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Docket Number:	24-OPT-02
Project Title:	Compass Battery Energy Storage
TN #:	255595
Document Title:	Section 4-17_Wildfire and Fire Protection
Description:	This section describes the potential effects the Project may have as it relates to wildfire and fire protection.
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Submitter Role:	Applicant Consultant
Submission Date:	4/9/2024 12:11:31 PM
Docketed Date:	4/9/2024

4.17 Wildfire and Fire Protection

This section describes the potential effects of the construction, operation, and decommissioning of the Project may have on potential wildfire impacts. The information presented is based on a review of existing resources and applicable laws, regulations, guidelines, and standards. Publicly available sources were reviewed in the development of this section, including, but not limited to, the CAL FIRE Fire and Resource Assessment Program (FRAP) database, the City of San Juan Capistrano General Plan, the City of San Juan Capistrano Municipal Code, and the County of Orange and Orange County Fire Authority Local Hazard Mitigation Plan. Section 4.17.1 describes the existing environment that could be affected, including vegetation and fuels, climate, topography, fire hazard severity zone designation, fire history, and emergency response and fire protection. Section 4.17.2 identifies potential environmental impacts that may result from Project construction, operation, maintenance, and decommissioning. Section 4.17.3 discusses cumulative effects. Section 4.17.4 identifies mitigation measures that should be considered during Project construction, operation, maintenance, and decommissioning. 4.17.5 provides an overview of the regulatory setting related to wildfire and presents laws, ordinances, regulations, and standards (LORS) applicable to wildfire. Section 4.17.6 identifies regulatory agency contacts and Section 4.17.7 describes any permits required for the Project related to wildfire resources. Section 4.17.8 provides references used to develop this section.

Analysis for the Project is based in-part on information from the Fire Protection Technical Report that has also been prepared to clarify the content and reliability of lithium-iron phosphate (LFP) systems, analyze fire behavior and wildfire risk and provide recommendations based on the fire environment at the Project site (see Appendix 4.17A).

4.17.1 Affected Environment

4.17.1.1 Regional Setting

The Project is located in the southern portion of Orange County, California, in the northwestern portion of the City of San Juan Capistrano.

Regionally, the Project Area occurs within a valley between the Santa Ana Mountains to the northeast and the Laguna Woods to the west, west of the Peninsular Range and approximately 5 miles from the Pacific Ocean. Interstate 5 and State Route 73 are major transportation corridors in the region, and the Project is immediately west of Interstate 5. Oso Creek, which originates in the Cleveland National Forest and travels southwest through southern Orange County before connecting with the Pacific Ocean, is located to the immediate east of the Project. The Project area is located on the San Juan Capistrano, California, U.S. Geological Survey 7.5-minute map on Sections 25, 26, 35, and 36 of Township 75, Range 8 West.

The 12.4-acre development area for the BESS facility would occur within a larger 40.8-acre parcel. The Project area currently consists of a mixture of undeveloped and developed lands. Mixed low intensity uses are located on the northern side of the project site associated with Saddleback Church Rancho Capistrano; it contains dirt roads and light, non-commercial agricultural activity combined with church buildings for various programs. Besides a few small dirt trails and roads, the southern portion of the project site is undeveloped, with no sign of recent agricultural activity. Oso Creek lies at the bottom of nearby steep slopes; outside of these steep areas, the Project Area is flat to gently sloping.

Land use surrounding the Project consists of residential development to the north, east, and west. Interstate 5 occurs to the east, separating the Project Area from other developed areas. Residential development to the west is

denser than the residential development to the east. Several schools, churches, and agricultural areas are scattered in areas surrounding the Project Area. Several creeks, such as Oso Creek, Arroyo Trabuco, and Horno Creek, occur in the vicinity that eventually drain to the Pacific Ocean to the south.

4.17.1.2 Vegetation/Fuels

Variations in vegetative cover type and species composition have a direct effect on fire behavior. Some plant communities and their associated plant species have increased flammability based on plant physiology (resin content), biological function (flowering, retention of dead plant material), physical structure (bark thickness, leaf size, branching patterns), and overall fuel loading. For example, grass-dominated plant communities become seasonally prone to ignition and produce lower intensity, higher spread rate fires. As described in Section 4.2, Biological Resources, vegetation communities on the proposed Project site are dominated by agricultural land consisting of non-native annual grasses. The Project area also consists of Disturbed Habitat and Urban / Developed Areas. Vegetation communities and land covers observed in the Project Area are depicted on Figure 4.2-8, Vegetation Communities / Land Cover Types. Additional vegetation communities found on the project site include the following: soft scrub / mixed chaparral, coast live oak, Baccharis (riparian), Fremont cottonwood/mixed willow (*Populus fremontii-Salix laevigata*) Riparian Mixed Hardwood Woodland, and California Sagebrush (*Artemisia californica*) Scrub Occupied by Coastal California Gnatcatcher (*Polioptila californica*).

Annual grasslands can sustain the spread of wildfire after the grass has cured, which typically occurs around the onset of fire season, April to October, but may occur earlier or later in the year based on conditions during the winter and spring. Cured annual grasslands contain a nearly continuous expanses of grass only broken up by roads, waterways, or rocky areas. Since cured grass is a lightweight fuel, meaning it has a high surface area to mass ratio, it comes into equilibrium with the moisture in the atmosphere relatively quickly (within one hour) and is available to burn when the moisture in the air (relative humidity) drops below 15% (Livingston and Varner 2016) which can occur during the hottest and driest periods of the day throughout the fire season. This availability to burn combined with the continuous vegetation can sustain the growth of fast moving, large fires. However, it is important to identify that the growth of these fires are significantly influenced by the time of day or changes in weather conditions when relative humidity increases. Fire activity can dramatically decrease during the night or during periods when the relative humidity rises above 15%.

4.17.1.3 Climate

Climate in the Project area is characterized as a hot-summer Mediterranean climate with cool, wet winters and hot, dry summers. Temperatures in the Project area range between average lows of 49 °F during the coldest months to average highs of 78 °F during the summer months. From August to October, maximum temperatures may be around 85 °F. Most of the precipitation falls between November and April. Winds in the proposed Project area are predominantly out of the west-southwest for most of the year. Average wind speeds vary between 3 and 10 mph (Weather Spark 2024). The Project area may also be subject to Santa Ana winds, which are seasonal hot and dry winds that can dry out vegetation, make vegetation more fire prone, and exacerbate wildfire risks.

Weather conditions conducive to the ignition and spread of a wildfire occur on average from March to October. During this period, the window when the grass at the proposed Project site is available to burn varies. In March, there may be a relatively short window during the day when temperatures are high enough and relative humidities low enough that fire can spread in the grass. This window increases as the year progresses, peaking in July and August during the hottest and driest periods of the year. As the year progresses, this window will decrease again as the temperature decreases and relative humidity increases.

4.17.1.4 Topography

Topography influences fire risk by affecting fire spread rates. Typically, steep terrain results in faster fire spread up slope and slower spread down slope. Terrain that forms a funneling effect—such as chimneys, chutes, or saddles—on the landscape can result in especially intense fire behavior, including faster spread and higher intensity. Conversely, flat terrain tends to have little effect on fire spread, resulting in fires that are driven by vegetation and wind.

The terrain for the Project site is relatively flat, as elevation ranges from approximately 165 to 270 feet above mean sea level. The Project site is bounded from the west and east by steep slopes, and the aspects of both of these slopes are respectively facing east and west.

4.17.1.5 Fire Hazard Severity Zone Designation

CAL FIRE's FRAP database includes map data documenting areas of significant fire hazards in the state. These maps categorize geographic areas of the state into different fire hazard severity zones (FHSZs). The classifications include Moderate, High, and Very High FHSZs. CAL FIRE uses FHSZs to classify anticipated fire-related hazards for the entire state, and includes classifications for State Responsibility Areas, Local Responsibility Areas, and Federal Responsibility Areas. Fire hazard severity classifications consider vegetation, topography, weather, crown fire production, and ember production and movement.

The proposed Project site and the surrounding area are not located within a State Responsibility Area (SRA) or Local Responsibility Area (LRA) Very High Fire Hazard Severity Zone. The closest SRA/VHFHSZ to the east is across the I-5 Freeway in the Mission Viejo area, approximately one mile from the Project site. To the west the closest SRA/VHFHSZ is west of Laguna Niguel approximately 2.5 miles from the Project site (Figure 4.17-1, State Responsibility Areas, and Figure 4.17-2, Fire Hazard Severity Zones). The closest VHFHSZ within LRA is located approximately 1.8 miles southeast of the Project site.

The California Public Utilities Commission (CPUC) has published High Fire Threat District (HFTD) maps. The HFTD maps show areas where there is an increased risk (including likelihood and potential impacts on people and property) for utility associated wildfires (CPUC 2023). Figure 4.17-3, CPUC Fire Threat Tiers, shows that the Project site and the surrounding area are not located within a Tier 2 (Elevated) or Tier 3 (Extreme) HFTD. The closest HFTD is within Tier 2 approximately 0.5-mile to the east and Tier 2 and Tier 3 approximately two miles to the west.

4.17.1.6 Fire History

Fire history is an important component of evaluating how prone to ignition and fire spread a landscape is. Fire history data provides valuable information regarding fire spread, fire frequency, most vulnerable areas, and notable ignition sources, amongst others. In turn, this understanding of why fires occur in an area and how they typically spread can then be used for pre-planning. This fire history analysis uses the FRAP database. FRAP summarizes fire perimeter data dating to the late 1800s, but is incomplete since it only includes fires over 10 acres in size and has incomplete perimeter data, especially before the mid-20th century (Syphard and Keeley 2016). However, the data does provide a summary of recorded fires and can be used to show whether large fires have occurred in the proposed Project area, which indicates whether they may be possible in the future.

According to available data from the CAL FIRE FRAP records, there have been 40 fires within five miles of the proposed Project site but no fires have burned onto the development footprint of the BESS facility at the Project site (CAL FIRE 2022). Twenty-three of those 40 fires have occurred within the past 10 years, from 2016 to 2022.

The CPUC collects and publishes data on utility-caused fires. Figure 4.17-4, Fire History, shows a map of the recorded fire perimeters within five miles of the proposed Project site.

4.17.1.7 Emergency Response and Fire Protection

The proposed Project site is located on LRA lands where the local government has the primary responsibility for fire suppression and emergency response. OCFA is responsible for fire suppression and prevention and would be the fire authority having jurisdiction. All fire departments within the County provide mutual aid to one another, responding to calls regardless of jurisdictional boundaries (OCFA 2022).

The nearest fire station is OCFA Station #9, located approximately 1.6 miles north of the Project site (maximum travel distance is approximately 2.5 miles). Table 4.17-1 summarizes the location, equipment, staffing levels, maximum travel distance, and estimated travel time for OCFA Station #9 and the next nearest fire stations (OCFA 2024).

