18. WILDFIRE

The City of Hollister is not located in a high fire hazard severity zone. Although the topography of the General Plan Planning Area is relatively flat, the neighboring foothills, rangelands, and generally dry vegetation conditions pose a threat of wildfire in the General Plan Study Area.

18.1 REGULATORY FRAMEWORK

18.1.1 STATE REGULATIONS

18.1.1.1 Fire Hazard Severity Zones and Responsibility Areas

The California Department of Forestry and Fire Protection (CAL FIRE) publishes maps recommending fire hazard severity zones for every California county. The maps identify lands in California as falling within one of the following management areas: Local Responsibility Area (LRA), State Responsibility Area (SRA), and Federal Responsibility Area (FRA). Within each of these areas, a single agency has direct responsibility: in LRAs, local fire departments or fire protection districts are responsible; in SRAs, CAL FIRE is responsible; in FRAs, federal agencies such as the United States Forest Service, National Park Service, Bureau of Land Management, United States Department of Defense, United States Fish and Wildlife Service, and Department of the Interior are responsible.[1] Within the LRA, CAL FIRE designates lands as being within a Very High Fire Hazard Severity Zone (VHFHSZ) or non-VHFHSZ.

18.1.1.2 California Building Code

Building Design Standards

The California Building Code (CBC), contained in Part 2 of 24 California Code of Regulations, identifies building design standards, including those for fire safety. The CBC is updated on a three-year cycle. It is effective Statewide, but a local jurisdiction may adopt more restrictive standards based on local conditions under specific amendment rules prescribed by the State Building Standards Commission. Commercial and residential buildings are plan-checked by local city and county building officials for compliance with the CBC and any applicable local edits. Typical fire safety requirements of the CBC include the installation of fire sprinklers in all new high rise buildings; the establishment of fire resistance standards for fire doors, building materials, and particular types of construction; and clearance of debris and vegetation within a prescribed distance from occupied structures in wildfire hazard areas. The City of Hollister regularly adopts each new CBC update under the Hollister Municipal Code (HMC) Title 15, Buildings and Construction, Section 15.04.050, Construction Codes Adopted by Reference.

[1] Association of Bay Area Governments and Metropolitan Transportation Commission, 2018, White Paper: Bay Area Wildland Urban Interface Review of Risks, Plans, and Strategies, page 7.

Materials and Methods for Exterior Wildfire Exposure

Chapter 7A of the CBC, Materials and Methods for Exterior Wildfire Exposure, prescribes building materials and construction methods for new buildings in a Fire Hazard Severity Zone. Chapter 7A contains requirements for roofing; attic ventilation; exterior walls; exterior windows and glazing; exterior doors; decking; protection of underfloor, appendages, and floor projections; and ancillary structures.

18.1.1.3 California Fire Code

The California Fire Code (CFC) incorporates, by adoption, the International Fire Code of the International Code Council, with California amendments. This is the official Fire Code for the State and all political subdivisions. It is found in California Code of Regulations Title 24, Part 9, and, like the CBC, it is revised and published every three years by the California Building Standards Commission. Also like the CBC, the CFC is effective Statewide, but a local jurisdiction may adopt more restrictive standards based on local conditions. The City of Hollister regularly adopts each new CFC update under the Hollister Municipal Code (HMC) Title 15, Buildings and Construction, Section 15.04.050, Construction Codes Adopted by Reference. The CFC includes provisions and standards for emergency planning and preparedness, fire service features, fire protection systems, hazardous materials, fire flow requirements, and fire hydrant locations and distribution. Typical fire safety requirements include: installation of sprinklers in all high-rise buildings; the establishment of fire resistance standards for fire doors, building materials, and particular types of construction; and the clearance of debris and vegetation within a prescribed distance from occupied structures in wildfire hazard areas.

Wildland-Urban Interface Areas

Chapter 49 of the CFC, Requirements for Wildland-Urban Interface (WUI) Fire Areas, prescribes construction materials and methods in fire hazard severity zones; requirements generally parallel CBC Chapter 7A.

Defensible Space

California Public Resources Code Sections 4291 et seq. requires that brush, flammable vegetation, or combustible growth within 100 feet be removed around all buildings on or adjoining a mountainous area, forest-covered lands, brush-covered lands, grass-covered lands, or land covered in flammable materials. Requirements regarding hazardous vegetation and fuel management are also contained in Sections 4906 and 4907 of the CFC.

18.1.1.4 California Office of Emergency Services

The California Office of Emergency Services (Cal OES) was established on January 1, 2009 and created by Assembly Bill (AB) 38, which merged the duties, powers, purposes, and responsibilities of the former Cal OES with those of the Governor's Office of Homeland Security. Cal OES is responsible for the coordination of overall state agency response to major disasters in support of local government. Cal OES is responsible for ensuring the State's readiness to respond to and recover from all hazards—natural, manmade, emergencies, and disasters—and for assisting local governments in their emergency preparedness, response, recovery, and hazard mitigation efforts. In 2018, Cal OES completed a *State Hazard Mitigation Plan*, which designated fire hazard severity zones and WUI areas.[2]

