Fire Hazard Planning Technical Advisory

GENERAL PLAN TECHNICAL ADVICE SERIES

2022 Update

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Disclaimer

Because communities throughout California are varied and have different needs, the recommendations in this technical advisory are designed for a wide spectrum of uses and applications. This document is meant to be a resource for the public to use at their discretion; it does not alter or direct public agency discretion or decision-making in preparing planning documents. This document should not be construed as legal advice, nor is the Governor's Office of Planning and Research enforcing or attempting to enforce any part of the recommendations contained herein. (Government Code [GC] § 65035 ["It is not the intent of the Legislature to vest in the Office of Planning and Research any direct operating or regulatory powers over land use, public works, or other state, regional, or local projects or programs."].)

1. Introduction

This planning guide is one in a series of technical advisories provided by the Governor's Office of Planning and Research (OPR) as a service to professional planners, land use officials, and California Environmental Quality Act (CEQA) practitioners. OPR issues technical guidance on issues that broadly affect land use planning, including the application of CEQA. The goal of this technical advisory is to provide a robust planning framework for addressing fire hazards, reducing risk, and increasing resilience across California's diverse communities and landscapes. To accomplish this goal, it is essential that local agencies (i.e., cities and counties) develop and incorporate effective policies and implementation programs in their general plans and integrate their general plans with other relevant hazard and risk reduction policies, plans, and programs. This advisory provides guidance on those policies and programs, and is also intended to assist city and county planners in discussions with professionals from fire hazard prevention and mitigation, disaster preparedness, and emergency response and recovery agencies as they work together to develop effective fire hazard policies for the general plan.

1.1 Update Information

This Fire Hazard Planning technical advisory was first published in 2015. Pursuant to the requirements of SB 901 (Dodd, 2018) and AB 2911 (Friedman, 2018), as codified in GC § 65040.21, OPR updated this document to include "specific land use strategies to reduce fire risk to buildings, infrastructure, and communities." OPR prepared this update "in consultation with the Department of Forestry and Fire Protection (CAL FIRE), the State Board of Forestry and Fire Protection (State Board), and other fire and safety experts." Per GC § 65040.21, OPR must update the guidance document "not less than once every eight years".

1.2   Document Outline

This document is organized into the following sections:

1) **Introduction**

2) **Overview of Fire Hazards and Risks in California**: This section provides background and context for understanding fire hazards and risks to California's communities and landscapes.

3) **Regulatory and Policy Background:** This section summarizes legal and regulatory requirements that directly address fire hazard planning and mitigation, including federal and state laws and regulations, and key policies, programs and guidelines that complement the regulatory framework.

4) **Fire Hazard Planning Guidance**: This section provides an overview of the key steps in the fire hazard planning process, general recommendations for incorporating these steps in general plan updates, and opportunities for alignment of fire hazard planning with other topics such as climate adaptation and local hazard mitigation plans.

5) **Example Policies**: This section provides example fire hazard policies and implementation programs that could be included in general plans.

6) **Appendices**: The appendices include potential resources –including funding sources, informational guidance, networks, and tools –to support fire hazard planning, recent planning examples from communities throughout California, and other technical sections that support the main body of the document.

2. Overview of Fire Hazards and Risks in California

2.1 Brief History

Fire is a natural part of California's diverse landscapes and is vital to many ecosystems across the state. For centuries, many California Native American tribes (hereinafter referred to as tribes) recognized this interdependence between fire, communities, culture, and the environment and used prescribed burning—the intentional ignition of small, low-intensity fires—to maintain and restore environmental health and promote resilience against catastrophic wildfires (Lake, 2018). However, in the 1800's, ecosystem management changed when settlers began enforcing a strict fire-suppression regime. Over the next century, firefighters sought to extinguish all fire in California, which led to problems such as forest densification and heightened wildfire risk (Lake, 2018; Johnston-Dodds, 2002). In the 1960s the National Park Service began to acknowledge the negative impact of fire suppression on California's landscapes and revised its policies to better co-exist with fire (Parsons & Nichols, 1986). Since then, California's local, regional, and state agencies have also had to grapple with this legacy and adapt their policies and practices. Today, this work is more complex than ever before, given additional challenges presented by climate change, heightened population vulnerabilities, and the expansion of new development and infrastructure into areas prone to fire hazards.

2.2 Increasing Wildfire Risk

Cities and counties are frequently challenged to accommodate both current and future residents in need of safe and affordable housing. In California, approximately 180,000 homes need to be constructed annually to meet demand (Department of Housing and Community Development, n.d.). Over the past few decades, communities across the state have approved many new housing units. These are often placed within or adjacent to wildland areas, creating "wildland-urban interface" (WUI) conditions (see Figure 1). Today, approximately one third of all homes in California are located in the WUI (Mowery et al, 2019). When it comes to wildfire, this trend is of particular concern because WUI conditions are associated with an increased risk of loss of human life, property, natural resources, and economic assets. According to CAL FIRE's [2018 Strategic Fire Plan for California](#), "since the turn of the century there has been a steep increase in structures lost compared to the 1990s" (Id. at p. 8).

This rise in destroyed assets is not only because of increasing housing demand and development in the WUI; it is also correlated to an increase in average fire size and severity (Strategic Fire Plan for California, 2018). Land management efforts have yet to be employed at the scale required to address the continued overgrowth and environmental health impacts caused by 100+ years of fire suppression, making wildfires more difficult to contain.

Figure 1: Map of California's Wildland Urban Interface (Available from CAL FIRE's Fire and Resource Assessment Program)

Wildland urban interface areas are present in communities spanning across California.

What's more, Earth's changing climate—specifically rising temperatures and the resulting shifts in wind and water patterns—is exacerbating the situation, substantially increasing wildfire risk in certain areas of the state. The frequency of extreme fire weather during the autumn months has more than doubled in California since the 1980s and, factoring in climate change, this frequency is projected to increase in the future (Goss et.al, 2020). According to California's Fourth Climate Change Assessment, if greenhouse gas emissions continue to rise, California is likely to see a 50% increase in fires larger than 25,000 acres as well as a potential 77% increase in average area burned by 2100. According to some experts, we are now entering an era of "mega-fires" or "mega-disturbances" (Stephens et.al., 2014).