Table 4.17-1 Closest Emergency Response Station Summary¹

Station Name	Location	Apparatus	Daily Staffing	Maximum Travel Distance	Travel Time
OCFA Station #9	9 Shops Blvd., Mission Viejo, CA 92691	Medic Engine 9, Truck 9, Swift Water 9	2 Fire Captains, 2 Fire Apparatus Engineers, 4 Firefighters	2.5 miles	4.9 minutes
OCFA Station #7	31865 Del Obispo St, San Juan Capistrano, CA 92675	Engine 7, Engine 307*, Medic 7, Patrol 7, Water Tender 7	1 Fire Captain, 1 Fire Apparatus Engineer, 3 Firefighters, Reserve Firefighters	2.9 miles	5.6 minutes
OCFA Station #39	24241 Avila Rd. Laguna Niguel, CA 92677	Medic Engine 39, Engine 339*	1 Fire Captain, 1 Fire Apparatus Engineer, 2 Firefighters	4 miles	7.5 minutes
OCFA Station #49	31461 Street of the Golden Lantern Laguna Niguel, CA 92677	1 Fire Captain, 1 Fire Apparatus Engineer, 2 Firefighters	Medic Truck 49	4.1 miles	7.6 minutes
OCFA Station # 5	23600 Pacific Island Dr. Laguna Niguel, CA 92677	Medic Engine 5, Engine 105	1 Fire Captain, 1 Fire Apparatus Engineer, 2 Firefighters	4.3 miles	8 minutes

¹ Travel distances are derived from Google road data while travel times are calculated using response speeds of 35 mph, consistent with nationally recognized National Fire Protection Association (NFPA) standard 1710 and Insurance Services Office (ISO) Public Protection Classification Program's Response Time Standard formula ($\text{Time} = 0.65 + 1.7(\text{Distance})$). The ISO response travel time formula discounts speed for intersections, vehicle deceleration, and acceleration and does not include turnout time.

* = cross-staffed by on-duty personnel (OCFA 2024)

For the initial full alarm, which consists of personnel, equipment and resources dispatched upon notification of a structure fire, the National Fire Protection Association (NFPA) Standard 1710 sets a total response objective of 8 minutes for low and medium hazard incidents and 10 minutes and 10 seconds for high hazard / high-rise incidents (NFPA 1710, 2020). The San Juan Capistrano General Plan Public Services and Utilities Element notes that OFCA has adopted the following service standards for the provision of fire protection within San Juan Capistrano (City of San Juan Capistrano, 1999):

- First-in fire engine should arrive on-scene to both medical aids and fire within five (5) minutes 80 percent of the time
- First-in truck company should arrive on-scene to fires within 10 minutes 80 percent of the time
- First-in paramedic companies should arrive on-scene at all medical aids within eight (8) minutes 90 percent of the time.

The OCFA 2022-2023 Adopted Budget notes that 80% of emergency calls had a response time of 8 minutes and 16 seconds, and that 90% of emergency calls had a response time of 9 minutes and 54 seconds. While the response times noted by the OCFA fulfill the second and third service standard bullets, it should also be noted that these service standards were last updated in 1999.

4.17.2 Impact Analysis

The following subsections cover potential wildfire related impacts associated with the construction and operation of the proposed Project.

4.17.2.1 Methodology

To identify and assess potential impacts related to wildfire, Dudek reviewed publicly available information from CAL FIRE, City of San Juan Capistrano, OCFA, Fire Protection Technical Report prepared by Dudek (Appendix 4.17A), and information provided by the Applicant.

4.17.2.2 Impact Evaluation Criteria

The potential for impact related to hazardous material were evaluated using the criteria described in Appendix G of the California Environmental Quality Act (CEQA) Guidelines (sections 15000-15387, Title 13, California Code of Regulations, Chapter 3). A Project would have a significant environmental impact in terms of wildfire if it is located in or near SRAs or lands classified as VHFHSZs and would:

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

4.17.2.3 Impact Evaluation

4.17.2.3.1 Emergency Response

The 2020 County of Orange and Orange County Fire Authority Local Hazard Mitigation Plan (LHMP) was developed collaboratively with emergency management staff, County and external partners, and Orange County residents. The mission of the LHMP is to promote sound public policy designed to protect residents, critical facilities, infrastructure, key resources, private property, and the environment from natural hazards in unincorporated areas, fire hazards in the Fire Authority service area, and County and OCFA owned facilities.

The City has also identified several evacuation routes for emergency access. Government Code 65302(g) requires communities to identify residential developments in any hazard area identified in the safety element that does not have at least two emergency evacuation routes. Per the evacuation route maps in the Safety Element of the General Plan, Camino Capistrano is identified as an evacuation routes (City of San Juan Capistrano 2022).

Primary access roads on-site would be a minimum of 20 feet in width. All on-site roads would consist of aggregate base in compliance with OCFA requirements. Activities associated with the Project would not impede the free movement of emergency response vehicles. Construction vehicles would access the Project site(s) from I-5, which would provide connection to local access roads (i.e., Camino Capistrano). During construction, materials would be placed within the Project boundaries adjacent to the current phase of construction in order to avoid any access conflicts in case of emergency evacuations.

Activities associated with the project would not impede existing emergency response plans or evacuation routes for the project site and/or other land uses in the project vicinity. The Project would not result in any closures of I-5. All secondary roads, such as Camino Capistrano, would be kept open for public use during project construction and operations. All vehicles and stationary equipment would be staged off public roads and would not block or restrict emergency access routes.

The Project would adhere to all safety practices addressed in the LHMP, and BMPs and training as described in Section 4.5.4.1, Construction Phase, and Section 4.16, Worker Health and Safety would be implemented. When the Project is in operation, the Project would not include on-site personnel on a daily basis, which results in zero or a very low number of vehicles that would be evacuating the area during a wildfire event. Emergency response plans may need to be updated to document the presence of the BESS at this location along with basic BESS firefighting strategies, which are already part of the local fire authority's response training and preparedness for other BESS facilities within its jurisdiction. Additionally, travel time to the proposed Project site for the first responding units from OCFA Station #9 is not expected to exceed 5 minutes, and the Project site is within the 8 minute and 10-minute response periods set by NFPA 1710. Therefore, the Project would not be expected to impair local emergency response or evacuation plans.

In addition, the project will prepare an individual detailed Emergency Response Plan (ERP) in coordination with the OCFA and other emergency responders prior to the commencement of construction. This ERP will be based on a Hazard Mitigation Analysis (HMA) prepared by experts and tailored to the specific BESS equipment to ensure prevention and management practices are included in the ERP. This ERP will include and exceed all recommendations included in SB 38, recent California legislation requiring the preparation of ERP's for BESS projects.

4.17.2.3.2 Wildfire Risk and Pollutant Containment in a Wildfire Event

Construction and Decommissioning

The construction and decommissioning phases of the proposed Project could contribute to wildfire risk due to the potential for sparks and accidental ignitions during construction activities. Construction and decommissioning activities would introduce potential ignition sources to the proposed Project site, including the use of heavy machinery, vehicles, welding activities or other hot work. The Project would be subject to OCFA requirements, such as limiting or ceasing construction and decommissioning work during high-wind weather events and implementing ongoing fire patrols during fire season. Additionally, pre-construction site preparation, including vegetation management would reduce the wildfire hazards on site. Vegetation management would reduce the risk of wildfire spreading from within the active construction areas to offside fuel beds. Provided site improvements and vegetation management requirements are appropriately implemented and approved by the OCFA, construction and decommissioning activities are not anticipated to exacerbate wildfire risk to adjacent areas or such that proposed Project workers would be exposed to the uncontrolled spread of a wildfire or pollutant concentrations from a wildfire.

Operation

The proposed BESS facility includes the installation of an approximately 250MW BESS, related components, and a loop-in transmission line connecting the BESS facility to an existing SDG&E transmission line. The proposed Project site currently is dominated by California annual grassland composed of non-native grasses that could serve as potential fuel sources. Existing slopes west of the Project site and open space south of the Project site present areas of potential wildfire hazard. Existing potential ignition sources near the Project site include vehicles traveling along Interstate 5, Camino Capistrano, the nearby railroad line, and accidental or arson related ignitions. The power lines, switchyard, and related infrastructure could contribute to the risk of wildfire ignition.

As mentioned in the Project description and as detailed in the Fire Protection Technical attached herein at Appendix 4.17A, the proposed BESS facility would use a lithium-iron phosphate technology, which would be NFPA 855 Code compliant, and compliant with all applicable UL testing, and include built-in failsafe and cooling systems designed to prevent thermal runaway and the spread of fire. Included in the BESS are the fire suppression system (FSS) and the heating, ventilation, and air conditioning (HVAC) system. The FSS system is composed of smoke detectors, gas detectors and aerosols, which serve the primary purpose of preventing fire spread in time should any open flame or gas signal appear in the battery system. The HVAC system would maintain the temperature of the battery system within the allowable operating temperature range. An auxiliary distribution box would also be included which provides auxiliary power for the whole control system and liquid cooling system. In addition, the site would include infra-red sensors and visual monitoring by the operations team as part of its Hazard Mitigation Analysis and Emergency Response Plan. The SCADA system and grid-connected alarm connections would be triggered by any malfunction resulting in a change in power production well in advance of a thermal incident. The combination of these features would ensure the BESS facility would be in compliance with California Fire Code (CFC) Sections 1207.8.1 through 1-1207.8.3.

The Fire Protection Technical Report (Appendix 4.17A) conducted a fire scenario assessment examining what wildfire may look like approaching the project site from the north and south. Even with the most extreme conditions in mind for existing site conditions, the level terrain and maintained vegetation tempers the anticipated wildfire behavior. Modeling of post-development conditions with fuel modification recommendations integrated indicates a reduction in flame length and intensity. See Appendix 4.17A, Fire Protection Technical Report, Figure 4.17-5, Behave Plus Analysis Map, and Figure 4.17-6, Fuel Modification Plan, for additional fire behavior modeling information.

The vegetation management requirements established by Section 1207.5.7 of the CFC are that areas within 10 feet on each side of outdoor energy storage systems shall be cleared of combustible vegetation and other combustible growth. The code does permit single specimens of trees, shrubbery, or cultivated ground cover such as green grass, ivy, succulents, or similar plants used as ground cover provided that they do not form a means of readily transmitting fire. Additionally, Section 1207.8.3 of the CFC requires that the energy storage systems would be separated by a minimum of 10 feet from lot lines, public ways, buildings, stored combustible materials, hazardous materials, high-piled stock, and other exposure hazards. CFC section 1207.8.1 requires remote outdoor installations to be located more than 100 feet from the hazards previously mentioned. Similarly, CFC Section 1207.5.8 requires energy storage systems to be separated from any means of egress by at least 10 feet, but this can be reduced if large-scale fire testing in accordance with UL 9540A is completed. The proposed project design complies with and substantially exceeds the requirements.

Vegetation management would also occur around power poles and powerlines. California Public Resources Code 4292 and 4293 requires that a minimum of 10 feet of vegetation clearance must be maintained around every electrical pole or tower and that the appropriate clearance be maintained around electrical transmission and distribution lines for the operating voltage. Given the grass dominated vegetation and lack of sizeable trees in the area of the loop-in transmission line, there are not anticipated to be any vegetation clearance issues related to the transmission lines.

During operations, the facilities would be remotely operated year-round, lessening the risk that project occupants may be exposed to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire during maintenance activities. In the event that a wildfire may occur, on site technicians would be instructed to follow evacuation procedures outlined in the Operations Health and Safety Program. Additional details for this program are in Section 4.16 Worker Health and Safety, 4.16.1.3.2 Operations Health and Safety Program. Additionally, potential pollutants generated in the event of a wildfire would be contained within the on-site battery enclosures. The enclosures would be NFPA Standard 855 compliant and would be equipped with a fire extinguishing system to ensure fire safety. If potential pollutants are able to escape the enclosures, the non-combustible perimeter wall will serve as an additional method of containment. Therefore, it is not anticipated that project occupants would be exposed to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire due to slope, prevailing winds, and other factors while on-site during operations.

Summary

Given the region's fire history, it can be anticipated that periodic wildfires will occur in the open space areas of City of San Juan Capistrano, with the vegetated areas surrounding the proposed Project site being no exception. Given the climatic, vegetative, topographic characteristics, and local fire history of the area, the proposed Project site, once developed, could be subject to periodic wildfires that may burn onto or spot into the site.