18.1.1.5 2019 Strategic Fire Plan for California

CAL FIRE produced the 2019 *Strategic Fire Plan for California*, which contains goals, objectives, and policies to prepare for and mitigate the effects of fire on California's natural and built environments. The 2019 *Strategic Fire Plan for California* focuses on fire prevention and suppression activities to protect lives, property, and ecosystems, in addition to providing natural resource management to maintain State forests as a resilient carbon sink to meet California's climate change goals. This plan provides State Responsibility Fire Safe Regulations, which requires that all parcels 1 acre or larger provide a minimum 30-foot setback for buildings from all property lines and/or the center of the road. A key component of the 2019 *Strategic Fire Plan for California* is the collaboration between communities to ensure fire suppression and natural resource management is successful.[3]

18.1.1.6 Unit Strategic Fire Plan San Benito-Monterey

The Unit Strategic Fire Plan San Benito-Monterey (USFP) was adopted by CAL FIRE and updated in April 2018. The USFP is a multi-jurisdictional off-shoot of the 2019 *Strategic Fire Plan for California*, which provides region-specific guidance for fire response. The USFP for the San Benito-Monterey region meets several objectives, including collecting and analyzing data to assess communities at risk and in need of fuel reduction, working with grant writers to secure funding, utilizing CAL FIRE personal and resources, and educating the public on fire prevention and incorporating fire resistant landscaping and construction, as well as hazardous fuel reduction.[4]

[2] California Office of Emergency Management, 2018, California State Hazard Mitigation Plan, https://www.caloes.ca.gov/HazardMitigationSite/Documents/002-2018%20SHMP_FINAL_ENTIRE%20PLAN.pdf, accessed on April 27, 2020.

[3] California State Board of Forestry and Fire Protection, 2018, 2018 Strategic Fire Plan for California, http://cdfdata.fire.ca.gov/pub/fireplan/fpupload/fpppdf1614.pdf, accessed on April 27, 2020.

[4] California State Board of Forestry and Fire Protection, April 2018, Unit Strategic Fire Plan San Benito-Monterey, https://3d82c780-2a61-40e4-adf4-605487cebd0f.filesusr.com/ugd/076511_500bb92634e14e75bf5e394851700145.pdf, accessed on April 27, 2020.

18.1.1.7 California Public Utilities Commission

In 2007, wildfires in southern California were ignited by overhead utility power lines and aerial communication facilities near power lines. In response, the California Public Utilities Commission (CPUC) began considering and adopting regulations to protect the public from fire hazards due to overhead power lines and nearby aerial communication facilities. The CPUC published a Fire-Threat Map under Rulemaking 15-05-006, following procedures in Decision 17-01-009, revised by Decision 17-06-024, which adopted a work plan for the development of a utility High Fire-Threat District where enhanced fire safety regulations in Decision 17-12-024 apply.[5] The fire regulations require electric utilities to:[6]

- Prioritize the correction of safety hazards.
- Correct non-immediate fire risks in "Tier 2" (elevated fire threat) areas on the CPUC High Fire-Threat District within 12 months, and in "Tier 3" (extreme fire threat) areas within 6 months.
- Maintain increased clearances between vegetation and power lines within the High Fire-Threat District.
- Maintain stricter wire-to-wire clearances for new and reconstructed facilities in Tier 3 areas.
- Conduct annual inspections of overhead distribution facilities in rural areas of Tier 2 and Tier 3 areas.
- Prepare a fire prevention plan annually if overhead facilities exist in the High Fire-Threat District.

18.1.2 LOCAL REGULATIONS

18.1.2.1 San Benito County Emergency Operations Plan

The San Benito County *Emergency Operations Plan* (EOP), adopted August 2015, is designed to set the foundation for emergency management to reduce the county's vulnerabilities to both natural and man-made disasters. The EOP provides basic guidance related to earthquakes, flooding, fires, landslides, severe weather, pandemics and epidemics, as well as hazardous material emergencies. Guidance is presented in the form of mitigation programs, which are split into three categories: emergency prevention and protection; response concept of operations; and recovery concept of operations. The City of Hollister does not have an Office of Emergency Services or an assigned emergency planner. Therefore, responsibility for preparation and response to a disaster is enforced by the San Benito County Office of Emergency Services.[7]

[5] California Public Utilities Commission, http://www.cpuc.ca.gov/firethreatmaps/, accessed on April 27, 2020.

[6] California Public Utilities Commission, press release: CPUC Adopts New Fire-Safety Regulations, http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M201/K352/201352402.PDF, accessed on April 27, 2020.

[7] San Benito County Office of Emergency Services, August 2015, San Benito County Operational Area Emergency Operations Plan, http://www.cosb.us/wp-content/uploads/SBC-EOP-2015.pdf, accessed on April 25, 2020.

18.1.2.2 San Benito County Multi-Jurisdictional Hazard Mitigation Plan

San Benito County's mitigation programs are enforced through the *Multi-Jurisdictional Local Hazard Mitigation Plan* (LHMP), which was adopted concurrently with the County EOP. The LHMP includes hazard mitigation goals, strategies, and priorities, and provides a comprehensive assessment of the county's hazards and vulnerabilities. The priorities of the mitigation programs are to reduce the loss of life, minimize structural damage, reduce disruption of essential services, protect the environment, and promote hazard mitigation as an integrated public policy. The LHMP covers all jurisdictions in San Benito County, including the City of Hollister.[8]

18.1.2.3 San Benito County Community Wildfire Protection Plan

The San Benito Fire Safe Council adopted the San Benito County Community Wildfire Protection Plan (SBCCWPP) in May 2010 with guidance and support from CAL FIRE. The goal of the SBCCWPP is to provide a framework by which hazardous fuels can be assessed and reduced within the WUI areas in the county. Topics addressed by the SBCCWPP include existing fire response capabilities, physical characteristics, existing management plans, a county risk assessment, and community hazard reduction priorities.[9]

18.1.2.4 2005 City of Hollister General Plan

The 2005 City of Hollister General Plan includes goals, policies, and implementation measures related to wildfire in the Land Use (LU), Community Services and Facilities (CSF), and Health and Safety (HS) Elements. Applicable goals, policies, and implementation measures in the Hollister General Plan serve to adhere to the provisions in applicable emergency response and evacuation plans, reduce development in high fire risk areas, ensure adequate public facilities are available, and reduce the impact of flooding or landslides post-fire. As part of the proposed project, some existing General Plan goals, policies, and implementation measures would be amended, substantially changed, or new policies would be added. A list of policies applicable to wildfire is provided in Table 18-1.

