

4.18 Wildfire

This section analyzes potential impacts related to wildfires and fire hazards from the implementation of the proposed 2021 LRDP. The analysis considers fire severity zones and nearby State Responsibility Areas (SRA) or lands classified as Very High Fire Hazard Severity Zones (FHSZ) and the potential for the 2021 LRDP to exacerbate impacts in these locations.

4.18.1 Environmental Setting

Wildfire Fundamentals

A wildfire is an uncontrolled fire in an area of extensive combustible fuel, including vegetation and structures. Wildfires differ from other fires in that they take place outdoors in areas of grassland, woodlands, brushland, scrubland, peatland, and other wooded areas that act as a source of fuel, or combustible material. Buildings may become involved if a wildfire spreads to adjacent communities. The primary factors that increase an area's susceptibility to wildfire include slope and topography, vegetation type and condition, and weather and atmospheric conditions. The California Climate Change Center reported a projected increase in wildfire frequency statewide between 11 percent under a lower-range warming scenario and 55 percent under a medium-range warming scenario. Please see Section 4.8, *Greenhouse Gas Emissions*, for impact analysis and information related to the 2021 LRDP's GHG emissions.

A significant part of Riverside County is undeveloped and consists of rugged topography with highly flammable vegetation. Hillside terrain has substantial risk, particularly in August, September, and October, when dry vegetation and hot dry Santa Ana winds coincide (Riverside County 2019). Widespread fires after an earthquake, coupled with Santa Ana winds, constitute the worst-case wildfire scenario in Riverside County, and there is a statistically high chance that the worst-case fire suppression need could occur (Riverside County 2019).

The indirect effects of wildland fires can be catastrophic. In addition to stripping the land of vegetation and destroying forest resources, large, intense fires can harm the soil, waterways, and the land itself. Soil exposed to intense heat may lose its capacity to absorb moisture and support life. Regions of dense dry vegetation, particularly in canyon areas and on hillsides, pose the greatest potential for wildfire risks. Urban/wildland interface fires occur when a fire burning in wildland vegetation gets close enough to threaten urban structures. The Office of Planning and Research (OPR) has recognized that although high-density structure-to-structure loss can occur, structures in areas with low- to intermediate- housing density were most likely to burn, potentially due to intermingling with wildland vegetation or difficulty of firefighter access. Fire frequency also tends to be highest at low to intermediate housing density, at least in regions where humans are the primary cause of ignitions (California Natural Resources Agency 2018).

The major urban/rural interface areas of fire risk in Riverside include Mount Rubidoux, the Santa Ana River Basin, Lake Hills, Mockingbird Canyon/Monroe Hills, Sycamore Canyon, Box Springs Mountains, and La Sierra/Norco Hills. The Box Springs Mountains area has Very High risk fire susceptibility and Mockingbird Canyon and the Southern Sphere Area each have Very High/High/Moderate risk fire susceptibility (City of Riverside 2018a).

No part of Riverside County is immune from fire danger. Structural and automobile fires represent the most common types of fire in urbanized areas and can be caused by a variety of human, mechanical and natural factors. Urban fires have the potential to spread to other structures or

areas, particularly if not extinguished promptly. Proactive efforts, such as fire sprinkler systems, fire alarms, and fire-resistant roofing and construction methods, can collectively lessen the likelihood and reduce the severity of urban fires (City of Riverside 2018a).

Wildfire-Conducive Conditions

Because of substantial open space areas and associated vegetation and wildlife habitats throughout the State, California is subject to fire hazards. Grassland or other vegetation in California is easily ignited, particularly in dry seasons. Wildfire is a serious hazard in high dry fuel load areas, particularly near areas of natural vegetation and steep slopes, because fires tend to burn more rapidly on steeper terrain. Wildfire is also a serious hazard in areas of high wind, given that fires will travel faster and farther geographically when winds are higher. Furthermore, wildfire is more likely in areas where electric power lines are located above-ground and could ignite vegetation where it comes into contact.

Vegetation

Vegetation is fuel to a wildfire, and it changes over time with seasonal growth and die-back. The relationship between vegetation and wildfire is complex, but generally some vegetation is naturally fire-resistant, while other vegetation is extremely flammable. For example, cured grass is much more flammable than standing trees (California Department of Forestry and Fire Protection [CAL FIRE] 2018). Grass is considered an open fuel, in which oxygen has free access to promote the spread of fire. Additionally, weather and climate conditions, such as drought, can lead to increasingly dry vegetation with low-moisture content and, thus, higher flammability. It is worth noting that some plant types in California landscapes are fire-resistant, while others are fire-dependent for their seed germination cycles. Wildfire behavior depends on the type of fuel present, such as ladder, surface, and aerial fuels. Ladder fuels provide a path for a surface fire to climb upward, into the crowns of trees. Surface fuels include grasses, logs, and stumps low to the ground. Aerial fuels include limbs, foliage, and branches not in contact with the ground (CAL FIRE 2020a). Weather and climate conditions, including drought cycles and high winds, can lead to dry vegetation whose low moisture content increases its flammability.

Hillside Slope and Aspect

According to CAL FIRE, sloping land increases susceptibility to wildfire because fire typically burns faster up steep slopes, and steep slopes may hinder firefighting efforts (CAL FIRE 2007). Following severe wildfires, sloping land is more susceptible to landslide or flooding from increased runoff during substantial precipitation events. Landslides and surficial slope failure are most likely to occur in areas with more than 25 percent (14 degrees) slope (hillside areas) and along steep bluffs. Aspect is the direction that a slope faces, which determines how much radiated heat the slope will receive from the sun. Thus, slopes facing south to southwest will receive the most solar radiation; they tend to be warmer and the vegetation drier than on slopes facing a northerly to northeasterly direction, increasing the potential for wildfire ignition and spread (University of California 2018).

Weather and Atmosphere

Wind, temperature, and relative humidity are the most influential weather elements in fire behavior and susceptibility (National Park Service 2017). Fire moves faster under hot, dry, and windy conditions. Wind may also blow embers ahead of a fire, causing its spread. Drought conditions also

lead to extended periods of excessively dry vegetation, increasing the fuel load and ignition potential.

Power Lines

Above-ground power lines have the potential to contribute to wildfire risk, especially when they are near or traverse wilderness areas. In some instances, high winds can blow nearby trees and branches into powerlines, sparking fires. Wind can also snap wooden poles, causing live wires to fall onto nearby grass or other fuel, igniting it. While the California Public Utilities Commission (CPUC) estimates only about 10 percent of California's wildfires are triggered by power lines, the frequency and severity of these wildfires has spurred the agency to make new requirements for power line safety practices (Atkinson 2018).