2.3   Impacts of Wildfire

California has already begun to experience the effects of mega-fires. In 2017, the Thomas and Tubbs fires topped the charts as the largest and most destructive wildfire events on record, respectively. However, these records were short-lived. In 2018, the Mendocino Complex Fire burned over 459,000 acres, while the Camp Fire took at least 85 lives and destroyed 18,804 structures in Butte County, including much of the town of Paradise (CAL FIRE, 2019), marking another year of unprecedented loss.

This trend has continued to play out in recent fire seasons. 2020's August Complex fire became California's first "gigafire" in modern history, with over 1 million acres burned. In addition, the 2021 Dixie Fire grew to be California's largest single blaze on record. Between 2003 and 2021, the top 10 costliest wildland fires in the United States all occurred in California (Insurance Information Institute, 2022). Moreover, as shown in Figure 2, nine of the 20 largest and most destructive fires in California's history[1] occurred in the past two years (CAL FIRE, 2022).

[1] CAL FIRE's historical record, at the time this document was prepared, spans from 1932-2021

Figure 2: California's 20 Largest Wildfires in CAL FIRE's Recorded History (Source: CAL FIRE, 2022)
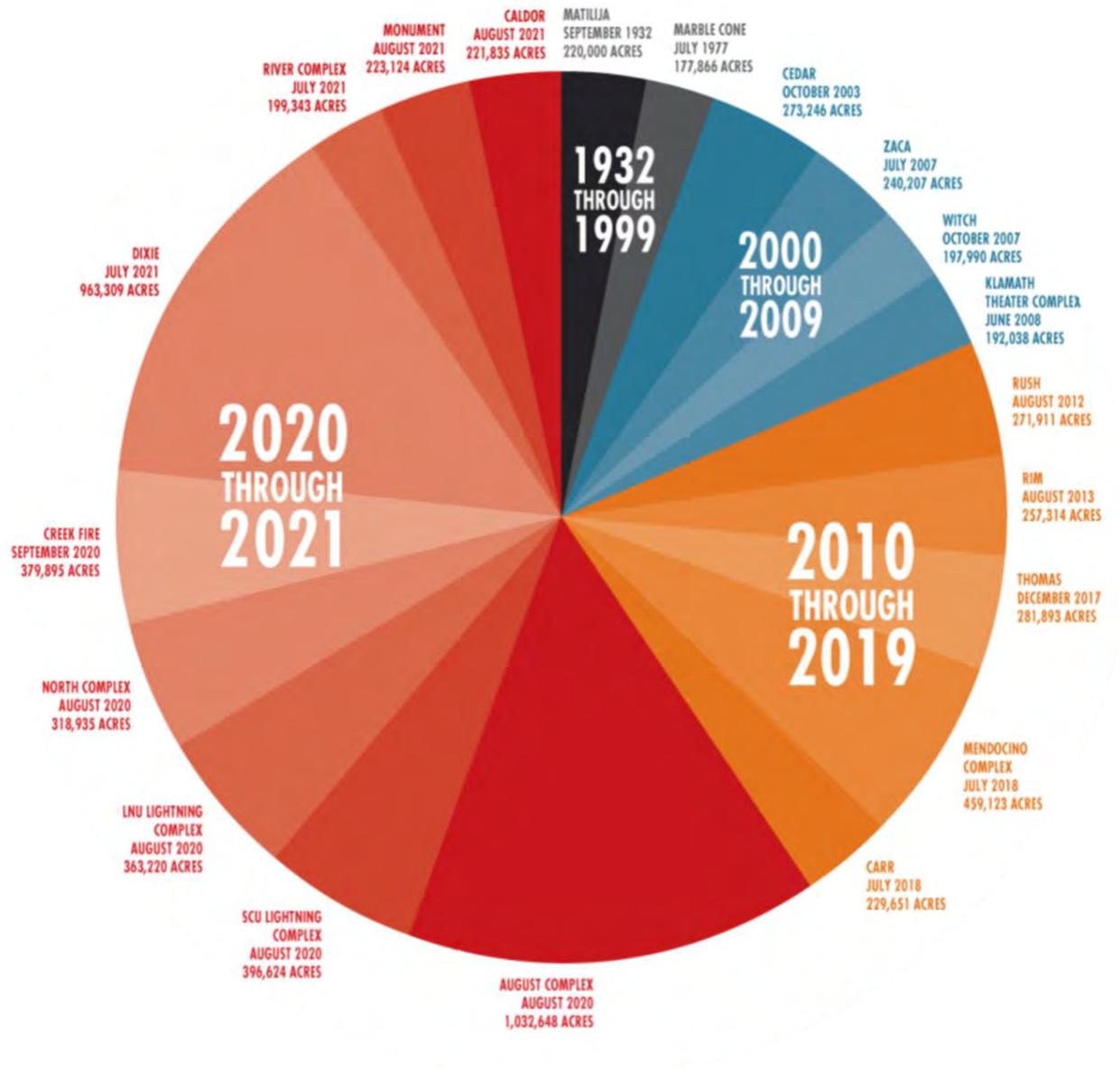
Wildfires in California not only cause direct damage, but also produce indirect impacts on ecosystem services and the built environment (Hill et al., 2020). For example, following the Tubbs fire, benzene—a toxic chemical—was released from melted plastic piping and entered Santa Rosa's drinking water system. As a result, the city implemented a water advisory (see Figure 3) that lasted for 11 months (City of Santa Rosa, n.d.). Additionally, with less vegetation in place, destructive floods and landslides pose serious risks to fire-impacted communities. Following the 2017 Thomas fire, a debris flow caused severe structural damage and took the lives of at least 23 people (County of Santa Barbara Office of Emergency Management, 2018).

Figure 3: Outline of Santa Rosa's Water Advisory Area Following the Tubbs Fire (Source: City of Santa Rosa 2/23/18 Advisory)
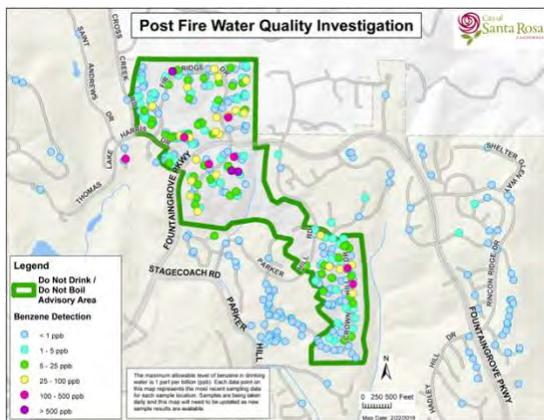
The maximum allowable level of benzene in drinking water is 1 part per billion (ppb). After the Tubbs fire, benzene levels reached more than 500 ppb in portions of the city.