TABLE 18-1 2005 HOLLISTER GENERAL PLAN RELEVANT WILDFIRE POLICIES

Policy No.	Policy
LU2.3	Police and Fire Staffing Levels. Review police and fire department master plans to determine and meet adequate staffing levels.
CSF1.1	Adequate Capabilities and Capacity of Local Public. Services ensure that future growth does not exceed the capabilities and capacity of local public services such as wastewater collection and treatment, local water supply systems, fire and police protection, maintenance of streets and roads, local school systems, parks and recreational facilities, and landfill capacity, and ensure that public services meet Federal and State standards and are available in a timely fashion.

[8] San Benito County Office of Emergency Services, August 2015, San Benito County Operational Area Multi-Jurisdictional Local Hazard Mitigation Plan, http://www.cosb.us/wp-content/uploads/Local-Hazard-Mitigation-Plan-_-SBC-FEMA-Approved.pdf, accessed on April 25, 2020.

[9] San Benito Fire Safe Council, May 2010, San Benito County Community Wildfire Protection Plan, https://3d82c780-2a61-40e4-adf4-605487cebd0f.filesusr.com/ugd/076511_5b29f22632f54dc79cecf6d219672ac0.pdf, accessed on April 27, 2020.

TABLE 18-1 2005 HOLLISTER GENERAL PLAN RELEVANT WILDFIRE POLICIES

Policy No.	Policy
CSF1.2	New Development Requirements for Public Services. Require new development applications to identify the impacts that the proposed development would have on the provision of public services, and approve those applications that can mitigate impacts or contribute a proportional fair share so that local public services can be maintained at an acceptable level.
CSF1.4	Coordinate Facilities and Services Planning. Cooperate and coordinate with the County of San Benito, LAFCO and other local agencies in the provision of infrastructure and services within the Hollister Planning Area.
CSF1.5	Capital Improvements Maintenance and Replacement. Ensure that the City's Capital Improvement Program is coordinated with responsible districts and agencies and provides for ongoing, preventative maintenance of infrastructure facilities and the timely replacement of City equipment.
CSF1.7	Development Review Criteria for Public Services. Prior to granting approval, evaluate each new development in terms of the following criteria: 1. Would the proposed development share a common border with a property that has already been developed? 2. Would the proposed development be adequately served by infrastructure (water, sewer, streets, schools, parks, etc.), which is already in place or mitigated? 3. Would the proposed development be located within the existing service areas of local service providers (fire protection, police protection, solid waste disposal, schools, etc.), and not result in a reduction in their current capabilities?
CSF4.8	Fire Safety. Ensure that development within the Hollister Planning Area does not exceed the capability of the Hollister Fire Department and the San Benito County Fire Department to provide an adequate level of fire protection.
CSF4.2	Requirements for Fire Safety. Ensure that all new development will be adequately designed to minimize risks to life and property through the implementation of the Fire Protection Master Plan. New development will be protected from fire hazards through the provision of peak load water supply systems capable of providing the flow required for fire suppression, through the design of roads with adequate widths and turning radii, and through adequate separation between buildings, prior to project approval.
HS1.1	Location of Future Development. Permit development only in those areas where potential danger to the health, safety, and welfare of the residents of the community can be adequately mitigated, including development which would be subject to severe flood damage or geological hazard due to its location and/or design. Development also should be prohibited where emergency services, including fire protection, cannot be provided.
HS1.2	Safety Considerations in Development Review. Require appropriate studies to assess identified hazards and assure that impacts are adequately mitigated.
HS1.3	Coordination with San Benito County and Other Agencies on Safety Matters. Cooperate with the County of San Benito and with other government agencies in all matters related to safety, hazardous waste management and emergency planning.
HS2.3	Hazard Awareness. Publicize disaster plans and promote resident awareness and caution regarding hazards, including soil instability, earthquakes, flooding, and fire.
HS2.4	Access for Emergency Vehicles. Provide adequate access for emergency vehicles and equipment, including providing a second means of ingress and egress to all development.
HS2.5	Neighborhood Disaster Preparedness. Neighborhoods with potential for being cut-off in an emergency should have a volunteer center for emergency coordination.
HS2.6	Disaster Preparedness Training and Planning. Continue to provide essential emergency public services during natural catastrophes. Undertake disaster preparedness training and planning in cooperation with other public agencies and appropriate public-interest organizations.

Source: City of Hollister, *2005 General Plan*.

Hollister Planning Area. CSF.N calls for updates to the Fire Protection Master Plan while CSF.W enforces strict requirements for development in high fire hazard areas. Measure CSF.II would require that a fire agency review all proposed development and require fire protection mitigation as needed, prescribed in implementation measure CSF.II. CSF.X suggests enhancing fire facilities. HS.E seeks to provide public

information on safety and emergency preparedness issues with periodic emergency exercises conducted in conjunction with the County, as prescribed in HS.J. HS.M includes the designation of emergency evacuation routes in conjunction with the County. Finally, implementing measure HS.S includes the regular review and update of the City's Emergency Plan.