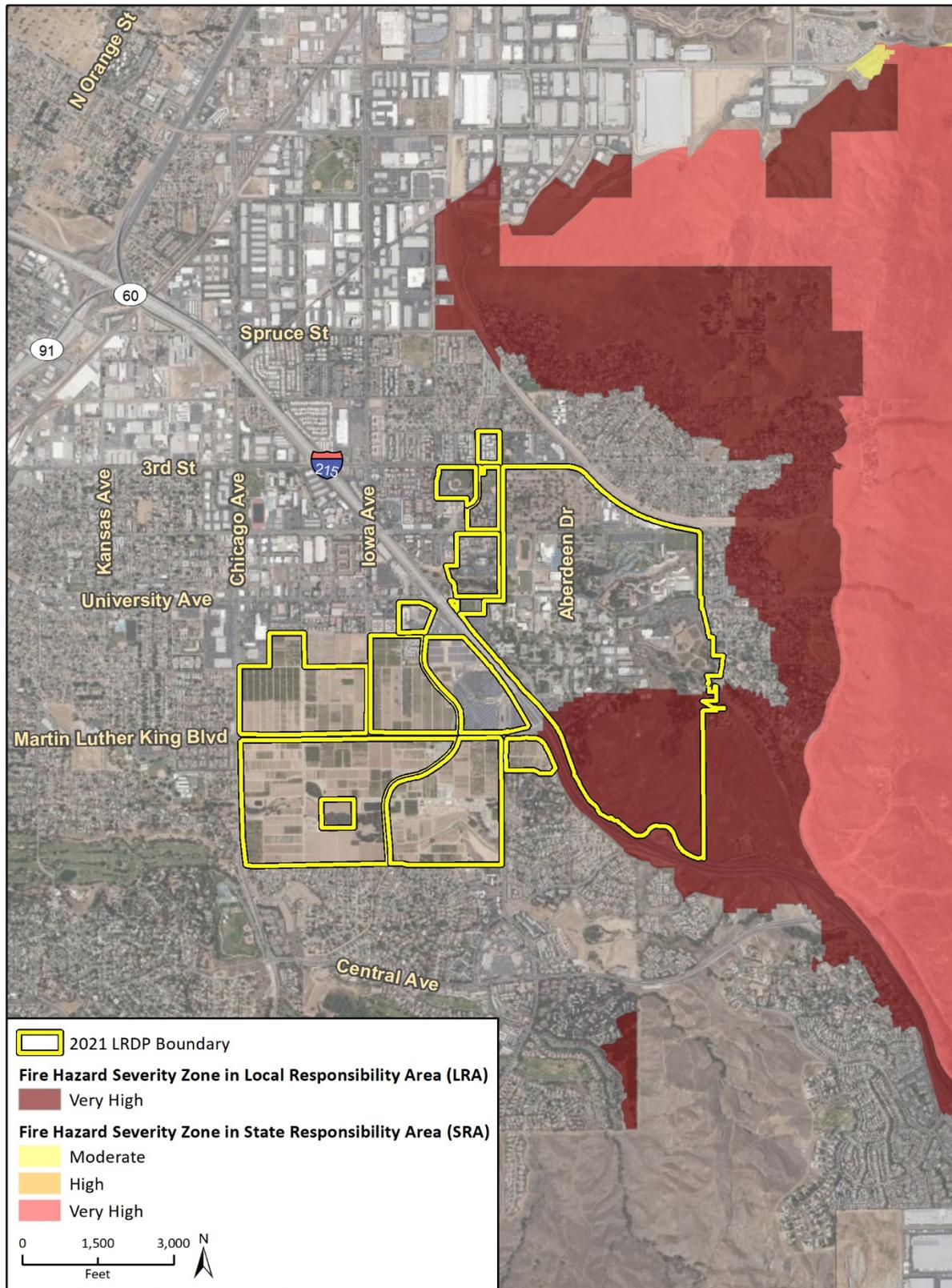
Wildfire Hazard Designations

In California, federal, State, and local agencies share responsibility for wildfire prevention and suppression. Federal agencies are responsible for federal lands in Federal Responsibility Areas (FRA). The State of California has determined that some non-federal lands in unincorporated areas with watershed value are of statewide interest and have classified those lands as SRA, which are managed by CAL FIRE. All incorporated areas and unincorporated lands not in FRAs or SRAs are classified as Local Responsibility Areas (LRA).

While nearly all of California is subject to some degree of wildfire hazard, there are specific features that make certain areas more hazardous. CAL FIRE is required by law to map areas of significant fire hazards based on fuels, terrain, weather, and other relevant factors (Public Resources Code 4201-4204, California Government Code 51175-89). As described above, the primary factors that increase an area's susceptibility to fire hazards include slope, vegetation type and condition, and atmospheric conditions. CAL FIRE maps fire hazards based on zones, referred to as FHSZ. There are three levels of severity: 1) Moderate FHSZs; 2) High FHSZs; and 3) Very High FHSZs. Only the Very High FHSZs are mapped for LRAs. Each of the zones influence how people construct buildings and protect property to reduce risk associated with wildland fires in a particular location. Under State regulations, areas in Very High FHSZs must comply with specific building and vegetation management requirements intended to reduce property damage and loss of life in those areas. Figure 4.18-1 shows areas near UCR that are designated as Very High FHSZ or an SRA.

The City of Riverside (City) General Plan Public Safety Element maps the areas in Box Springs Mountains, east of the UCR campus, as a Very High fire hazard area (City of Riverside 2018a, Figure PS-7). This extends to areas in the southern portion of East Campus, as illustrated in Figure 4.18-1.

Figure 4.18-1 Area Fire Hazard Severity Zones



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Additional data provided by CalFire, 2020.

Fig 4.18-1 Fire Hazard Severity Zones

Emergency and Evacuation Routes/Access

The City's General Plan Public Safety Element establishes multiple evacuation routes out of the City accessed from major arterial roadways, including but not limited to Martin Luther King Boulevard to the I-215/SR 60 freeway, University Avenue to the I-215/SR 60 freeway, and Iowa Avenue to the I-215/SR 60 freeway. The City's Emergency Operations Plan is updated every 5 years, during which these routes are confirmed as the most effective means of emergency response (City of Riverside 2018a).

The UCR Emergency Action Plan has provisions for evacuating campus buildings during emergency situations (UCR 2016). The Emergency Action Plan contains information including but not limited to emergency evacuation procedures, a map that shows the location of the building's emergency assembly areas, a building floor plan that shows emergency evacuation routes and the location of emergency equipment (e.g., fire extinguishers, fire alarm stations, emergency response kits), a list of pertinent safety personnel, including contact information, and department or building-specific emergency response procedure. UCR Transportation and Parking Services (TAPS) also assists in the event of an evacuation and coordinates with various campus locales including the City, as necessary.

The UCR Environmental Health & Safety (EH&S) Division offers training on helping persons who require assistance, including an online course library (UCR 2020). Emergency procedures are also posted on the EH&S website. Furthermore, a decision-making matrix is provided on the EH&S website that provides actions to take by levels of health concern pertaining to wildfire smoke events (UCR 2021).

Post-fire Slope Instability and Drainage Pattern Changes

Slope instability from wildfire scarring of the landscape can result in slope instability in the form of more intensive flooding and landslides. These post-fire slope soils and altered drainage patterns can result in soil creep on downslope sides of foundations and reduce lateral support.

In Riverside, most natural slopes are relatively flat, generally less than 15 percent, although some slopes are more than 30 percent in the southeastern hillsides (City of Riverside 2018a). Steep topography fractured and unconsolidated bedrock conditions, and expansive soils make hillside areas unstable, including those in the Box Springs Mountains area. Landsliding in these areas may result from heavy rain, erosion, removal of vegetation, seismic activity, wildfire, or combinations of these and other factors.

Campus Conditions

As shown on Figure 4.18-1, most developed areas of UCR are located in an urbanized area outside of a designated Very High FHSZ in a SRA. However, the southern area of East Campus, near South Campus Drive and East Campus Drive and including the southern portion of the UCR Botanic Gardens and the Open Space Reserve, are within a Very High FHSZ in a LRA that includes the Box Springs Mountains.

Hillside Slope and Aspect

As discussed in Section 4.7, *Geology and Soils*, campus topography is relatively flat, with some sloping on southeastern part of East Campus. These areas, particularly in the northern reaches, are largely developed. However, the UCR Botanic Gardens and open space lands are highly vegetated and in the Very High fire area. Over the last decades, wildfires have not occurred in the UCR Botanic Gardens (Tang 2021).

Vegetation

The northern portions of UCR East Campus include predominantly developed areas consisting of buildings, roads, parking lots and parking structures, and walkways commingled with a mature, extensive, and maintained campus landscape. The southern portions of East Campus where the UCR Botanic Gardens are situated include dense plantings and some native scrub species in open space areas near the Botanic Gardens Visitor Parking Lot. Adjacent neighborhoods are similarly developed and landscaped, although in residential patterns. These built environments and vegetation communities are susceptible to wildfire in extreme events under baseline conditions.

West Campus is largely comprised of agricultural fields, citrus groves, row crops, and research lands which are not prone to wildfire. These areas are managed and watered on a regular basis, and no fires have been documented in the area (Tang 2021).

Weather and Atmosphere

The Western Regional Climate Center maintains a weather monitoring station in Corona, approximately 17.9 miles west of UCR. According to data collected at this weather station, most precipitation is received from November through March, with an average annual rainfall of approximately 11 inches (U.S. Climate Data 2020). May through September is the driest part of the year and coincides with what was traditionally considered the fire season in California. However, increasingly persistent drought and climatic changes in the State have resulted in drier winters. Fires during the autumn, winter, and spring months are becoming more common. Prevailing winds are northwest, measured from March Air Reserve Base, approximately 11.6 miles southeast of the campus, and west/northwest, measured from the Riverside Municipal Airport, approximately 9.7 miles southwest of the campus (Western Regional Climate Center 2020). In 2020, average maximum wind speeds ranged from 5.8 mph to 10.6 mph, with wind gusts averaging between 5.7 mph to 7.3 mph (World Weather Online 2021).

Presence of Power Lines

Above-ground power lines are present along roadways that border the campus under existing conditions. This includes along Watkins Drive, near the Box Springs Mountains, and Blaine Street for its extent, including where it intersects Watkins Drive. They are also present on portions of West Linden Street, but electric power transmission lines are below ground on Canyon Crest Drive and within the campus grounds. As discussed in Section 3, *Environmental Setting*, one new transmission line segment will run south along Chicago Avenue to about a 0.25 mile south of Martin Luther King Boulevard, then east through West Campus. A second segment was being constructed at the time this EIR was being prepared approximately 600 feet north of where the first line ended. This line intercepts the north-south line on UCR's property and continues east across Canyon Crest Drive to the I-215/SR 60 freeway.