The effects of wildfires can also be far-reaching, spanning across geographies. For instance, as people displaced by the 2017 Sonoma County fires sought shelter in neighboring areas, hosting communities felt a strain on their infrastructure and resources. Because of increased housing demand, asking prices for rental units increased and many tenants were displaced (BAHRII, 2019). Wildfire events also increase pressure on safety net services such as unemployment, food stamps, educational assistance (Deryugina, 2017). The impacts of California wildfires even extend beyond state borders. In 2020, wildfire smoke not only blanketed large swaths of California, but also worsened air quality across the United States (NASA, 2020).

Moreover, as energy utilities responded to the growing threat and severity of catastrophic wildfire events and the potential risk of ignitions by electrical transmission and distribution facilities and equipment, communities across the state were affected by public safety power shutoff (PSPS) events. In 2019, about 2.7 million people experienced extended power outages during PSPS events as utilities responded to risky weather conditions (Botts, 2019). Utility credit downgrades are also resulting in higher customer rates, thereby reducing access to affordable electricity (Office of Planning and Research, 2019).

2.4   Equity Implications

While many people have been impacted by wildfire, certain groups are particularly vulnerable to and disproportionately affected by these events. For instance, during the Thomas and Tubbs fires, counties struggled to provide Spanish speakers with timely emergency alerts and information (Mendez and Flores-Haro, 2019; Botts and Freedman, 2017; Roos, 2018). Moreover, during the Camp Fire, elderly residents and persons with disabilities were less likely to escape (Verzoni, 2019). The smoke from wildfire events also has adverse health impacts downwind, particularly on outdoor workers, unsheltered populations, and individuals with underlying health conditions. Similarly, the impacts from PSPS events acutely affected portions of the broader community, particularly low-income individuals and persons experiencing food insecurity (Botts, 2019). Rebuilding and recovering from wildfire events varies across income and demographic groups as well. For example, "many individuals in rural areas, low-income neighborhoods, and immigrant communities do not have access to the resources necessary to pay for insurance [or] rebuilding" after a wildfire and, therefore, take a longer time to recover (Davies et al., 2018). Additionally, wildfires can exacerbate existing mental health conditions and lead to post traumatic stress disorder (PTSD), low self-esteem, and/or depression for vulnerable populations, including children and the elderly (Hill et al., 2020). Following the 2017 fires in Sonoma County, the Federal Emergency Management Agency (FEMA) referred thousands of residents to mental health services (Kuipers, 2019) and local organizations created a Wildfire Mental Health Collaborative, which supported residents for nearly three years following the event (Healthcare Foundation Northern Sonoma County, n.d.).

Increasing Access to Safety Information

The Listos California Program is helping communities across California get ready for disasters. Their public guidance, offered in ten languages, outlines five simple steps individuals can take to increase preparedness. The program also developed additional guidance for food and agricultural workers as well as people experiencing homelessness.

2.5   Rising to the Challenge

Addressing the risks, impacts, and inequities caused by wildfire requires a holistic and integrated approach. In anticipation of future wildfire scenarios, jurisdictions must grapple not only with fire risk but also plan for the plethora of downstream impacts that are caused by wildfire events.

California is working with local, regional, tribal, and federal partners to develop and implement a wide array of solutions in order to protect public health, promote resilience, and support local economies. CAL FIRE's 2019 Community Wildfire Prevention & Mitigation Report outlines how the State will implement strategies such as fuel modification, prescribed burning, home hardening, and public education to reduce future fire risk. In addition, California's Wildfire and Forest Resilience Task Force is working across State agencies to implement California's Wildfire and Forest Resilience Action Plan by:

1) Increasing the pace and scale of forest health projects;

2) Strengthening protection of communities;

3) Managing forests to achieve the State's economic and environmental goals; and

4) Driving innovation and measuring progress.

As communities plan for the future, they too are rising to the challenge. Appendix C highlights how local agencies are addressing wildfire risk in their general plans. In addition, OPR's WUI Planning Guide provides examples for cities and counties to reference as they leverage planning tools, code & standards, development review procedures, and other mechanisms to implement general plan policies and programs. Together, we can build a more sustainable and resilient future.

Figure: 4 Unmanaged (top image) Versus Managed (bottom image) Ponderosa Pine Forest (Source: Erika Sloniker, The Nature Conservancy)
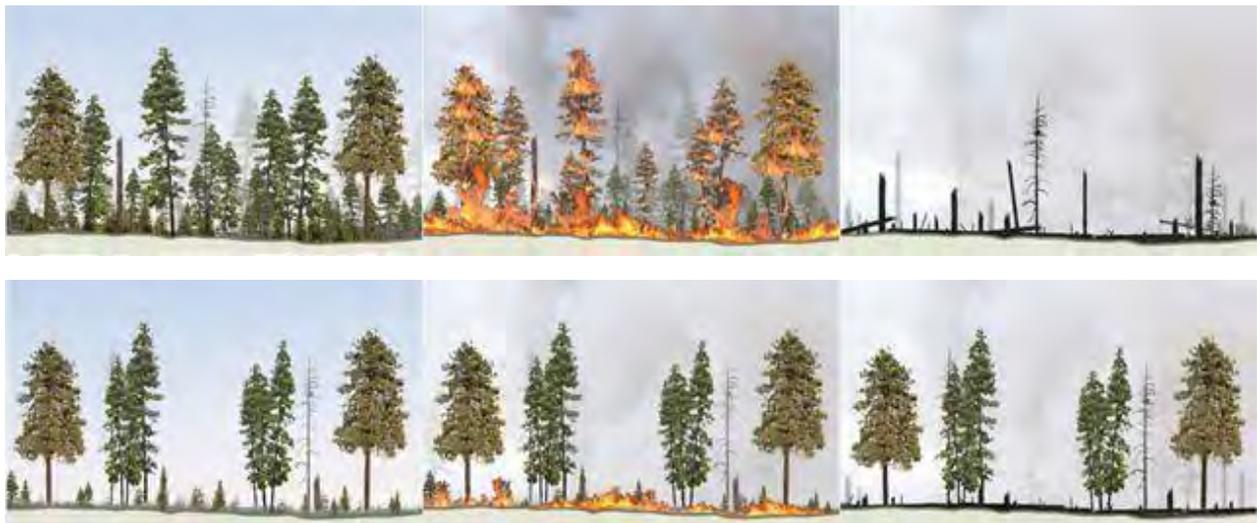
Climate Impacts on California's Landscapes