As with any development in this location, the proposed Project would introduce potential ignition sources to the site. However, all new BESS components would be constructed to City of San Juan Capistrano Fire Code, NFPA 855, and 2022 CFC standards (or the current edition). The proposed Project would implement vegetation management throughout the BESS facility. Given the monitoring system will shut off the unit should it sense any abnormal conditions, a thermal runaway event is highly unlikely, but should it occur, the fire protection and prevention equipment will either extinguish the fire or isolate the event to a single enclosure with limited range. The UL 9540A testing ensures that any fire from an individual BESS would not spread to adjacent units. (It is notable that in the few commercial battery storage thermal incidents that have occurred, fire has not spread beyond the individual cabinet affected). Combined with the planned vegetation management, setbacks and masonry

perimeter walls, there would be a low likelihood of a fire spreading from a BESS enclosure offsite. Fires from off-site would not have continuous fuels across this site and would therefore be expected to burn around and/or over the site via spotting. Burning vegetation embers may land on proposed Project components but are not likely to result in ignition based on ember decay rates the non-combustible and ignition-resistant materials that will be used on site, and the planned grading and vegetation management. As such, accidental fires within the maintained landscape of the Project would have limited ability to ignite or spread. It should be noted that while these standards would provide a high level of protection for the proposed Project, there is no guarantee that compliance with these standards would prevent damage or destruction of BESS components by fire in all cases.

Given the fire protection systems of BESS enclosures, the UL 9540A testing compliance, and the vegetation management and setbacks, the proposed Project, once developed, is not anticipated to facilitate wildfire spread. In addition, the Project is designed to reduce projected flame lengths to levels that would be manageable by firefighting resources for protecting the site's components. This will be detailed in the ERP to be prepared for the project in collaboration with the OCFA. Additional recommendations outlined in the Fire Protection Technical Report that would further reduce wildfire risk include:

- 20' FMZ – entire area within walls to be void of vegetative fuel – gravel or similar surface.
- 10' tall perimeter precast, decorative concrete walls to OCFA satisfaction
- Landscaped areas on the outside of the perimeter wall will be limited to fire-resistant landscaping consistent with fuel modification zone requirements
- Maintain FMZs twice-yearly or more as needed

4.17.2.3.3 Wildfire Risk of Associated Infrastructure

Roads

The Project would involve improvement of the access road off Camino Capistrano to the Project site. The added human activity and vehicle activity would introduce new potential ignition sources to the Project area during construction. However, vegetation would be removed where paved and gravel roads would be constructed and where fill would be placed from grading operations. Construction of connections to existing roadways would provide increased accessibility for emergency services to the proposed Project site. Further, site access, including road widths and connectivity, would comply with compliance with the OCFA and SDG&E standards. Additionally, all construction related vehicles would be required to have equipment capable of suppressing construction-related ignitions. The proposed Project ownership would be responsible for long term funding and maintenance of private roads and fire protection systems. Therefore, installation and maintenance of site access roads in accordance with all relevant development codes is not anticipated to exacerbate wildfire risk.

BESS

While development of a battery energy storage system and the associated loop-in transmission line would introduce new potential ignition sources to the proposed Project site, the site would be largely converted from readily ignitable fuels to BESS enclosures and associated components on graded and maintained areas. The proposed Project would be developed according to all existing building codes and fire codes, as indicated in the City of San Juan Capistrano Fire Code (City of San Juan Capistrano Municipal Code, Section 8-10.01), which adopts the 2022 California Fire Code, including Chapter 12 Section 1207 Electrical Energy Storage Systems and includes information for clearances and vegetation control. These codes include provisions for fuel modification and defensible space for

fire prevention and safety. The BESS cabinets contain extensive fire prevention and abatement equipment. Additional fire prevention and management systems are included in the project design, including infrared and video monitoring. Management of these cabinets in a thermal incident will be addressed in detail in the Hazard Mitigation Analysis (HMA) and Emergency Response Plan (ERP) prepared for the project, which incorporates and exceeds all of the recommendation contained in SB 38, recent legislation requiring emergency response plans for BESS.

Vegetation Management

The proposed BESS facility would be maintained free from combustible vegetation to allow for fire protection mitigation and defensible space consistent with local regulation. This would surpass the minimum of 10 feet around BESS enclosures stated in the CFC. Additionally, a minimum of 10 feet of vegetation clearance will be provided around all power poles/towers as well as powerlines associated with the proposed project and associated loop-in transmission line. Adequate vegetation management should be performed before bringing any combustible materials on to the project site, and vegetation management activities would occur prior to the start of construction and throughout the life of the Project. Consequently, the associated vegetation management activities would not exacerbate fire risk, provided that fuel modification and other vegetation management activities are implemented and enforced according to OCFA, county, and state requirements. The proposed vegetation management activities would reduce the fire risk by thinning or removing combustible vegetation.

Summary

Installation and maintenance of project roads, fuel modification, and other associated infrastructure would not exacerbate wildfire risks, provided that the appropriate fire prevention, access, and vegetation management activities are implemented as required by the OCFA, County code, state requirements. The roads, compliant battery energy storage system, loop-in transmission line, and vegetation management would contribute to reducing or mitigating the risk of wildfire. Therefore, the installation and maintenance of associated infrastructure is not anticipated to exacerbate wildfire risk.

4.17.2.3.4 Post-fire Slope Instability, Flooding or Landsliding

Vegetation plays a vital role in maintaining existing drainage patterns and the stability of soils. Plant roots stabilize the soil, and leaves, stems and branches intercept and slow water, allowing it to percolate into the soil more effectively. Removal of surface vegetation reduces the ability of the soil surface to absorb rainwater and can allow for increased runoff that may include large amounts of debris or mudflows. If hydrophobic conditions exist post-fire, the rate of surface water runoff is increased as water percolation into the soil is reduced (Moench and Fusaro 2012). The potential for surface runoff and debris flows therefore increases for areas recently burned by large wildfires (Moench and Fusaro 2012). As previously discussed and shown in Figure 4.17-4, Fire History, no fires have burned onto the proposed Project site, but multiple wildfires have burned within a 5 mile radius of the proposed Project site. Fires that have burned close to the Project site include the 1979 Niguel Fire, 1979 Ortega Fire, 2016 San Juan Fire, and a small unnamed 2017 fire that occurred on the other side of I-5. The Project site will be located on gravel-covered level land immediately adjacent to Oso Creek, hence there are no structures or people downslope of the proposed Project. There is a 40-foot elevation difference from the Project site to the stream bed below with a bluff in between.

The potential for landslides, runoff, flooding, drainage changes and water quality improvements has been analyzed in Section 4.15, Water Resources, and Section 4.4, Geological Hazards and Resources. While the Project site is not located in SRA or LRA FHSZ and is located on relatively flat land, the Project site is approximately 600 feet east

from where the uphill slopes begin. The Fire Protection Technical Report notes that while a flaming front is possible from the due west approaching the Project in a downhill, backing fire, it is unlikely (Appendix 4.17A). The USGS Post Wildfire Debris Flow Hazard Assessment Viewer uses geospatial data related to basin morphometry, burn severity, soil properties, and rainfall characteristics to estimate the probability and volume of debris flows that may occur in response to a design storm (USGS 2023). The USGS publishes the results of this assessment online on a map viewer that shows recent burn perimeters, and the hazard and the likelihood of a debris flow within the fire perimeter. The likelihood of a debris flow in the Project area is categorized in the 0-20% likelihood in response to a design storm having a 15-minute peak rainfall intensity of 24 mm/h occurring immediately after a wildfire (USGS 2023). Additionally, according to Figure 2-3 in the Landslide and Liquefaction Zones of the Safety Element of the City of San Juan Capistrano General Plan, the proposed Project site is located in an area outside of the City's landslide zone. As described in Section 4.15, Water Resources, the overall site drainage patterns would generally remain the same as existing drainage patterns. Section 4.15 also notes that while a portion of the Project's offsite access road would be located within a Federal Emergency Management Agency (FEMA) 100-year floodplain area, the Project site (BESS area) does not overlap with a FEMA 100-year floodplain area and would not be subject to inundation by a 1% annual chance flood. No wildfires have burned on the site or on the larger parcel that contains the Project site. Any post-fire related runoff or drainage impacts from the project site vicinity would likely follow site stormwater and drainage infrastructure that reduces the natural drainage patterns and flow into Oso Creek. It is unlikely that any people or structures would be impacted by the limited contribution of runoff from the project site vicinity as the creek flows unimpeded south through the cities of San Juan Capistrano and Dana Point into the Pacific Ocean. Further, as discussed in Section 4.4, Geological Hazards and Resources, based on a review of California Geological Survey mapping, the southwest portion of the Project site is partially located within landslide class VII designated area, which is not considered a very high landslide susceptibility area; the remainder of the site is designated in landslide class 0.

In summary, there is not a significant risk of landslides and flooding within the proposed Project area. Therefore, the Project is not anticipated to not expose people or structures to downslope or downstream flooding or landslides as a result of runoff, post-fire slope instability, or drainage changes.

4.17.3 Cumulative Effects

Cumulative projects that would have the potential to be considered in a cumulative context with the proposed Project's incremental contribution, and that are included in the analysis of cumulative impacts relative to wildfire, are identified in Chapter 4, Environmental Analysis, Table 4-1, Cumulative Projects. Cumulative projects were chosen based on proximity to the proposed project. Other projects include residential, commercial, and industrial development as well as similar energy projects. The majority of the cumulative projects would involve both construction and operational activities.

As described above, the proposed Project Site is not located in SRA or LRA FHSZ. As with any new project in this location, the proposed Project, combined with other projects in the region, would increase the activities and potential ignition sources in the area, which may increase the potential of a wildfire and increase the number of people and structures exposed to risk of loss, injury, or death from wildfires. Individual projects located within the City of San Juan Capistrano and surrounding areas are required to comply with their applicable County/City fire and building codes, which must be at least as stringent as state codes and have been increasingly strengthened as a result of severe wildfires that have occurred in the last two decades. While the Project is not located in an SRA or Very High FHSZ, the Project will prepare a Fire Protection Plan (FPP) as part of its ERP, using qualified fire safety

specialists to recommend prevention and management practices. Other projects in the vicinity that are located in those zones will need to prepare Fire Protection Plans with extensive analyses as well.

CFC 403.10.6 requires a fire safety and evacuation plan be prepared and maintained for occupancies that involve activities for the research and development, testing, manufacturing, handling, storage of lithium-ion batteries or lithium metal batteries or the repair or servicing of vehicles powered by lithium-ion batteries or lithium metal batteries. This would be the case for most systems as lithium is the most efficient and economically viable of available technologies. This would mean that other energy storage projects would be required to prepare such plans which would aid in highlighting any possible hazards associated with the projects and incorporate any necessary mitigations to reduce those hazards to acceptable levels. Since each project would be expected to adhere to all applicable regulations and, if within an area presenting a fire hazard, would likely be required to prepare a document analyzing the wildfire risks associated with the project, the cumulative effect of the Project and other nearby projects is not considered to exacerbate wildfire risks or expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire due to slope, prevailing winds, or other factors. Therefore, the cumulative effect of the Project and nearby projects on the spread of wildfire is not anticipated to exacerbate wildfire risk.

The proposed Project has associated infrastructure that, combined with the associated infrastructure of other projects in the region, could result in an increase in potential ignition sources in the area, which may increase the potential of a wildfire. However, as mentioned previously mentioned, each project located in an SRA or a Very High FHSZ would be subject to the requirement of the preparation of an FPP which would analyze the fire hazard upon and presented by the respective project as well as its compliance with the most stringent of all applicable local or state regulations. Any mitigations or alternative materials and methods necessary to negate existing hazards would be provided. Similarly, Fire Safety Plans (FSPs) would have to be prepared for the nearby energy storage systems should they choose to utilize lithium battery technology, which is the most common current choice given the current technology available. FPPs and FSPs would analyze projects in their totality, including associated infrastructure. These plans would highlight any fire hazards presented by a project's associated infrastructure and mitigate them as necessary. By these processes reducing the potential of ignition from each respective project, the cumulative impact of said projects is reduced.

