to the proposed Project, the rerouted and undergrounded portions of this alternative would pass through urban areas located entirely within the low risk Project area.

3.16.3 Applicable Laws, Regulations, and Standards

3.16.3.1 Federal

National Fire Plan

There are no specific directions in the National Fire Plan to permit holders on their responsibilities for power line clearance requirements or other forest management activities.

Angeles National Forest Fire Management Plan and Land Management Plan

The ANF Fire Management Plan provides a framework for the management of wildland fire, prescribed fire and hazard fuel reduction, as tools to safely accomplish the resource protection and management objectives of the ANF as described in the Land Management Plan. In addition, the FS would develop a Forest Service Fire Safety Plan as part of the permit that the FS issues for the Project on ANF lands.

Title 14 CFR Section 91.137, Temporary Flight Restrictions in the Vicinity of Disaster/Hazard Areas

14 CFR Section 91.137 allows an administrator to issue a Notice to Airmen (NOTAM) designating an area within which temporary flight restrictions (TFR) apply. When a NOTAM is issued, no person may operate an aircraft within the designated area unless that aircraft is participating in the hazard relief activities and is being operated under the direction of the official in charge of on-scene emergency response activities. During a wildfire, all helicopter construction and maintenance equipment would be prohibited from flying in the designated hazard area.

3.16.3.2 State

CPUC General Order 95: Rules for Overhead Electric Line Construction

GO 95 is the key standard governing the design, construction, operation, and maintenance of overhead electric lines in the State. It was adopted in 1941 and updated most recently in 2006. GO 95 includes safety standards for overhead electric lines, including minimum distances for conductor spacing, mini-

mum conductor ground clearance, standards for calculating maximum sag, electric line inspection requirements, and vegetation clearance requirements. The latter, governed by rule 35, and inspection requirements, governed by Rule 31.2 are summarized here.

GO 95: Rule 35, Tree Trimming, defines minimum vegetation clearances around power lines. Rule 35 guidelines require:

- 10 feet radial clearances are required for any conductor of a line operating at 10,000 Volts or more, but less than 300,000 Volts (this would apply to the proposed 220-kV line segments)
- 15 feet radial clearances are required for any conductor of a line operating at 300,000 Volts or more (this would apply to the proposed 500-kV line segments).

GO 95: Rule 31.2, Inspection of Lines, requires that lines be inspected frequently and thoroughly for the purpose of insuring that they are in good condition, and that lines temporarily out of service be inspected and maintained in such condition as not to create a hazard.

PRC 4292, Powerline Hazard Reduction

PRC 4292 requires a 10-foot clearance of any tree branches or ground vegetation from around the base of power poles carrying more than 110 kV. The firebreak clearances required by PRC 4292 are applicable within an imaginary cylindrical space surrounding each pole or tower on which a switch, fuse, transformer or lightning arrester is attached and surrounding each dead-end or corner pole, unless such pole or tower is exempt from minimum clearance requirements by provisions of PRC 4296. Proposed Project structures would be primarily exempt due to their design specifications.

PRC 4293, Powerline Clearance Required

PRC 4293 presents guidelines for line clearance including a minimum of 10 feet of vegetation clearance from any conductor operating at 110,000 volts or higher.

California Code of Regulations (CCR) Title 14 Section 1254

CCR 14 Section 1254 presents guidelines for minimum clearance requirements on non-exempt utility poles. The proposed Project structures would be primarily exempted from the clearance requirements with the exception of cable poles and dead-end structures.

The firebreak clearances required by PRC 4292 are applicable within an imaginary cylindrical space surrounding each pole or tower on which a switch, fuse, transformer or lightning arrester is attached and surrounding each dead-end or corner pole, unless such pole or tower is exempt from minimum clearance requirements by provisions of 14, CCR, 1255 or PRC 4296. The radius of the cylindroid is 3.1 m (10 feet) measured horizontally from the outer circumference of the specified pole or tower with height equal to the distance from the intersection of the imaginary vertical exterior surface of the cylindroid with the ground to an intersection with a horizontal plane passing through the highest point at which a conductor is attached to such pole or tower. Flammable vegetation and materials located wholly or partially within the firebreak space shall be treated as follows:

- At ground level – remove flammable materials, including but not limited to, ground litter, duff and dead or desiccated vegetation that will propagate fire
- From 0 to 2.4 m (0 to 8 feet) above ground level remove flammable trash, debris or other materials, grass, herbaceous and brush vegetation. All limbs and foliage of living trees shall be removed up to a height of 2.4 m (8 feet).

- From 2.4 m (8 feet) to horizontal plane of highest point of conductor attachment remove dead, diseased or dying limbs and foliage from living sound trees and any dead, diseased or dying trees in their entirety.

3.16.3.3 Local

Los Angeles County General Plan

The Safety Element (December 1990), one of the required elements in the County of Los Angeles General Plan, is the policy document that outlines fire protection standards. Specific fire protection standards are set forth in the County Fire Code, which is the mechanism that implements the policies and goals outlined in the Safety Element. Applicable to the proposed Project would be the County of Los Angeles Fire Department Transmission Line Guidelines, which set forth minimum clearance requirements around transmission line structures identical to those set forth in CCR 14 Section 1254.

Los Angeles County Code, Title 32—Fire Code

Title 32 of the Los Angeles County Code relevant to powerline clearance Sections 317.1.1 and 317.1.2 are identical to PRC Sections 4292 and 4293, respectively.

Kern County General Plan

The Safety Element (March, 2007) requires that all development comply with the requirements of the Kern County Fire Department or other appropriate agency regarding access and fire protection facilities. According to the Safety Element, all fuel and firebreaks are required to meet the minimum design standards of the Kern County Fire Chief, and the Fire Chief may require a fire plan for development that would occur during the critical fire season. This plan should reflect the proposed course of action for fire prevention and suppression.

San Bernardino County General Plan

There are no specific fire safety requirements related to installation and maintenance of transmission lines through San Bernardino County contained in the General Plan.

Orange County General Plan

There are no specific fire safety requirements related to installation and maintenance of transmission lines through Orange County contained in the General Plan.

3.16.3.4 Project Applicant

Southern California Edison's Fire Management Plan (Specification E-2005-104: Transmission Line Project Fire Plan, dated February 21, 2006) outlines guidance for prevention, control, and extinguishment of fires during transmission line construction and maintenance. It is an overall technical reference that serves as an accompanying document to individual Project Specifications. Each Project Specification defines specific project job requirements and serves as the master document; in all cases where the Fire Management Plan is in conflict with the Project Specification, the Project Specification would apply. The Project Specification for the proposed Project (or Alternatives, should any of them be approved) would be prepared prior to the commencement of construction activities. The Fire Management Plan, to which SCE has committed in APM HAZ-4, outlines SCE's policy for the prevention and suppression of fire during construction activities. The Plan outlines fire safeguards and precautions, including the provision of portable firefighting equipment, assignment of a fire patrolperson, documenting activities in a daily log, and specific measures in compliance with Forest Service requirements for construction carried out on

Forest Service lands. The Plan does not cover project maintenance activities, and does not set forth specific restrictions for activities carried out on non-Forest Service lands. However, in addition to SCE's Fire Management Plan, the FS would develop a Forest Service Fire Safety Plan as part of the permit that the FS issues for the project on ANF lands.

3.16.4 Impact Analysis Approach

3.16.4.1 Criteria for Determining Impact Significance

To satisfy CEQA requirements, conclusions are made regarding the significance of each identified impact that would result from the proposed Project and alternatives. Appropriate criteria have been identified and utilized to make these significance conclusions. The following significance criteria for wildfire prevention and suppression were derived from previous environmental impact assessments and from the CEQA Guidelines (Appendix G, Environmental Checklist Form, Section IX). A significant impact would result if any of the following were to occur.

- Criterion FIRE1: Activities associated with the Project adversely affect fire prevention and suppression activities.
- Criterion FIRE2: Project-related activities or the presence of the Project expose communities, firefighters, personnel, and/or natural resources to an increased risk of wildfire.
- Criterion FIRE3: Activities associated with Project construction or maintenance result in a fuel vegetation matrix with an increased ignition potential and rate of fire spread.

Significance conclusions for individual impacts are not required for compliance with NEPA. Therefore, conclusions presented in the following analysis regarding the significance of identified impacts are provided for the purposes of CEQA only.

3.16.4.2 Applicant-Proposed Measures (APMs)

APMs were identified by SCE in the PEA. Table 3.16-4 presents the APMs that are relevant to the issue area of Wildfire Prevention and Suppression. APMs are a commitment by the Applicant (SCE) and are considered part of the proposed Project. Therefore, the following discussions of impact analysis assume that all APMs will be implemented as defined in the table. Additional mitigation measures are recommended in this section if it is determined that APMs do not fully mitigate the impacts for which they are presented.

Table 3.16-4. Applicant-Proposed Measures – Wildfire Prevention and Suppression

APM HAZ-4	Fire Management Plan. The Fire Management Plan, developed by SCE and presented in the PEA as Appendix D, would be implemented.

3.16.4.3 Impact Assessment Methodology

This analysis first established baseline conditions for the affected environment, presented above in Section 3.16.2, which included a description of wildland fuels, climate, topography, wildfire history, fire prevention and suppression resources, and characteristics of existing transmission lines. Two distinct areas, the Tehachapi Fireshed and the low risk Project area were defined based on biophysical, historical, and management characteristics in relation to the location of the proposed Project and alternatives. Construction, operation, and maintenance activities, plus structure design specifications, were identified based on information provided in SCE's PEA. The two Project areas were then evaluated based on their potential to be affected by design features or construction, operation, and maintenance activities related to the proposed Project and alternatives. Impacts related to wildfire prevention and suppression were

identified based on the expected interaction between the biophysical characteristics of the Project areas and the design specifications, construction activities, maintenance activities, and operational expectations of the proposed Project and alternatives.

For the purposes of satisfying CEQA requirements, the significance of each impact is also identified according to the following classifications: Class I: Significant impact; cannot be mitigated to a level that is less than significant; Class II: Significant impact; can be mitigated to a level that is less than significant; Class III: Adverse impact; less than significant; and Class IV: Beneficial impact.

3.16.5 Alternative 1: No Project/Action

Selection of the No Project/Action Alternative would mean that the proposed TRTP would not be implemented. As such, none of the associated Project activities would occur and the environmental impacts associated with the proposed Project would not occur. Specifically, the interference with firefighting operations from construction activities and from new or taller transmission lines across the landscape, the new transmission line-related wildfire ignitions, and the non-native plant introductions from the Project that would contribute to a change in fuel conditions would not occur.

However, under the No Project/Action Alternative, some currently unknown plan would need to be developed to provide the transmission upgrades necessary to interconnect renewable generation projects in the Tehachapi area and to also address the existing transmission problems south of Lugo Substation. Similarly, other yet unspecified transmission upgrades would presumably be proposed in the future to provide the needed capacity and reliability to serve growing electrical load in the Antelope Valley. To interconnect wind projects in the Tehachapi area, it is possible that other electrical utilities with transmission facilities in the area, such as LADWP, might purchase some of the power from Tehachapi wind developers and integrate it into their system. Another possibility is the development of a private transmission line that could connect wind projects to the electrical grid. Any of these projects, which would occur as a result of the unfulfilled electrical transmission need in the absence of TRTP, are likely to have similar impacts as those identified for the proposed Project. However, if a transmission line were to be constructed in the absence of TRTP that was located in a new ROW through dense wildland fuels, construction of the new line in the new ROW would have the effect of introducing a substantially greater linear obstacle to firefighting across the landscape compared with the proposed Project and would involve substantially more intensive clearing and grading activities that could result in wildfire ignitions compared with the proposed Project.

Additionally, numerous potential developments throughout the proposed Project area that are completely unrelated to electrical transmission could ignite wildfires, such as residential development projects at the wildland-urban interface. Not only will these developments contribute to ignitions and obstructions during the construction phase, but once dwellings are occupied they will be a new source of long-term ignitions.