From the heat of Death Valley to the cool Sierra peaks, sandy coastal beaches to fertile inland soils, the dynamic range of California's landscapes is unparalleled. As communities across California work to mitigate and adapt to the impacts of climate change, they should address challenges unique to their region. In recognition of California's diverse array of environments, California's Fourth Climate Change Assessment includes nine regional reports to inform planning and implementation at the local and regional scales. With respect to wildfire, numerous climactic drivers will influence risk differently between California's regions. These include:

- *Increasing Temperatures*: Wildfire risk in the San Francisco Bay Area region is rising in tandem with increasing temperatures. Further upstate, in the Sacramento, Sierra Nevada, and North Coast regions, forests that experience drought are also more susceptible to wildfire. High heat not only influences fire risk directly but can also produce indirect impacts. For instance, in the San Joaquin Valley, where fire hazard is typically low, warming temperatures will likely worsen air quality due to extended agriculture fallowing. This, in turn, can exacerbate health impacts from wildfire smoke.

- *Shifting Wind Patterns*: The Santa Ana, Sundowner, and Diablo winds, will continue to shape wildfire activity across Southern, Central, and Northern California, respectively. Modelers are still working to determine how these wind events will be impacted by climate change.

- *Shifting Water Patterns:* Climate change will cause shifting water patterns that can impact wildfire risk across the state. In the inland desert, the potential weakening of the North American Monsoon signal could reduce the threat of fire starts due to lightning. Moreover, changing patterns of rainfall will impact plant growth in the desert, thereby altering the amount of fuel for fires. Mediterranean ecosystems along the central coast have a similar response to water availability since they are situated on a transition zone. In Southern California and San Diego, meanwhile, changing precipitation will factor heavily into post-fire risk assessments since these landscapes are especially vulnerable to post-fire flooding and landslides (USGS, n.d.).

- *Shifting Insect Habitat*: Bark beetle infestations are rising in response to the changing climate, increasing tree mortality—particularly in the southern Sierra Nevada —and reducing carbon storage.

- *Human Impacts*: Across all of California's landscapes human factors, such as development patterns and risk mitigation strategies, will have a direct impact on communities' ability to mitigate and adapt to the impacts of climate change. Local decisions are a large factor in determining the future health of a community.

3.   Regulatory and Policy Background

This section describes federal and state laws, regulations, and policies related to fire hazard planning and mitigation, along with major programs and guidelines that complement the current regulatory framework. It is not intended to be an exhaustive list of all fire-related laws or policies that may exist but rather to provide planning context and highlight what would be most relevant to local planners or others engaged in the planning process. A general overview is depicted in Figure 5, followed by summary-level descriptions.

Figure 5: Overview of California's Wildfire Laws, Regulations, Plans, and Policies
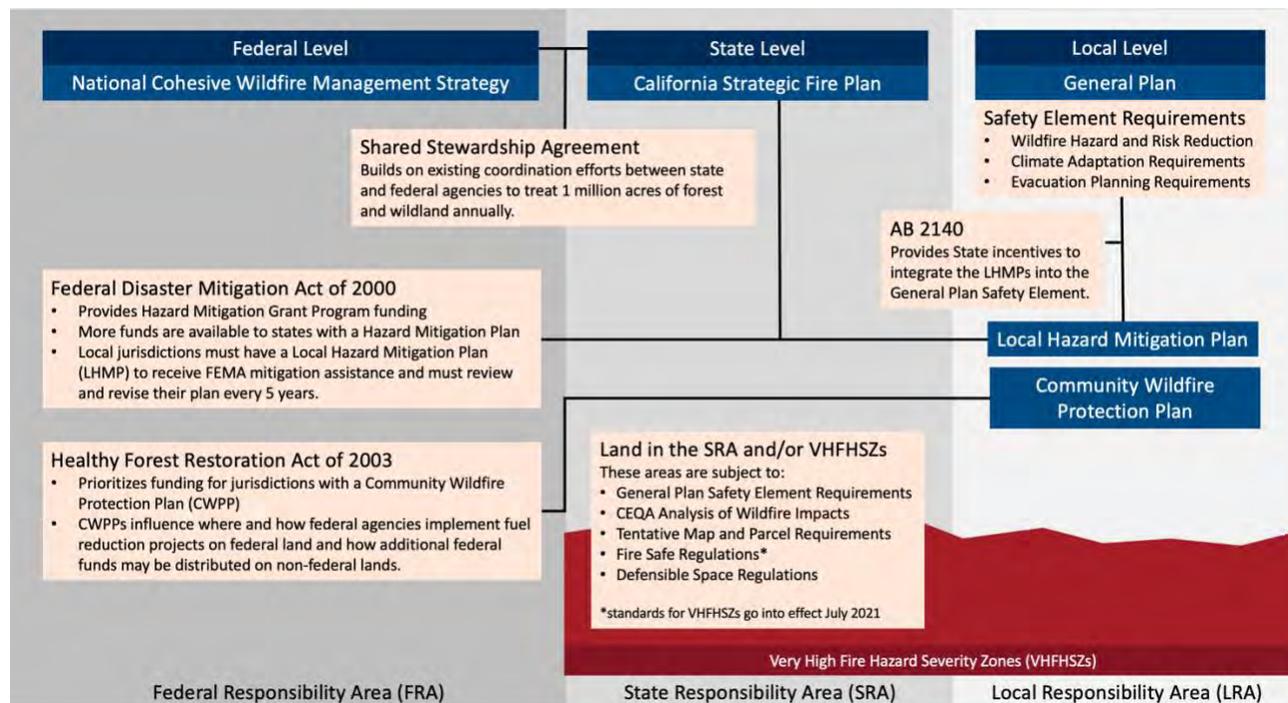
3.1   Federal Framework

National Cohesive Wildland Fire Management Strategy

In response to requirements of the Federal Land Assistance, Management, and Enhancement Act of 2009, the Wildland Fire Leadership Council – an intergovernmental committee of Federal, state, tribal, county, and municipal government officials convened by the Secretaries of the Interior, Agriculture, Defense, and Homeland Security – directed the development of the National Cohesive Wildland Fire Management Strategy (Cohesive Strategy). The Cohesive Strategy is a collaborative process with active involvement of all levels of government and non-governmental organizations, as well as the public, to seek national, all-lands solutions to

wildland fire management issues. The strategy is regionally oriented and science based. The Cohesive Strategy identifies three primary goals as presenting the greatest opportunities for making a positive difference in addressing wildland fire problems and achieving their vision (refer to Figure 6).