18.1.2.5 Hollister Municipal Code

In addition to the General Plan, the Hollister Municipal Code (HMC) regulates fire hazard reduction in the city. The HMC contains all ordinances for the city and identifies regulations and general provisions that ensure consistency with the General Plan. The HMC is organized by Title, Chapter, and Section. The HMC does not have any provisions related specifically to wildland fires, however there are several provisions related to fire hazards and fire protection facilities, which are integral to reducing the risk and impact of wildfires in the General Plan Planning Area. For more detailed information on fire regulations in the HMC, refer to Chapter 15, Public Services and Recreation.

18.2 EXISTING CONDITIONS

This section describes the types and causes of wildfires and the potential wildfire risks in the General Plan Planning Area.

18.2.1 WILDFIRE BACKGROUND

18.2.1.1 Types of Wildfire

There are three basic types of wildland fires:

- Crown fires burn trees to their tops; these are the most intense and dangerous wildland fires.
- Surface fires burn surface litter and duff. These are the easiest fires to extinguish and cause the least damage to the forest. Brush and small trees enable surface fires to reach treetops and are thus referred to as *ladder fuels*.
- Underground fires occur underground in deep accumulations of dead vegetation. These fires move very slowly and can be difficult to extinguish.[10]

Wildfires burn in many types of vegetation—forest, woodland, scrub (including chaparral, sage scrub, and desert scrub), and grassland. Many species of native California plants are adapted to fire. Chaparral shrubs recover from fire in either of two ways: 1) woody root crowns or burls below the soil surface that survive a fire and re-sprout; or, 2) shrubs (various species of *Manzanita* and *Ceanothus*) that are killed by fire and produce seeds requiring intense heat from a fire to germinate.[11] Many species of conifers have seed cones

[10] Natural Resources Canada, 2018, Fire Behavior, https://www.nrcan.gc.ca/forests/fire-insects-disturbances/fire/13145, accessed on May 4, 2020.

[11] Rundel, Philip, and Gustafson, Robert, 2005, Introduction to the Plant Life of Southern California. Berkeley and Los Angeles, California: University of California Press.

requiring fire to open.[12] Between 2010 and 2017, wildfires in California burned about 265,000 acres of forest land, 207,000 acres of scrub vegetation, 99,000 acres of grassland, 18,000 acres of desert vegetation, and 14,000 acres of other vegetation types.[13]

18.2.1.2 Wildfire Causes

Although the term *wildfire* suggests natural origins, a 2017 study that evaluated 1.5 million wildfires in the United States between 1992 and 2012 found that humans were responsible for igniting 84 percent of wildfires, accounting for 44 percent of acreage burned.[14] The three most common types of human-caused wildfires are debris burning (logging slash, farm fields, trash, etc.); arson; and equipment use.[15] Power lines can also ignite wildfires through downed lines, vegetation contact, conductors that collide, and equipment failures.[16] CAL FIRE determined that 16 wildfires in northern California in October 2017 were caused by electric power and distribution lines, conductors, and the failure of power poles.[17,18] Lightning is another major cause of wildfire in the United States, although it is natural rather than human-caused.[19]

An analysis of US Forest Service wildfire data from 1986 to 1996 determined that 95 percent of human-caused wildfires, and 90 percent of all wildfires, occurred within 0.5 miles of a road; and that about 61 percent of all wildfires and 55 percent of human-caused wildfires occurred within approximately 650 feet (200 meters) of a road. The study concluded that the increase in human-caused ignition greatly outweighs the benefits of increased access for firefighters.[20]

There are three primary methods of wildfire spread, which are listed below:

- Embers. The most prolific cause of home ignition at a rate of two out of every three homes destroyed. Embers are glowing or burning pieces of vegetation or construction debris that are

[12] California Department of Forestry and Fire Prevention, Fire and Fuels Treatment, https://www.fire.ca.gov/programs/resource-management/resource-protection-improvement/landowner-assistance/forest-stewardship/fire-and-fuels-treatment/, accessed on May 4, 2020.

[13] State Board of Forestry and Fire Protection and California Department of Forestry and Fire Prevention, 2019, 2019 Strategic Fire Plan for California, https://www.fire.ca.gov/media/5504/strategicplan2019-final.pdf, accessed on May 4, 2020.

[14] Balch, Jennifer; Bradley, Bethany; Abatzoglou, John, et. al., March 2017, Human-Started Wildfires Expand the Fire Niche Across the United States. Proceedings of the National Academy of Sciences: Volume 114 No. 11, https://www.pnas.org/content/pnas/114/11/2946.full.pdf, accessed on May 4, 2020.

[15] Pacific Biodiversity Institute, 2007, Roads and Wildfires, http://www.pacificbio.org/publications/wildfire_studies/Roads_And_Wildfires_2007.pdf, accessed on May 4, 2020.

[16] Texas Wildfire Mitigation Project, 2018, How Do Power Lines Cause Wildfires? https://wildfiremitigation.tees.tamus.edu/faqs/how-power-lines-cause-wildfires, accessed on May 4, 2020.