3.16.6 Alternative 2: SCE's Proposed Project

3.16.6.1 Direct and Indirect Effects Analysis

Adverse effects on fire prevention and suppression activities (Criterion FIRE1)

Impact F-1: Construction and/or maintenance activities would reduce the effectiveness of firefighting.

Project construction and maintenance activities have the potential to interfere with fire engine access to wildfires in remote, wildland areas, which would reduce the effectiveness of firefighting.

Low Fire Risk Project Area

Due to a low risk of fire, flat terrain, and the presence of sufficient paved roads for emergency vehicle access during a wildfire, construction and maintenance of the Project segments through the low fire risk Project area do not have the potential to interfere with firefighting operations.

Tehachapi Fireshed Area

The proposed Project would be accessed by several narrow, unpaved roads in the ANF and Puente Hills Landfill Native Habitat Preservation Authority (PHLNHPA) lands, and construction activities could limit emergency vehicle access. If adequate road access cannot be maintained in remote areas of the ANF due to construction and maintenance activities, or due to the presence of parked vehicles and large equipment on narrow single-lane roads, the access restriction could directly result in delay or disruption of firefighting response in the event of fire. Such delays or disruptions would result in reduced effectiveness of firefighting efforts. APM HAZ-4 (Fire Management Plan, Specification E-2005-104; February 21, 2006) requires SCE to follow its Fire Management Plan during construction of the proposed Project. The Fire Management Plan covers fire safety provisions, equipment, communication, and reporting during construction; however, it makes no commitments to ensure emergency vehicle access to wildlands in the event of fire. Should construction or maintenance activities require the use of helicopters, Project helicopters would be restricted by FAA rules on temporary flight restrictions from flying in designated areas, eliminating any potential interference with aerial firefighting operations during a wildfire event in the areas surrounding the Project. Delays in, or prevention of, ground-based emergency vehicle access to wildfires can result in a larger number of acres burned and a larger number of homes at risk at the wildland-urban interface. Therefore, despite implementation of APM HAZ 4, the restriction of emergency vehicle access during Project construction and maintenance activities would reduce the effectiveness of firefighting activities on ANF and PHLNHPA lands. Construction and maintenance activities for the proposed Project would not interfere with firefighting operations in the Tehachapi Fireshed outside of the ANF and PHLNHPA lands due to sufficient paved roadways throughout the remainder of the fireshed.

Mitigation Measure for Impact F-1

F-1 **Prepare wildland traffic control plans.** SCE shall develop wildland traffic control plans as part of the Traffic Control Plans required by Mitigation Measure T-1a (Prepare Traffic Control Plans) in consultation with the FS (ANF), California Department of Parks and Recreation (CHSP) [Alternative 4 only], and Puente Hills Landfill Native Habitat Preservation Authority (PHLNHPA), as appropriate. The wildland traffic control plans shall stipulate mechanisms through which narrow roads shall be kept passable for emergency service providers in a wildfire-related or other emergency situation. SCE shall appoint a Road Master, who shall administer the wildland traffic control plans and facilitate emergency vehicle access in the event

of a wildfire-related or other emergency. The wildland traffic control plans shall identify strategic locations for adequate construction and maintenance vehicle parking, as necessary, in consultation with the land management agency, and alternate routes for large equipment and vehicle evacuation shall be identified to the extent possible. Wildland traffic control plans shall be prepared in consultation with the land management agencies for both construction and maintenance activities and shall be submitted to the FS, California Department of Parks and Recreation [Alternative 4 only], and PHLNHPA at least 30 days prior to construction in areas managed by these agencies.

Environmental Effects of Mitigation Measure F-1

While Mitigation Measure F-1 is recommended to avoid Project interference with firefighting operations, it may adversely affect other resources. The widening of roads associated with this measure would result in greater land disturbance, which would create several additional impacts. Vegetation removal that would occur from road widening activities would affect the flora and fauna in these areas. Greater land disturbance would contribute to increased soil erosion, which would potentially affect water quality. Cultural resources that would be located in the areas of road widening may be damaged by earthmoving activities. In addition, geology-related impacts may be associated with road widening activities if they are located in the presence of unstable slopes. These potential impacts are similar to the effects of other Project activities, which are discussed in Sections 3.4 (Biological Resources), 3.5 (Cultural Resources), 3.8 (Hydrology and Water Quality), and 3.7 (Geology, Soils, and Paleontology).

CEQA Significance Conclusion

Interruption of ground-based firefighting operations as a result of Project construction and maintenance would be a significant impact. To reduce the significance of this potential impact, the following mitigation measure has been identified: Mitigation Measure F-1 (Prepare wildland traffic control plans). Mitigation Measure F-1 would ensure that emergency vehicles would have adequate access to wildland areas during Project construction and maintenance activities on NFS and PHLNHPA lands. Implementation of the mitigation measure described above would reduce Impact F-1 to a less-than-significant level (Class II).

Impact F-2: Presence of new or higher overhead transmission line would reduce the effectiveness of firefighting.

Large wildfires are fought at strategic locations in wildland-urban interface communities such as ridge tops and natural and manmade fuelbreaks. Fires are also fought at locations where there is ground-based access to wildlands by road and by aerial access to wildlands where obstacles such as transmission lines do not exist. In the locations where the proposed Project would introduce a new or substantially higher linear overhead electrical element to the landscape of the Tehachapi Fireshed in the vicinity of one or more of the strategic firefighting elements presented above, firefighting effectiveness would be reduced.

Low Fire Risk Project Area

Although Segment 10 and Segment 4 would require new and expanded ROW, these segments occur in the low-risk Project areas and would not be expected to affect firefighting effectiveness. Segment 5 would not require new ROW, would not increase the maximum height of transmission lines in the shared ROW, and would therefore not have the potential to reduce the effectiveness of aerial firefighting activities.

Tehachapi Fireshed Area

As described in Section 3.16.2.2, portions of Segment 6, Segment 7, Segment 8A, and Segment 11 would increase the maximum height of transmission lines in the shared ROW through the Tehachapi Fireshed. The height increase would be approximately 50 feet on average along these segments. The increased height of transmission lines in these areas would decrease the effectiveness of aerial firefighting activities because firefighting aircraft would have to fly at higher altitudes to avoid conflicts with the transmission lines and towers. Flying at higher altitudes can reduce the accuracy of targeted drops of water and flame retardant used to suppress and contain wildfires. However, because there are existing transmission lines in the shared ROW, aerial firefighting crews avoid making drops near the ROW under existing conditions, and the addition of the proposed Project would present only a marginal increase in the required altitude of aerial vehicles working through the shared ROW.

CEQA Significance Conclusion

The increased heights of transmission lines in Segments 6, 7, 8A, and 11 would create a less-than-significant impact on aerial firefighting effectiveness (Class III). No mitigation is required.

Exposure of communities, firefighters, personnel, and/or natural resources to an increased risk of wildfire (Criterion FIRE2)

Impact F-3: Construction and/or maintenance activities would increase the risk of wildfire.

Construction activities associated with the proposed Project would include excavation, grading, blasting, and the use of vehicles and heavy equipment. The use of heavy equipment along with the personnel required to construct, repair, and maintain the transmission line would introduce a variety of potential wildfire ignition sources to surrounding vegetation fuels. Construction activities would also introduce additional combustible materials to the construction areas, such as diesel fuel and herbicides.

Low Fire Risk Project Area

Due to a lack of fuels and flat terrain, Project-related construction activities that occur in the low fire risk Project areas do not have the potential to increase the risk of wildfire that would put communities, firefighters, or natural resources at risk of sustaining damages.

Tehachapi Fireshed Area

An ignition that escapes containment at the top of the fireshed could spread to the limits of the fireshed under extreme weather conditions. Project-related ignitions within the proposed Project corridor in the Tehachapi Fireshed have the potential to escape initial attack containment and become catastrophic fires. The areas with heaviest fuel loads, steep topography, and exposure to Santa Ana winds would have a higher burn probability and a higher potential for an ignition to escape. Construction- and maintenance-related ignitions that occur during extreme weather conditions would be at high risk to escape containment and burn large areas throughout the Tehachapi Fireshed, potentially spreading south and west through Acton, La Cañada Flintridge, Santa Clarita, and other communities at the wildland-urban interface, including private inholdings within the ANF. Ignition of a large fire as a result of Project construction or maintenance would threaten firefighter safety above the existing level of hazard that exists for area firefighters. Finally, ignition of a large fire as a result of Project construction or maintenance could adversely affect natural resources including biological resources and air and water quality.

Transmission line maintenance activities would include the periodic use of vehicles and presence of personnel for line inspections and could also include the use of heavy equipment for conductor repairs or replacement. These activities would be far less intensive than construction activities; however, they would recur periodically over the life of the Project, resulting in a recurring source of ignitions for 50 years or more. Therefore, construction and maintenance activities would create a significant risk of a fire with potentially damaging impacts to communities, firefighter health and safety, and natural resources in the highly volatile Tehachapi Fireshed.

APM HAZ-4 (Fire Management Plan, Specification E-2005-104; February 21, 2006) requires SCE to follow its Fire Management Plan during construction of the proposed Project. The Plan is discussed in detail in Section 3.16.3.4. The Plan covers fire safety provisions, equipment, communication, and reporting during construction, however it is not applicable to Project maintenance activities, it does not detail SCE's commitments on non-Forest Service lands, nor does it relate to personnel training for fire preparedness. The Fire Management Plan referenced in Mitigation Measure F-3a below is the same plan referenced in Mitigation Measure PSU-1a (Revise SCE's Fire Management Plan) in Section 3.11.6.1 (Public Services and Utilities). On NFS lands, provisions for the cessation of activities during times of high fire risk are included in SCE's Fire Management Plan per APM HAZ-4, and would also be included in the Forest Service Fire Safety Plan developed as a part of the permit that the FS would issue for the Project.

Mitigation Measures for Impact F-3

F-3a **Revise SCE's Fire Management Plan for maintenance activities.** SCE's Fire Management Plan shall be revised to be applicable to Project maintenance activities located off NFS lands. All provisions of the Plan that are applicable to construction crews and activities shall be made applicable to maintenance crews and activities. The revised Plan shall be submitted to the CPUC for review at least 60 days prior to construction.

F-3b **Cease work during Red Flag Warning events.** During Red Flag Warning events, as issued daily by the National Weather Service in State Responsibility Areas (SRA) and Local Responsibility Areas (LRA), all non-emergency construction and maintenance activities shall cease in affected areas. An exception shall be made for transmission line testing where a transmission line may be tested, one time only, if the loss of another transmission facility could lead to system instability or cascading outages.

F-3c **Ensure open communication pathways.** All construction crews and inspectors shall be provided with radio and cellular telephone access that is operational along the entire length of the approved route to allow for immediate reporting of fires. Communication pathways and equipment shall be tested and confirmed operational each day prior to initiating construction activities at each construction site. All fires shall be reported to the fire agencies with jurisdiction in the Project area immediately upon ignition.

Each crew member shall carry at all times a laminated card listing pertinent telephone numbers for reporting fires and defining immediate steps to take if a fire starts. Information on contact cards shall be updated and redistributed to all construction crewmembers, as needed, prior to the initiation of construction activities and on the day the information change goes into effect. Outdated cards shall be destroyed.

F-3d **Remove hazards from the work area.** SCE shall clear dead and decaying vegetation from the work area prior to starting construction and/or maintenance work. The work area includes only those areas where personnel are active or where equipment is in use or stored, and may include portions of the transmission ROW, construction laydown areas, pull sites, access roads, parking

pads, and any other sites adjacent to the ROW where personnel are active or where equipment is in use or stored. Cleared dead and decaying vegetation shall either be removed or chipped and spread onsite in piles no higher than six (6) inches.

F-3e **Comply with non-smoking policy on PHLNHPA lands.** SCE and contractor personnel shall comply with the non-smoking policy on Puente Hills Landfill Native Habitat Preservation Authority (PHLNHPA) lands during construction and maintenance activities, and this commitment shall be written into SCE's Fire Management Plan for construction and maintenance (see Mitigation Measure F-3a, Revise SCE's Fire Management Plan for maintenance activities).