Campus Structures

Most buildings on the campus were built from the 1950s to the 1980s (see the Appendix E, Historic Resources Evaluation), and are primarily constructed of concrete, metal, and glass.

4.18.2 Regulatory Setting

Federal

The Disaster Mitigation Act of 2000

The Disaster Mitigation Act of 2000 requires a State mitigation plan as a condition of disaster assistance. There are two different levels of State disaster plans: “Standard” and “Enhanced.” States that develop an approved Enhanced State Plan can increase the amount of funding available through the Hazard Mitigation Grant Program. The Act has also established new requirements for local mitigation plans.

National Fire Plan

The National Fire Plan was developed under Executive Order 11246 in August 2000, following an historic wildland fire season. Its intent was to establish plans for active response to severe wildland fires and their impacts to communities, while ensuring sufficient firefighting capacity. The plan addresses firefighting, rehabilitation, hazardous fuels reduction, community assistance, and accountability. The program promotes close coordination among local, State, tribal, and federal firefighting resources by conducting training, purchasing equipment, and providing prevention activities on a cost-share basis. To help protect people and their property from potential catastrophic wildfire, the National Fire Plan directs funding to be provided for projects designed to reduce the fire risks to communities. High-risk communities identified within the wildland-urban interface, the area where homes and wildlands intermix, were published in the Federal Register in 2001. At the request of Congress, the Federal Register notice only listed those communities neighboring federal lands (CAL FIRE 2018). CAL FIRE incorporates concepts from this plan into State fire planning efforts.

State

California Fire and Building Codes (2019)

The California Fire Code is Chapter 9 of California Code of Regulations (CCR) Title 24. It establishes the minimum requirements consistent with nationally recognized good practices to safeguard public health, safety, and general welfare from the hazards of fire, explosion, or dangerous conditions in new and existing buildings, structure, and premises, and to provide safety and assistance to firefighters and emergency responders during emergency operations. It is the primary means for authorizing and enforcing procedures and mechanisms to ensure the safe handling and storage of any substance that may pose a threat to public health and safety. The California Fire Code regulates the use, handling, and storage requirements for hazardous materials at fixed facilities. The California Fire Code and the California Building Code use a hazard classification system to determine what protective measures are required to ensure fire safety and protect lives.

These measures may include construction standards, separations from property lines and specialized equipment. To ensure that these safety measures are met, the California Fire Code employs a permit system based on hazard classification. The provisions of this Code apply to the construction, alteration, movement, enlargement, replacement, repair, equipment, use and occupancy, location, maintenance, removal, and demolition of every building or structure or any appurtenances connected or attached to such building structures throughout California.

More specifically, the Fire Code is included in Title 24 of the CCR. Title 24, part 9, Chapter 7 addresses fire-resistances-rated construction; California Building Code (Part 2); Chapter 7A addresses materials and construction methods for exterior wildfire exposure; Fire Code Chapter 8 addresses fire related Interior finishes; Fire Code Chapter 9 addresses fire protection systems; and Fire Code Chapter 10 addresses fire-related means of egress, including fire apparatus access road width requirements. Fire Code Section 4906 also contains existing regulations for vegetation and fuel management to maintain clearances around structures. These requirements establish minimum standards to protect buildings in FHSZs within SRAs and wildland-urban interface fire areas. This code includes provisions for ignition-resistant construction standards for new buildings.

Fire Code Chapter 33, *Fire Safety During Construction and Demolition*, also includes requirements for a construction pre-fire plan, training, fire protection devices, regulations for refueling, fire clearances, precautions against fire, including prohibitions on smoking, on-site firewatch, and regulations for welding and electrical wiring.

Executive Order N-05-19

On January 9, 2019, Governor Gavin Newsom issued Executive Order N-05-19 to address the recent damaging wildfires happening in California. Executive Order N-05-19 directs CAL FIRE, in consultation with other State agencies and departments, to recommend immediate, medium and long-term actions to help prevent destructive wildfires. In response, CAL FIRE (with the contribution of several other State agencies) created the Community Wildfire Prevention & Mitigation Report (February 22, 2019) which contains recommendations to reduce the damage from wildfires across the State. Specifically, they focus on reducing wildfire fuel (such as vegetation clearing), long-term community protection (creating defensible space in communities), wildfire prevention, and forest health (CAL FIRE 2019).

California Fire Plan

The Strategic Fire Plan for California (California Fire Plan) is the State's road map for reducing the risk of wildfire. The most recent version of the Plan was finalized in August 2018 and directs each CAL FIRE Unit to prepare a locally specific fire management plan (CAL FIRE 2018). Pursuant to the California Fire Plan, individual CAL FIRE units are required to develop fire management plans for their areas of responsibility. These documents assess the fire situation within each of the 21 CAL FIRE units and six contract counties. The plans include stakeholder contributions and priorities and identify strategic areas for pre-fire planning and fuel treatment as defined by the people who live and work with the local fire problem. The plans are required to be updated annually. The CAL FIRE/Riverside County Strategic Fire Plan seeks to reduce firefighting costs and property losses, increase firefighter safety, and educate the public on fire prevention throughout Riverside County, including areas adjacent to UCR such as Moreno Valley. With California's extensive wildland-urban interface situation, the list of high-risk communities extends beyond just those adjacent to federal lands, discussed above. The California State Forester (CAL FIRE Director) has the responsibility for managing the list of those high-risk communities. Areas near and adjacent to the UCR campus are included in high-risk evaluations and vegetation management plans have been developed for these areas (CAL FIRE 2020a).

California Disaster Mitigation Act

The California Office of Emergency Services (CalOES) prepares the State of California Multi-Hazard Mitigation Plan (SHMP). The SHMP identifies hazard risks and includes a vulnerability analysis and a

hazard mitigation strategy. The SHMP is federally required under the Disaster Mitigation Act of 2000 for the State to receive federal funding. The Disaster Mitigation Act of 2000 requires a State mitigation plan as a condition of disaster assistance.

California Emergency Response Plan

California has developed an emergency response plan to coordinate emergency services provided by federal, State, and local governments and private agencies. Responding to hazardous-materials incidents is one part of this plan. The plan is administered by the California Governor's Office of Emergency Services, which coordinates the responses of other agencies. When the City of Riverside experiences an emergency, an Emergency Operations Center may be opened. In the event an Emergency Operations Center is opened, emergency response team members coordinate efforts and work with local fire and police agencies, emergency medical providers, the California Highway Patrol, CAL FIRE, CDFW, and Caltrans.

State Emergency Plan

The foundation of California's emergency planning and response is a statewide mutual aid system designed to ensure adequate resources, facilities, and other support is provided to jurisdictions whenever their own resources prove to be inadequate to cope with a given situation.

The California Disaster and Civil Defense Master Mutual Aid Agreement (California Government Code Sections 8555–8561) requires signatories to prepare operational plans to use in their jurisdiction and outside their area. These plans include fire and non-fire emergencies related to natural, technological, and war contingencies. The State of California, all State agencies, all political subdivisions, and all fire districts signed this agreement in 1950.

Section 8568 of the California Government Code, the "California Emergency Services Act," states that "the State Emergency Plan shall be in effect in each political subdivision of the state, and the governing body of each political subdivision shall take such action as may be necessary to carry out the provisions thereof." The Act provides the basic authorities for conducting emergency operations following the proclamations of emergencies by the Governor or appropriate local authority, such as a City Manager. The provisions of the act are further reflected and expanded on by appropriate local emergency ordinances. The Act further describes the function and operations of government at all levels during extraordinary emergencies, including war.

All local emergency plans are extensions of the State of California Emergency Plan. The State Emergency Plan conforms to the requirements of California's Standardized Emergency Management System (SEMS), the system required by Government Code 8607(a) for managing emergencies that involve multiple jurisdictions and agencies. The SEMS incorporates the functions and principles of the Incident Command System, the Master Mutual Aid Agreement, existing mutual aid systems, the operational area concept, and multi-agency or inter-agency coordination. Local governments must use SEMS to be eligible for funding of their response-related personnel costs under State disaster assistance programs. The SEMS consists of five organizational levels that are activated as necessary, including field response, local government, operational area, regional, and State. The Governor's Office of Emergency Services divides the State into several mutual aid regions. Riverside is in Region IV, managed by Assistant Chief Pete Mercado (CalOES 2020).

California Building Code

WILDLAND-URBAN INTERFACE BUILDING STANDARDS

On July 2, 2019, the Building Standards Commission updated the Office of the State Fire Marshal's emergency regulations amending the CCR, Title 24, Part 2, known as the 2019 California Building Code. These codes include provisions for ignition-resistant construction standards in the wildland-urban interface.