The Cohesive Strategy's goals are as follows:

1) *Restoring and maintaining resilient landscapes:* The strategy must recognize the current ecosystem health and variability of resilient landscapes among geographic areas, including variation in impacts from climate change. Because landscape conditions and needs vary depending on local climate and fuel conditions, among

other elements, the strategy must address landscapes on a regional and sub-regional scale.

2) *Creating fire-adapted communities:* The strategy must offer options and opportunities to engage communities and work with them to become more resistant to wildfire threats and respond in the event of a wildfire emergency.

3) *Responding to wildfires:* The strategy must consider the full spectrum of fire management activities and recognize the differences in missions among local, state, tribal and federal agencies. The strategy must offer collaboratively developed methodologies to move forward.

Figure 6: The Cohesive Strategy's Vison, National Goals, and National Challenges

Shared Stewardship Agreement

In a key step to improve stewardship of California's forests, the State of California and the U.S. Forest Service launched a joint state-federal initiative in August 2020 to reduce wildfire risks, restore watersheds, protect habitat and biological diversity, and help the state meet its climate objectives. The [Agreement for Shared Stewardship of California's Forest and Rangelands](#) includes a commitment by the federal government to match California's goal of reducing wildfire risks on 500,000 acres of forest land per year. To protect public safety and ecology, experts agree that at least one million acres of California forest and wildlands must be treated annually across jurisdictions using various fuel modification techniques. A historical transition toward unnaturally dense forests, a century of fire suppression and climate change resulting in warmer, hotter and drier conditions have left the majority of California's forestland highly vulnerable to catastrophic wildfire and in need of active, science-based management. Since the federal government owns nearly 58% of California's 33 million acres of forestlands, while the state owns three percent, joint state-federal management is crucial to California's overall forest health and wildfire resilience. Improved coordination also is key since nearly half of the state dollars invested in fuels management in recent years were spent on federal land.

The Shared Stewardship Agreement builds on existing coordination between state and federal agencies, and outlines six core principles that will drive improved state-federal collaboration:

- Prioritize public safety;

- Use science to guide forest management;

- Coordinate land management across jurisdictions;

- Increase the scale and pace of forest management projects;

- Remove barriers that slow project approvals; and

- Work closely with all stakeholders, including tribal communities, environmental groups, academia and timber companies.

Specifically, through this agreement California and the U.S. Forest Service commit to jointly execute the following activities:

- Treat one million acres of forest and wildland annually to reduce risk of catastrophic wildfire (building on the state's existing 500,000-acre annual commitment);

- Develop a shared 20-year plan for forest health and vegetation treatment that establishes and coordinates priority projects;

- Expand use of ecologically sustainable techniques for vegetation treatments such as prescribed fire;

- Increase pace and scale of forest management by improving ecologically sustainable timber harvest in California and grow jobs by tackling structural obstacles, such as workforce and equipment shortfalls and lack of access to capital;

- Prioritize co-benefits of forest health such as carbon sequestration, biodiversity, healthy watersheds and stable rural economies;

- Recycle forest byproducts to avoid burning slash piles;

- Improve sustainable recreation opportunities;

- Enable resilient, fire-adapted communities; and

- Share data and continue to invest in science.

Local Hazard Mitigation Plans

The [Federal Disaster Mitigation Act of 2000](#) (DMA 2000) enacted several changes under Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act) related to pre-disaster mitigation, streamlining the administration of disaster relief, and controlling the costs of federal disaster assistance. These changes have collectively brought greater focus on pre-disaster planning and activities as a means for reducing response and post-disaster costs.

On February 26, 2002, an Interim Final Rule (IFR) (44 Code of Federal Regulations Parts 201 & 206) to implement the DMA 2000, was published in the Federal Register. This IFR addressed state mitigation planning, identified new local mitigation planning requirements, authorized Hazard Mitigation Grant Program (HMGP) funds for planning activities, and the possibility of an increase in the percentage of HMGP funds available to states that develop a comprehensive, enhanced, State Hazard Mitigation Plan.

In accordance with the February 26th IFR and a further October 1st IFR, local governments must have a [Local Hazard Mitigation Plan](#) (LHMP) that is reviewed by the State Mitigation Officer and then approved by FEMA, prior to November 1, 2004, in order to receive FEMA mitigation project assistance. LHMPs must be revised, reviewed, and approved every five years.

According to the February 26, 2002 IFR, Section 201.6, local and tribal governments must include the following in their LHMPs:

- a planning process;
- a risk assessment;
- a mitigation strategy; and,
- a plan maintenance and updating process.

The February 26th IFR directs state and local governments to develop comprehensive and integrated plans that are coordinated through appropriate state, local, and regional agencies, as well as non-governmental interest groups. Moreover, state and local governments are encouraged to consolidate the planning requirements for different mitigation plans and programs to the extent feasible and practicable.

Although the LHMP and the general plan safety element are not intended to be identical documents, many of the data and analysis requirements are similar. AB 2140 (2006) allows (but does not require) a local agency to adopt and/or incorporate by reference its current, FEMA-approved LHMP into the general plan safety element. AB 2140 encourages LHMP integration by providing a disaster mitigation funding incentive that authorizes the state to use available California Disaster Assistance Act funds to cover local shares of the 25% non-federal portion of grant-funded post-disaster projects when approved by the legislature per GC § 8685.9. If an LHMP is adopted or incorporated by reference into the safety elements, it must be consistent with the safety element and all other elements of the general plan, pursuant to internal consistency requirements for the general plan codified at GC § 65300.5.