F-3f **Share costs for ANF fuelbreak maintenance.** SCE shall enter into a cost-sharing agreement with the FS for maintenance of the existing system of fuelbreaks. Cost-sharing for fuelbreak maintenance shall be required for backbone fuelbreaks in close proximity to the Project or that transect the path of the Project. A backbone fuelbreak is an identified key ridge or other linear geographical feature that has a high level of effectiveness in slowing or containing a wildfire. Backbone fuelbreaks in the vicinity of the Project include: Santa Clara Divide, Mill Creek, Flintridge, Clear Creek, Millard, Brown Mountain, Clamshell, Santa Anita Dam, Chantry and Monrovia (a.k.a. Redbox/Rincon).

F-3g **Provide transmission line safety training to ANF staff.** SCE shall provide transmission line safety training to FS (ANF) staff prior to the start of the official fire season on an annual basis.

Environmental Effects of Mitigation Measure F-3d

While Mitigation Measure F-3d is recommended to decrease the risk of wildfire from Project activities, it may result in additional impacts to other resources. Native vegetation or other biological resources may be adversely affected by this measure if they are located under or adjacent to piles of chipped vegetation. This potential impact is similar to the effects of other Project activities, which are fully discussed in Section 3.4 (Biological Resources).

Mitigation Measure F-3d would also contribute to increased construction noise from operation of the chippers, which may impact noise sensitive receptors in the Project area. The use of chippers in order to clear dead/decaying vegetation from Project work areas is included in the construction noise analysis presented in Section 3.10 (Noise) for the proposed Project. As described in Table 3.10-10 (Noise Policy Compliance Table – Construction), although construction noise would be temporary and would be reduced by implementation of APMs NOI-1, NOI-3, and NOI-4, and Mitigation Measures N-1a (Implement Best Management Practices for construction noise) and N-1b (Avoid sensitive receptors during mobile construction equipment use), the level of construction noise would violate several local noise ordinances and standards.

Environmental Effects of Mitigation Measure F-3f

Mitigation Measure F-3f would require SCE to contribute its fair share for maintenance of the existing system of fuelbreaks on ANF, an ongoing project for which separate environmental reviews under NEPA are periodically undertaken by the Forest Service. Therefore, Mitigation Measure F-3f would not result in impacts associated with the Project.

CEQA Significance Conclusion

Construction and maintenance activities would increase the risk of wildfire, resulting in a significant impact. To reduce the significance of these potential impacts, the following mitigation measures have been identified: Mitigation Measures F-3a (Revise SCE's Fire Management Plan for maintenance activities),

F-3b (Cease work during Red Flag Warning events), F-3c (Ensure open communication pathways), F-3d (Remove hazards from the work area), and F-3e (Comply with non-smoking policy on PHLNHPA lands).

Mitigation Measure F-3a would require the incorporation of fire safe practices during Project maintenance in addition to Project construction. Mitigation Measure F-3b would reduce the potential impact to communities, firefighters, and natural resources by prohibiting Project construction and maintenance activities during Red Flag Warning events, which would eliminate work during extreme fire weather and have the effect of substantially reducing the potential acres burned, the number of communities at risk, and the hazard to firefighting crews. This measure would be applicable to non-Forest Service lands (similar provisions for ANF lands are contained in HAZ-4). This measure would reduce the risk of homes sustaining damage in a Project construction- or maintenance-related fire.

Mitigation Measure F-3c would reduce firefighting response time in the event of an ignition, which would have the effect of reducing the potential impact to communities and natural resources. Mitigation Measure F-3d (Remove hazards from the work area) would reduce the severity of construction- and maintenance-related ignitions that escape initial containment efforts by minimizing volatile fuel loads within the corridor. Mitigation Measure F-3e would ensure compliance with PHLNHPA's non-smoking policy. The implementation of these mitigation measures would reduce Impact F-3 to a less-than-significant level (Class II).

Impact F-4: Construction and/or maintenance activities would increase the risk of personnel injury or death in the event of fire

Construction and maintenance personnel would be exposed to an increased risk of injury or death in the event of a fire in the vicinity of construction areas if sufficient emergency evacuation routes were not available, or if safe emergency evacuation routes were not known to personnel prior to an incident.

Low Fire Risk Project Area

The risk of an uncontrolled fire is sufficiently low throughout the low fire risk Project area. However, in the unlikely event of an uncontrolled fire, sufficient paved roadways are available for emergency evacuation of personnel.

Tehachapi Fireshed Area

Portions of the Tehachapi Fireshed area within ANF, on PHLNHPA lands, and in CHSP are accessible by narrow, unpaved roadways through wildland areas that are highly susceptible to wildfires. Critical to personnel safety in the event of fire are the availability of safe evacuation routes and personnel awareness of these routes. Air-lifting of personnel in the event of fire is unlikely to be feasible due to flight restriction orders that are issued during wildfire events. Segment 11 through ANF is the most access-restricted of all proposed Project segments. Under existing conditions, the bridge along Fall Creek Road (along Segment 11) that would provide for the crossing of Tujunga Creek is out of service, providing only a single point of ingress and egress for personnel and firefighting crews in the event of a wildfire. Under Alternative 2 this bridge would be repaired to ensure an adequate number of emergency evacuation routes in the event of an uncontrolled fire in the vicinity of Segment 11.

APM HAZ-4 (Fire Management Plan, Specification E-2005-104; February 21, 2006) requires SCE to follow its Fire Management Plan during construction of the proposed Project. The Plan is discussed in detail in Section 3.16.3.4. Among other commitments, the Plan commits to restricting project activities in compliance with ANF Project Activity Levels, as issued daily by ANF, for example, during periods of

extreme fire hazard due to critical weather conditions. Because Project construction activities would be restricted relative to the severity of weather conditions, the presence of construction workers in ANF would be limited during extreme fire weather thereby reducing the risk of personnel injury and death as a result of a Santa-Ana driven wildfire event.

The Plan covers fire safety provisions, equipment, communication, and reporting during construction, however it does not detail SCE's commitments on non-Forest Service lands, it does not ensure emergency evacuation of personnel from wildland areas in the event of fire, and it does not address the emergency evacuation constraint of the out-of-service Tujunga Creek Bridge. As a result, personnel engaged in Project construction or maintenance activities on non-Forest Service lands would be at risk of being engaged in work activities during extreme weather conditions. In addition, personnel working in wildland areas would be at risk of not being evacuated in the event of fire during normal weather conditions due to a lack of evacuation planning effort despite implementation of APM HAZ-4. Finally, personnel working on ANF lands in the vicinity of Tujunga Creek would be at risk in the event of a fire during normal weather conditions despite implementation of APM HAZ-4 due to the emergency access constraint of the area.

Mitigation Measures for Impact F-4

F-3b Cease work during Red Flag Warning events.

F-4 Prepare and implement Emergency Evacuation Plan. SCE shall prepare an Emergency Evacuation Plan to ensure the safe and expedient ground-based evacuation of personnel in the event of an uncontrolled fire in the Project area, including addressing the Tujunga Creek bridge area. The Plan shall make explicit the following elements: a schedule of the locations of all personnel during the fire season, conditions under which to evacuate, chain of command, communications with ANF Emergency Operations Center, and identification of evacuation routes. An emergency evacuation officer shall be appointed to educate personnel about emergency evacuation routes prior to each day's construction activities, to carry out the Plan in the event that an evacuation order is issued or that a nearby uncontrolled fire threatens personnel safety, and to update the plan should access conditions change. The Emergency Evacuation Plan shall be submitted to FS, PHLNHPA, and California Department of Parks and Recreation [Alternative 4 only], as appropriate, for review and comment at least 30 days prior to Project construction.

CEQA Significance Conclusion

Construction and maintenance activities would increase the risk of personnel injury or death in the event of an uncontrolled wildfire, resulting in a significant impact. To reduce the significance of this potential impact, the following mitigation measures have been identified: Mitigation Measure F-3b (Cease work during Red Flag Warning events) and, F-4 (Prepare and implement Emergency Evacuation Plan).

Mitigation Measure F-3b would reduce the risk to construction and maintenance personnel by prohibiting Project construction and maintenance activities during Red Flag Warning events, which would eliminate work during extreme fire weather. This measure would be applicable to non-Forest Service lands (similar provisions for ANF lands are contained in HAZ-4). This measure would reduce the risk of personnel injury and death as a result of a Santa Ana driven wildfire by restricting the presence of personnel in wildland areas during the most extreme fire weather.

Mitigation Measure F-4 would ensure identification of emergency access routes prior to Project construction activities, require education of personnel about these access routes prior to each day's

construction or maintenance activities, and require appointment of an Emergency Evacuation Plan officer to administer the plan in the event of fire. The implementation of these mitigation measures would reduce Impact F-4 to a less-than-significant level (Class II).

Impact F-5: Presence of the overhead transmission line would increase the risk of wildfire and compromise firefighter safety.

The presence of an overhead transmission line in areas where a transmission line does not currently exist would create a new source of potential wildfire ignitions for the life of the Project. Component failures can result in wildfire ignitions if maintenance or inspections are inadequate. Line faults can be caused by such unpredictable events as conductor contact by floating debris, gun shots, and helicopter collisions; these latter events are rare but would be unavoidable. In addition, the presence of a transmission line in areas susceptible to wildfires compromises firefighter safety by creating an electrical shock hazard for ground-based firefighters.

Low Fire Risk Project Area

Due to a lack of fuels and flat terrain, unpredictable ignitions related to Project operation that occur in the low fire risk Project areas do not have the potential to increase the risk of wildfire that would put communities, firefighters, or natural resources at risk of sustaining damages.

Tehachapi Fireshed Area

The Tehachapi Fireshed is a high-risk fireshed based on its wildfire history, fuels present, and wildland-urban interface communities at risk. Any line faults that create sparks or ignite nearby vegetation in the Tehachapi Fireshed could result in a large and catastrophic wildfire, which would put large areas and potentially many households at risk. The potential for unavoidable ignitions related to the presence of the overhead transmission line to occur during extreme fire weather increases the likelihood of a catastrophic wildfire. The risk of ignitions and the risk of damage from a Project-related ignition would be substantially reduced through implementation of adequate line clearances in compliance with GO95 Rule 35, and by performing adequate inspections to detect imminent component failures in compliance with GO 95 Rule 31.2.

The portions of Alternative 2 that would be located within the Tehachapi Fireshed would replace existing transmission lines. Therefore, the existing transmission lines within the Tehachapi Fireshed that Alternative 2 would replace represent an ongoing source of potential wildfire ignitions. Once operational, the potential for wildfire ignitions as a result of the presence of a transmission line would persist, but would not be increased.

CEQA Significance Conclusion

The presence of the Project would not increase the likelihood of a catastrophic wildfire. The transmission lines constructed within the Tehachapi Fireshed would have the same potential for igniting a wildfire as the existing transmission lines the project would replace. Therefore, Impact F-5 would be less than significant (Class III).

Increased ignition potential and rate of fire spread (Criterion FIRE3)

Impact F-6: Project activities would introduce non-native plants, which would contribute to an increased ignition potential and rate of fire spread.

Project construction and maintenance activities create the potential for the introduction and spread of non-native, invasive plants. Non-native plants are often spread by human and vehicle vectors in areas of large-scale soil disturbance and importation. Construction and maintenance of the proposed Project would contribute to the introduction and proliferation of non-native, invasive plants. Certain invasive plants, like cheatgrass, medusa head and Saharan mustard, can contribute to changes in wildfire frequency, timing and spread (Cal-IPC, 2007). Cheatgrass and medusa head, for example, dry out earlier in the season than native grasses, extending the length of the fire season and creating fine fuels that are easily ignited. These fine fuels contribute to wildfire ignitions earlier in the year and an increased level of fire recurrence. In addition, non-native grasslands have a "spotting" effect during a wildfire, where embers from these grasslands are blown ahead of the fire line, contributing to an increased rate of fire spread. Invasive annual grasses also influence fire spread by creating a fine fuel continuum between patchy, perennial shrubs allowing wildfires to expand further into otherwise sparsely vegetated wildlands (Wiedinmyer and Neff, 2007). The introduction and spread of specific invasive plants within the proposed Project ROW would adversely influence fire behavior by increasing the fuel load, fire frequency and fire spread.