Interface zones are dense housing adjacent to vegetation that can burn and must meet the following criteria:

1. Housing density class 2, 3, or 4
2. In moderate, high, or very high fire hazard severity zone
3. Not dominated by wildland vegetation (lifeform not herbaceous, hardwood, conifer, or shrub)
4. Spatially contiguous groups of 30-meter cells that are 10 acres and larger

Intermix zones are housing development interspersed in an area dominated by wildland vegetation and must meet the following criteria:

1. Not interface
2. Housing density class 2
3. Housing density class 3 or 4, dominated by wildland vegetation
4. In Moderate, High, or Very High FHSZ
5. Improved parcels only
6. Spatially contiguous groups of 30-meter cells 25 acres and larger

Influence zones have wildfire-susceptible vegetation up to 1.5 miles from an interface zone or intermix zone (CAL FIRE 2018).

California Public Resources Code

The California Public Resources Code (PRC) includes fire safety regulations that restrict the use of equipment that may produce a spark, flame, or fire; require the use of spark arrestors on construction equipment that use an internal combustion engine; specify requirements for the safe use of gasoline-powered tools in fire hazard areas; and specify fire suppression equipment that must be provided on-site for various types of work in fire-prone areas.

These regulations include the following:

- Earthmoving and portable equipment with internal combustion engines would be equipped with a spark arrestor to reduce the potential for igniting a wildland fire (PRC § 4442)
- Appropriate fire suppression equipment would be maintained during the highest fire danger period—from April 1 to December 1 (PRC § 4428)
- On days when a burning permit is required, flammable materials would be removed to a distance of 10 feet from any equipment that could produce a spark, fire, or flame, and the construction contractor would maintain the appropriate fire suppression equipment (PRC § 4427)
- On days when a burning permit is required, portable tools powered by gasoline-fueled internal combustion engines would not be used within 25 ft of any flammable materials (PRC § 4431)

Government Code Section 51182

A person who owns, leases, controls, operates, or maintains an occupied dwelling or occupied structure in, upon, or adjoining a mountainous area, forest-covered land, brush-covered land, grass-covered land, or land that is covered with flammable material, which area or land is in a Very High FHSZ shall at all times do all of the following:

1. Maintain defensible space of 100 ft from each side and from the front and rear of the structure
2. Remove that portion of a tree that extends within 10 ft of the outlet of a chimney or stovepipe
3. Maintain a tree, shrub, or other plant adjacent to or overhanging a building free of dead or dying wood
4. Maintain the roof of a structure free of leaves, needles, or other vegetative materials
5. Obtain a certification from the local building official that the dwelling or structure, as proposed to be built, complies with all applicable State and local building standards prior to constructing a new dwelling or structure that will be occupied or rebuilding an occupied dwelling or occupied structure damaged by a fire in that zone, the construction or rebuilding of which requires a building permit

California Public Utilities Commission General Orders

GENERAL ORDER 95

The CPUC General Order 95 applies to construction and reconstruction of overhead electric lines in California. The replacement of poles, towers, or other structures is considered reconstruction and requires adherence to all strength and clearance requirements of this order. The CPUC has promulgated various Rules to implement the fire safety requirements of General Order 95, including:

- Rule 18A requires utility companies take appropriate corrective action to remedy Safety Hazards.
- General Order 95 nonconformances requires that each utility company establish an auditable maintenance program.
- Rules 31.2 requires that lines be inspected frequently and thoroughly.
- Rule 35 requires that vegetation management activities be performed in order to establish necessary and reasonable clearances. These requirements apply to all overhead electrical supply and communication facilities that are covered by General Order 95, including facilities on lands owned and maintained by California State and local agencies.
- Rule 38 establishes minimum vertical, horizontal, and radial clearances of wires from other wires.
- Rule 43.2.A.2 requires that for lines located within Tier 2 or Tier 3 zones, the wind loads required in Rule 43.2.A.1 be multiplied by a wind load factor of 1.1. (CPUC 2018)

GENERAL ORDER 165

General Order 165 establishes requirements for the inspection of electric distribution and transmission facilities that are not contained within a substation. Utilities must perform “Patrol” inspections, defined as a simple visual inspection of utility equipment and structures that is designed to identify obvious structural problems and hazards, at least once per year for each piece of equipment and structure. “Detailed” inspections, where individual pieces of equipment and

structures are carefully examined, are required every 5 years for all overhead conductor and cables, transformers, switching/protective devices, and regulators/capacitors. By July 1st of each year, each utility subject to this General Order must submit an annual report of its inspections for the previous year under penalty of perjury (CPUC 2017a).

GENERAL ORDER 166

General Order 166 Standard 1.E requires that investor-owned utilities (IOUs) develop a fire prevention plan which describes measures that the electric utility will implement to mitigate the threat of power-line fires generally. Additionally, this standard requires that IOUs outline a plan to mitigate power line fires when wind conditions exceed the structural design standards of the line during a Red Flag Warning in a high fire threat area. Fire prevention plans created by IOUs are required to identify specific parts of the utility's service territory where the conditions described above may occur simultaneously. Standard 11 requires that utilities report annually to the CPUC regarding compliance with General Order 166 (CPUC 2017b). The City's Local Hazard Mitigation Plan notes that above-ground power lines are susceptible to high winds that pass through the city, including the area around UCR. Arcing lines can cause sparks to drop onto buildings or brush and the utility department continues to address this risk (City of Riverside 2018b).

California Public Utilities Commission Undergrounding Rule 20 Programs¹

Tariff Rule 20 is the vehicle for the implementation of the underground conversion programs. Rule 20 provides three levels, A, B, and C, of progressively diminishing ratepayer funding for the projects, and a sub-program D which is specific to undergrounding in San Diego Gas & Electric's Fire Threat District. For the Rule 20 Program, Cities identify overhead lines that they wish to convert to underground and in consultation with their investor owned utility (IOU) determine if the conversion project qualifies for any of the Rule 20 A, B, C or D programs. If qualified utility ratepayer funds will cover between 0 and 100 percent of the costs of the conversion project as detailed below. Approximately 35 to 40 miles of overhead lines are converted each year to underground through Rule 20 Sections A, B, and C. There have not been any Rule 20D projects to date.

RULE 20A

Rule 20A projects are constructed in areas of a community that are used most often by the general public. Rule 20A projects are nominated by the city or county and are paid for by the electric utility ratepayers. Under Rule 20A, the CPUC requires the utility to allocate a certain amount of work credits each year to the cities and unincorporated counties for conversion projects. Because ratepayers contribute the bulk of the costs of Rule 20A programs through utility rates, the projects must be in the public interest by meeting one or more of the following public interest criteria:

- Eliminate an unusually heavy concentration of overhead lines;
- Involve a street or road with a high volume of public traffic;
- Benefit a civic or public recreation area or area of unusual scenic interest;
- Be listed as an arterial street or major collector as defined in the Governor's Office of Planning and Research (OPR) Guidelines.

The determination of "general public interest" under these criteria is made by the local government, after holding public hearings, in consultation with the utility.

¹ California Public Utilities Commission. 2021. <https://www.cpuc.ca.gov/General.aspx?id=4403>

In addition, the community must also have accumulated enough Rule 20A work credit allocations to fund a project. Such allocations are given out annually by the utility and communities can accumulate them over several years until they have sufficient funding to complete a project. Communities may borrow forward five years to obtain additional credits. Once enough work credits are available, the community forms a utility underground district by municipal resolution to initiate a project.

The program is voluntary, and the communities identify the overhead conversion projects in consultation with the utilities. Each year Rule 20A results in converting approximately 20 miles of overhead distribution lines to underground.

RULE 20B

Projects in larger developments or areas that do not meet any of the above criteria can be performed as Rule 20B projects. At a minimum, the proposed project must involve both sides of a street for a minimum of 600 feet. The applicant (residents, local government, or developer) is responsible for the installation of the conduit, substructures, and boxes as well as paying for the cost to complete the installation of the underground (electric, telephone, and cable) system. Unlike Rule 20A, there are no work credits involved with Rule 20B and the applicant expends funds and receives reimbursement. After the project is complete, the electric utility credits the applicant in the amount of an equivalent overhead system, plus the taxes, if applicable. This reimbursement typically ranges from 20 to 40 percent of the project cost.

RULE 20C

Projects that do not qualify under 20A or 20B are performed under Rule 20C. Rule 20C projects are less than 600 feet in length and typically involve one or more property owners. The applicant(s) bear the cost of the entire undergrounding project and receive a small credit for the salvage cost of the facilities, less depreciation, that do not go underground.

RULE 20D

Not Applicable – Rule 20D is currently only in San Diego Gas & Electric’s service territory.