Local governments can work with their local emergency management agencies, local fire authorities, the State's Office of Emergency Services (CalOES), CAL FIRE, and Fire Safe Councils to ensure effective, integrated, and consistent wildfire prevention and hazard mitigation programs across numerous plans, including LHMPs, community wildfire protection plans (CWPPs, addressed further below), and general plans. More detailed discussion of plan integration and alignment is addressed in Section 4 of this document.

Community Wildfire Protection Plans

A Community Wildfire Protection Plan (CWPP) is a planning and funding prioritization tool created by the Healthy Forests and Restoration Act of 2003 as an incentive for communities to engage in comprehensive forest and fire hazard planning and help define and prioritize local implementation and funding needs (USDA n.d.). CWPPs are generally developed by local governments or other entities with assistance from state and federal agencies and in collaboration with other interested partners. This provides communities with a tremendous opportunity to influence where and how federal agencies implement fuel reduction projects on federal land, as well as how additional federal funds may be distributed for projects on non-federal lands. CAL FIRE also provides funding opportunities for projects or activities that may be identified in CWPPs.

The minimum requirements for a CWPP are:

- *Collaboration:* A CWPP must be collaboratively developed. Local and state officials must meaningfully involve federal agencies and other interested parties, particularly non-governmental stakeholders that manage land in the vicinity of the community.

- *Prioritized Fuel Reduction:* A CWPP must identify and prioritize areas for hazardous fuel reduction treatments on both federal and non-federal land and recommend the types and methods of treatment that, if completed, would reduce the risk to the community.

- *Treatment of Structural Ignitability:* A CWPP must recommend measures that homeowners and communities can take to reduce the ignitability of structures throughout the area addressed by the plan.

Three signatures are required to approve a CWPP:

1) A representative of the applicable local government;

2) The chief of the local fire department/district; and

3) The state forester/fire warden.

As with the LHMP, a CWPP is not identical to the general plan; however, some of the data and analysis included in both documents are similar.

3.2   State Framework

2018 California Strategic Fire Plan

The Strategic Fire Plan for California is the State's road map for reducing wildfire risk. The Fire Plan is a cooperative effort between the State Board and CAL FIRE. By placing the emphasis on what needs to be done long before a fire starts, the Strategic Fire Plan looks to reduce firefighting costs and property losses, increase firefighter safety, and contribute to

overall ecosystem health. The central goals of the 2018 Strategic Fire Plan include:

- Improve the availability and use of consistent, shared information on hazard and risk assessment;

- Promote the role of local planning processes, including general plans, new development, and existing developments, and recognize individual landowner/homeowner responsibilities;

- Foster a shared vision among communities and the multiple fire protection jurisdictions, including county-based plans and community-based plans such as CWPPs;

- Increase awareness and actions to improve fire resistance of man-made assets at risk and fire resilience of wildland environments through natural resource management;

- Integrate implementation of fire and vegetative fuels management practices consistent with the priorities of landowners or managers;

- Determine and seek the needed level of resources for fire prevention, natural resource management, fire suppression, and related services; and

- Implement needed assessments and actions for post-fire protection and recovery.

California Vegetation Treatment Program (CalVTP)

The California Vegetation Treatment Program (CalVTP), developed by the State Board, is a critical component of the state's multi-faceted strategy to address California's wildfire crisis. The CalVTP defines the vegetation treatment activities and associated environmental protections to reduce the risk of loss of lives and property, reduce fire suppression costs, restore ecosystems, and protect natural resources as well as other assets at risk from wildfire. The CalVTP supports the use of prescribed burning, mechanical treatments, hand crews, herbicides, and prescribed herbivory as tools to reduce hazardous vegetation around communities in the WUI, to construct fuel breaks, and to restore healthy ecological fire regimes. The CalVTP will allow CAL FIRE, along with other agency partners, to expand their vegetation treatment activities to treat up to approximately 250,000 acres per year, contributing to the target of 500,000 annual acres of treatment on non-federal lands.

CAL FIRE has the primary responsibility for implementing proposed CalVTP vegetation treatments, though many local, regional, and state agencies could also employ the CalVTP to implement vegetation treatments if their projects are within the scope of the CalVTP. For more information, refer to the State Board's CalVTP Database.

Wildfire and Forest Resilience Action Plan

On January 8, 2021, the Governor's Forest Management Taskforce released a comprehensive Wildfire and Forest Resilience Action Plan to reduce wildfire risk for vulnerable communities, improve the health of forests and wildlands and accelerate action to combat climate change. The Task Force and the state's efforts going forward will be guided by this Action Plan with an overall goal to increase the pace and scale of forest management and wildfire resilience efforts by 2025 and beyond. The primary goals of the Action Plan include:

- Increase the Pace and Scale of Forest Health Projects

- Strengthen Protection of Communities

- Manage Forests to Achieve the State's Economic and Environmental Goals

- Drive Innovation and Measure Progress

The Action Plan contains numerous individual actions under each goal, several of which support local community wildfire risk reduction and adaptation planning and implementation projects. Local agencies in or near forested areas may want to consider this Action Plan when updating their general plans and/or other relevant local plans.

Fire Risk Reduction Communities

Assembly Bill (AB) 1823 (2019) amended PRC Section 4290.1 to require that, on or before July 1, 2022, the State Board must develop criteria for and maintain a list of local agencies considered to be a "Fire Risk Reduction Community" located in the state responsibility area (SRA) or very high fire hazard severity zones (VHFHSZs), identified pursuant to GC § 51178, that meet best practices for local fire planning. Criteria that must be used to develop the Fire Risk Reduction Community list include recently developed or updated CWPPs, adoption of the board's recommendations to improve the Safety Element, participation in Fire Adapted Communities and Firewise USA programs, and compliance with the Board's minimum fire safety standards. Per Public Resources Code (PRC) Section 4124.7 CAL FIRE must "prioritize local assistance grant funding applications from local agencies based on the 'Fire Risk Reduction Community' list."