CEQA Significance Conclusion

Project activities would introduce non-native plants, which would contribute to an increased ignition potential and rate of fire spread. To reduce the significance of this potential impact, the following mitigation measure has been identified: Mitigation Measure B-3a (Prepare and implement a Weed Control Plan) (see full description in Section 3.4, Biological Resources). Implementation of the Weed Control Plan would prevent or substantially reduce the potential for ignition potential or increased fire spread as a result of non-native, invasive plants introduced during to the Project area during construction or maintenance activities. Implementation of this mitigation measure would reduce Impact F-6 to a less-than-significant level (Class II).

3.16.6.2 Cumulative Effects Analysis

Geographic Extent

The geographic extent of the cumulative effects analysis includes the area within the Tehachapi Fireshed boundary, as defined in Section 3.16.2, and shown on Figure 3.16-1 (at the end of this section). The Tehachapi Fireshed is defined as the areas that have experienced multiple, large fires (at least 300 acres in extent) over a 50-year history (up to and including 2006), are generally categorized as being located in high or very high Fire Hazard Severity Zones as defined by Cal Fire, contain surface fuels capable of carrying a large wildfire, and are within the Santa Ana wind influence area in relation to potential ignitions from the proposed Project. Firesheds are conceptually analogous to watersheds. An ignition that escapes containment at the top of the fireshed could spread to the limits of the fireshed under extreme weather conditions. Furthermore, an individual fireshed encompasses areas with similar fire risk and where a similar prevention and response strategy could influence the wildfire outcome. Cumulative effects are therefore evaluated to the geographic extent of the high-risk Tehachapi Fireshed boundary due to similar wildfire risks across the fireshed. The Tehachapi Fireshed includes portions of Los Angeles, San Bernardino, Orange, and Ventura Counties. Wildfires are not expected to occur in the low fire risk areas

due to a lack of the biophysical conditions necessary to carry wildfires, including dense fuels and steep topography.

Existing Cumulative Conditions

The TRTP corridor currently contains several other high-voltage transmission lines, which have contributed to an unknown number of wildfires since installation. The proposed Project would be constructed primarily within existing ROW adjacent to these existing structures, which create an ongoing source of potential wildfire ignitions.

Numerous wildland-urban interface communities exist throughout the Tehachapi Fireshed. These communities are situated in harm's way when a large fire sweeps through the area. Furthermore, the presence of humans in the fuel-laden Tehachapi Fireshed has increased the number of human-related wildfire ignitions in recent decades, which has resulted in shorter intervals between large fires. Human activities have altered natural fire regimes relative to their historic range of variability (Syphard et al., 2007). California chaparral shrublands have experienced such substantial human population growth and urban expansion that the increase in ignitions, coupled with the most severe fire weather in the country (Schroeder et al., 1964), have increased fire frequency above the historic range of variability (Keely et al., 1999). Impacts to ecosystems, communities, and species are possible if a disturbance regime, like wildfire, exceeds its natural range of variability (Landres et al., 1999; Dale et al., 2000). For example, too-frequent fire can result in habitat loss and fragmentation, shifting plant community composition, reduction of small-mammal populations, and accompanying loss of predator species (Barro and Conard, 1991; DellaSalla et al., 2004).

These land-use changes and fire frequency increases have lead to vegetation type conversion of the native shrubland systems into primarily non-native grasslands in many areas of San Diego County. These non-native grassland systems dry out earlier in the season and are more easily ignited than native shrublands, thus their presence increases the potential for fire occurrence and fire frequency even as they may locally reduce fire intensity by replacing hot, woody fuels with cool, fast-burning fuels.

More frequent fires also increase the total number of homes and businesses lost to wildfires over time, as most structures are rebuilt after being damaged or destroyed in a wildfire.

Reasonably Foreseeable Future Projects and Changes

Future subdivision of wildlands and residential development at the wildland-urban interface, consistent with the Los Angeles, San Bernardino, Orange, and Ventura County General Plans, are expected to increase the number of human-caused fires throughout the Tehachapi Fireshed over the life of the proposed Project and beyond. Future development is also expected to contribute to non-native species spread. Reasonably foreseeable projects that would contribute to increased ignitions and non native species spread include the Tejon Mountain Village development (3,450 dwelling units), and existing transmission line maintenance activities.

Cumulative Impact Analysis

- **Construction and/or maintenance activities would reduce the effectiveness of firefighting (Impact F-1).** Construction activities related to the proposed Project in the ANF, residential development near the ANF (such as the Tejon Mountain Village), and maintenance of existing transmission lines in the shared ROW through the ANF could limit emergency vehicle access in the forest. If adequate road access cannot be maintained in remote areas of the ANF due to construction and maintenance activities, the access restriction could delay firefighting response. Existing transmission line maintenance activities that block roads within the ANF

could combine to seriously delay firefighting operations during the fire season in the event of a fire in the ANF. However, Mitigation Measure F-1 (Prepare wildland traffic control plans) would reduce this impact of the Project and ensure access for emergency response vehicles. Therefore, the Project would not be cumulatively considerable and no cumulative effect would occur (Class III).

- **The presence of new or higher overhead transmission line would reduce the effectiveness of firefighting (Impact F-2).** The addition of the aboveground transmission lines on towers of substantially higher maximum height than existing towers through the Tehachapi Fireshed would marginally reduce the effectiveness of firefighting activities within the Fireshed by limiting aerial operations. The proposed Project would combine with existing transmission lines that serve as barriers to firefighting operations, resulting in a cumulatively considerable impact. Mitigation Measure F-3f (Share costs for ANF fuelbreak maintenance) would increase the likelihood of successful fire suppression by increasing the strategic firefighting locations for firefighters in the ANF, but it would not be able to reduce the impact on the effectiveness of firefighting to a less-than-significant level. Therefore, this impact would be cumulatively significant and unavoidable (Class I).
- **Construction and/or maintenance activities would increase the risk of wildfire (Impact F-3).** Numerous construction activities, particularly increased residential development, adjacent to wildland areas throughout the Tehachapi Fireshed are reasonably foreseeable in the near future. This type of construction increases the level of human influence and activity adjacent to wildlands, thereby increasing human-caused wildfire ignitions. Other phenomena, such as increased travel on wildland-adjacent roadways also contribute to wildfire ignitions that result in widespread damages. Construction of the proposed Project would also increase wildfire ignitions in fuel-laden wildlands, and these can have especially devastating consequences during severe fire weather conditions. Mitigation Measures F-3a (Revise SCE's Fire Management Plan for maintenance activities), F-3b (Cease work during Red Flag Warning events), F-3c (Ensure open communication pathways), F-3d (Remove hazards from the work area), and F-3e (Comply with non-smoking policy on PHLNHPA lands) would reduce the severity of Project-level impacts from wildfire ignition as a result of construction and maintenance to a less-than-significant level. However, although these measures would restrict Project related activities to times during which Santa Ana winds are not blowing, which would limit the severity of construction or maintenance ignited fires, these mitigation measures cannot completely eliminate the possibility of a wildfire ignition that could result in the loss of life, property, and natural resources. There.fore, the proposed Project would combine with other reasonably foreseeable residential development projects to create a cumulatively considerable increase in wildfire ignitions from construction and maintenance activities across the Tehachapi Fireshed. Mitigation measures cannot reduce the risk of a damaging wildfire to zero, and therefore this impact would be cumulatively significant and unavoidable (Class I).
- **Construction and/or maintenance activities would increase the risk of personnel injury or death in the event of fire (Impact F-4).** The proposed Project would increase the risk of construction and maintenance personnel injury or death in the event of an uncontrolled wildland fire to a less-than-significant level after mitigation. However, this effect would not combine with other past, present, nor reasonably foreseeable projects to result in a cumulative impact to personnel. Therefore this impact would not be cumulatively significant (No Impact).
- **Presence of the overhead transmission line would increase the risk of wildfire and compromise firefighter safety (Impact F-5).** The proposed Project would not result in a new ongoing source of potential wildfire ignitions within a fireshed. However, the existing transmission lines within the Tehachapi Fireshed that Alternative 2 would replace represent an ongoing source of potential wildfire ignitions. Once operational, the potential for wildfire ignitions as a result of the presence of a transmission line would persist, but would not increase. Past, present, and reasonably foreseeable projects that have been/would be constructed near fuel-laden wildlands would also increase the probability of igniting a wildfire that would result in widespread damages. Even a single ignition that escapes containment in the highly fire-prone Tehachapi Fireshed could have devastating effects on communities, firefighter health and safety, and natural resources, and these mitigation measures would not ensure prevention or containment of all ignitions. Therefore, this impact of the proposed Project would be expected to combine with similar impacts from existing and reasonably foreseeable transmission lines and would be cumulatively considerable. A number of past, present, and reasonably foreseeable fuel-reduction projects that have been/would be carried out on ANF lands would reduce the severity of potential wildfires ignited by the proposed Project and other transmission lines in the ANF. Fuel reduction projects cannot reduce the risks of a catastrophic wildfire to zero, however,

and the impact would remain cumulatively considerable. Therefore, this impact would be cumulatively significant and unavoidable (Class I).

- **Project activities would introduce non-native plants, which would contribute to an increased ignition potential and rate of fire spread (Impact F-6).** Mitigation measures targeted at the prevention and management of invasive plants can reduce Project-level impacts on the spread of invasive species across the Tehachapi Fireshed, which in turn reduces the effect of non-native plant cover on exacerbating wildfire behavior. Similar mitigation measures would be expected to be implemented for many of the reasonably foreseeable housing development and fuel reduction projects in the Tehachapi Fireshed that have the potential to introduce and spread non-native species, reducing the cumulative impact of invasive plant cover on wildfire behavior to a less than significant level. However, not all activities that result in non-native plant introductions and spread are regulated, nor can they be easily regulated due to their dispersed nature. These activities include such things as human travel on roadways and recreational hiking in wildland areas, both of which can transport non-native plant seeds in soils compacted in tire treads and on the soles of hiking boots. Because invasive plant introductions to wildland areas is reasonably foreseeable despite best efforts at mitigation, and because Mitigation Measure B-3a (Prepare and implement a Weed Control Plan) would not completely eliminate the risk of non-native species introduction, the incremental effects of the proposed Project on non-native species introduction that adversely affect wildfire behavior are considered cumulatively considerable. This impact would be cumulatively significant and unavoidable (Class I).

Mitigation to Reduce the Project's Contribution to Significant Cumulative Effects

No mitigation is available to reduce the Project's contribution to significant cumulative effects on wildfire prevention and suppression.

3.16.7 Alternative 3: West Lancaster Alternative

3.16.7.1 Direct and Indirect Effects Analysis

Adverse effects on fire prevention and suppression activities (Criterion FIRE1)

Impacts associated with Criterion FIRE1 for Alternative 3 would be the same as impacts associated with this criterion for the proposed Project, as described above in Section 3.16.2. The segments of Alternative 3 that pass through the Tehachapi Fireshed would be identical to the proposed Project, and the rerouted portion of this alternative would be located entirely within the low fire risk Project areas, and would not change the impacts associated with fire prevention and suppression activities.

Impact F-1 (Construction and/or maintenance activities would reduce the effectiveness of firefighting) would require implementation of the following mitigation measure: F-1 (Prepare wildland traffic control plans). With implementation of the mitigation measure listed above and described in detail in Section 3.16.6.1, Impact F-1 for Alternative 3 would be less than significant (Class II).

Impact F-2 (Presence of new or higher overhead transmission line would reduce the effectiveness of firefighting) would be less than significant (Class III).

Exposure of communities, firefighters, personnel, and/or natural resources to an increased risk of wildfire (Criterion FIRE2)

Impacts associated with Criterion FIRE2 for Alternative 3 would be the same as impacts associated with this criterion for the proposed Project, as described above in Section 3.16.2. The segments of Alternative 3 that pass through the Tehachapi Fireshed would be identical to the proposed Project, and the rerouted portion of this alternative would be located entirely within the low fire risk Project areas, and would not change the impacts associated with increased wildfire risk, nor would it unduly restrict emergency evacuation routes.