Syphard and Keeley (2015) summarized all wildfire ignitions included in the CAL FIRE FRAP database dating back over 100 years. They found that in San Diego County (which is similar to the Orange County fire environment), equipment-caused fires were by far the most numerous, and these also accounted for most of the area burned, but powerline fires were a close second. The equipment related fires would likely be minimized through FPP and FSPs and the findings of the research correlated these fires mainly with low to medium density residential areas where there is an intermix of potential ignition sources, homes, with vegetation that can carry fire. Modern code requirements, including maintained defensible space, would inhibit the spread of fire from such ignitions.

In regard to the environmental impacts of the associated infrastructure, other than those related to wildfire, as stated previously, the installation and maintenance of roads, utilities, vegetation management activities, and any other project-related infrastructure would be part of their associated project. As such, any potential temporary or ongoing environmental impacts related to these components of their respective project would have been accounted for and analyzed through the CEQA process as part of the impact assessment conducted for the entirety of the project.

In summary, while the proposed Project, in combination with other projects in the area, would increase the amount of associated infrastructure that may cause an ignition that could result in a wildfire, the proposed projects located in an SRA or a Very High FHSZ would likely be subject to the preparation of FPPs, FSPs, and/or CEQA documents that would identify and mitigate any hazards presented by the associated infrastructure. Therefore, the cumulative

effect of the associated infrastructure of the proposed Project and associated infrastructure of other projects within the vicinity is not anticipated to exacerbate fire risk.

4.17.4 Recommendations

Extreme Fire Day Ignition Avoidance and Fire Patrols. The National Weather Service defines a Red Flag Warning as environmental conditions where warm temperatures, very low humidities, and stronger winds are expected to combine to produce an increased risk of fire danger. A Red Flag Warning is issued for a stated period by the National Weather Service using pre-determined criteria to identify particularly critical wildfire danger in a particular geographic area. All construction and maintenance activities shall temporarily cease during Red Flag Warnings. The superintendent shall coordinate with personnel to determine which low fire hazard activities may occur. Should OCFA or a similar entity declare a Red Flag Warning affecting the Project site, the same work activity restrictions occurring during National Weather Service Red Flag Warning periods shall apply.

The proposed Project shall implement ongoing fire patrols during the fire season as defined by local and state agencies. The Site Safety Director (SSD) will be assigned as fire patrol to monitor work activities when an activity risk exists for fire compliance. The SSD shall verify proper tools and equipment are on site, assess any fire agency work restrictions, and serve as a lookout for fire starts, including staying behind (e.g., a fire watch) to make certain no residual fire exists. Fire watch may be performed by any site personnel. An SSD shall perform routine patrols of the Project site during the fire season equipped with a portable fire extinguisher and communications equipment. The proposed Project staff shall notify the OCFA of the name and contact information of the current SSD in the event of any change.

Pre-Construction Requirements. Vegetation management shall be conducted prior to the start of construction and throughout all construction phases. Existing flammable vegetation shall be reduced by 50% for all areas within 20 feet of any construction activities. Caution must be used to avoid causing erosion or ground (including slope) instability or water runoff due to vegetation removal, vegetation management, maintenance, landscaping or irrigation.

Prior to bringing any combustible materials onto the site, site improvements within the active development area shall be in place, including an approved, temporary roadway surface. These features shall be approved by OCFA prior to combustibles being brought on site.

Construction Suppression and Monitoring Equipment Requirements. The Project will be equipped with fire suppression and monitoring equipment. The amount and type of equipment will be determined by consultation between Compass Energy Storage LLC, the SSD, and OCFA. Additionally, all construction-related vehicles shall be equipped with a 10 pound, 4A:80BC Dry Chemical Fire Extinguisher, a 5-gallon backpack pump fire extinguisher, a 46-inch round point hardwood shovel, and a first aid kit.

Operational Vegetation Management Requirements The proposed Project will remove all vegetation inside the 10 foot tall perimeter wall. Landscaping outside the wall for visual screening will be limited to a fire resistant planting palette to be approved in the attached Landscape Plan. Inside the wall, a conversion of this area to a rock/gravel surface and establishment of minimum 20-foot wide FMZ within the inside perimeter of the facility are recommended.

As a further means of ensuring the vegetation management is maintained per this requirement, the proposed Project applicant or current owner will obtain an inspection and report from an authorized Wildland Fire Safety Inspector by June 1 of each year, certifying that vegetation management activities throughout the Project site have

been performed pursuant to this plan. This effort further ensures vegetation maintenance and compliance with no impact on the County.

4.17.5 Laws, Regulations, and Standards

Federal, state, and local laws, ordinances, regulations, and standards (LORS) related to wildfire were reviewed for applicability to the Project. These summarized below in Table 4.17-2 and described in detail.

Table 4.17-2, LORS Applicable to Wildfire and Fire Protection

Jurisdiction	LORS	Applicability	Opt-In Application Reference	Project Conformity
Federal	National Fire Protection Association Codes, Standards, Practices, and Guides	Provides standards for the design, installation, operation and removal of BESS in regard to fire safety.	Section 4.17.5 Appendix 4.17A	The NFPA Standards provide the basis for state regulation (CFC Chapter 12 Section 1207), which the proposed Project will comply with.
Federal	North American Electric Reliability Corporation; Institute of Electrical and Electronics Engineers; National Electrical Safety Code	Electrical components of the proposed Project. Most notably, overhead powerlines.	Section 4.17.5 Appendix 4.17A	All electrical components, most notably overhead powerlines, associated with the proposed Project, would comply with the requirements of these LORS, most notably the vegetation management requirements.
Federal	Federal Wildland Fire Management Policy; National Fire Plan	Policies of fire suppression services provided to the proposed Project.	Section 4.17.5 Appendix 4.17A	These documents impact the policies of the agencies that would provide fire suppression services to the proposed Project.
Federal	International Fire Code; International Wildland-Urban Interface Code	Model codes for California.	Section 4.17.5 Appendix 4.17A	As a model code for the California Fire Code and upcoming Wildland-Urban Interface Code, they impact what requirements are adopted by the State and subsequently County.

Table 4.17-2, LORS Applicable to Wildfire and Fire Protection

Jurisdiction	LORS	Applicability	Opt-In Application Reference	Project Conformity
State	CGC Sections 51175 through 51181; PRC Sections 4292-4293; PUC 8386	LORS pertaining mainly to defensible space, vegetation management around powerlines, and fire hazard severity zones.	Section 4.17.5 Appendix 4.17A	Vegetation management around power lines would be in compliance with these requirements
State	Part 9 of CCR Title 24, California Fire Code	Establishes requirements for fire department access, fire protection systems, BESS design, installation, operation, and removal.	Section 4.17.5 Appendix 4.17A	All Project components will be in compliance with the requirements of the CFC including those pertaining to fire apparatus access, and BESS design.
State	CAL FIRE	The CAL FIRE subdivision, FRAP, creates the FHSZ maps that dictate what FHSZs are near the proposed Project.	Section 4.17.5 Appendix 4.17A	The Project not located in FHSZ nor in an SRA area that would be served by CAL FIRE suppression services and have to comply to all pertinent LORS for development in a SRA. However, FHSZ maps delineate nearby FHSZ lands.
State and Local	Mutual Aid Agreements	Establishes agreements between fire protection agencies to provide aid to nearby areas when necessary.	Section 4.17.5 Appendix 4.17A	Enables fire protection to be provided by the nearest resource and for additional resources to respond when necessary.
Local	OCFA 2023 Strategic Fire Plan; County of Orange and Orange County Fire Authority Local Hazard Mitigation Plan; Unified County of Orange and Orange County Operational Area Emergency Operations Plan	Establishes operational policies and plans for the agencies providing emergency services.	Section 4.17.5 Appendix 4.17A	Impacts the agencies that would provide emergency services to the proposed Project and possible evacuation orders.

Table 4.17-2, LORS Applicable to Wildfire and Fire Protection

Jurisdiction	LORS	Applicability	Opt-In Application Reference	Project Conformity
Local	City of San Juan Capistrano General Plan	Establishes policies that guide fire-safe development and local emergency services.	Section 4.17.5 Appendix 4.17A	Provides general principles that the proposed Project would follow as well as policies that would impact the emergency services that would serve the proposed Project.
Local	City of San Juan Capistrano Municipal Code	Contains the City of San Juan Capistrano Fire Code, which outlines the requirements of the proposed Project pertaining to fire safety.	Section 4.17.5 Appendix 4.17A	Contains pertinent local codes (Fire Electrical), that all proposed Project components would have to be in compliance with.

Acronyms: CCR – California Code of Regulations, CFC – California Fire Code, CGC California Government Code, NFPA – National Fire protection Association, PRC – Public Resource Code, PUC – Public utilities Commission.

4.17.5.1 Federal LORS

National Fire Protection Association Codes, Standards, Practices, and Guides

National Fire Protection Association (NFPA) codes, standards, recommended practices, and guides are developed through a consensus standards development process approved by the American National Standards Institute. This process brings together professionals representing varied viewpoints and interests to achieve consensus on fire and other safety issues. NFPA standards are recommended guidelines and nationally accepted good practices in fire protection but are not laws or codes unless adopted as such or referenced as such by the California Fire Code or the local fire agency.

- **NFPA 10, Standard for Portable Fire Extinguishers (2018):** A long-standing standard, which specifies the types, sizes, rating, and locations for portable fire extinguishers. It also provides information on how to calculate the number and size of portable fire extinguishers needed.
- **NFPA 11, Standard for Low-, Medium-, and High-Expansion Foam (2016):** NFPA 11 is a longstanding standard, which provides recommendations for design and installation of firefighting foam systems and portable equipment. It also provides recommendations regarding calculating the amount of foam concentrate and solution needed on a flammable or combustible liquid fire.
- **NFPA 22, Standard for Water Tanks for Private Fire Protection (2018):** Provides recommendations for the design, construction, installation, and maintenance of tanks and accessory equipment that supply water for private fire protection.
- **NFPA 30, Flammable and Combustible Liquids Code (2018):** This standard provides safeguards to reduce the hazards associated with the storage, use, and handling of flammable and combustible liquids. It provides detailed information regarding tank storage, spacing, dispensing of liquids, portable containers, and other related operations. NFPA 30 is referenced by the California Fire Code.

- **NFPA 70, National Electrical Code (2017):** NFPA 70 is the standard for the design, installation, and inspection of electrical hazards. It includes recommendations for various types of occupancies and also provides recommendations and criteria for the location and installation of “explosion proof” electrical systems.
- **NFPA 72, National Fire Alarm and Signaling Code (2019):** NFPA 72 is the standard for the design, installation, and operation of fire alarm systems in various occupancies. This standard is used by fire alarm system designers when designing and installing a system. It is utilized also by fire agencies when reviewing plans for new systems.
- **NFPA 497, Classification of Flammable Liquids, Gases, or Vapors, and of Hazardous Locations for Electrical Installations in Chemical Process Areas (2017):** NFPA 497 is the standard, which is utilized along with NFPA 70 to determine flammable gas, flammable liquid, and combustible liquid hazards and to recommend the areas that require explosion-proof electrical systems. It also sets forth the extent of the classified areas. Although the title says chemical process areas, it is used as a standard for explosion-proof electrical as it defines various risks and contains numerous diagrams to help the electrical system designer.
- **FPA 855, Standard for the Installation of Stationary Energy Storage Systems,** is the standard for the design, installation, operation, and removal of battery energy storage systems and components. It is the basis for much of CFC Chapter 12 Section 1207.