California Wildfire Mitigation Financial Assistance Program

AB 38 (2019) established a comprehensive wildfire mitigation financial assistance program to, among other things, encourage cost-effective structure hardening and retrofitting to create fire-resistant homes, businesses, and public buildings. The bill requires the State Fire Marshal, in consultation with specified State officials, to identify building retrofits and structure hardening measures, and CAL FIRE to identify defensible space, vegetation management, and fuel modification activities, that are eligible for financial assistance under the program. The bill specifies the types of designated wildfire hazard areas eligible for funding under the program.

Fire Hazard Severity Zones

CAL FIRE maintains fire hazard severity zone (FHSZ) data and maps for the entire state. There are three classes of fire hazard severity ratings within FHSZs: Moderate, High, and Very High. Fire hazard severity considers vegetation amount, topography, and weather (temperature, humidity and wind), and represents the likelihood of an area burning over a 30- to 50-year time period.

GC § 51177 and 51178 define "Very High Fire Hazard Severity Zones" (VHFHSZs) within LRAs to mean areas outside of SRAs that are designated as VHFHSZs by the Director of Forestry and Fire Protection based on consistent statewide criteria and based on the severity of fire hazard that is expected to prevail in those areas. VHFHSZs are based on fuel loading, slope, fire weather, and other relevant factors including areas where Santa Ana, Mono, and Diablo winds have been identified by CAL FIRE as a major cause of wildfire spread.

CAL FIRE has a list of incorporated cities or areas within the LRA for which it has made recommendations on VHFHSZs. Local agencies must designate VHFHSZs within their jurisdictions within 120 days of receiving recommendations from the Director (GC § 51179(a)). A local agency may, at its discretion, include areas within the jurisdiction of the local agency, not identified as VHFHSZs by the director, as VHFHSZs following a finding supported by substantial evidence in the record that the requirements of Section 51182 are necessary for effective fire protection within the area (GC § 51179(b)).

FHSZ maps are available at https://frap.fire.ca.gov/mapping/

3.3   Local Framework

Summary of State Fire Hazard Planning Requirements for Local Governments

- General Plan Safety Elements must be revised upon the next update to the Housing Element on or after January 1, 2014 to address specific wildfire hazard planning requirements for all jurisdictions with lands in the SRA or VHFHSZs (GC § 65302(g)). The revisions must include information about wildfire hazards and risks, as well as goals, policies, objectives and implementation measures for the protection of the community from the unreasonable risk of wildfire (GC § 65302(g) and 65302.5).

- Before approving a tentative subdivision map or parcel map within the SRA or VHFHSZs, a county must make certain findings that the subdivision is consistent with fire safety and defensible space regulations in Public Resources Code § 4290 and 4291, and that fire protection and suppression services are available for the subdivision (GC § 66474.02).

General Plan Safety Elements

Wildfire Hazard and Risk Reduction Requirements

Senate Bill (SB) 1241 (2012) revised the safety element provisions in State law to require all cities and counties whose planning area is within the SRA or VHFHSZs to address and incorporate specific information regarding wildfire hazards and risk, and policies and programs to address and reduce unreasonable risks associated with wildfire. These requirements are codified in GC § 65302(g)(3) and § 65302.5(b). For more information, refer to pages 21-22 of this TA.

Climate Adaptation Requirements

SB 379 (2015) amended GC § 65302(g)(4) to require that climate change adaptation and resilience be addressed in general plan safety elements. The law requires local agencies to incorporate the following into their climate adaptation and resiliency strategy:

- A vulnerability assessment that identifies the risks that climate change poses to the local jurisdiction and the geographic areas at risk from climate change impacts, including, but not limited to, an assessment of how climate change may affect the risks associated with the natural hazards addressed in the safety element;

- Information that may be available from federal, state, regional, and local agencies that will assist in developing the vulnerability assessment and the adaptation policies and strategies required;

- A set of adaptation and resilience goals, policies, and objectives based on the information specified in the vulnerability assessment, for the protection of the community; and,

- A set of feasible implementation measures designed to carry out the goals, policies, and objectives identified.

SB 1035 (2018) further requires local agencies to update the climate adaptation portion of the safety element at least every eight years to identify "new information relating to flood and fire hazards and climate adaptation and resiliency strategies applicable to the city or county that was not available during the previous revision of the safety element".

GC § 65302(g)(3) states the following:

"Upon the next revision of the housing element on or after January 1, 2014, the safety element shall be reviewed and updated as necessary to address the risk of fire for land classified as state responsibility areas, as defined in Section 4102 of the Public Resources Code, and land classified as VHFHSZs, as defined in Section 51177. This review shall consider the advice included in the Office of Planning and Research's most recent publication of "Fire Hazard Planning, General Plan Technical Advice Series" and shall also include all of the following:

(A)   *Information regarding fire hazards, including, but not limited to, all of the following:*

    (i)   *Fire hazard severity zone maps available from the Department of Forestry and Fire Protection.*

    (ii)   *Any historical data on wildfires available from local agencies or a reference to where the data can be found.*

    (iii)   *Information about wildfire hazard areas that may be available from the United States Geological Survey.*

    (iv)   *General location and distribution of existing and planned uses of land in very high fire hazard severity zones and in state responsibility areas, including structures, roads, utilities, and essential public facilities. The location and distribution of planned uses shall not require defensible space compliance measures required by State law or local ordinance to occur on publicly owned lands or open space designations of homeowner associations*

    (v)   *Local, state and federal agencies with responsibility for fire protection, including special districts and local offices of emergency services.*

(B)   *A set of goals, policies, and objectives based on the information identified pursuant to subparagraph (A) for the protection of the community from the unreasonable risk of wildfire.*

(C)   *A set of feasible implementation measures designed to carry out the goals, policies, and objectives based on the information identified pursuant to subparagraph (B) including, but not limited to, all of the following:*

    (i)   *Avoiding or minimizing the wildfire hazards associated with new uses of land.*

    (ii)   *Locating, when feasible, new essential public facilities outside of high fire risk areas, including, but not limited to, hospitals and health care facilities, emergency shelters, emergency command centers, and emergency communications facilities, or identifying construction methods or other methods to minimize damage if these facilities are located in a state responsibility area or very high fire hazard severity zone.*

    (iii)   *Designing adequate infrastructure if a new development is located in a state responsibility area or in a very high fire hazard severity zone, including safe access for emergency response vehicles, visible street signs, and water supplies for structural fire suppression.*