Senate Bill 1028

SB 1028 (2016) requires each electrical corporation to construct, maintain, and operate its electrical lines and equipment in a manner that will minimize the risk of catastrophic wildfire posed by those components, and makes a violation of these provisions by an electrical corporation a crime under State law. The bill also requires each electrical corporation to annually prepare a wildfire mitigation plan and submit to CPUC for review. The plan must include a statement of objectives, a description of preventive strategies and programs that are focused on minimizing risk associated with electric facilities, and a description of the metrics that the electric corporation uses to evaluate the overall wildfire mitigation plan performance and assumptions that underlie the use of the metrics.

University of California, Riverside

UCR Emergency Operations Plan/Emergency Action Plan

As required by CCR Title 8, UCR prepared and implemented an Emergency Action Plan in July 2012. The latest revision to the plan occurred in 2016. The document is intended to guide the emergency response actions of all campus personnel during an emergency event, as well as provide standard

actions in the case of a safety-threatening emergency. The UCR Emergency Operations Plan is a living document that is reviewed and modified on a 5-year cycle and is currently being updated. The Emergency Operations Plan establishes policies, procedures, and organizational structure for the preparedness, response, and recovery of emergency events impacting the campus. To prepare for emergencies and disasters, campus buildings are expected to have an Emergency Action Plan. The Emergency Action Plan contains information including but not limited to emergency evacuation procedures, a map that shows the location of the building's emergency assembly areas, a building floor plan that shows emergency evacuation routes and the location of emergency equipment (e.g., fire extinguishers, fire alarm stations, emergency response kits), a list of pertinent safety personnel, including contact information, and department or building-specific emergency response procedure. TAPS also assists in the event of an evacuation and coordinates with various campus locales including the City, as necessary. Emergency procedures are also posted on the EH&S website. Emergency assembly areas are identified on a campus map that also shows emergency call box locations.²

UCR Campus Construction and Design Standards

The UCR Campus Construction and Design Standards for building, safety, and security specify fire suppression requirements to which design professionals must adhere when developing civil, architectural, structural, electrical, and mechanical systems as they pertain to fire response. While the University is its own enforcement agency except where the codes of the State Fire Marshal are involved. For these requirements, campus projects are subject to plan approval and enforcement authority by the State agency in which the Campus Fire Marshal, who is designated by the California State Fire Marshal, serves the State as a deputy.

As noted in these standards, overhead lines are prohibited and required to be installed underground.

Pertaining to fire protection features, as development occurs, the following measures shall be incorporated:

- New structures would be designed with adequate fire protection features pursuant to State law and the requirements of the State Fire Marshal. Building designs would be reviewed by appropriate campus staff and as agreed upon by the University of California.
- Prior to implementation of individual projects, the adequacy of water supply and water pressure will be determined to ensure sufficient fire protection services, as established by the California Fire Code.
- Adequate access will be provided to within 50 feet of the main entrance of occupied buildings to accommodate emergency ambulance service.
- Adequate access for fire apparatus will be provided pursuant to the California Fire Code as it relates to standpipes and sprinkler outlets.
- Service roads, turnaround, plazas, and pedestrian walks that may be used for fire or emergency vehicles will be constructed to withstand loads of up to 80,000 pounds or per California Fire Code requirements.

² The Emergency Assembly Campus Map in its most updated format at <https://campusmap.ucr.edu/emergency-assembly-areas>

Regional and Local (Non-Binding)

As noted in Section 4, “University of California Autonomy,” UCR, a constitutionally-created State entity, is not subject to municipal regulations of surrounding local governments for uses on property owned or controlled by UCR that are in furtherance of the university’s educational purposes. However, UCR may consider, for coordination purposes, aspects of local plans and policies of the communities surrounding the campus when it is appropriate and feasible but not bound by those plans and policies in its planning efforts.

City of Riverside General Plan

The City’s General Plan Public Safety Element contains objectives, policies, and tools that aim to reduce potential fire hazards and protect individuals from injuries caused by fires. Through implementation of the General Plan policies, the City will continue to reduce the potential for damage by dangerous fires by providing adequate firefighting services, by protecting hillsides and urban-wildland interface areas, by encouraging residents to plant and maintain drought-resistant, fire-retardant plant species on slopes to reduce the risk of brush fire and soil erosion and by working with the Riverside Fire Department to control hazardous vegetation.

In 2018, the City amended its Public Safety Element and it includes a discussion of fire prevention and response. Hills and canyon areas east, north/northeast, and south/southeast near the UCR campus are considered to present the greatest potential for wildfire that could threaten the urban/wildland interface, particularly during high wind or Santa Ana wind events. Figure PS-7 of the Public Safety Element indicates the area east, north/northeast, and south/southeast of the campus, in the Box Springs Mountains, as a Very High hazard rating. This extends to areas in the southern portion of East Campus (see Figure 4.18-1).

The Public Safety Element discusses a transition from total fire suppression in brush and vegetation areas to one that allows for a more holistic and ecologically sensitive management of these fuels in a way that reduces fire threats. Policies in the City’s General Plan Public Safety Element that apply to wildfire impacts include the following:

- Policy PS-6.1: Ensure that sufficient fire stations, personnel, and equipment are provided to meet the needs of the community as it grows in size and population
- Policy PS-6.2: Endeavor to meet/maintain a response time of 5 minutes for Riverside's urbanized areas
- Policy PS-6.5: Mitigate existing fire hazards related to urban development or patterns of urban development as they are identified and as resources permit
- Policy PS-6.9: Provide outreach and education to the community regarding fire safety and prevention
- Policy PS-6.11: Promote the prevention, detection, investigation, and prosecution of accidental and arson fires through coordinated investigative and training partnerships with fire and law enforcement agencies and prosecuting authorities

City of Riverside Local Hazard Mitigation Plan

The City’s Local Hazard Mitigation Plan (LHMP) was developed with input from many organizations and stakeholders, including State and local fire departments, including federal agencies, community groups, and land management agencies. The purpose of the LHMP is to help reduce the potential loss of human life and damage to property, natural, and cultural resources in Riverside due to

wildfire and other natural and human-made disasters. The plan describes the wildfire risk and potential throughout the City, designates wildland areas, discusses assets at risk throughout the City, provides mitigation actions, and discusses resources available (City of Riverside 2018b).

4.18.3 Environmental Impacts and Mitigation Measures

Significance Criteria

UCR utilizes the following 2020 CEQA Guidelines Appendix G significance criteria questions related to Wildfire.

If located in or near SRA or lands classified as Very High FHSZ, would the proposed 2021 LRDP:

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

Issues Not Evaluated Further

No criteria questions related to Wildfire were scoped out of the Draft EIR analysis; all concerns are addressed herein.

Analysis Methodology

Impacts related to wildfire hazards and risks were evaluated using FHSZ mapping for Riverside County, aerial imagery, and topographic mapping. Additionally, weather patterns related to prevailing winds and precipitation trends were considered as they relate to the spread and magnitude of wildfire.

To evaluate the proposed 2021 LRDP potential wildfire impacts, resource conditions that could pose a risk to development of the proposed 2021 LRDP were identified through review of documents pertaining to these topics. Sources consulted include the Riverside County General Plan, City of Riverside General Plan, the UCR Emergency Operations Plan, background reports prepared for nearby plans and projects, and published geologic literature. The information obtained from these sources was reviewed and summarized to establish the existing conditions (described above) and identify potential environmental hazards that may result from implementation of the proposed 2021 LRDP. In determining level of significance, the analysis assumes that the proposed 2021 LRDP would comply with relevant federal and State laws.

CEQA does not generally require an agency to consider the effects of existing environmental conditions on a proposed project's future users or residents. Consequently, impacts under the thresholds identified above would only be considered significant if the proposed 2021 LRDP risks exacerbating those existing environmental conditions.

2021 LRDP Objectives and Policies

There are no objectives or policies in the proposed 2021 LRDP related to wildfire.

Impact Analysis

Impact WF-1 SUBSTANTIALLY IMPAIR AN EMERGENCY RESPONSE PLAN OR EMERGENCY EVACUATION PLAN.

IMPLEMENTATION OF THE PROPOSED 2021 LRDP COULD RESULT IN TEMPORARY LANE OR ROADWAY CLOSURES ON THE EDGES OF CAMPUS AND WITHIN THE CAMPUS CIRCULATION SYSTEM DURING CONSTRUCTION ACTIVITIES. CONSTRUCTION IMPACTS WOULD BE LESS THAN SIGNIFICANT. OPERATION OF NEW FACILITIES WOULD NOT SUBSTANTIALLY IMPAIR AN ADOPTED EMERGENCY RESPONSE OR EVACUATION PLAN. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

As shown in Figure 4.18-1, CAL FIRE has mapped areas proximate to the campus as Very High FHSZs and the City's General Plan Public Safety Element maps urban/wildland interface areas on the southern portion of East Campus and within proximity to East Campus on the east, north/northeast, and southeast as Very High fire hazard areas (CAL FIRE 2007, City of Riverside 2018a). UCR's Emergency Action Plan guides evacuation procedures in case of fire and other emergencies. TAPS personnel support evacuations and coordinate with other University departments and with the City, as necessary.