North American Electric Reliability Corporation

According to NERC Standard FAC-003, transmission vegetation management standards are applicable to all transmission lines operated as 200 kilovolts and higher and to lower voltage lines designated by the Regional Reliability Organization as critical to the reliability of the region’s electric system (NERC 2022). The elements and requirements of these standards apply to SDG&E’s transmission line–related vegetation management activities in the proposed Project area.

Institute of Electrical and Electronics Engineers

In accordance with Standard 516-2003 (Guide for Maintenance Methods on Energized Power Lines), the transmission vegetation management program requires identifying and documenting clearances between vegetation and any overhead supply conductors while considering transmission line voltage, effects of ambient temperature on conductor sag under maximum design loading, fire risk, line terrain, and elevation, and effects of wind velocities on conductor sway. The clearances identified must be no less than those outlined in this standard.

National Electrical Safety Code

Section 23 of the National Electrical Safety Code describes all clearances, including climbing space involving overhead supply and communication lines.

Federal Wildland Fire Management Policy

The Federal Wildland Fire Management Policy was developed in 1995, updated in 2001, and again in 2009 by the National Wildfire Coordinating Group, a federal multi-agency group that establishes consistent and coordinated fire management policy across multiple federal jurisdictions. An important component of the Federal Wildland Fire Management Policy is the acknowledgement of the essential role of fire in maintaining natural ecosystems. The Federal Wildland Fire Management Policy and its implementation are founded on the following guiding principles,

found in the Guidance for Implementation of Federal Wildland Fire Management Policy (National Wildfire Coordinating Group 2009):

- Firefighter and public safety are the first priority in every fire management activity.
- The role of wildland fire as an essential ecological process and natural change agent will be incorporated into the planning process.
- Fire management plans, programs, and activities support land and resource management plans and their implementation.
- Sound risk management is a foundation for all fire management activities.
- Fire management programs and activities are economically viable, based upon values to be protected, costs, and land and resource management objectives.
- Fire management plans and activities are based upon the best available science.
- Fire management plans and activities incorporate public health and environmental quality considerations.
- Federal, state, tribal, local, interagency, and international coordination and cooperation are essential.
- Standardization of policies and procedures among federal agencies is an ongoing objective.

National Fire Plan

The National Fire Plan, officially titled *Managing the Impacts of Wildfire on Communities and the Environment: A Report to the President in Response to the Wildfires of 2000*, was a presidential directive in 2000 as a response to severe wildland fires that had burned throughout the United States. The National Fire Plan focuses on reducing fire impacts on rural communities and providing assurance for sufficient firefighting capacity in the future. The plan addresses five key points: Firefighting, Rehabilitation, Hazardous Fuels Reduction, Community Assistance, and Accountability. The plan continues to provide invaluable technical, financial, and resource guidance and support for wildland fire management across the United States. The U.S. Forest Service and the Department of the Interior are working to successfully implement the key points outlined in the plan (DOI/USDA 2000).

International Fire Code

Created by the International Code Council, the International Fire Code (IFC) addresses a wide array of conditions hazardous to life and property, including fire, explosions, and hazardous materials handling or usage (although not a federal regulation, but rather the product of the International Code Council). The IFC places an emphasis on prescriptive and performance-based approaches to fire prevention and fire protection systems. Updated every 3 years, the IFC uses a hazards classification system to determine the appropriate measures to be incorporated to protect life and property (often these measures include construction standards and specialized equipment). The IFC uses a permit system (based on hazard classification) to ensure that required measures are instituted (International Code Council 2020a).

International Wildland–Urban Interface Code

The International Wildland–Urban Interface Code is published by the International Code and is a model code addressing wildfire issues in low-density, rural residential areas or where residential areas abut open space (International Code Council 2020b). As of the time of this document being written, California is in the process of consolidating all state codes applicable to the wildland-urban interface into its own Wildland-Urban Interface Code.

4.17.5.2 State LORS

California Government Code

California Government Code Sections 51175 through 51189 provide guidance for classifying lands in California as fire hazard areas and requirements for management of property within those lands. CAL FIRE is responsible for classifying FHSZs based on statewide criteria and makes the information available for public review. Further, local agencies must designate, by ordinance, Very High FHSZs within their jurisdiction based on the recommendations of CAL FIRE. It should be noted that 51182-51189 does not apply to this Project because the Project is not within SRA nor is it located on area classified as FHSZ.

California Code of Regulations

California Fire Code

Part 9 of Title 24 contains the California Fire Code (CFC), which incorporates by adoption the International Fire Code with necessary California amendments. The purpose of this code is to establish the minimum requirements to safeguard the public health, safety, and general welfare from the hazards of fire, explosion, or dangerous conditions in new and existing buildings, structures, and premises, and to provide safety and assistance to firefighters and emergency responders during emergency operations. Chapter 49 of the CFC contains minimum standards for development in the wildland-urban interface and fire hazard areas. Chapter 12, Section 1207 of the CFC establishes requirements for electrical energy storage systems including allowable quantities and separation distances based upon the type of installation.

California Public Resources Code

California Public Resource Code Section 4292 and 4293 describe the responsibilities of operators of electrical equipment, including distribution and transmission systems, to maintain the flammable vegetation around their equipment and the overhead wires to the following standards:

- Clear a fire break of not less than 10 feet in each direction from the outer circumference of a pole or tower that supports a switch, fuse, transformer, lightning arrester, line junction, or dead end or corner pole,
- Maintain a clearance of the respective distances specified in this section in all directions between all vegetation and all conductors that are carrying electric current:
 - For any line that is operating at 2,400 or more volts but less than 72,000 volts, four feet.
 - For any line operating at 72,000 or more volts but less than 110,000 volts, six feet.
 - For any line operating at 110,000 or more volts, 10 feet.

California Public Utilities Commission General Orders and Rules

- **California Public Utilities Commission General Order No. 131-D** -The California Public Utilities Commission (CPUC) has sole and exclusive state jurisdiction over the siting and design of the Project. According to CPUC General Order (GO) 131-D, Section XIV.B,
- **California Public Utilities Commission General Order No. 95** - General Order 95 (GO 95) describes the overhead line design, construction, and maintenance requirements. GO 95 applies to all overhead electrical supply and communication facilities outside buildings.

- **California Public Utilities Commission General Order No. 166** - General Order 166 (GO 166) describes the standards to ensure that jurisdictional electric utilities are prepared for emergencies and disasters to minimize damage and inconvenience to the public that may occur due to electric system failures, major outages, or hazards posed by damage to electric facilities. GO 166 applies to all electric utilities subject to the jurisdiction of the CPUC concerning matters relating to electric service reliability and safety.
- **Rule R.08-11-005 - Rule R.08-11-005** describes identifying, evaluating, and adopting fire-safety regulations for the High Fire Threat District (HFTD). R.08-11-005 also adopted the CPUC Fire-Threat Map that describes the High Fire Threat District that consists of three areas: Tier 1 High Hazard Zones, Tier 2 Elevation Risk, and Tier 3 Extreme Risk areas.

Public Utilities Code 8386

Public Utilities Code (PUC) 8386 describes the basic requirements for investor-owned utilities (IOU) towards operating their equipment to minimize the risk of catastrophic wildfire posed by their electrical lines and equipment. PUC 8386 also describes the required elements of a Wildfire Mitigation Plan (WMP) prepared by an IOU, including the wildfire risks, risk drivers present in their service territory, and the strategies the IOU is performing to mitigate these risk/risk drivers.

California Department of Forestry and Fire Protection (CAL FIRE)

CAL FIRE is tasked with reducing wildfire-related impacts and enhancing California's resources. CAL FIRE responds to all types of emergencies including wildland fires and residential/commercial structure fires. In addition, CAL FIRE is responsible for the protection of approximately 31 million acres of private land within the state and, at the local level, is responsible for inspecting defensible space around private residences. CAL FIRE is responsible for enforcing State of California fire safety codes included in the CCR and California Public Resources Codes.

CAL FIRE also inspects utility facilities and makes recommendations regarding improvements in facility design and infrastructure. Joint inspections of facilities by CAL FIRE and the utility owner are recommended by CAL FIRE so that each entity may assess the current state of the facility and the successfully implement fire prevention techniques and policies. Violations of state fire codes discovered during inspections are required to be brought into compliance with the established codes. If a CAL FIRE investigation reveals that a wildfire occurred as a result of a violation of a law or negligence, the responsible party could face criminal and/or misdemeanor charges. In cases where a violation of a law or negligence has occurred, CAL FIRE has established the Civil Cost Recovery Program, which requires parties liable for wildfires to pay for wildfire-related damages.

Fire Hazard Severity Zone Mapping

As previously discussed, CAL FIRE's FRAP database provides data documenting areas of significant fire hazards throughout the state, based on fuel loading, slope, fire history, weather, and other relevant factors as directed by Public Resources Code Sections 4201-4204 and Government Code Sections 51175-51189. FHSZs are ranked from Moderate to Very High and are categorized for fire protection within a Federal Responsibility Area, State Responsibility Area, or Local Responsibility Area under the jurisdiction of a federal agency, CAL FIRE, or local agency, respectively.

California Strategic Fire Plan

The 2019 Strategic Plan is guided by CAL FIRE's mission to serve and safeguard the people and protect the property and resources of California as well as its vision to be the leader in providing fire prevention and protection,

emergency response, and enhancement of natural resource systems. The Strategic Plan is organized into four goals. These goals include to improve core capabilities, enhance internal operations, ensure health and safety, and build an engaged, motivated, and innovative workforce. These goals are further categorized into the following objectives to meet said goals.

- Analyze and integrate core operations functions at all levels of the Department.
- Evaluate and improve existing emergency response capabilities.
- Expand forestry and fire prevention through effective natural resource management programs, education, inspections, and land use planning.
- Strengthen post-incident assessments to create long-term improvements.
- Analyze business support functions and improve operational efficiencies.
- Define and effectively manage internal communication processes.
- Review and update communication processes to all external stakeholders.
- Create a secure, responsive, and integrated user-centric technology culture.
- Manage fiscal challenges to ensure adequate funding for critical programs.
- Promote employee behavioral health and physical fitness.
- Promote the safety of Department employees, partners, and the public.
- Address skill gaps and barriers through creative outreach and recruiting.
- Create and implement detailed training plans for all Department employees.
- Retain the Department workforce through purposeful engagement.

Mutual Aid Agreements

The California Disaster and Civil Defense Master Mutual Aid Agreement, as provided by the California Emergency Services Act, provides statewide mutual aid between and among local jurisdictions and the state. The statewide mutual aid system exists to ensure that adequate resources, facilities, and other supports are provided to jurisdictions whenever resources prove to be inadequate for a given situation. Each jurisdiction controls its own personnel and facilities but can give and receive help whenever needed. CAL FIRE and the OCFA participate in these mutual aid, automatic aid and other agreements with surrounding fire departments. In some instances, the closest available resource may come from another fire department.

4.17.5.3 Local LORS

The proposed Project would be subject to state and federal agency planning documents described above, as well as the regional or local planning documents such as the City of San Juan Capistrano General Plan and the City of San Juan Capistrano Municipal Code.

Orange County Fire Authority, 2023 Strategic Fire Plan

OCFA developed a successor to its 2010–2020 Unity Strategic Fire Plan. Orange County’s Unit Strategic Fire Plan was first collaboratively developed as a planning and assessment tool in 2010, in conjunction with key stakeholders and partner organizations, with the goal of reducing total government costs and citizen losses from wildfire in Orange County (OCFA 2023). This plan addresses such topics as firefighter and public safety, Wildland Urban Interface (WUI) challenges, impactful cost-effective solutions, community preparedness, prioritization, collaborative

partnerships, program, project and policy evaluation and adaptability. The plan is now designed to be used in conjunction with both the Orange County Community Wildfire Protection Plan and OCFA's Fire Danger Operating Plan (OCFA 2023).