Impact F-3 (Construction and/or maintenance activities would increase the risk of wildfire) would require implementation of the following mitigation measures: F-3a (Revise SCE's Fire Management Plan for maintenance activities), F-3b (Cease work during Red Flag Warning events), F-3c (Ensure open communication pathways), F-3d (Remove hazards from the work area), F-3e (Comply with non-smoking policy on PHLNHPA lands), F-3f (Share costs for ANF fuelbreak maintenance),and F-3g (Provide transmission line safety training to ANF staff). With implementation of the mitigation measures listed above and described in detail in Section 3.16.6.1, Impact F-3 for Alternative 3 would be less than significant (Class II).

Impact F-4 (Construction and/or maintenance activities would increase the risk of personnel injury or death in the event of fire) would require implementation of the following mitigation measures: F-3b (Cease work during Red Flag Warning events), and F-4 (Prepare and implement Emergency Evacuation Plan). With implementation of these mitigation measures described in detail in Section 3.16.6.1, Impact F-4 would be less than significant (Class II).

Impact F-5 (Presence of the overhead transmission line would increase the risk of wildfire and compromise firefighter safety) would be less than significant (Class III).

Increased ignition potential and rate of fire spread (Criterion FIRE3)

Impacts associated with Criterion FIRE3 for Alternative 3 would be the same as impacts associated with this criterion for the proposed Project, as described above in Section 3.16.2. The segments of Alternative 3 that pass through the Tehachapi Fireshed would be identical to the proposed Project, and the rerouted portion of this alternative would be located entirely within the low fire risk Project areas, and would not change the impacts associated with increased wildfire risk.

Impact F-6 (Project activities would introduce non-native plants, which would contribute to an increased ignition potential and rate of fire spread) would require implementation of the following mitigation measure: B-3a (Prepare and implement a Weed Control Plan). With implementation of this mitigation measure, which is described in detail in Section 3.4 (Biological Resources), Impact F-6 for Alternative 3 would be less than significant (Class II).

3.16.7.2 Cumulative Effects Analysis

This section addresses potential cumulative effects that would occur as a result of implementation of Alternative 3 (West Lancaster Alternative). This alternative consists of a brief re-route of the proposed transmission line just north of Antelope Substation, which would add approximately 0.4 mile to the length of the route in the low fire risk Project area. The remainder of this alternative route (south of Antelope Substation) would be identical to that of the proposed Project and would, therefore, result in identical impacts as the proposed Project. The rerouted portion of the Alternative 3 route generally parallels the proposed Project route to the west. As a result, this alternative traverses similarly low fire risk areas as the portion of the proposed Project route it is proposed to replace, would require the same types of construction activities to build, and would result in the same operational capacity as the proposed Project. Based on the substantial similarity of Alternative 3 to the proposed Project, this alternative's contribution to cumulative impacts would be identical to that of the proposed Project.

Geographic Extent

Alternative 3 only differs from the proposed Project for a very small portion of the proposed route in the City of Lancaster, near Antelope Substation. This area is encompassed by the same geographic extent of

the cumulative analysis defined for Alternative 2 in Section 3.16.6.2. Therefore, the geographic extent of the cumulative analysis for Alternative 3 is exactly the same as that for Alternative 2 and would include both the low fire risk Project areas and the Tehachapi Fireshed.

Existing Cumulative Conditions

The existing cumulative conditions for Alternative 3 are exactly the same as for Alternative 2, as described in Section 3.16.6.2.

Reasonably Foreseeable Future Projects and Changes

Reasonably foreseeable future projects and changes to the cumulative scenario for Alternative 3 would be exactly the same as Alternative 2, described in Section 3.16.6.2.

Cumulative Impact Analysis

As described in Section 3.16.6.2, impacts associated with Alternative 3 would be cumulatively considerable if they would have the potential to combine with similar impacts of other past, present, or reasonably foreseeable projects. The minor re-route of the proposed Project transmission line associated with Alternative 3 would not affect the proposed Project's contribution to cumulative impacts and therefore, cumulative impacts of Alternative 3 would be exactly the same as cumulative impacts for Alternative 2, as detailed in Section 3.16.6.2 and described below.

Impacts F-1 (Construction and/or maintenance activities would reduce the effectiveness of firefighting) and F-4 (Construction and/or maintenance activities would increase the risk of personnel injury or death in the event of fire) would not be cumulatively considerable (Class III and No Impact, respectively).

The following impacts would be cumulatively considerable and would combine with similar impacts of other projects to result in impacts that would be significant and unavoidable (Class I): Impact F-2 (Presence of new or higher overhead transmission line would reduce the effectiveness of firefighting), Impact F-3 (Construction and/or maintenance activities would increase the risk of wildfire), Impact F-5 (Presence of the overhead transmission line would increase the risk of wildfire and compromise firefighter safety), and Impact F-6 (Project activities would introduce non-native plants, which would contribute to an increased ignition potential and rate of fire spread).

Mitigation to Reduce the Project's Contribution to Significant Cumulative Effects

No mitigation is available to reduce the Project's contribution to significant cumulative effects on wildfire prevention and suppression.

3.16.8 Alternative 4: Chino Hills Route Alternatives

3.16.8.1 Direct and Indirect Effects Analysis

Adverse effects on fire prevention and suppression activities (Criterion FIRE1)

Impacts associated with Criterion FIRE1 for Alternative 4 would be more severe than impacts associated with this criterion for the proposed Project. As described in Section 3.16.2.4 (Affected Environment: Alternative 4), this alternative would follow the same route as the proposed Project through the low risk Project area along Segments 10 and 4 and part of Segments 5, 7, and 11. This alternative would also follow the same route as the proposed Project through the Tehachapi Fireshed for the remainder of Segments 5, 7, and 11, and Segment 6. Alternative 4 would continue to follow the proposed Project route

along Segment 8A in the Tehachapi Fireshed, diverging from the proposed Project route at S8A MP 19.2. All four of the Alternative 4 route options would diverge in various directions in and around CHSP. Alternative 4 would not introduce new impacts to Wildfire Prevention and Suppression, however it would increase the severity of impacts associated with Criterion FIRE1.

In addition to being located through ANF and PHLNHPA lands, all of the Alternative 4 routes would pass through CHSP, and would be accessed by narrow, unpaved roads that could be similarly obstructed by construction and maintenance vehicles and obstruct emergency fire vehicle access. The four optional routes of Alternative 4 would each introduce varying lengths of new transmission ROW through an area containing high-risk fuels and steep topography in CHSP. The introduction of a new linear element across the landscape would introduce a new obstruction to aerial and ground-based firefighting operations. This would occur for 5.3 miles along Route D, which would introduce a new transmission corridor that, in combination with existing transmission lines, would create an area of indefensible space of approximately 2,000 acres in CHSP. The creation of indefensible spaces allows fires to build in intensity unchecked by firefighters until the fire burns through the area.

Impact F-1 (Construction and/or maintenance activities would reduce the effectiveness of firefighting) would require implementation of the following mitigation measure: F-1 (Prepare wildland traffic control plans). Even though additional wildland road obstruction would potentially occur during construction and maintenance activities for Alternative 4 as compared to the proposed Project, with implementation of the mitigation measure listed above and described in detail in Section 3.16.6.1, Impact F-1 for Alternative 4 would be less than significant (Class II).

Impact F-2 (Presence of new or higher overhead transmission line would reduce the effectiveness of firefighting) for Alternative 4 would be significant and unavoidable, and no mitigation is available (Class I).

Exposure of communities, firefighters, personnel, and/or natural resources to an increased risk of wildfire (Criterion FIRE2)

Impacts associated with Criterion FIRE2 for Alternative 4 would be similar to impacts associated with this criterion for the proposed Project described above in Section 3.16.2. However, Alternative 4 would require substantially more intensive construction activities for the creation of new and expanded ROW that would be required along all four of the routes for Alternative 4. Impact F-3 in the low fire risk Project area would be identical to the proposed Project, and would not have the potential to increase the risk of wildfire. Impact F-3 in the Tehachapi Fireshed area would be similar to the proposed Project. However, since substantially more intensive construction activities would be required for the creation of new and expanded ROW, Impact F-3 would present a greater risk of wildfire ignition during construction activities. Impacts would be proportional to the lengths of new and expanded ROW within the Tehachapi Fireshed boundary (with greater impacts resulting from longer distances), defined here:

- Route A would require 8.5 miles of new and expanded ROW
- Route B would require 13 miles of new and expanded ROW
- Route C would require 9.5 miles of new and expanded ROW
- Route D would require 9.2 miles of new and expanded ROW

Impact F-3 (Construction and/or maintenance activities would increase the risk of wildfire) would require implementation of the following mitigation measures: F-3a (Revise SCE's Fire Management Plan for maintenance activities), F-3b (Cease work during Red Flag Warning events), F-3c (Ensure open

communication pathways), F-3d (Remove hazards from the work area), F-3e (Comply with non-smoking policy on PHLNHPA lands), F-3f (Share costs for ANF fuelbreak maintenance),and F-3g (Provide transmission line safety training to ANF staff). Although the magnitude of construction activities would be greater for Alternative 4, with implementation of the mitigation measures listed above and described in detail in Section 3.16.6.1, Impact F-3 would be less than significant (Class II).

Impact F-4 through the low risk Project areas along Alternative 4 would be identical to the low risk Project areas for the proposed Project, and would not have the potential to increase the risk of personnel injury or death in the event of fire. Although Alternative 4 would reroute portions of Segment 8A through the Tehachapi Fireshed, this would not unduly restrict emergency evacuation routes, and Impact F-4 in the Tehachapi Fireshed area would be identical to that of the proposed Project.

Impact F-4 (Construction and/or maintenance activities would increase the risk of personnel injury or death in the event of fire) would require implementation of the following mitigation measures: F-3b (Cease work during Red Flag Warning events), and F-4 (Prepare and implement Emergency Evacuation Plan). With implementation of the mitigation measures listed above and described in detail in Section 3.16.6.1, Impact F-4 would be less than significant (Class II).

Impact F-5 through the low risk Project areas along Alternative 4 would be identical to the low risk Project areas for the proposed Project, and would not have the potential to increase the risk of wildfire that would put communities, firefighters, or natural resources at risk of sustaining damages.

Impact F-5 in the Tehachapi Fireshed area would be similar to the proposed Project for most of the project alignment, except for the re-routed portion of Alternative 4. The re-routed portion of this alternative would result in a new or expanded transmission line alignment within CHSP and the area immediately north of CHSP. Each route of Alternative 4 would be constructed either directly adjacent, or in close proximity, to existing transmission lines within and immediately north of CHSP, where the risk of fire ignition due to presence of a transmission line already exists. Despite this existing risk, the additional infrastructure associated with any of the Alternative 4 routes would incrementally increase the amount of equipment in the area that could fail or be interfered with, thereby incrementally increasing the risk of a wildfire.

As discussed above for Alternative 2, the risk of ignitions and the risk of damage from a Project-related ignition would be substantially reduced through implementation of adequate line clearances in compliance with GO95 Rule 35, and by performing adequate inspections to detect imminent component failures in compliance with GO 95 Rule 31.2. Nonetheless, presence of any of the Alternative 4 transmission line routes would result in an incremental increased risk of wildfire ignition, resulting in a significant impact.

To reduce the significance of this potential impact, the following mitigation measures have been identified: F-5 (Share costs for fuelbreak maintenance). Mitigation Measure F-5 would increase the level of fuelbreak maintenance in the area of Alternative 4, providing an increased number of strategic firefighting locations for firefighters to fight a Project-ignited fire. Nonetheless, the long-term potential for the Project to ignite a fire and cause damage to homes and natural resources would still exist. Therefore, Impact F-5 would remain significant and unavoidable (Class I).