Construction

Buildout of the proposed 2021 LRDP would include the development of new structures and infrastructure within UCR. During construction phases, construction of campus facilities associated with the proposed 2021 LRDP could result in temporary lane or roadway closures on the edge of campus and within the campus circulation system. Construction management plans for each campus projects include information related to truck route details, potential road closures/detours, and emergency access, and are reviewed and approved prior to construction activity commencing. With these review and approval procedures in place, project developed under the proposed 2021 LRDP would not result in inadequate emergency access to construction sites or nearby structures. Construction management plans are prepared in accordance with the latest version of the California Manual on Uniform Traffic Control Devices and include measures such as the following:

- Identify proposed truck routes to be used
- Include a public information and signage plan to inform student, faculty and staff of the planned construction activities, roadway changes/closures, and parking changes
- Store construction materials only in designated areas that minimize impacts to nearby roadways
- Limit the number of lane closures during peak hours to the extent possible. Inform the Campus before any partial road closure.
- Use Caltrans certified flag persons for any temporary lane closures to minimize impacts to traffic flow, and to ensure safe access into and out of the project sites
- Install traffic control devices as specified in the California Department of Transportation Manual of Traffic Controls for Construction and Maintenance Work Zones
- To minimize disruption of emergency vehicle access, affected jurisdictions (Campus Police, City Police, and City Fire Department) [are] consulted to identify detours for emergency vehicles, which will then be posted by the construction contractor

- Coordinate with local transit agencies for temporary relocation of routes or bus stops in works zones, as necessary
- Coordinate with other projects under construction near the project site, so an integrated approach to construction-related traffic is developed and implemented

As detailed in Section 4.15, *Transportation*, with inclusion of a construction management plan as standard condition of approval, construction impacts related to transportation concerns would be **less than significant**. In support of these standard practices, UCR has proposed Continuing Best Practices (CBP) as conditions of individual project approval that would ensure, to the extent feasible, that at least one unobstructed lane in both directions on campus roadways are maintained specifically in the event of a wildfire emergency and that the Campus Fire Marshal discloses roadway closures to the City of Riverside Fire Department and identify alternative travel routes, if necessary. As such, evacuation routes, if present within the specific roadway segment that would require temporary closure as noted above, would be similarly rerouted.

Additionally, the Campus Fire Marshal would review plans during the plan review process to ensure adequate ingress/egress on the campus project site during construction activities is made available to emergency vehicles. Furthermore, evacuation routes would not be blocked during construction as staging areas are required to be situated in such a way that they avoid designated evacuation zones. Construction-related vehicular traffic would also use designated routes. Therefore, construction impacts related to emergency response/evacuation plan consistency would be **less than significant**.

Operation

Implementation of the proposed 2021 LRDP would result in higher-density residential, educational facilities, recreational facilities, and/or associated campus support services (e.g., neighborhood-serving commercial, retail, professional services) as part of infill development on campus in areas near the Very High fire hazard mapped areas (e.g., in areas along the southern portions of East Campus). These areas would be accessible from existing roadways (providing multiple access points for emergency vehicles) and would not impede the use of emergency evacuation routes either on campus or within the City during operation.

Roadways within the campus are not designated evacuation routes in the City's General Plan Public Safety Element (City of Riverside 2018a). Major arterial roadways that border the campus connect to other roadways that are used for evacuation routes, including University Avenue and Martin Luther King Boulevard. The ramp for the I-215/SR 60 freeway is accessible directly from the University Avenue and Martin Luther King Boulevard exits of the campus, which serve as evacuation routes for the campus (City of Riverside 2018a). Construction and operation of projects associated with the proposed 2021 LRDP would not substantially alter or otherwise interfere with public rights-of-way and would provide adequate and multiple internal ingress and egress for necessary emergency response vehicles. Implementation of the proposed 2021 LRDP would not obstruct traffic circulation on designated disaster routes during construction or operation. In addition, projects implemented under the proposed 2021 LRDP would comply with applicable California Fire Code (Title 24, CCR, Section 9) requirements, that include stringent building standards including fire suppression systems, materials, and design. Development constructed under the 2021 LRDP would also have to comply with Title 24, the CCR, including Fire Code Chapter 10 which addresses fire related Means of Egress, including Fire Apparatus Access Road width requirements. Fire Code Section 4906 also contains existing regulations for vegetation and fuel management to maintain

clearances around structures. As continuing best practice and required Fire Code requirements, the Campus Construction and Design Standards include fire protection features that would be adhered to for all new campus projects. The Campus Fire Marshal would review plans during the plan review process and inspect the project facility prior to occupancy of buildings to ensure all applicable Fire Codes are met, fire protection features are incorporated, and adequate ingress/egress on the campus project site is made available at all times to emergency vehicles.

Implementation of the 2021 LRDP would increase population in campus-associated housing in the northern portion of East Campus and increase population in campus facilities in the southern part of East Campus, where areas are near Very High FHSZs. Commensurate with this growth, the UCR Emergency Operations Plan would be revised to account for increased development in residential, neighborhood-serving commercial retail, and professional services, and academic development within the campus and would adequately cover the existing plus new 2021 LRDP population in the event of an emergency, including wildfire. As standard practice, the campus would implement the Emergency Operations Plan/Emergency Action Plan in the event of an emergency.

When implemented, infill development under the 2021 LRDP could alter emergency assembly areas throughout the campus, as indicated in the UCR Emergency Action Plan (UCR 2016). However, implementation of future development under the proposed 2021 LRDP would be guided by existing and future LRDP objectives and policies including those concerning public safety and transportation related to circulation and traffic management. Furthermore, the Office of Emergency Management will update its Emergency Action Plan to account for increased density and a greater student/faculty/staff population. Therefore, operational impacts related to emergency response/evacuation plan consistency would be **less than significant without mitigation**.

Mitigation Measures

No mitigation measures are required. Nevertheless, UCR has proposed the following Continuing Best Practices (CBP) as conditions of individual project approval.

CBP WF-1 Construction – Traffic Control

To the extent feasible, the campus shall maintain at least one unobstructed lane in both directions on campus roadways. At any time only a single lane is available, the campus shall provide a temporary traffic signal, signal carriers (i.e., flagpersons), or other appropriate traffic controls to allow travel in both directions. If construction activities require the complete closure of a roadway segment, the campus shall provide alternate routes and appropriate signage.

CBP WF-2 Construction – Alternative Travel Routes

Prior to campus construction activities and/or roadway closures, the Campus Fire Marshal, as delegated by the State Fire Marshal, and in cooperation with the City of Riverside Fire Department shall ensure that adequate access for emergency vehicles is provided or identify alternative travel routes.

Significance After Mitigation

Impacts would be less than significant.

Impact WF-2 EXACERBATE WILDFIRE RISKS THEREBY EXPOSING PROJECT OCCUPANTS TO POLLUTANT CONCENTRATIONS FROM A WILDFIRE.

IMPLEMENTATION OF THE PROPOSED 2021 LRDP WOULD INCREASE THE DENSITY OF DEVELOPMENT ON CAMPUS, WITH NEW BUILDINGS AND INFRASTRUCTURE CONSTRUCTED ACCORDING TO THE LATEST FIRE CODE AND SAFETY STANDARDS. NEW CONSTRUCTION WOULD BE LOCATED IN AREAS WITHIN 2 MILES OF VERY HIGH FHSZS. PEOPLE LIVING, WORKING, AND ATTENDING CLASS IN THESE AREAS COULD BE EXPOSED TO POLLUTANT CONCENTRATIONS FROM A WILDFIRE OR THE UNCONTROLLED SPREAD OF A WILDFIRE. IMPACT RISK WOULD BE LESS THAN SIGNIFICANT.

Construction

Construction activities under the proposed 2021 LRDP would involve the use of hazardous materials such as petroleum products (See Section 4.9, *Hazards and Hazardous Materials*). UCR EH&S is charged with implementing measures, directly and through campus departments, designed to ensure compliance with applicable federal and State laws and regulations related to the proper use, storage, and transport of hazardous materials. The Campus Fire Marshal is responsible for ensuring compliance with the proper storage, handling, and use of any hazardous materials during construction activities. Construction equipment would be subject to standard operating procedures that would limit sources of ignition that could generate a wildfire. All construction activities on campus require fire safety protocols, including, but not limited to, on-site fire extinguishing equipment, including Fire Code Chapter 33, as outlined in the Regulatory Setting above.

Compliance with applicable federal and State laws and regulations related to the proper use, storage, and transport of hazardous materials would reduce the risk of wildfire ignition from the use of hazardous materials. As such, impacts would be **less than significant**.