City of San Juan Capistrano General Plan

Safety Element

The purpose of the Safety Element is to identify potential hazards to the City's jurisdiction including its residents, structures, public facilities, and infrastructure. By identifying local and regional hazards (including both natural hazards and human-made hazards), goals and policies can be crafted to address public safety concerns unique to the City. The Safety Element satisfies the requirements of state planning law and is a mandated component of the General Plan. Government Code Section 65302(g) established the required components of the Safety Element, which includes wildland and urban fires as a main area. State law allows communities to select additional and non-mandatory safety issues for consideration in the Safety Element, and the City has also elected to address utility-related events such as power failure and stoppages. The information in the Safety element serves as a guide for hazard mitigation, emergency planning, and preparedness throughout the City's jurisdiction (City of San Juan Capistrano, 2022). Wildfire policies include the following:

Public Services and Utilities Safety Goal 1: Reduce the risk to the community from hazards related to geologic conditions, seismic activity, wildfires, flooding, and climate change.

Wildfire

- Policy 1.1: Ensure that the City Standards for fire protection for new developments in Very High Fire Hazard Severity Zones meet or exceed the statewide minimums.
- Policy 1.2: Minimize the approval of new residential subdivision developments in Very High Fire Hazard Severity Zones when feasible.
- Policy 1.3: Continue to enforce and, as needed, increase the weed abatement and Arundo removal program on an annual basis.
- Policy 1.4: Require property owners to incorporate fire-safe and erosion-safe design during new development or major renovations (development over a two-year period of more than 33% of existing square footage or 2,000 s.f. resulting in the building exceeding 5,000 square feet and receive contracted emergency service agency's approval prior to permit issuance.
- Policy 1.5: Coordinate with local contracted fire emergency service agency to evaluate the required fire safe design to be incorporated during rebuilding effort after a major disaster.
- Policy 1.6: Reduce the risk of wildfire hazards by requiring fuel modification for landscaping and defensible space for development located in areas of high wildfire risk.
- Policy 1.7: Cooperate and coordinate with the OCFA and California Water Service to ensure that fire hydrant placement, water pressure, and availability of fire suppression equipment are adequate for firefighting purposes.

Policy 1.8: Cooperate with the California Water Service to make sure that present and future water supply needs are met adequately.

Policy 1.9: Reduce the risk of erosion and mudslides following wildfires by developing a revegetation / erosion control strategy.

Policy 1.10: Coordinate with Caltrans, Orange County, local contracted emergency service agencies, and City Public Works to maintain defensible space along public and private roads.

Policy 1.11: Coordinate with Cal Fire, and local contracted fire emergency service agency to maintain and create fuel breaks in and around the City.

Policy 1.12: Continue to coordinate with the local contracted fire emergency service agency to determine future emergency needs and required training.

Safety Goal 4: Improve the ability of the City to be prepared for and respond effectively to natural and human-caused emergencies.

Policy 4.1: Support the development of local preparedness plans and multi-jurisdictional cooperation and communication for emergency situations consistent with the Standardized Emergency Management System (SEMS).

Policy 4.2: Maintain and update the Emergency Operations Plan and Local Hazard Mitigation Plan.

Policy 4.3: Maintain an adequate stock of emergency preparedness equipment and supplies.

Policy 4.4: Educate residents and businesses regarding appropriate actions to safeguard life and property during and immediately after emergencies and encourage them to sign up for an emergency notification system per City's Emergency Preparedness Program.

Public Services and Utilities Element

The purpose of the Public Services and Utilities Element is to ensure that sufficient levels of public services are provided as San Juan Capistrano develops. Working in conjunction with the Growth Management Element, the Public Services and Utilities Element plans for the needed expansion of public services and infrastructure to coincide with new development. Many of the public service providers are agencies or utility providers that operate independently of the City or are contracted by the City to provide services such as law enforcement, fire protection, electrical service, gas service, and telecommunications service. To ensure a sufficient level of public services, the City will work with these agencies or providers to ensure that service to existing residents does not diminish with any future development and the resulting increase in population (City of San Juan Capistrano, 1999).

Public Services and Utilities Goal 2: Work with the Orange County Fire Authority to provide a sufficient level of fire protection.

Policy 2.1: Work closely with the Orange County Fire Authority in determining and meeting community needs for fire protection services and facilities.

Policy 2.2: Periodically evaluate the level of fire protection service to ensure that San Juan Capistrano has appropriate levels of fire protection services.

Public Services and Utilities Goal 7: Work effectively with providers of natural gas, electricity, telephone, cable television and solid waste disposal to provide sufficient levels of these services.

Policy 7.1: Work closely with providers of energy, communications and solid waste disposal in determining and meeting the needs of the community for energy, communications and solid waste disposal.

Policy 7.2: Encourage energy efficient development.

City of San Juan Capistrano Municipal Code

The City of San Juan Capistrano Municipal Code Title 8, Building Regulations, Chapter 10, California Fire Codes, Sec. 8-10.01 adopts the 2022 California Code, based on the 2021 International Fire Code as published by the International Code Council, with amendments.

County of Orange and Orange County Fire Authority Local Hazard Mitigation Plan

The 2020 County of Orange and OCFA Local Hazard Mitigation Plan (LHMP) was developed collaboratively with emergency management staff, County and external partners, and Orange County residents (County of Orange and Orange County Fire Authority 2021). The document is an update to the 2015 LHMP and is a critical step in continuing Orange County's commitment to hazard mitigation as one component of its comprehensive emergency management program. The mission of the LHMP is to promote sound public policy designed to protect residents, critical facilities, infrastructure, key resources, private property, and the environment from natural hazards in unincorporated areas, fire hazards in the Fire Authority service area, and County and Fire Authority owned facilities. The LHMP is a multi-jurisdiction plan developed jointly between the County of Orange, a local government, and the Orange County Fire Authority, a Joint Powers Authority. This collaborative plan was developed to ensure that each participating agency has met the requirements of 44 CFR §201.6. The current approved LHMP is adopted as an element of The County of Orange General Plan under Chapter IX – Safety Element as required under California Government Code §8685.9 and §65302.6. As a multi-jurisdiction plan, the LHMP focuses on mitigating all natural hazards impacting unincorporated areas of the County as well as County and Orange County Fire Authority owned facilities.

Unified County of Orange and Orange County Operational Area Emergency Operations Plan

The Unified County of Orange (County) and Orange County Operational Area (OA) Emergency Operations Plan (EOP) provides guidance and procedures for the County and the County as the OA to prepare for and respond to natural, technological, conflict-related, and human-caused incidents creating situations requiring a coordinated response. It provides guidance for management concepts, identifies organizational structures and relationships and describes responsibilities and functions of the emergency organization to protect life and property (Unified County of Orange and Orange County Operational Area 2019). Of relevance to this Project may be the chapters discussing utility fire and wildland and urban fire.

4.17.6 Agencies and Agency Contacts

Applicable agency contacts for worker health and safety are shown in Table 4.17-3. The project would be designed per OCFA requirements and standards for BESS, however, approval from the OCFA would also be superseded by CEC approval of the Project under the opt-in program.

Table 4.17-3. Permits and Agency Contacts

Issue/Approval	Agency Contact	Applicability
Fire Code Conformance	OCFA Planning and Development Services Section 1 Fire Authority Road, Building A, Irvine, CA 92602 (714) 573-6100	Plan Review

4.17.7 Permits and Permit Schedule

There are no applicable permits or permit schedule. Pending Project approval from the CEC, construction of the Project would commence.

4.17.8 References

CAL FIRE 2022. Historic Fire Perimeters. <https://www.fire.ca.gov/what-we-do/fire-resource-assessment-program/fire-perimeters>

City of San Juan Capistrano. 1999. City of San Juan Capistrano General Plan. Public Services & Utilities Element. <https://sanjuancapistrano.org/DocumentCenter/View/1081/General-Plan—Safety-Element-PDF>

City of San Juan Capistrano. 2022. City of San Juan Capistrano Safety Element. General Plan Update. <https://sanjuancapistrano.org/DocumentCenter/View/1081/General-Plan—Safety-Element-PDF>

County of Orange & Orange County Fire Authority. County of Orange & Orange County Fire Authority Local Hazard Mitigation Plan. 2021 County of Orange and Orange County Fire Authority Local Hazard Mitigation Plan.pdf (ocsheriff.gov)

Livingston, A.C., and Varner, J.M. 2016. "Fuel Moisture Differences in a Mixed Native and Non-Native Grassland: Implications for Fire Regimes". <https://fireecology.springeropen.com/counter/pdf/10.4996/fireecology.1201073.pdf>

NFPA. 2020. Organization and Deployment of Fire Suppression Operations, EMS and Special Operations in Career Fire Departments. https://www.iaff.org/wp-content/uploads/Departments/Fire_EMS_Department/30541_Summary_Sheet_NFPA_1710_standard.pdf

OCFA. 2022. Orange County Fire Authority Fiscal Year 2022-2023 Adopted Budget. <https://ocfa.org/Uploads/Transparency/OCFA%202022-2023%20Adopted%20Budget.pdf>

OCFA. 2023. Orange County Fire Authority, 2023 Unit Strategic Fire Plan. <https://www.osfm.fire.ca.gov/media/dyph2u5f/2023-orange-county-unit-fire-plan.pdf>

OCFA. 2024. Operations Division 3. <https://www.ocfa.org/AboutUs/Departments/OperationsDirectory/Division3.aspx>

Syphard A.D., and J.E. Keeley. 2015. "Historical Reconstructions of California Wildfires Vary by Data Source." *International Journal of Wildland Fire* 25(12):1221–1227. <https://doi.org/10.1071/WF16050>.