Mitigation Measure for Impact F-5

F-5 **Share costs for fuelbreak maintenance.** SCE shall enter into cost-sharing agreements with the City of Chino Hills and Chino Hills State Park for maintenance of the existing system of fuelbreaks on and surrounding State Parks lands. Cost-sharing for fuelbreak maintenance shall

be required for backbone fuelbreaks in close proximity to the Project or that transect the path of the project. A backbone fuelbreak is an identified key ridge or other linear geographical feature that has a high level of effectiveness in slowing or containing a wildfire. An agreement on cost sharing with each the City of Chino Hills and Chino Hills State Park shall be reached prior to the start of Project construction.

Increased ignition potential and rate of fire spread (Criterion FIRE3)

Impacts associated with Criterion FIRE3 for Alternative 4 would be the same as impacts associated with this criterion for the proposed Project, as described above in Section 3.16.2, with the exception of a greater development of wildland areas associated with all four Route options for Alternative 4 as a result of the requirement for new and expanded ROW.

Impact F-6 (Project activities would introduce non-native plants, which would contribute to an increased ignition potential and rate of fire spread) would require implementation of the following mitigation measure: B-3a (Prepare and implement a Weed Control Plan). Although the magnitude of construction activities would be greater for Alternative 4, with implementation of this mitigation measure, which is described in detail in Section 3.4 (Biological Resources), Impact F-6 would be less than significant (Class II).

3.16.8.2 Cumulative Effects Analysis

This section addresses potential cumulative effects that would occur as a result of implementation of Alternative 4 (Chino Hills Route Alternatives). This alternative consists of four different routing options which would diverge from the proposed Project route in the City of Chino Hills. The route for Alternative 4 would be exactly the same as that of the proposed Project for all segments except Segment 8, where the Alternative 4 routing options (Routes A through D) would diverge from the proposed Project alignment at S8A MP 19.2. Furthermore, Alternative 4 would require the same types of construction activities to build, and would result in the same operational capacity as the proposed Project. Based on the substantial similarity of Alternative 4 to the proposed Project, this alternative's contribution to cumulative impacts would be similar or identical to that of the proposed Project. However, when compared to the proposed Project, each alternative's contribution to certain cumulative impacts may be incrementally increased or decreased as a result of the rerouted portion of the alternative. With regard to Alternative 4, any incremental increases or decreases in the Project's contribution to the cumulative scenario would result from the location of the alternative alignments associated with Routes A, B, C, and D.

Geographic Extent

Alternative 4 differs from the proposed Project in the southwestern portion of the proposed route within the boundary of the Tehachapi Fireshed, near the cities of Chino, Chino Hills, and Ontario. This area is encompassed by the same geographic extent of the cumulative analysis defined for Alternative 2 in Section 3.16.6.2. Therefore, the geographic extent of the cumulative analysis for Alternative 4 is exactly the same as that for Alternative 2 and would include the low fire risk Project areas and the Tehachapi Fireshed areas.

Existing Cumulative Conditions

The existing cumulative conditions for Alternative 4 are exactly the same as for Alternative 2, as described in Section 3.16.6.2.

Reasonably Foreseeable Future Projects and Changes

Reasonably foreseeable future projects and changes to the cumulative scenario for Alternative 4 would be exactly the same as Alternative 2, described in Section 3.16.6.2.

Cumulative Impact Analysis

As described in Section 3.16.6.2, impacts associated with Alternative 4 would be cumulatively considerable if they would have the potential to combine with similar impacts of other past, present, or reasonably foreseeable projects. As discussed in Section 3.16.8.1, Alternative 4 would increase the magnitude of Project-level impacts to Wildfire Prevention and Suppression due to more intensive construction activities and the introduction of new linear obstructions to the landscape. Therefore, Alternative 4 would incrementally increase the Project's contribution to significant cumulative Impacts F-2, F-3, F-5, and F-6.

Impacts F-1 (Construction and/or maintenance activities would reduce the effectiveness of firefighting) and F-4 (Construction and/or maintenance activities would increase the risk of personnel injury or death in the event of fire) would not be cumulatively considerable **(**Class III and No Impact, respectively**)**.

The proposed Project would result in an incrementally increased ongoing source of potential wildfire ignitions through line faults that can be caused by unpredictable events such as conductor contact by floating debris, gun shots, and helicopter collisions; these are rare but would be unavoidable. Past, present, and reasonably foreseeable projects that have been/would be constructed near fuel-laden wildlands would also increase the probability of igniting a wildfire that would result in widespread damages. Even a single ignition that escapes containment in the highly fire-prone Tehachapi Fireshed could have devastating effects on communities, firefighter health and safety, and natural resources, and these mitigation measures would not ensure prevention or containment of all ignitions. Therefore, this impact of the proposed Project would be expected to combine with similar impacts from existing and reasonably foreseeable transmission lines and would be cumulatively considerable. A number of past, present, and reasonably foreseeable fuel-reduction projects that have been/would be carried out on ANF lands would reduce the severity of potential wildfires ignited by the proposed Project and other transmission lines in the ANF. In addition, Mitigation Measure F-5 (Share costs for fuelbreak maintenance) would increase the maintenance of existing fuelbreaks in the area of Alternative 4. Fuel reduction projects cannot reduce the risks of a catastrophic wildfire to zero, however, and the impact would remain cumulatively considerable. Therefore, this impact would be cumulatively significant and unavoidable (Class I).The following impacts would also be cumulatively considerable and would combine with similar impacts of other projects to result in impacts that would be significant and unavoidable **(**Class I**)**: Impact F-2 (Presence of new or higher overhead transmission line would reduce the effectiveness of firefighting), Impact F-3 (Construction and/or maintenance activities would increase the risk of wildfire), and Impact F-6 (Project activities would introduce non-native plants, which would contribute to an increased ignition potential and rate of fire spread).

Mitigation to Reduce the Project's Contribution to Significant Cumulative Effects

Mitigation measures introduced for Alternative 4 in Section 3.16.8.1 would help to reduce this alternative's incremental contribution to cumulative impacts.

3.16.9 Alternative 5: Partial Underground Alternative

3.16.9.1 Direct and Indirect Effects Analysis

Adverse effects on fire prevention and suppression activities (Criterion FIRE1)

The segments of Alternative 5 that pass through the Tehachapi Fireshed would be identical to the proposed Project, and the underground portion of this alternative would be located entirely within the low fire risk Project areas, and would not change the impacts associated with fire prevention and suppression activities.

Impact F-1 (Construction and/or maintenance activities would reduce the effectiveness of firefighting) would require implementation of the following mitigation measure: F-1 (Prepare wildland traffic control plans). With implementation of the mitigation measure listed above and described in detail in Section 3.16.6.1, Impact F-1 for Alternative 5 would be less than significant (Class II).

Impact F-2 (Presence of new or higher overhead transmission line would reduce the effectiveness of firefighting) would be less than significant (Class III).

Exposure of communities, firefighters, personnel, and/or natural resources to an increased risk of wildfire (Criterion FIRE2)

Impacts associated with Criterion FIRE2 for Alternative 5 would be the same as impacts associated with this criterion for the proposed Project, as described above in Section 3.16.2. The segments of Alternative 5 that pass through the Tehachapi Fireshed would be identical to the proposed Project, and the underground portion of this alternative would be located entirely within the low fire risk Project areas, and would not change the impacts associated with increased wildfire risk.

Impact F-3 (Construction and/or maintenance activities would increase the risk of wildfire) would require implementation of the following mitigation measures: F-3a (Revise SCE's Fire Management Plan for maintenance activities), F-3b (Cease work during Red Flag Warning events), F-3c (Ensure open communication pathways), F-3d (Remove hazards from the work area), F-3e (Comply with non-smoking policy on PHLNHPA lands), F-3f (Share costs for ANF fuelbreak maintenance),and F-3g (Provide transmission line safety training to ANF staff). With implementation of the mitigation measures listed above and described in detail in Section 3.16.6.1, Impact F-3 for Alternative 5 would be less than significant (Class II).

Impact F-4 (Construction and/or maintenance activities would increase the risk of personnel injury or death in the event of fire) would require implementation of the following mitigation measures: F-3b (Cease work during Red Flag Warning events), and F-4 (Prepare and implement Emergency Evacuation Plan). With implementation of the mitigation measures listed above and described in detail in Section 3.16.6.1, Impact F-4 would be less than significant (Class II).

Impact F-5 (Presence of the overhead transmission line would increase the risk of wildfire) would be less than significant (Class III).

Increased ignition potential and rate of fire spread (Criterion FIRE3)

Impacts associated with Criterion FIRE3 for Alternative 5 would be the same as impacts associated with this criterion for the proposed Project, as described above in Section 3.16.2. The segments of Alternative 5 that pass through the Tehachapi Fireshed would be identical to the proposed Project, and the

underground portion of this alternative would be located entirely within the low fire risk Project areas, and would not change the impacts associated with increased wildfire risk.

Impact F-6 (Project activities would introduce non-native plants, which would contribute to an increased ignition potential and rate of fire spread) would require implementation of the following mitigation measure: B-3a (Prepare and implement a Weed Control Plan). With implementation of this mitigation measure, which is described in detail in Section 3.16.6.1, Impact F-6 for Alternative 5 would be less than significant (Class II).

3.16.9.2 Cumulative Effects Analysis

This section addresses potential cumulative effects that would occur as a result of implementation of Alternative 5 (Partial Underground Alternative). This alternative consists of all of the components of the proposed Project except for a four-mile underground portion of Segment 8A in the low fire risk Project area. The remainder of this alternative route would be identical to that of the proposed Project and would, therefore, result in identical impacts as the proposed Project. The underground portion of the Alternative 5 route follows the same route as the proposed Project through Chino Hills. As a result, this alternative would be underground through low fire risk areas. Based on the substantial similarity of Alternative 5 to the proposed Project, this alternative's contribution to cumulative impacts would be identical to that of the proposed Project.

Geographic Extent

Alternative 5 only differs from the proposed Project for a four-mile underground portion of the proposed route along Segment 8A through the low fire risk Project area. This area is encompassed by the geographic extent of the cumulative analysis defined for Alternative 2 in Section 3.16.6.2. Therefore, the geographic extent of the cumulative analysis for Alternative 5 is exactly the same as that for Alternative 2 and would include both the low fire risk Project areas and the Tehachapi Fireshed.

Existing Cumulative Conditions

The existing cumulative conditions for Alternative 5 are exactly the same as for Alternative 2, as described in Section 3.16.6.2.

Reasonably Foreseeable Future Projects and Changes

Reasonably foreseeable future projects and changes to the cumulative scenario for Alternative 5 would be exactly the same as Alternative 2, described in Section 3.16.6.2.

Cumulative Impact Analysis

As described in Section 3.16.6.2, impacts associated with Alternative 5 would be cumulatively considerable if they would have the potential to combine with similar impacts of other past, present, or reasonably foreseeable projects. The underground portion of the proposed Project transmission line associated with Alternative 5 would not affect the proposed Project's contribution to cumulative impacts and therefore, cumulative impacts of Alternative 5 would be exactly the same as cumulative impacts for Alternative 2, as detailed in Section 3.16.6.2 and described below.

Impacts F-1 (Construction and/or maintenance activities would reduce the effectiveness of firefighting) and F-4 (Construction and/or maintenance activities would increase the risk of personnel injury or death in the event of fire) would not be cumulatively considerable (Class III and No Impact, respectively).

The following impacts would be cumulatively considerable and would combine with similar impacts of other projects to result in impacts that would be significant and unavoidable (Class I): Impact F-2 (Presence of new or higher overhead transmission line would reduce the effectiveness of firefighting), Impact F-3 (Construction and/or maintenance activities would increase the risk of wildfire), Impact F-5 (Presence of the overhead transmission line would increase the risk of wildfire and compromise firefighter safety), and Impact F-6 (Project activities would introduce non-native plants, which would contribute to an increased ignition potential and rate of fire spread).

Mitigation to Reduce the Project's Contribution to Significant Cumulative Effects

Mitigation measures identified for the proposed Project in Sections 3.16.6.1 and 3.16.6.2 would help reduce the contribution made by Alternative 5. No additional mitigation is available to reduce the Project's contribution to significant cumulative effects on wildfire prevention and suppression.