[17] California Department of Forestry and Fire Prevention, June 2018, CAL FIRE Investigators Determine Causes of 12 Wildfires in Mendocino, Humboldt, Butte, Sonoma, Lake, and Napa Counties, https://www.fire.ca.gov/media/5100/2017_wildfiresiege_cause.pdf, accessed on May 4, 2020.

[18] California Department of Forestry and Fire Prevention, May 2018, . CAL FIRE Investigators Determine Cause of Four Wildfires in Butte and Nevada Counties, https://www.fire.ca.gov/media/5100/2017_wildfiresiege_cause.pdf, accessed on May 4, 2020.

[19] Balch, Jennifer; Bradley, Bethany; Abatzoglou, John, et. al., March 2017, Human-Started Wildfires Expand the Fire Niche Across the United States, Proceedings of the National Academy of Sciences: Volume 114 No. 11. https://www.pnas.org/content/pnas/114/11/2946.full.pdf, accessed on May 4, 2020.

[20] Pacific Biodiversity Institute, 2007, Roads and Wildfires, http://www.pacificbio.org/publications/wildfire_studies/Roads_And_Wildfires_2007.pdf, accessed on May 4, 2020.

lofted during the wildfire, which can move up to a mile ahead of a firestorm. These small embers or sparks may fall on the vegetation near a home (on dry leaves, needles, or twigs on the roof) and then subsequently ignite and burn down the home. Ember storms place all structures without fire resistant landscaping and construction within miles of the fire at potential risk.

- Direct Flame Contact. Direct flame impingement refers to the transfer of heat by direct flame exposure. Direct contact will heat the building materials of the home; if the time and intensity of exposure is severe enough, windows will break, and materials will ignite.
- Radiant Heat. A house can catch on fire from the heat that is transferred to it from nearby burning objects, even in the absence of direct flames or embers. By creating defensible space around homes, the risk from radiant heat is significantly reduced. A home with 100 feet of clearance from forest or shrubs will usually have minimal impact from radiant heat or direct flame.

Wildfire season in the Western US recently has lengthened from an average of between five and seven months to a year-round occurrence. The number of large wildfires in California (i.e., greater than 1,000 acres) has increased from approximately 25 to 55 per year since the 1960s.[21] This is occurring as average annual temperature in the Western US has risen by nearly two degrees Fahrenheit since the 1970s and the winter snowpack has declined.[22] The encroachment of urban development into wildland areas has been another contributing factor.

Frequent wildfires reduce recovery of shrubs and trees - especially shrubs and trees that must produce seeds to regenerate. Wildfires also increase invasion of non-native grasses, resulting in the converting of native shrublands to non-native grassland.[23] Non-native grasses are generally more flammable than the chaparral and sage scrub vegetation that is replaced; thus, such conversion exacerbates wildfire hazards.[24]

18.2.1.3 Secondary Effects

Secondary effects of wildfire include debris flows and air pollution post-fire. A debris flow is a fast-moving landslide hazard which occurs after high intensity rainfall in an area which has recently experienced a wildfire. Lands which have experienced a wildfire are more susceptible to rainfall-induced landslides because wildfires can decimate vegetation, which increases the imperviousness of soil so that it repels water. Whereas in vegetated areas, soil is stabilized and is more absorbent.[25] Debris flow typically occurs in areas with steep slopes which increase likelihood of down-slope landslides. As discussed in Chapter 8, Geology and Soils, the General Plan Planning Area is located in the Hollister Valley, a largely flat region

[21] State Board of Forestry and Fire Protection and California Department of Forestry and Fire Prevention, 2018, 2018 Strategic Fire Plan for California, page 7.

[22] State Board of Forestry and Fire Protection and California Department of Forestry and Fire Prevention, 2018, 2018 Strategic Fire Plan for California.

[23] US Geological Survey, 2012, Fire-Driven Alien Plant Invasion in a Fire-Prone Community, https://link.springer.com/article/10.1007/s00442-012-2253-8, accessed on May 4, 2020.

[24] See University of California Division of Agriculture and Natural Resources, 2009, Invasive Plants and Wildfires in Southern California, https://anrcatalog.ucanr.edu/pdf/8397.pdf, accessed on May 4, 2020.

[25] US Geological Survey, 2018, New post-wildfire resource guide now available to help communities cope with flood and debris flow danger, https://www.usgs.gov/center-news/post-wildfire-playbook?qt-news_science_products=1#qt-news_science_products, accessed on May 4, 2020.

which abuts the Diablo and Gabilan Mountain Ranges to the west and southwest, respectively. However, the General Plan Planning Area is located several miles from each mountain range and is immediately surrounded by flat agricultural land. Therefore, debris flow is not an environmental hazard which the General Plan Planning Area would be susceptible to in the event of a wildfire.

The other secondary effect, air pollution, could pose a hazard to the General Plan Planning Area in the event a wildfire occurs in the region. Smoke itself is made up of a complex mixture of gases and fine particles produced when wood and other organic materials burn. Health risks from smoke inhalation are largely from microscopic particles ($PM_{2.5}$) which can penetrate the lungs and cause a range of health problems that can include chronic heart and lung diseases. Exposure to particulate pollution is even linked to premature death. There are some populations which are more sensitive than others to smoke; for instance, people with heart or lung diseases; the elderly; children; people with diabetes; people with compromised immune systems; and pregnant women.[26] Through observations of wildfires, experts have determined that wildfires which produce larger plumes of smoke can result in that smoke and ash being carried thousands of miles from where the wildfire is located. Therefore, air pollution is a larger secondary risk from wildfires, which can affect any region in the world, regardless of each region's susceptibility to wildfires.[27]