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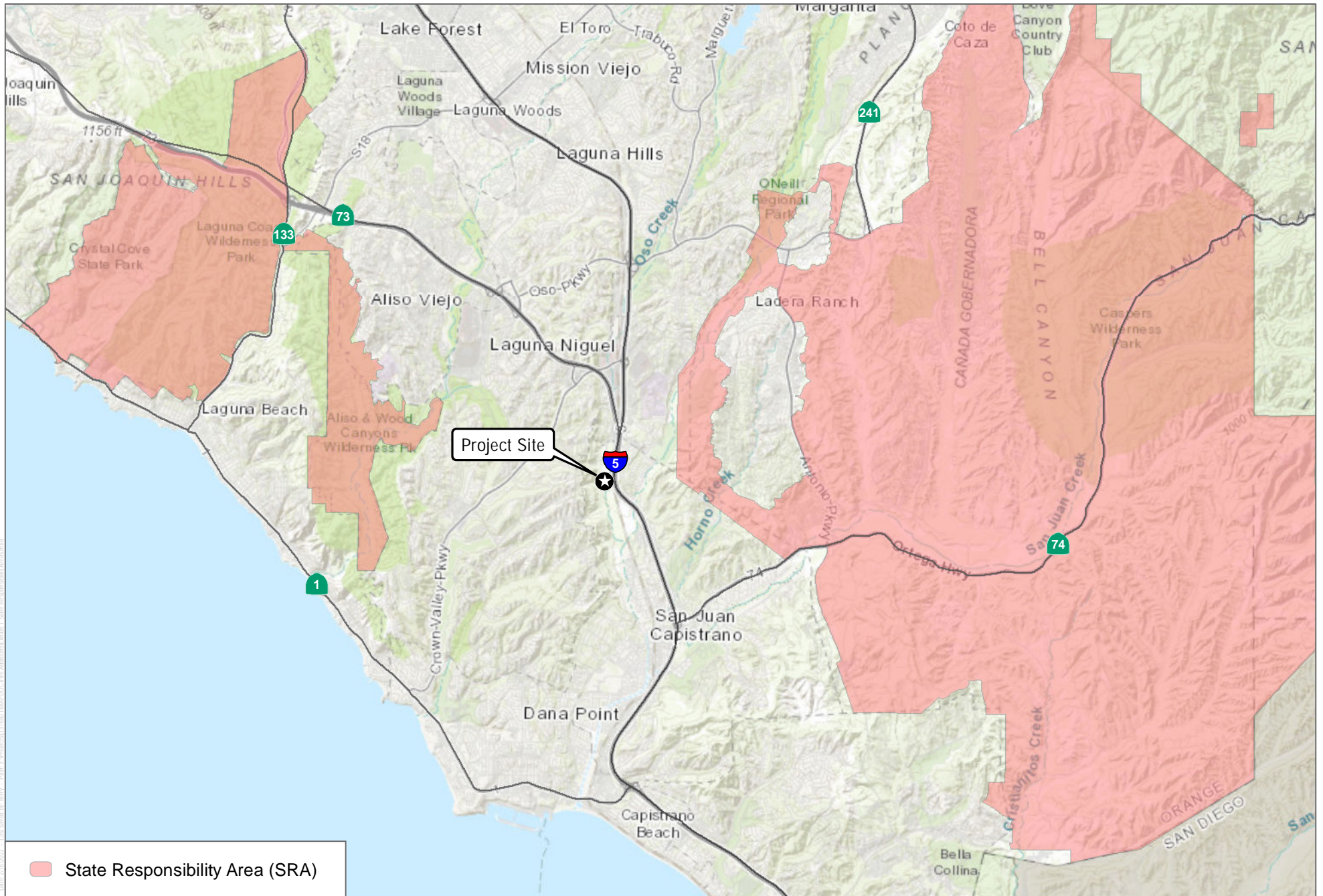
USGS. 2023. USGS Post Wildfire Debris Flow Hazard Assessment Viewer. <https://usgs.maps.arcgis.com/apps/dashboards/c09fa874362e48a9afe79432f2efe6fe>

Weather Spark 2024. Climate and Average Weather Year Round in San Juan Capistrano. <https://weatherspark.com/y/1897/Average-Weather-in-San-Juan-Capistrano-California-United-States-Year-Round>

2019 California Fire Code. California Code of Regulations. Title 24, Part 9. Section 1206.2.8.7

National Fire Protection Association. 2021. Guideline 855 - Standard for the Installation of Stationary Energy Storage Systems.

Orange County Fire Authority. Guideline G-10, Stationary Storage Battery Systems. 6 pp.



SOURCE: ESRI IMAGERY 2022

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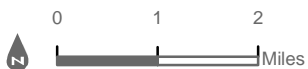
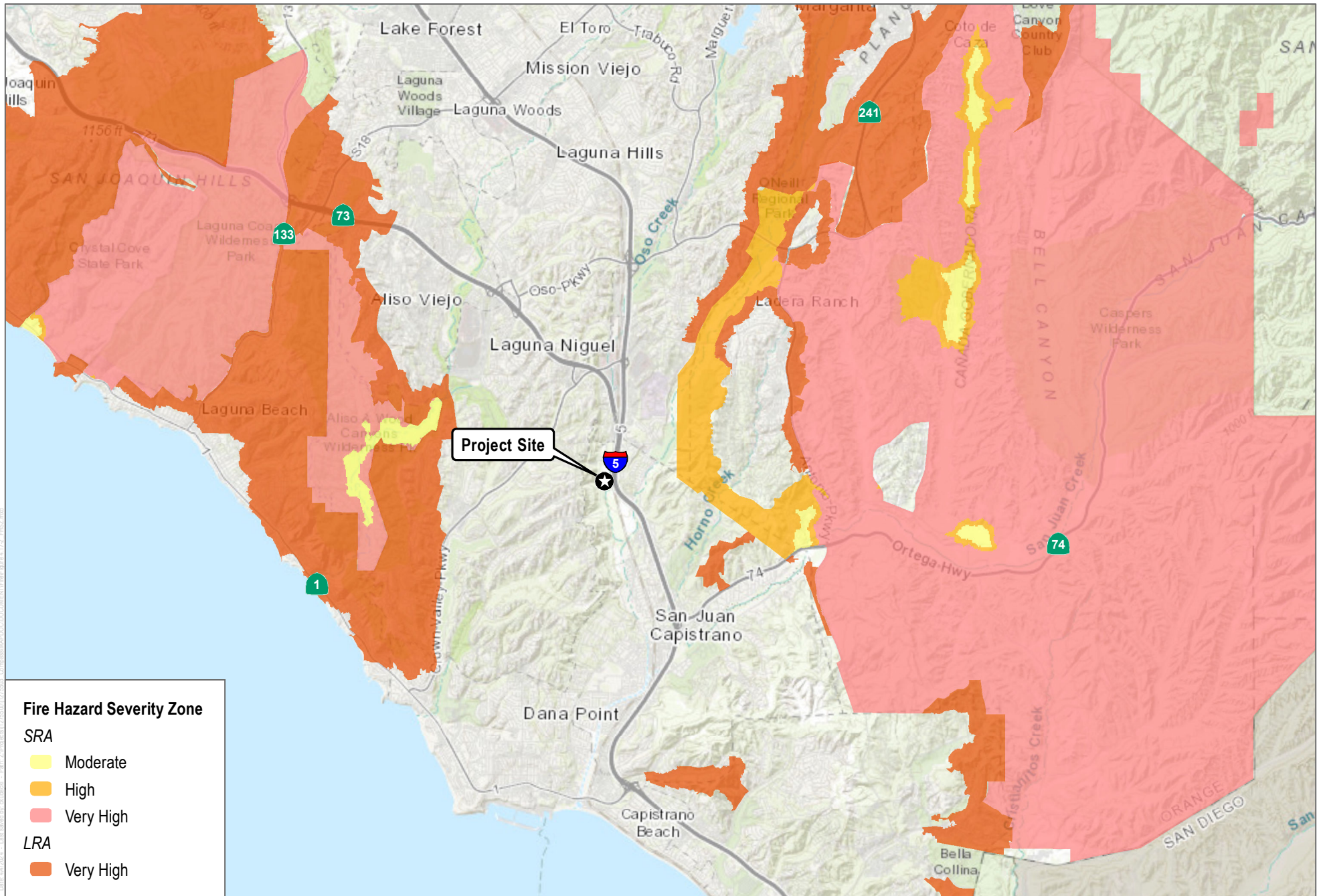


FIGURE 4.17-1
State Responsibility Areas

Compass BESS Project

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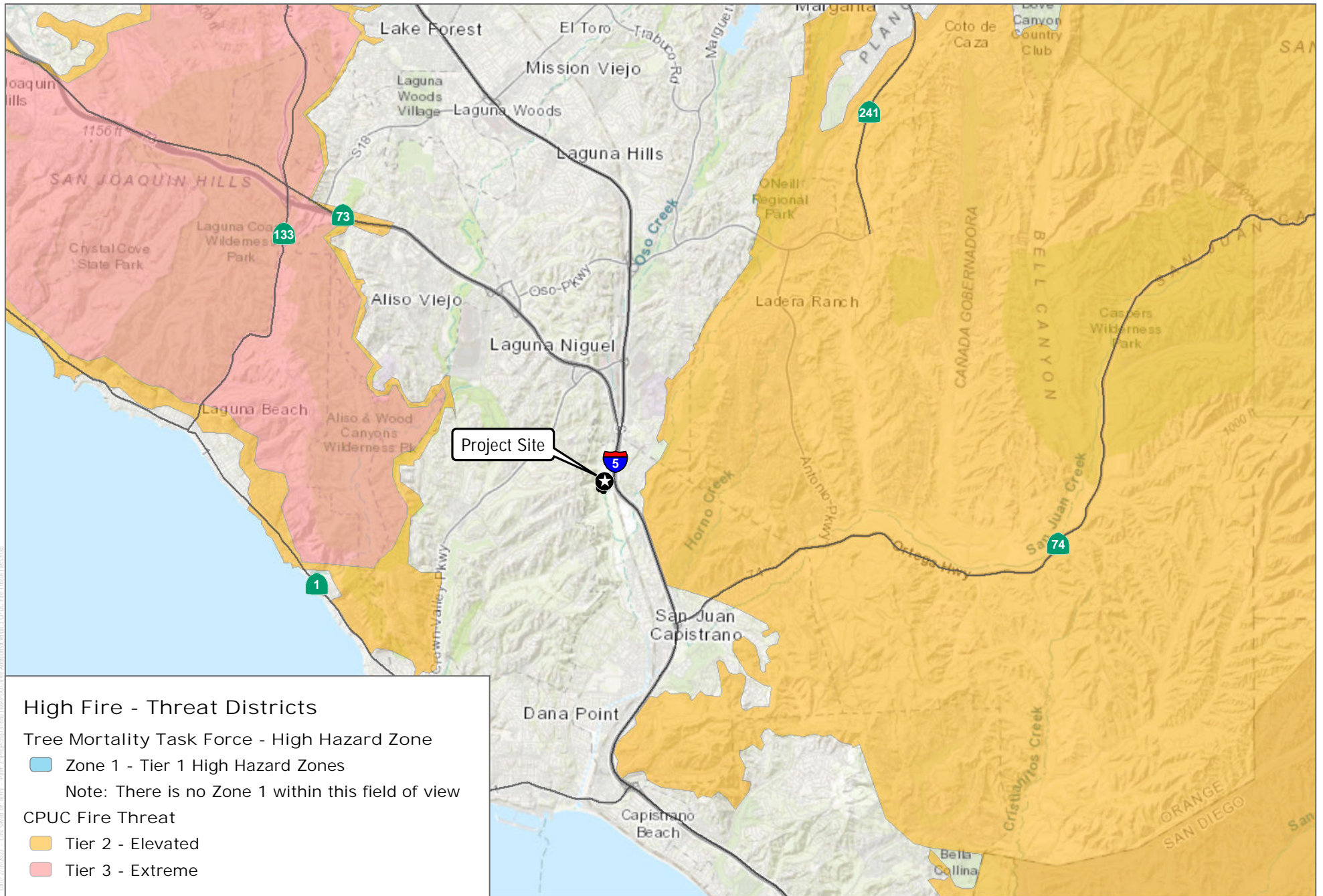