Operation

As shown on Figure 4.18-1, the southern areas of East Campus are in or adjacent to CAL FIRE Very High FHSZs and City-designated Very High fire hazard areas. Other east areas of East Campus are within 2 miles of these designated zones. Development facilitated by the proposed 2021 LRDP would increase the population associated with the campus by increasing residential development for student housing and campus facilities including laboratories, classrooms, and accessory structures. Development under the proposed 2021 LRDP would primarily be infill, in areas where campus student housing currently exists, mainly along Canyon Crest Drive and West Linden Street and where multi-family housing currently exists (e.g., Stonehaven Apartments on the northwest corner of Blaine Street and Canyon Crest Drive) and in the southern parts of East Campus where academic and supporting structures would be situated. UCR may also construct an interpretative center in the existing UCR Botanic Gardens.

Factors for assessing existing wildfire risk potential include drought, slope steepness, wind speeds, flammability of vegetation, and burn history and severity (length of time from last fire and location of last proximate fire). Since fires burn faster uphill, slope steepness is a crucial factor in fire spread. Vegetation provides fuel for fires, and low relative humidity and strong winds are critical weather conditions that could lead to rapid or dramatic increases in wildfire activity (CAL FIRE 2020b).

The UCR campus is subject to Santa Ana winds, which are strong dry offshore winds that affect southern California in autumn and winter. They can range from hot to cold, depending on the prevailing temperatures in the source regions, the Great Basin, and upper Mojave Desert (Tufts University 2018). The winds are known for the hot dry weather (often the hottest of the year) that

they bring in the fall and are infamous for fanning regional wildfires. Santa Ana winds are a type of downslope windstorm that occur over southern California from the coastal mountains westward and from Ventura County southward to the Mexican border (Rolinski et al. 2016).

Wildfire smoke produced from combustion of natural biomass contains thousands of individual compounds, including particulate matter, carbon dioxide, water vapor, carbon monoxide, hydrocarbons and other organic chemicals, nitrogen oxides, and trace minerals. Wildfires can move into the wildland urban interface, burning homes and structures and thereby consuming man-made materials in addition to natural fuels. Wildfire behavior will vary depending on natural fuel type; fires in open space fuels can range from mild to severe and can spread very slowly or extremely rapidly depending on weather and fuel conditions. Wildfires in open space areas can last for weeks and can have air quality impacts. Smoke levels in proximate and downwind populated areas can be difficult to predict (US EPA 2019).

The proposed 2021 LRDP would implement new development in areas previously disturbed and on relatively flat or slightly hilly topography, not in steep, vegetated slopes, and hillsides where fire risk is greatest. Development under the proposed 2021 LRDP would be concentrated on East Campus, which is within 2 miles of the Very High FHSZ and the Very High fire risk areas. The proposed 2021 LRDP would increase the density of development on the campus, including new residential; neighborhood-serving commercial, retail, professional services; interpretative center, and academic development that would be developed pursuant to the latest Fire Codes and safety standards. As discussed above, wildfire frequency tends to be highest at low to intermediate housing density. The 2021 LRDP would focus increased density within East Campus, with residential units occurring more toward Canyon Crest Drive and West Linden Street. Furthermore, development that could occur along South Campus Drive and East Campus Drive in East Campus, would occur in areas already developed and subject to wildfire prevention actions such as fuel clearance, thereby reducing the potential for wildfire risk. The proposed 2021 LRDP would not exacerbate wildfire risks over existing conditions.

Those portions of the UCR Campus currently designated as Very High FHSZ have generally been designated as Open Space Reserve and UCR Botanic Gardens. Furthermore, development under the proposed 2021 LRDP would maintain the same urban interface with wildland/vegetated areas in comparison to existing conditions. Development under the proposed 2021 LRDP would also include demolition and replacement of some existing structures with newer development that meets modern Fire Codes, thereby providing an increase in fire safety in comparison to existing conditions.

Implementation of fire protection features as outlined under UCR Campus Construction and Design Standards in the Regulatory Setting would further ensure that the projects implemented under the proposed 2021 LRDP would incorporate fire safety measures. The Campus Fire Marshal would review plans during the plan review process and inspect the project facility prior to occupancy of buildings to ensure all applicable Fire Codes are met, fire protection features are incorporated, and adequate ingress/egress on the campus project site is made available at all times to emergency vehicles.

Campus Construction and Design Standards and building codes, including the UCR Fire Prevention and Life Safety Policy, require all construction, alterations, renovations, and interior space dividers be subject to Fire Code review and inspection by UCR's Building and Safety Division, Fire Prevention, EH&S, Office of Emergency Management, and/or other applicable UCR departments and staff. This includes approval of plans and specifications to verify compliance with applicable codes, including the following:

- Title 24, CCR, Building Regulations
- Uniform Fire Code
- National Fire Codes of the National Fire Protection Association
- Title 19, CCR, Public Safety
- Title 8, CCR, Occupational Safety
- California Health and Safety Code

New development must be constructed to modern fire safety standards, which requires plan check review, during which the Campus Building Official and Campus Fire Marshal would review specific project plans to ensure that the design of the proposed structure complies with the required codes. Campus buildings, structures, and infrastructure would comply with the California Fire Code regarding emergency/fire access and use of building materials that would limit the spread of wildfire to the greatest extent possible. The California Fire Code includes safety measures that minimize the threat of fire, including ignition-resistant construction with exterior walls of noncombustible or ignition resistant material from the surface of the ground to the roof system and sealing any gaps around doors, windows, eaves and vents to prevent intrusion by flame or embers. Development would also be required to meet California Building Code requirements, including CCR Title 24, Part 2, which includes specific requirements related to exterior wildfire exposure. CCR Title 14 sets forth the minimum development standards for emergency access, fuel modification, setback, signage, and water supply, which help prevent loss of structures or life by reducing wildfire hazards risk.

Furthermore, new development is required to be constructed to modern fire safety standards, including Fire Code Title 24, Part 9, Chapter 7 Fire-Resistances - Rated Construction, California Building Code (Part 2), Chapter 7A Materials and Construction Methods for Exterior Wildfire Exposure, Fire Code Chapter 8 Interior Finishes. New development located in a Very High FHSZ would also be required to comply with standards in California Government Code 51182 to minimize fire risk. These standards include maintaining a firebreak of at least 30 feet, removing all flammable vegetation and combustible growth, and additional firebreaks within 100 feet by the removal of all brush, flammable vegetation, or combustible growth. In addition, prior to construction of a new dwelling that requires a building permit, California Government Code 51182 requires that the owner obtain certification from the local building official, in this case the Campus Building Official and the Campus Fire Marshal, that the building complies with all applicable State and local fire standards.

Operation under the 2021 LRDP would involve the use of hazardous materials including petroleum products, biohazards, radioactive materials, volatile, flammable, and explosive substances (see Section 4.9, *Hazards and Hazardous Materials*). UCR EH&S is charged with implementing measures, directly and through campus departments, designed to ensure compliance with applicable federal and State laws and regulations related to the proper use, storage, and transport of hazardous materials. Specifically, all individuals who handle hazardous materials are appropriately trained and are provided with Material Safety Data Sheets, which provide chemical safety information about precautions for protecting against known hazards associated with the material and identify protocols for proper storage and disposal of chemicals. In addition, the Campus Fire Marshal is responsible for ensuring compliance with the proper storage, handling, and use of explosive, flammable, combustible, toxic, corrosive, and other hazardous materials. Compliance with applicable federal and State laws and regulations related to the proper use, storage, and transport of hazardous materials would reduce the risk of wildfire ignition from the use of hazardous materials.

For all the reasons discussed above, the proposed 2021 LRDP would not exacerbate existing conditions related to exposing project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. Therefore, impacts would **less than significant**.

Mitigation Measures

Compliance with the most current Building and Fire codes would be required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

Impact WF-3 REQUIRE INSTALLATION OR MAINTENANCE OF ASSOCIATED INFRASTRUCTURE THAT MAY EXACERBATE FIRE RISK.

NEW OR UPDATED INFRASTRUCTURE WOULD BE CONCENTRATED IN PREVIOUSLY DEVELOPED PORTIONS OF CAMPUS, AND UTILITIES WOULD BE INSTALLED UNDERGROUND AND WOULD NOT CONTRIBUTE TO INCREASED FIRE RISK. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Construction

Impacts related to installation or maintenance of infrastructure (such as roads, fuel breaks, emergency water sources, or electrical power lines) that may exacerbate fire risk are limited to operational impacts. Construction impacts related to infrastructure that exacerbates fire risk would not occur. Impacts are considered to be **less than significant**.