18.2.2 WILDFIRE HISTORY NEAR HOLLISTER

There have been a total of 28 wildfires recorded in San Benito County since the 1950s. Wildfires ranged in size from 35,380 acres with the Mack fire in 1950 near the San Benito and Fresno county lines, to the 236-acre Browns Valley fire in 2001.[28] One wildfire, the 1981 Herbert Fire, burnt 1,866 acres mostly to the west of the General Plan Planning Area, although a small portion of the fire was within the General Plan Planning Area.[29] The most recent wildfire, the Coyote Fire, occurred in July of 2020. Located over 20 miles southeast of the General Plan Planning Area, the Coyote Fire burned approximately 1,500 acres.[30]

18.2.3 WILDFIRE HAZARDS IN HOLLISTER

The General Plan Planning Area is not located within a Federal Responsibility Area or a State Responsibility Area (SRA). As shown on Figure 18-1, the SRA is present within the eastern portion of the General Plan

[26] US Geological Survey, 2018, How Smoke Fires Can Affect Your Health, https://www.epa.gov/pm-pollution/how-smoke-fires-can-affect-your-health, accessed on May 4, 2020.

[27] Nasa Earth Observatory, August 2018, Smoky Skies in North America, https://earthobservatory.nasa.gov/images/92612/smoky-skies-in-north-america, accessed on May 4, 2020.

[28] San Benito County, August 2015, County of San Benito Operation Area California, USA Multi-Jurisdictional Hazard Mitigation Plan, http://www.cosb.us/wp-content/uploads/Local-Hazard-Mitigation-Plan-_-SBC-FEMA-Approved.pdf, accessed on May 4, 2020.

[29] Cap Radio, 2018, A History of California Wildfires pre-1950 to 2018, https://projects.capradio.org/california-fire-history/#11.58/36.8562/-121.4191, accessed on May 5, 2020.

[30] Cal FIRE, 2020, Coyote Fire General Information, https://www.fire.ca.gov/incidents/2020/7/15/coyote-fire/, accessed on August 28, 2020.

Planning Area. All SRA land on the east side of the General Plan Planning Area is designated as a moderate fire hazard severity zone, with some high fire hazard severity zones to the northwest and the southwest.[31]

The City Limits and SOI are in a Local Responsibility Area (LRA). There are a few pockets of Moderate and High Fire Hazard severity zones in the LRA, southeast of the General Plan Planning Area. There is also a small pocket of a High Fire Hazard severity zone to the west of the General Plan Planning Area. The High Fire Hazard zones are mostly located in the foothills of the surrounding mountain ranges.

According to Cal OES, a Wildland-Urban Interface (WUI) is defined as any area where structures and other human development meet or intermingle within wildland vegetation.[32] Developments in the WUI exacerbate fire occurrence and fire spread in several ways, including:

- Increased numbers of human-caused wildfires.
- Wildfires become harder to fight.
- Firefighting resources are diverted from containing the wildfire to protecting lives and homes.
- Letting natural fires burn becomes impossible; leading to buildup of fuel, increasing wildfire hazard further.[33]

Increased fire frequency tends to eliminate and replace native shrubs with weedy, highly flammable annual grasslands.[34] As described in further detail in Chapter 19, Climate Change, the frequency of fire is anticipated to increase as dry conditions are exacerbated by climate change.

Although the General Plan Planning Area is located on relatively flat land, the lower foothills to the east and west are high fire hazard severity zones which mean a large portion of the Hollister Valley Basin are within a WUI. As shown in Figure 18-2, much of the General Plan Planning Area is within the WUI. San Benito County rated all WUI land in the county as a moderate fire hazard severity zone.[35]

[31] California State Geoportal, January 2020, California Fire Hazard Severity Zone Viewer, https://gis.data.ca.gov/datasets/789d5286736248f69c4515c04f58f414, accessed on May 4, 2020.