3.16.10 Alternative 6: Maximum Helicopter Construction in the ANF Alternative

3.16.10.1 Direct and Indirect Effects Analysis

Adverse effects on fire prevention and suppression activities (Criterion FIRE1)

Impacts associated with Criterion FIRE1 for Alternative 6 would be similar to impacts associated with this criterion for the proposed Project, as described above in Section 3.16.2. The segments of Alternative 6 that pass through the Tehachapi Fireshed would be identical to the proposed Project, however substantially more helicopter use would be required for construction of Segments 6 and 11 throughout the ANF. The increased use of helicopters could interfere with aerial firefighting operations if construction aircraft were unable to communicate with firefighting air control or if construction aircraft were to remain in use in the event of a fire within the ANF.

Impact F-1 (Construction and/or maintenance activities would reduce the effectiveness of firefighting) would require implementation of the following mitigation measure: F-1 (Prepare wildland traffic control plans). With implementation of the mitigation measure listed above and described in detail in Section 3.16.6.1, Impact F-1 for Alternative 6 would be less than significant (Class II).

Impact F-2 (Presence of new or higher overhead transmission line would reduce the effectiveness of firefighting) would be less than significant (Class III).

Exposure of communities, firefighters, personnel, and/or natural resources to an increased risk of wildfire (Criterion FIRE2)

Impacts associated with Criterion FIRE2 for Alternative 6 would be similar to impacts associated with this criterion for the proposed Project, as described above in Section 3.16.2. The segments of Alternative 6 that pass through the Tehachapi Fireshed would be identical to the proposed Project, and the increased use of helicopter construction would incrementally decrease the impacts associated with increased wildfire risk during the construction phase of the Project as the use of heavy equipment and grading would be required to a lesser degree as a result of fewer roads being constructed. However, emergency access routes would be unduly constrained under Alternative 6. As described above in Section 3.16.6.1, the bridge along Fall Creek Road (along Segment 11) that would provide for the crossing of Tujunga Creek and allow for dual access to Segment 11, is out of service, resulting in only a single point of ground-based ingress and egress for personnel and firefighting crews at this location in the event of a wildfire. Under Alternative 6, this

bridge would not be repaired, resulting in an inadequate number of emergency evacuation routes in the event of an uncontrolled fire in the vicinity of Segment 11.

Impact F-3 (Construction and/or maintenance activities would increase the risk of wildfire) would require implementation of the following mitigation measures: F-3a (Revise SCE's Fire Management Plan for maintenance activities), F-3b (Cease work during Red Flag Warning events), F-3c (Ensure open communication pathways), F-3d (Remove hazards from the work area), F-3e (Comply with non-smoking policy on PHLNHPA lands), F-3f (Share costs for ANF fuelbreak maintenance), and F-3g (Provide transmission line safety training to ANF staff). With implementation of the mitigation measures listed above and described in detail in Section 3.16.6.1, Impact F-3 for Alternative 6 would be less than significant (Class II).

Impact F-4 (Construction and/or maintenance activities would increase the risk of personnel injury or death in the event of fire) would require implementation of the following mitigation measures: F-3b (Cease work during Red Flag Warning events) and F-4 (Prepare and implement Emergency Evacuation Plan). Mitigation Measure F-4 would ensure the safe and expedient evacuation of personnel working in the vicinity of the access-limited portion of Segment 11 nearby the washed-out Tujunga Creek Bridge. With implementation of the mitigation measures listed above and described in detail in Section 3.16.6.1, Impact F-4 would be less than significant (Class II).

Impact F-5 (Presence of the overhead transmission line would increase the risk of wildfire) would be less than significant (Class III).

Increased ignition potential and rate of fire spread (Criterion FIRE3)

Impacts associated with Criterion FIRE3 for Alternative 6 would be incrementally reduced compared with impacts associated with this criterion for the proposed Project, as described above in Section 3.16.2. Although the segments of Alternative 6 that pass through the Tehachapi Fireshed would be identical to the proposed Project, fewer roads would be required to be constructed under Alternative 6, resulting in a reduced potential for invasive weed introductions, and thereby a smaller increase in the ignition potential of wildland fuels and a smaller increase in the rate of fire spread through wildland fuels.

Impact F-6 (Project activities would introduce non-native plants, which would contribute to an increased ignition potential and rate of fire spread) would require implementation of the following mitigation measure: B-3a (Prepare and implement a Weed Control Plan). With implementation of this mitigation measure, which is described in detail in Section 3.4 (Biological Resources), Impact F-6 for Alternative 6 would be less than significant (Class II).

3.16.10.2 Cumulative Effects Analysis

This section addresses potential cumulative effects that would occur as a result of implementation of Alternative 6 (Maximum Helicopter Construction Alternative). This alternative consists of all of the elements of the proposed Project save for the creation of new access roads in the ANF and the increased use of helicopters during the construction phase of the Project. This alternative traverses identical high-risk fuels as the proposed Project route, would require the use of heavy equipment and grading during construction even though it would make use of a different construction technique along Segments 6 and 11, and would result in the same operational capacity as the proposed Project. Based on the substantial similarity of Alternative 6 to the proposed Project, this alternative's contribution to cumulative impacts would be identical to that of the proposed Project.

Geographic Extent

The geographic extent of the cumulative analysis for Alternative 6 is exactly the same as that for Alternative 2 and would include both the low fire risk Project areas and the Tehachapi Fireshed.

Existing Cumulative Conditions

The existing cumulative conditions for Alternative 6 are exactly the same as for Alternative 2, as described in Section 3.16.6.2.

Reasonably Foreseeable Future Projects and Changes

Reasonably foreseeable future projects and changes to the cumulative scenario for Alternative 6 would be exactly the same as Alternative 2, described in Section 3.16.6.2.

Cumulative Impact Analysis

The change in construction technique would not substantially change the contribution that Alternative 6 would make to cumulative effects. Therefore, cumulative impacts for Alternative 6 would be exactly the same as cumulative impacts for Alternative 2, as detailed in Section 3.16.6.2 and described below.

Impacts F-1 (Construction and/or maintenance activities would reduce the effectiveness of firefighting) and F-4 (Construction and/or maintenance activities would increase the risk of personnel injury or death in the event of fire) would not be cumulatively considerable (Class III and No Impact, respectively).

The following impacts would be cumulatively considerable and would combine with similar impacts of other projects to result in impacts that would be significant and unavoidable (Class I): Impact F-2 (Presence of new or higher overhead transmission line would reduce the effectiveness of firefighting), Impact F-3 (Construction and/or maintenance activities would increase the risk of wildfire), Impact F-5 (Presence of the overhead transmission line would increase the risk of wildfire and compromise firefighter safety), and Impact F-6 (Project activities would introduce non-native plants, which would contribute to an increased ignition potential and rate of fire spread).

Mitigation to Reduce the Project's Contribution to Significant Cumulative Effects

Mitigation measures identified for the proposed Project in Sections 3.16.6.1 and 3.16.6.2 would help reduce the contribution made by Alternative 6. No additional mitigation is available to reduce the Project's contribution to significant cumulative effects on wildfire prevention and suppression.

3.16.11 Alternative 7: 66-kV Subtransmission Alternative

3.16.11.1 Direct and Indirect Effects Analysis

Adverse effects on fire prevention and suppression activities (Criterion FIRE1)

Impacts associated with Criterion FIRE1 for Alternative 7 would be the same as impacts associated with this criterion for the proposed Project, as described above in Section 3.16.2. The segments of Alternative 7 that pass through the Tehachapi Fireshed would be identical to the proposed Project, and the rerouted and undergrounded portions of this alternative would be located entirely within the low fire risk Project areas, and would not change the impacts associated with fire prevention and suppression activities.

Impact F-1 (Construction and/or maintenance activities would reduce the effectiveness of firefighting) would require implementation of the following mitigation measure: F-1 (Prepare wildland traffic control

plans). With implementation of the mitigation measure listed above and described in detail in Section 3.16.6.1, Impact F-1 for Alternative 7 would be less than significant (Class II).

Impact F-2 (Presence of new or higher overhead transmission line would reduce the effectiveness of firefighting) would be less than significant (Class III).

Exposure of communities, firefighters, personnel, and/or natural resources to an increased risk of wildfire (Criterion FIRE2)

Impacts associated with Criterion FIRE2 for Alternative 7 would be the same as impacts associated with this criterion for the proposed Project, as described above in Section 3.16.2. The segments of Alternative 7 that pass through the Tehachapi Fireshed would be identical to the proposed Project, and the rerouted and undergrounded portion of this alternative would be located entirely within the low fire risk Project areas, and would not change the impacts associated with increased wildfire risk.

Impact F-3 (Construction and/or maintenance activities would increase the risk of wildfire) would require implementation of the following mitigation measures: F-3a (Revise SCE's Fire Management Plan for maintenance activities), F-3b (Cease work during Red Flag Warning events), F-3c (Ensure open communication pathways), F-3d (Remove hazards from the work area), F-3e (Comply with non-smoking policy on PHLNHPA lands), F-3f (Share costs for ANF fuelbreak maintenance), and F-3g (Provide transmission line safety training to ANF staff). With implementation of the mitigation measures listed above and described in detail in Section 3.16.6.1, Impact F-3 for Alternative 7 would be less than significant (Class II).

Impact F-4 (Construction and/or maintenance activities would increase the risk of personnel injury or death in the event of fire) would require implementation of the following mitigation measures: F-3b (Cease work during Red Flag Warning events), and F-4 (Prepare and implement Emergency Evacuation Plan). With implementation of the mitigation measures listed above and described in detail in Section 3.16.6.1, Impact F-4 would be less than significant (Class II).

Impact F-5 (Presence of the overhead transmission line would increase the risk of wildfire and compromise firefighter safety) would be less than significant (Class III).

Increased ignition potential and rate of fire spread (Criterion FIRE3)

Impacts associated with Criterion FIRE3 for Alternative 7 would be the same as impacts associated with this criterion for the proposed Project, as described above in Section. The segments of Alternative 7 that pass through the Tehachapi Fireshed would be identical to the proposed Project, and the rerouted and undergrounded portion of this alternative would be located entirely within the low fire risk Project areas, and would not change the impacts associated with increased wildfire risk.

Impact F-6 (Project activities would introduce non-native plants, which would contribute to an increased ignition potential and rate of fire spread) would require implementation of the following mitigation measure: B-3a (Prepare and implement a Weed Control Plan). With implementation of this mitigation measure, which is described in detail in Section 3.4 (Biological Resources), Impact F-6 for Alternative 7 would be less than significant (Class II).

3.16.11.2 Cumulative Effects Analysis

This section addresses potential cumulative effects that would occur as a result of implementation of Alternative 7 (66-kV Subtransmission Alternative). This alternative consists of undergrounding and

rerouting short segments of 66-kV subtransmission lines, which would be located entirely in the low fire risk Project area. The remainder of this alternative route would be identical to that of the proposed Project and would, therefore, result in identical impacts as the proposed Project. The rerouted and undergrounded portions of Alternative 7 traverse similarly low fire risk areas as the portion of the proposed Project route they are proposed to replace, would require the same types of construction activities to build, and would result in the same operational capacity as the proposed Project. Based on the substantial similarity of Alternative 7 to the proposed Project, this alternative's contribution to cumulative impacts would be identical to that of the proposed Project.

Geographic Extent

Alternative 7 only differs from the proposed Project for a very small portion of the proposed subtransmission routes in the Cities of Montebello, Pico Rivera, South El Monte, and Industry. These areas are encompassed by same the geographic extent of the cumulative analysis defined for Alternative 2 in Section 3.16.6.2. Therefore, the geographic extent of the cumulative analysis for Alternative 7 is exactly the same as that for Alternative 2 and would include both the low fire risk Project areas and the Tehachapi Fireshed.

Existing Cumulative Conditions

The existing cumulative conditions for Alternative 7 are exactly the same as for Alternative 2, as described in Section 3.16.6.2.

Reasonably Foreseeable Future Projects and Changes

Reasonably foreseeable future projects and changes to the cumulative scenario for Alternative 7 would be exactly the same as Alternative 2, described in Section 3.16.6.2.