SOURCE: ESRI IMAGERY 2022; CAL FIRE 2011, 2023



FIGURE 4.17-2
Fire Hazard Severity Zones (FHSZ)
 Compass Energy Storage Project

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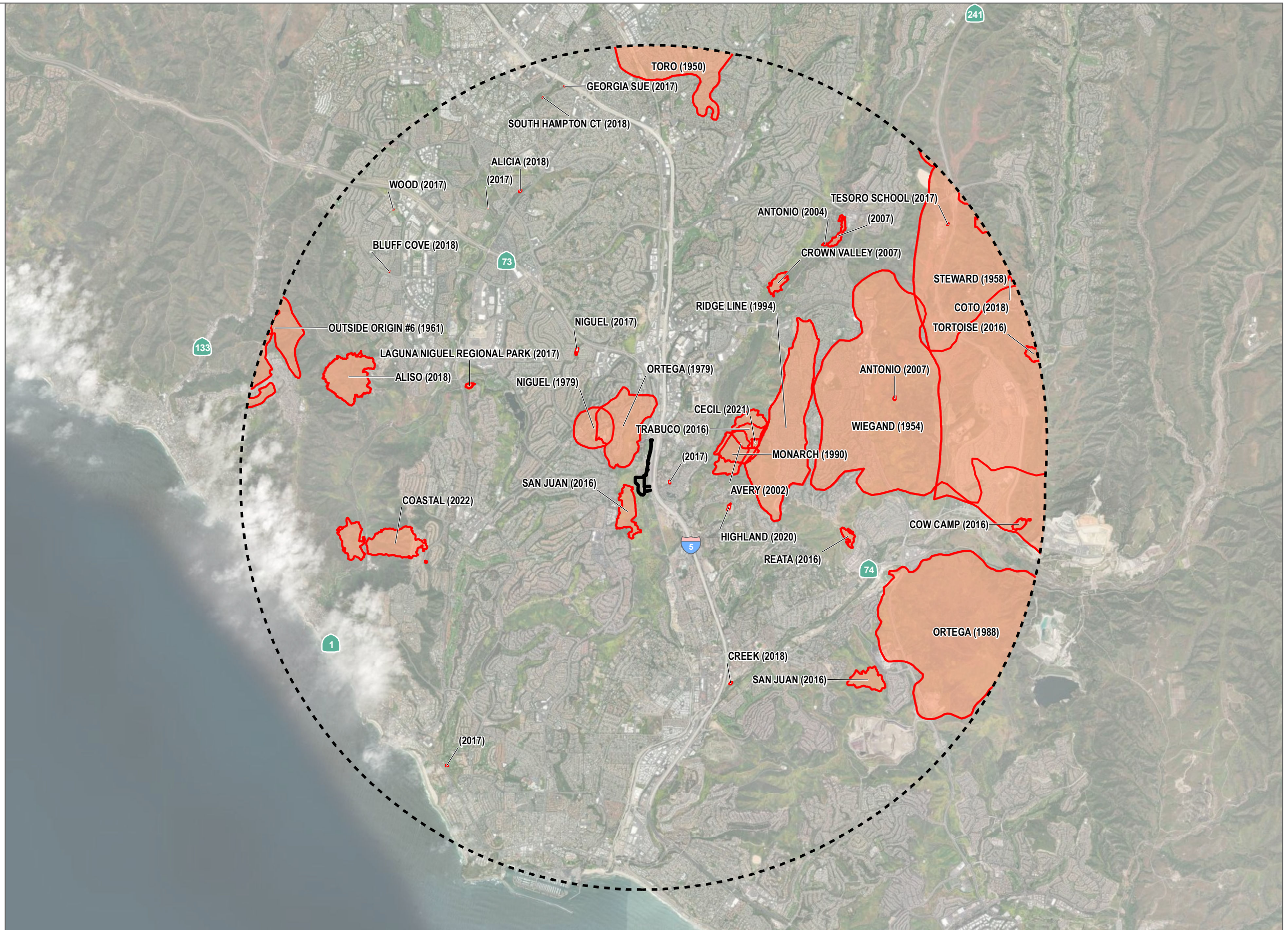
SOURCE: ESRI IMAGERY 2022; CPUC 2022



FIGURE 4.17-3
 CPUC Fire Threat Tiers
 Compass BESS Project

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-  Project Site
-  5-Mile Buffer
-  Fire Perimeter



SOURCE: Esri World Imagery; CAL FIRE 2022

FIGURE 4.17-4
Fire History
Compass Energy Storage Project

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Table 1. Fire Behavior Modeling Results for Existing Conditions

Fire Scenarios	Flame Length (feet)	Fireline Intensity (BTU/feet/second)	Spread Rate (mph)	Spotting Distance (miles)
Scenario 1: 5% slope, 40 mph N wind (offsite origin approaching proposed project site)				
Fuel Model GR1 (mowed grass/forbs)	3.1	67	0.5	0.3
Scenario 2: 5% slope, 20 mph S wind (offsite origin approaching proposed project site)				
Fuel Model GR1 (mowed grass/forbs)	2.3	35	0.3	0.2
Scenario 3: 30% slope, 40 mph NE wind (onsite origin through adjacent land)				
Fuel Model GR7 (upland mustard)	61.3	43624	15.0	2.6

Table 2. Fire Behavior Modeling Results for Post-Project Conditions

Fire Scenarios	Flame Length (feet)	Fireline Intensity (BTU/feet/second)	Spread Rate (mph)	Spotting Distance (miles)
Scenario 1: 5% slope, 40 mph N wind (offsite origin approaching perimeter precast wall)				
Fuel Model GR1 (mowed grass/forbs)	3.1	67	0.5	0.3
Scenario 2: 5% slope, 20 mph S wind (offsite origin approaching perimeter precast wall)				
Fuel Model GR1 (mowed grass/forbs)	2.3	35	0.3	0.2
Scenario 3: 30% slope, 40 mph NE wind (onsite origin)				
Fuel Model GR7 (upland mustard)	61.3	43624	15.0	2.6

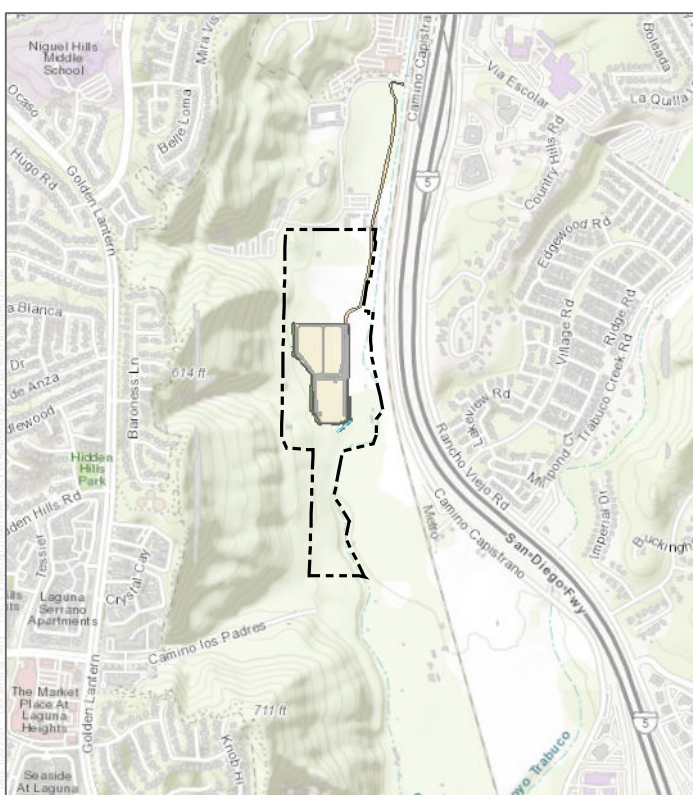
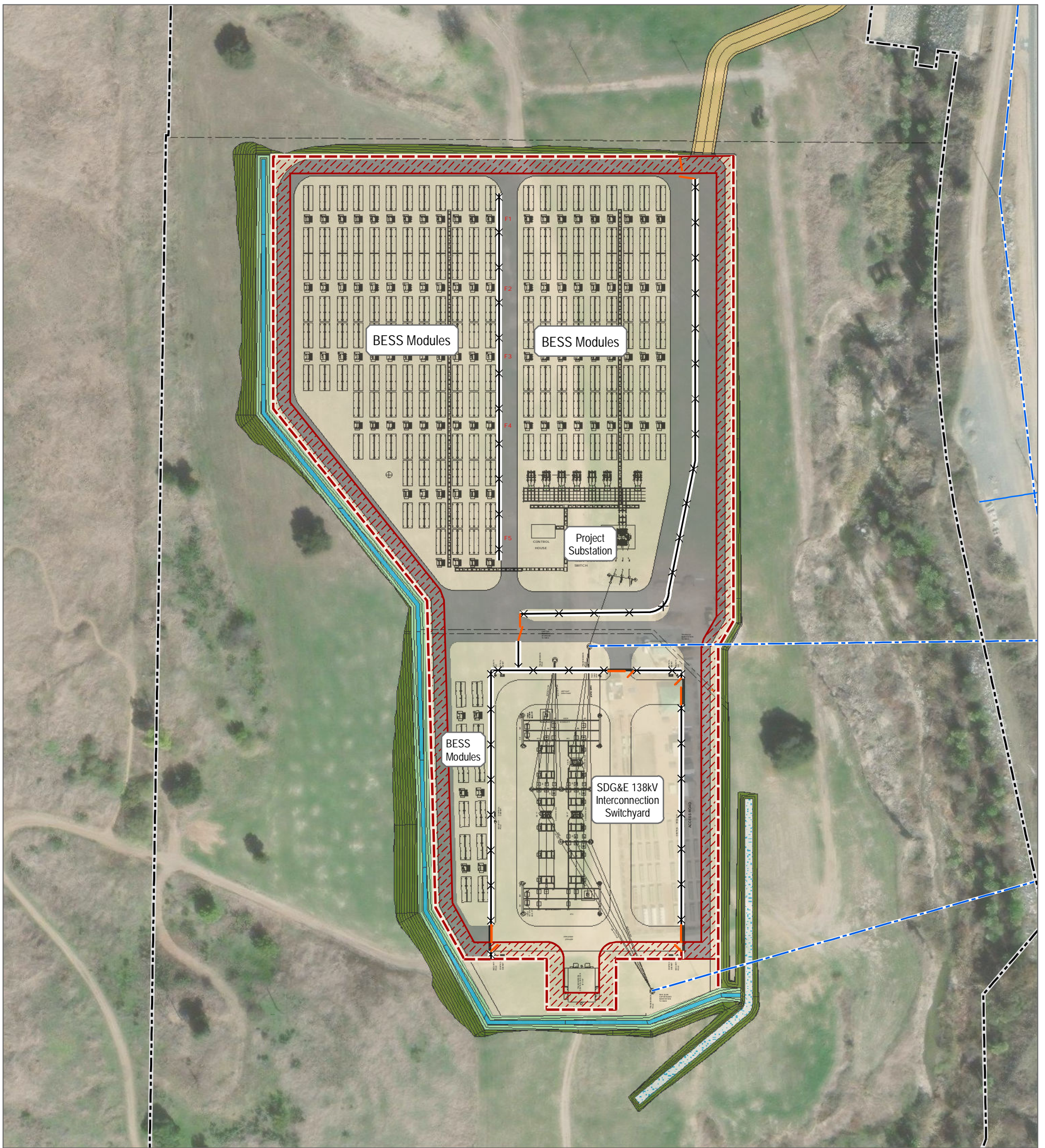


SOURCE: AERIAL-ESRI IMAGERY SERVICE 2023



FIGURE 4.17-5
BehavePlus Analysis
Compass BESS Project

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- 10-Ft Precast Fire Wall
- ✕ 6-Ft tall Security Fence with 3-strand Barbed Wire
- Gates
- Existing Transmission Alignment
- SDG&E Trabuco to Capistrano transmission line (138kV)
- Fiber
- APN 637-082-71
- 20-Ft Fuel Modification Zone
- Non-combustible Surface/Graded Work
- Internal Access Roads for Emergency Access
- Contour Grading
- Drainage Ditch
- Drainage Side Slopes
- Channel
- Offsite Access Road/Emergency Vehicle Access

FIRE RECOMMENDATIONS:

- Project to be compliant with 2022 CFC 1206, Electrical Energy Storage Systems
- Project to be compliant with OCFA Guideline G-10, Stationary Storage Battery Systems
- Fire suppression systems inside each container as proposed (NFPA 855 compliant)
- 10' tall perimeter precast, decorative concrete walls to OCFA satisfaction
- 20' FMZ - entire area within walls to be void of vegetative fuel - gravel or similar surface
- Landscaped areas to include fire-resistant landscaping consistent with fuel modification zone requirements
- Maintain FMZs twice-yearly or more as needed
- 20' wide access roads per OCFA standards
- Hydrants located per OCFA standards

SOURCE: AERIAL-ESRI IMAGERY SERVICE 2022; SITE PLAN-SARGENT & LUNDY 2024

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