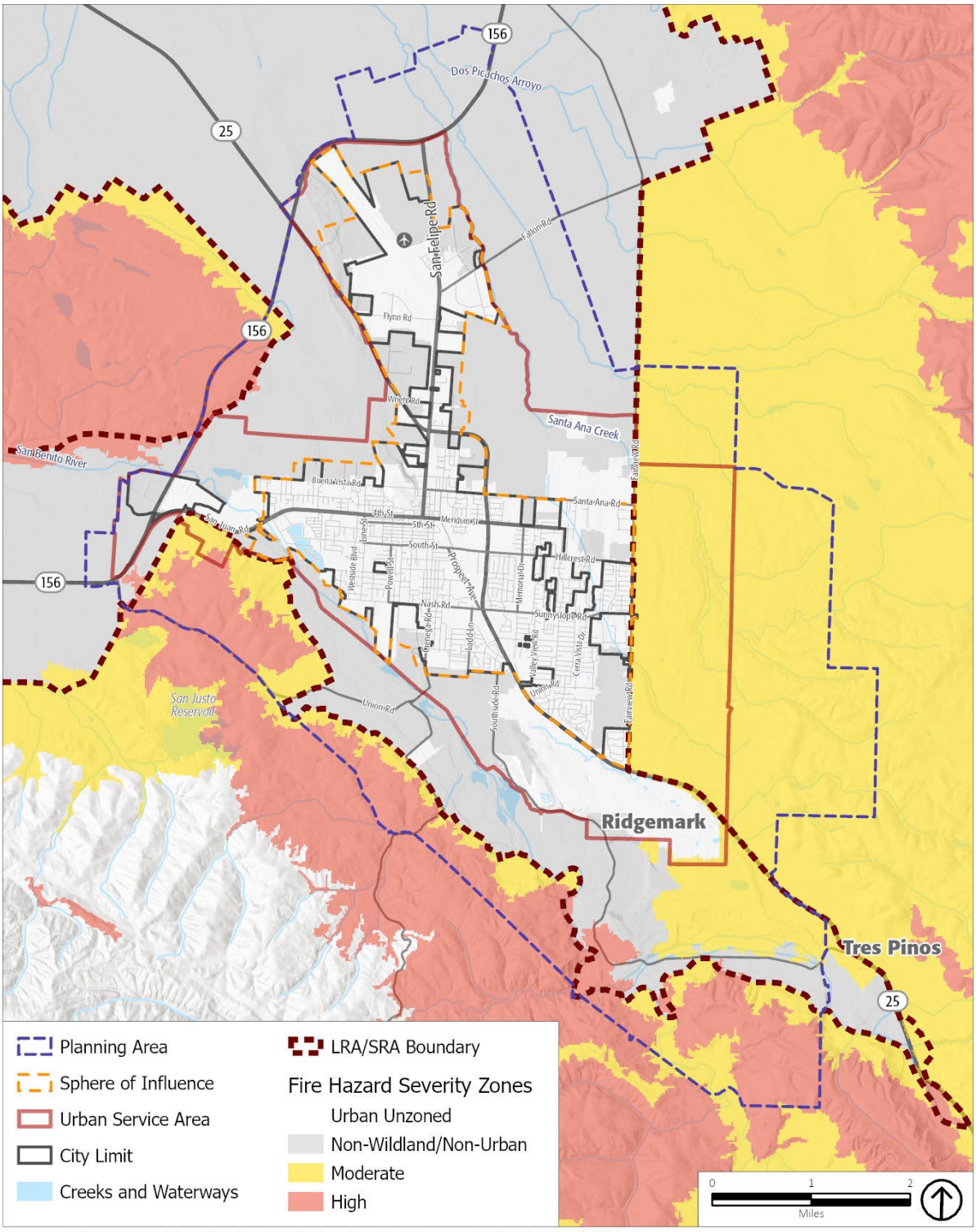
[32] California Office of Emergency Services, 2018, California State Hazard Mitigation Plan.

[33] Radeloff, Volker; Helmers, David; Kramer, H., et al., 2018, Rapid Growth of the US Wildland-Urban Interface Raises Wildfire Risk, Proceedings of the National Academy of Sciences (PNAS): Volume 115 No. 13, https://www.pnas.org/content/pnas/115/13/3314.full.pdf, accessed on May 4, 2020.

[34] US Geological Survey, 2012, Why Are Biologists Studying Housing Loss from Wildfires? https://www.usgs.gov/center-news/why-are-biologists-studying-housing-loss-wildfires, accessed on May 4, 2020.

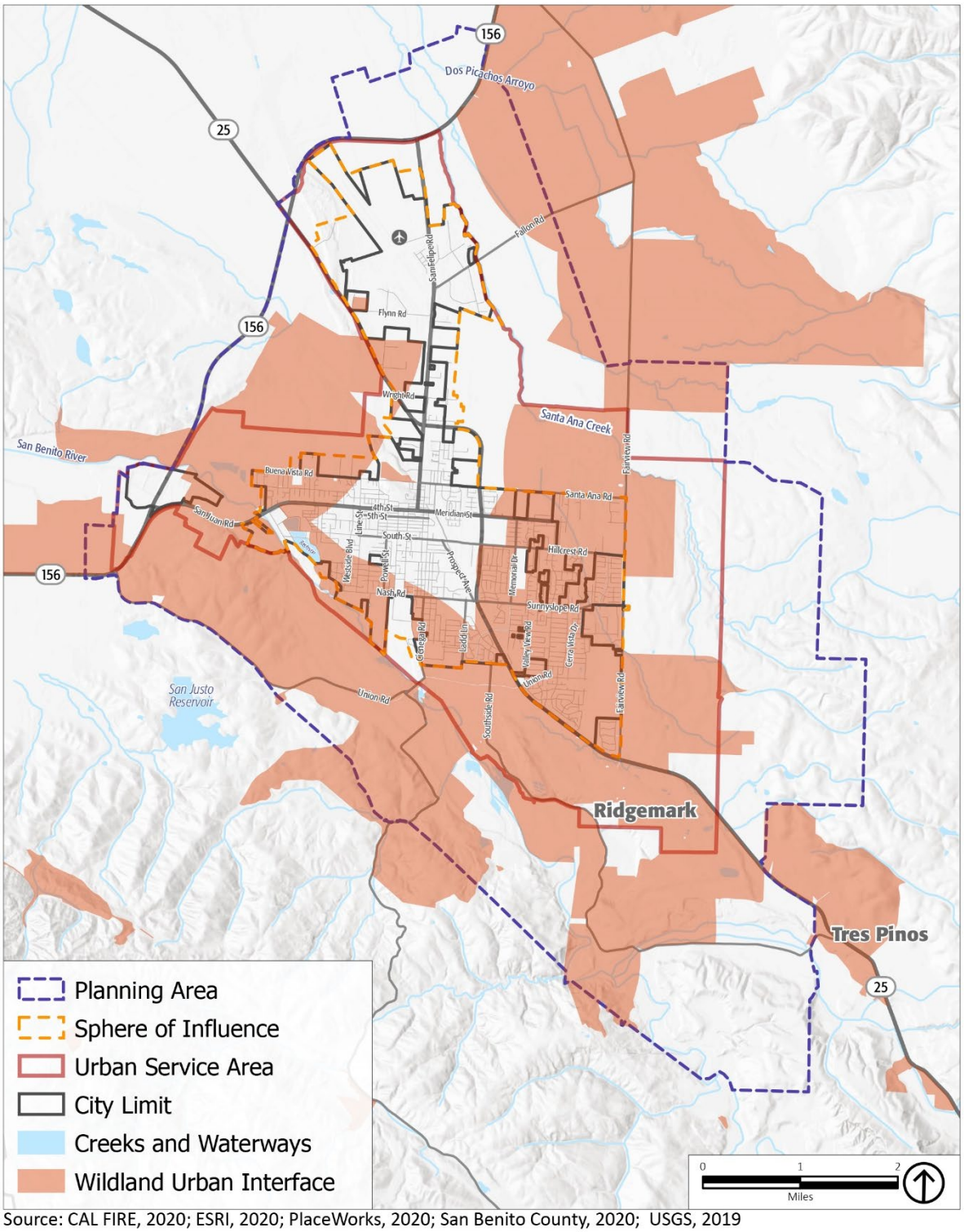
[35] San Benito County, August 2015, County of San Benito Operation Area California, USA Multi-Jurisdictional Hazard Mitigation Plan, http://www.cosb.us/wp-content/uploads/Local-Hazard-Mitigation-Plan-_-SBC-FEMA-Approved.pdf, accessed on May 4, 2020.