Operation

The proposed 2021 LRDP would direct new development on the UCR campus, which may include the installation of new infrastructure (i.e. roadways or pedestrian pathways) and utilities. New infrastructure would be concentrated in already developed portions of campus, primarily on East Campus. All utilities would be installed according to current building codes and safety standards, as outlined in Section 4.18.2, Regulatory Setting. In addition, new electrical connections on-campus would be installed underground in accordance with *UCR Campus Construction and Design Standards*, and would not contribute to increased fire risk. The undergrounding of new electrical power connections would minimize potential ignition and related fire risk on the campus. Therefore, operational impacts related to infrastructure that exacerbates fire risk would be **less than significant**.

Mitigation Measures

No mitigation measures are required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

Impact WF-4 EXPOSE PEOPLE OR STRUCTURES TO SIGNIFICANT RISKS, INCLUDING DOWNSLOPE OR DOWNSTREAM FLOODING OR LANDSLIDES.

DEVELOPMENT PROJECTS WOULD BE SITED ON PARTS OF CAMPUS THAT ARE AWAY FROM STEEP SLOPES (25 PERCENT OR GREATER) THAT MAY BECOME POST-FIRE HAZARD ZONES. IMPACTS WOULD BE LESS THAN SIGNIFICANT WITH MITIGATION.

According to the analysis in Section 4.7, *Geology and Soils*, the slope stability hazard in Riverside is considered negligible, because the topography is very flat to moderately flat, and no bedded sedimentary bedrock is exposed. Projects implemented under the proposed 2021 LRDP could develop in the southern area of East Campus, adjacent to natural hillsides, but the risk for deep-seated landslides is low, even on these natural slopes, because of the sturdy nature of the alluvial materials and bedrock underlying most of the campus. These have no weak planar structures developed that could trigger a large, deep-seated landslide. If a wildfire removed vegetation, there could be some runoff but there is little likelihood of a large, deep-seated landslide. This is discussed in more detail below.

Construction

Under the proposed 2021 LRDP, future development would result in short-term soil-disturbing activities that could lead to increased erosion including grading, trenching, boring, and removal of trees and other vegetation. Projects involving construction sites that are one acre or more are required to prepare and implement a SWPPP to comply with NPDES requirements for construction site stormwater discharges, as described in greater detail in Section 4.10, *Hydrology and Water Quality*. Plans include measures such as: design and construction of cut and fill slopes in a manner that minimizes erosion, protection of exposed slope areas, control of surface flows over exposed soils, use of wetting or sealing agents or sedimentation ponds, limiting soil excavation in high winds, construction of beams and runoff diversion ditches, and use of sediment traps, such as hay bales. Compliance with the NPDES requirements would ensure that implementation of the 2021 LRDP would not destabilize soils such that substantial risks related to post-fire landslides or debris flow would be created. As such, impacts are considered to be **less than significant**.

Operation

Severe wildfires damage the forest or shrub canopy, ground-level plants, and the soil itself. In general, this can result in increased runoff after intense rainfall, which can put homes and other structures below a burned area at risk of localized floods and landslides. West Campus is relatively flat and not subject to landslides or runoff. The southern portion of East Campus contains natural hillsides, in and near the UCR Botanic Gardens and Open Space Reserve. As noted above, the risk for deep-seated landslides is low, even on natural slopes in the East Campus area, because of the sturdy nature of the alluvial materials and bedrock underlying most of the campus, and these have no weak planar structures developed that could trigger a large, deep-seated landslide. The proposed 2021 LRDP would focus redevelopment projects in previously disturbed areas that are away or setback from steep, vegetated slopes and hillsides where fire-related slope instability and increased runoff risk is greatest. The most at-risk areas are designated for the least amount of development, particularly in the area around the UCR Botanic Gardens and Open Space Reserve.

In general, steep, hilly areas are especially vulnerable after a wildfire and areas burned at moderate to high severity are of greatest concern due to lack of cover and the development of water repellent layers. If a severe wildfire were to occur in the southern portion of East Campus (i.e., UCR Botanic

Gardens, Open Space Reserve), there is a chance that slope stability could be compromised and slope stabilization measures would become necessary. A provision to implement Mitigation Measure **MM WF-1** in the event of a catastrophic wildfire on the project site would be needed to minimize the potential for landslide and excessive erosion. Therefore, impacts related to flooding and landslide hazards due to post-fire slope instability or drainage changes would be **less than significant with mitigation**.

Mitigation Measures

MM WF-1 Implement Post-Fire Erosion Control Plan and Application

UCR shall incorporate into its Emergency Operations and Response Plan erosion control measures to be deployed in the event of a catastrophic wildfire. Erosion control measures shall be implemented as soon as possible after the event and shall include one or more of the following, as applicable:

1. Install mulch to cover the soil and reduce rain drop impact, overland flow, and soil particle movement. This can be certified weed-free straw, slash, and geotextile fabrics and should be installed as quickly as possible after the fire event.
2. Apply hydro-mulch mixture of water, fiber mulch, and tackifier on burned slopes to prevent soil erosion and foster revegetation. Seed, fertilizer, or soil stabilizing polymers can also be applied with the hydro-mulch.
3. Implement aerial seeding of grasses or legumes with a layer of straw mulch over seeded grasses. Ensure the mix of seed includes native grasses and plants with value for local wildlife.

Significance After Mitigation

Impacts would be less than significant with mitigation.

4.18.4 Cumulative Impacts

A project's environmental impacts are "cumulatively considerable" if the "incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects" (*CEQA Guidelines* Section 15065[a][3]). To analyze cumulative wildfire impacts, this Draft EIR considered anticipated development in the City of Riverside and Riverside County, and potential population increases of 55,945 in the City and 113,401 in the county by 2035. This geographic scope is appropriate for analyzing cumulative wildfire impacts because wildfires can affect large areas. This cumulative wildfire impact analysis particularly considered development on and proximate to the UCR campus, including the buildout of the cities of Riverside and Moreno Valley, anticipated in their general plans. It also considers projects in unincorporated Riverside County, which include warehouses and health care facilities, and mixed-use, single-family residential, and a mobile home park within 5 miles of campus, as described in Table 4-1.

Wildfire-Related Emergency/Evacuation Response (Impact WF-1)

Cumulative development in Riverside, Moreno Valley, and unincorporated Riverside County, including development under the proposed 2021 LRDP, would comply with local emergency response plans, which coordinate efforts among agencies and local entities in the event of a wildfire. This includes coordinating evacuation procedures for residents and businesses in the region. However, there is a chance that construction or operation of new cumulative development

would interfere with emergency response and evacuation plans. Therefore, cumulative impacts are considered significant. As outlined above under Impact WF-1, UCR has proposed conditions of individual project approval that would ensure, to the extent feasible, that at least one unobstructed lane in both directions on campus roadways are maintained specifically in the event of a wildfire emergency and that the Campus Fire Marshal discloses roadway closures to the City of Riverside Fire Department and identify alternative travel routes, if necessary. As such, evacuation routes, if present within the specific roadway segment that would require temporary closure as noted above, would be similarly rerouted. Therefore, the project's contribution would be reduced to **less than cumulatively considerable (less than significant)**.

Wildfire Hazards (Impact WF-2, WF-3, and WF-4)

Most land surrounding the UCR campus is suburban development, with only open space areas adjacent or within proximity of the east, northeast, south, and southeast of the campus and surrounding neighborhoods classified as Very High FHSZ (see Figure 4.18-1). Cumulative wildfire-related impacts could be significant if cumulative development would occur in rural or high fire hazard areas that could exacerbate risks due to location on steep slopes, in high-wind areas, or areas of historical wildfire burn areas. However, cumulative development in the City and throughout Riverside County would increase the density of development that would help reduce wildfire risk. All cumulative development would be required to assess potential for interfering with regional evacuation plans, increasing wildfire risk, and increasing exposure to potential post-fire landslides. Cumulative development and infrastructure would be subject to statewide standards for fire safety in the California Fire Code. However, existing codes and regulations cannot fully prevent wildfires from damaging structures or populations, and or prevent wildfires from igniting and occurring. If wildfires occurs, there would be the need for fire roads, fire breaks and other measures to fight and contain the fire. Following the fire, affected slopes in the cumulative assessment area could be subject to erosion and landslides, and cumulative wildfire impacts would be significant.

The proposed 2021 LRDP could result in a net increase in development of approximately 3.7 million asf (approximately 5.5 million gsf) of additional student housing, academic buildings, and support facilities. As such, implementation of the proposed 2021 LRDP would result in cumulatively considerable and significant contributions associated with Impact WF-4. However, implementation of Mitigation Measure **MM WF-1** would reduce impacts related to development under the proposed 2021 LRDP to less than significant levels. Therefore, the **cumulative contribution from the proposed 2021 LRDP would be less than significant**.

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