Cumulative Impact Analysis

As described in Section 3.16.6.2, impacts associated with Alternative 7 would be cumulatively considerable if they would have the potential to combine with similar impacts of other past, present, or reasonably foreseeable projects. The minor re-route of the proposed Project transmission line associated with Alternative 7 would not affect the proposed Project's contribution to cumulative impacts and therefore, cumulative impacts of Alternative 7 would be exactly the same as cumulative impacts for Alternative 2, as detailed in Section 3.16.6.2 and described below.

Impacts F-1 (Construction and/or maintenance activities would reduce the effectiveness of firefighting) and F-4 (Construction and/or maintenance activities would increase the risk of personnel injury or death in the event of fire) would not be cumulatively considerable (Class III and No Impact, respectively).

The following impacts would be cumulatively considerable and would combine with similar impacts of other projects to result in impacts that would be significant and unavoidable (Class I): Impact F-2 (Presence of new or higher overhead transmission line would reduce the effectiveness of firefighting), Impact F-3 (Construction and/or maintenance activities would increase the risk of wildfire), Impact F-5 (Presence of the overhead transmission line would increase the risk of wildfire and compromise firefighter safety), and Impact F-6 (Project activities would introduce non-native plants, which would contribute to an increased ignition potential and rate of fire spread).

Mitigation to Reduce the Project's Contribution to Significant Cumulative Effects

Mitigation measures identified for the proposed Project in Sections 3.16.6.1 and 3.16.6.2 would help reduce the contribution made by Alternative 7. No additional mitigation is available to reduce the Project's contribution to significant cumulative effects on wildfire prevention and suppression.

3.16.12 Impact Significance Summary

Table 3.16-5 summarizes the direct and indirect environmental impacts of the proposed Project (Alternative 2) and the other alternatives on wildfire prevention and suppression. The direct and indirect effects of the Project and alternatives have been fully described in Sections 3.16.6 through 3.16.11 above. Alternative 1 (No Project/No Action) impacts are fully described in Section 3.16.5; however, since no potential future project information is available an impact significance level for Alternative 1 is not included in the table below.

Table 3.16-5. Summary of Impacts and Mitigation Measures – Wildfire Prevention and Suppression

Impact	Impact Significance								Mitigation Measures
	Alt. 1+	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6	Alt. 7	NFS Lands*	
F-1: Construction and/or maintenance activities would reduce the effectiveness of firefighting.	N/A	Class II	Class II	Class II	Class II	Class II	Class II	Yes	F-1: Prepare wildland traffic control plans
F-2: Presence of new or taller overhead transmission line would reduce the effectiveness of firefighting.	N/A	Class III	Class III	Class I	Class III	Class III	Class III	Yes	None recommended.
F-3: Construction and/or maintenance activities would increase the risk of wildfire.	N/A	Class II	Class II	Class II	Class II	Class II	Class II	Yes	F-3a: Revise SCE's Fire Management Plan for maintenance activities F-3b: Cease work during Red Flag Warning events F-3c: Ensure open communication pathways F-3d: Remove hazards from the work area F-3e: Comply with non-smoking policy on PHLNHPA lands F-3f: Share costs for ANF fuelbreak maintenance F-3g: Provide transmission line safety training to ANF staff
F-4: Construction and/or maintenance activities would increase the risk of personnel injury or death in the event of fire.	N/A	Class II	Class II	Class II	Class II	Class II	Class II	Yes	F-3b: Cease work during Red Flag Warning events F-4: Prepare and implement Emergency Evacuation Plan
F-5: Presence of the overhead transmission line would increase the risk of wildfire.	N/A	Class III	Class III	Class I	Class III	Class III	Class III	Yes	F-5: Share costs for fuelbreak maintenance

Table 3.16-5. Summary of Impacts and Mitigation Measures – Wildfire Prevention and Suppression

Impact	Impact Significance								Mitigation Measures
	Alt. 1+	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6	Alt. 7	NFS Lands*	
F-6: Project activities would introduce non-native plants, which would contribute to an increased ignition potential and rate of fire spread.	N/A	Class II	Class II	Class II	Class II	Class II	Class II	Yes	B-3a: Prepare and implement a Weed Control Plan

N/A = Not Available.

* Indicates whether this impact is applicable to the portion of the Project on National Forest System lands.

+ Potential projects would likely traverse the same geographic regions as either the proposed Project or Alternatives 3 through 7, and subsequently introduce similar types of impacts.

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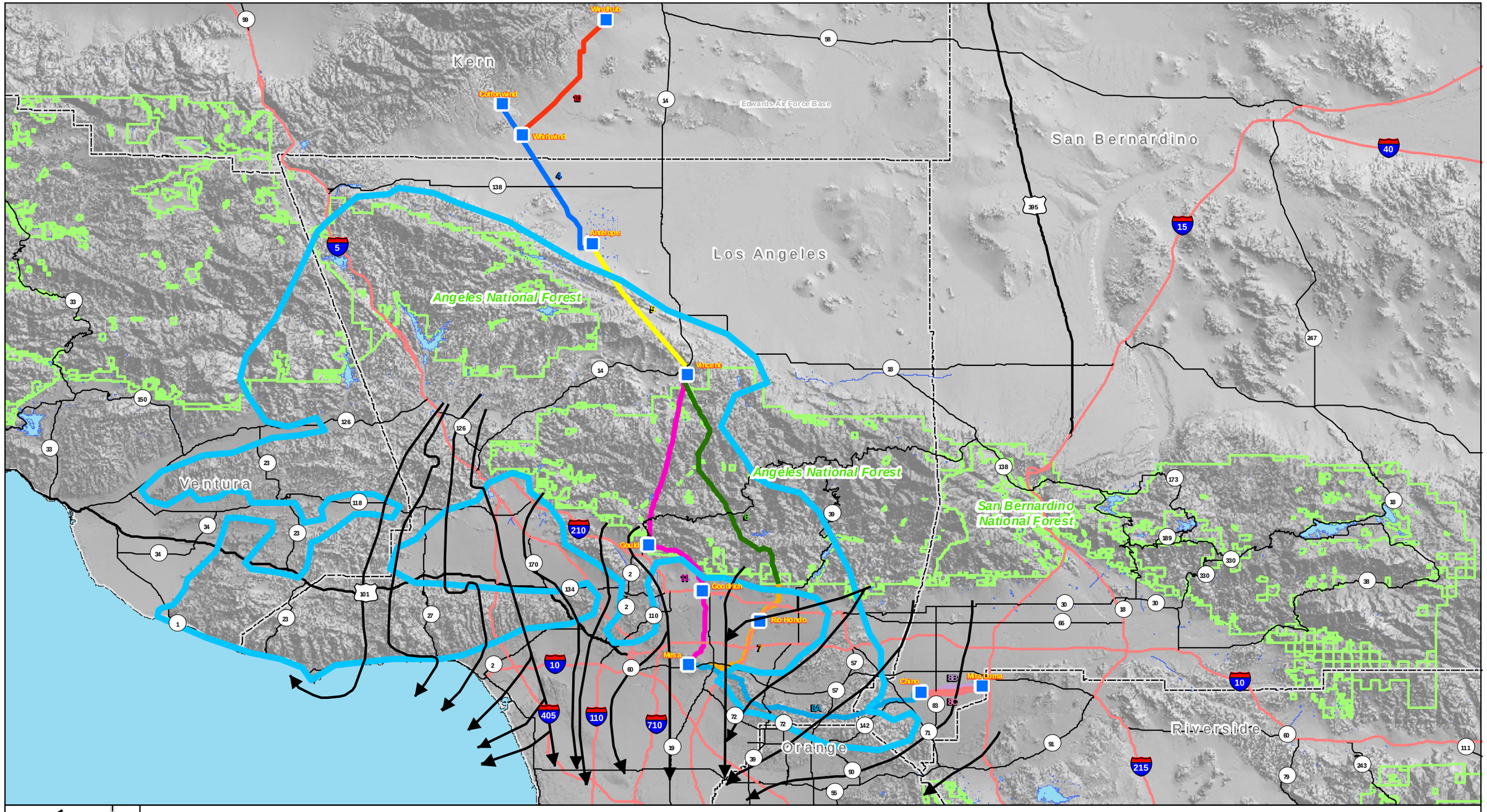

Figure 3.16-1

Tehachapi Fireshed

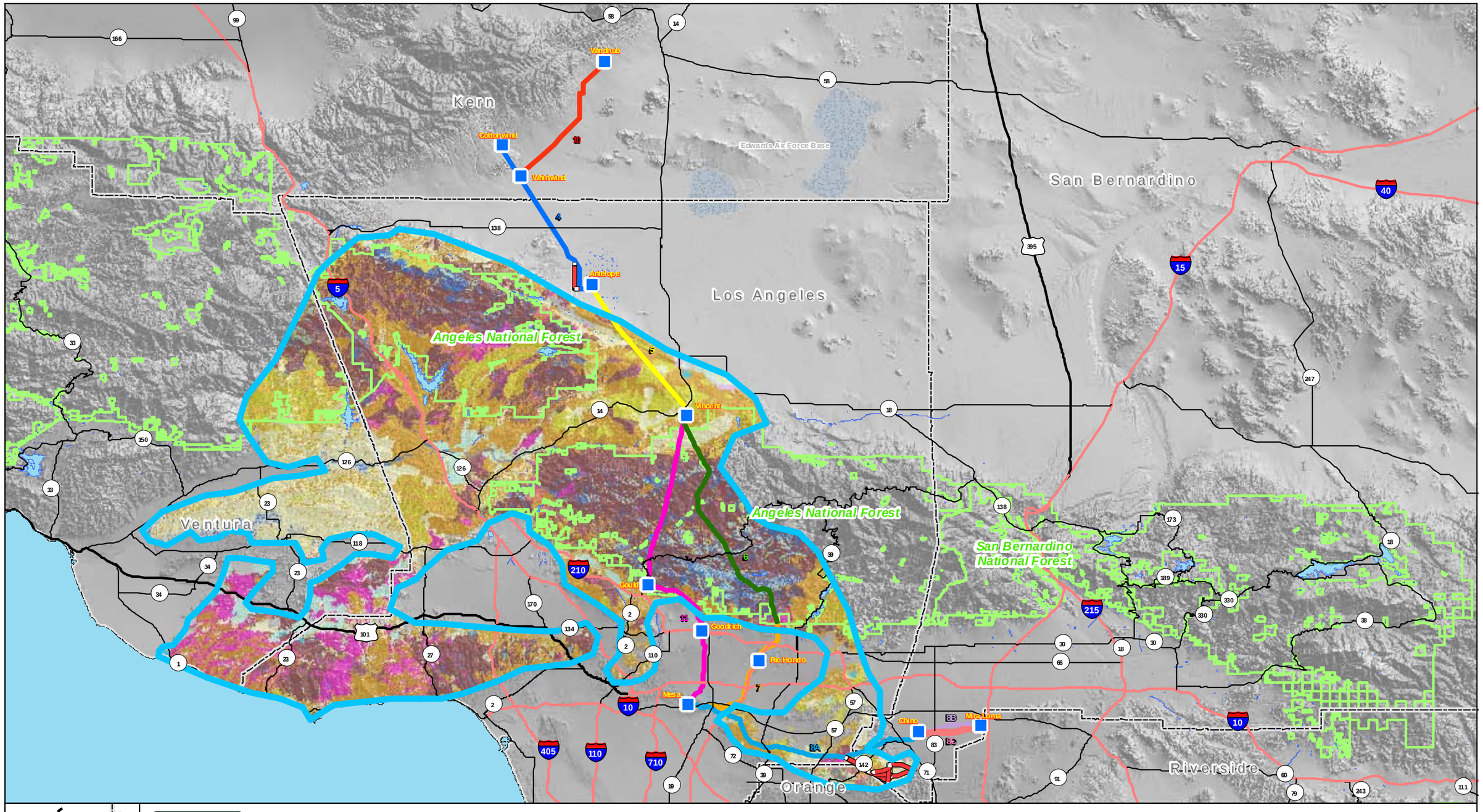

Figure 3.16-2

Tehachapi Fireshed Surface Fuels