Figure 18-1 Wildfire Responsibility and Fire Hazard Severity Zones



Source: ESRI, 2020; PlaceWorks, 2020; San Benito County, 2020; USGS, 2019

Figure 18-2 Wildland Urban Interface Areas



Source: CAL FIRE, 2020; ESRI, 2020; PlaceWorks, 2020; San Benito County, 2020; USGS, 2019

18.2.3.1 Land Cover and Vegetation

As described in more detail in Chapter 5, Biological Resources, and shown in Figure 5-1, the General Plan Planning Area includes 15 land cover types, four of which are considered natural vegetation communities.[36] These include evergreen forests, mixed conifer forests, grassland/herbaceous, and scrub. Forests make up less than 1 percent of the vegetation cover in the General Plan Planning Area, the majority of vegetation consists of grassland/herbaceous plants and scrub land which together total more acreage than any other land cover type in the General Plan Planning Area. Grasslands occupy most of the undeveloped hillsides to the east, south, and southwest, while scrublands occur along the margins or just outside of the General Plan Planning Area.

Grasslands and scrublands are highly flammable, particularly when leaf litter is left to accumulate, which ultimately dries and provides fuel for potential fires. The fire risk in grassland and scrubland vegetation communities can be reduced through several tactics, primarily controlled burns and annual grazing.[37]

18.2.3.2 Slopes

Slope is a measure of land steepness and wildfire intensity and rate of spread increase as slope increases due to the tendency of heat from a fire to rise via convection. For example, as slope increases from 20 to 40 percent, flame heights can double and rates of fire spread can increase fourfold; from 40 to 60 percent, flame heights can become three times higher and rates of spread can increase eightfold. The arrangement of vegetation throughout a hillside can also contribute to increased fire activity on slopes. As mentioned in Chapter 8, Geology and Soils, the topography of the General Plan Planning Area is largely flat and mostly does not contain significant slopes. However, the surrounding foothills at the outskirts of the Planning Area include a varied, sloped terrain.

18.2.3.3 Prevailing Winds

Prevailing winds are considered the wind pattern from the direction that is predominant at a place or season. Wind speed in the General Plan Planning Area range from seven- to ten-miles per hour. The direction of wind in the General Plan Planning Area trends from the northwest year-round.[38] Although severe windstorms are not frequent in the General Plan Planning Area, high winds do occur on occasion and may cause significant damage. Damage could include destabilizing dry brush that covers hillsides and land in the WUI, which in turn increases the risk of wildfire threat. Additional wind impacts can occur with destructive impacts to trees, power lines, and utility services, the damage of which could cause spark sources for potential wildfires.[39]

[36] Natural vegetation communities do not include cultivated crop land, hay crops/pastures, water, or urban developed land.

[37] The Nature Conservancy, Restoring Fire to Native Grasslands, https://www.nature.org/en-us/about-us/where-we-work/united-states/minnesota/stories-in-minnesota/restoring-fire-to-native-grasslands/, accessed August 28, 2020.

[38] San Benito County, August 2010, San Benito County General Plan Background Report, Chapter 11, Safety, page 11-52.

[39] San Benito County, August 2015, County of San Benito Operation Area California, USA Multi-Jurisdictional Hazard Mitigation Plan, http://www.cosb.us/wp-content/uploads/Local-Hazard-Mitigation-Plan-_-SBC-FEMA-Approved.pdf, accessed on May 4, 2020.

18.3 IMPLICATIONS FOR THE GENERAL PLAN UPDATE

Based on the information contained in this chapter, the General Plan Update process should consider the following:

- Develop policies and programs to support wildfire emergency planning and preparedness.
- Monitor the potential for wildfire risk. The General Plan Update provides an opportunity to anticipate and plan for wildfire hazards that could occur over the next 20 years.
- Consider wildfire risk when contemplating potential land use changes.

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