    (iv)   *Working cooperatively with public agencies with responsibility for fire protection.*

(D)   *If a city or county has adopted a fire safety plan or document separate from the general plan, an attachment of, or reference to, a city or county's adopted fire safety plan or document that fulfills commensurate goals and objectives and contains information required pursuant to this paragraph.*

GC § 65302.5(b) requires that the draft safety element updates must be submitted for review by the State Board and local fire agencies providing service in the territory of the jurisdiction. Specifically:

(1) *The draft element of or draft amendment to the safety element of a county or a city's general plan shall be submitted to the State Board of Forestry and Fire Protection and to every local agency that provides fire protection to territory in the city or county at least 90 days prior to either of the following:*

   (A) *The adoption or amendment to the safety element of its general plan for each county that contains state responsibility areas.*

   (B) *The adoption or amendment to the safety element of its general plan for each city or county that contains a very high fire hazard severity zone as defined pursuant to subdivision (i) of Section 51177.*

(2) *The State Board of Forestry and Fire Protection shall, and a local agency may, review the draft or an existing safety element and recommend changes to the planning agency within 60 days of its receipt regarding both of the following:*

   (A) *Uses of land and policies in state responsibility areas and very high fire hazard severity zones that will protect life, property, and natural resources from unreasonable risks associated with wild land fires.*

   (B) *Methods and strategies for wild land fire risk reduction and prevention within state responsibility areas and very high fire hazard severity zones. These methods and strategies shall reflect accepted best practices in the most recent guidance document entitled "Fire Hazard Planning, General Plan Technical Advice Series," as identified in Section 65040.21.*

(3) *(A) Prior to the adoption of its draft element or draft amendment, the board of supervisors of the county or the city council of a city shall consider the recommendations, if any, made by the State Board of Forestry and Fire Protection and any local agency that provides fire protection to territory in the city or county. If the board of supervisors or city council determines not to accept all or some of the recommendations, if any, made by the State Board of Forestry and Fire Protection or local agency, the board of supervisors or city council shall communicate in writing to the State Board of Forestry and Fire Protection or the local agency, its reasons for not accepting the recommendations.*

   (B) *If the board of supervisors or city council proposes not to adopt the board's recommendations concerning its draft element or draft amendment, the board, within 15 days of receipt of the board of supervisors' or city council's written response, may request in writing a consultation with the board of supervisors or city council to discuss the board's recommendations and the board of supervisors' or city council's response. The consultation may be conducted in person, electronically, or telephonically. If the board requests a consultation pursuant to this subparagraph, the board of supervisors or city council shall not approve the draft element or draft amendment until after consulting with the board. The consultation shall occur no later than 30 days after the board's request."*

(4) *If the State Board of Forestry and Fire Protection's or local agency's recommendations are not available within the time limits required by this section, the board of supervisors or city council may act without those recommendations. The board of supervisors or city council shall take the recommendations into consideration the next time it considers amendments to the safety element."*

Please see Appendix D to this document for additional information about the consultation process with the State Board and CAL FIRE Land Use Planning Program staff.

OPR's Integrated Climate Adaptation and Resiliency Program (ICARP)

Established by SB 246 (2015), ICARP is California's primary program for driving a cohesive, coordinated response to the impacts of climate change across local, regional and state efforts, with a commitment to prioritizing equitable approaches and efforts that integrate mitigation with adaptation. ICARP includes oversight of the Adaptation Clearinghouse, an online database of climate adaptation resources, and coordinates a Technical Advisory Council (TAC).

The TAC brings together local government, practitioners, scientists, and community leaders to help coordinate activities that better prepare California for the impacts of a changing climate. The TAC supports OPR in its goal to facilitate coordination among state, regional and local adaptation and resiliency efforts, with a focus on opportunities to support local implementation actions that improve the quality of life for present and future generations. ICARP also develops recommendations and guidance to guide local, regional and statewide efforts: In 2017, the TAC adopted a vision statement that expresses the characteristics of a resilient California, as well as principles that guide how adaptation actions should be implemented to achieve this vision. In addition, the TAC adopted a definition for vulnerable communities in April 2018, which is the basis for the ICARP guide Defining Vulnerable Communities in the Context of Climate Adaptation.

OPR recommends that safety element updates to address climate vulnerability assessment and adaptation requirements be coordinated with the ICARP vision and principles, definition of vulnerable communities, and state wildfire requirements, where applicable.

Evacuation Planning Requirements

Three separate bills – SB 99 (2019), AB 747 (2019), and AB 1409 (2020) – were signed into law to improve local evacuation planning. SB 99 requires cities and counties to identify residential developments with less than two evacuation routes. Meanwhile, AB 747 and AB 1409 require local agencies to assess evacuation routes and locations under a range of emergency scenarios. Communities should take these planning requirements into consideration when addressing wildfire risks in the safety element. However, agencies should note that these evacuation requirements apply to all types of hazards and are not unique to wildfire.

AB 747 (2019) added, and AB 1409 (2020) amended GC § 65302.15 as follows:

"(a) Upon the next revision of a local hazard mitigation plan, adopted in accordance with the federal Disaster Mitigation Act of 2000 (Public Law 106-390), on or after January 1, 2022, or, if a local jurisdiction has not adopted a local hazard mitigation plan, beginning on or before January 1, 2022, the safety element adopted pursuant to subdivision (g) of Section 65302 shall be reviewed and updated as necessary to identify evacuation routes and their capacity, safety, and viability and evacuation locations under a range of emergency scenarios. A county or city that has adopted a local hazard mitigation plan, emergency operations plan, or other document that fulfills commensurate goals and objectives may use that information in the safety element to comply with this section and, in that event, shall summarize and incorporate into the safety element that other plan or document".

SB 99 (2019) amended GC § 65302(g)(5) as follows:

"Upon the next revision of the housing element on or after January 1, 2020, the safety element shall be reviewed and updated as necessary to identify residential developments in any hazard area identified in the safety element that do not have at least two emergency evacuation routes."

Public Resource Code Section 4290.5

Complimentary to SB 99, PRC Section 4290.5 requires the State Board to identify existing subdivisions in the SRA or VHFHSZ without secondary egress routes, that are at significant fire risk. The Board must then provide recommendations to local governments to improve safety in the identified subdivisions. This process must begin on or before July 1, 2021 and repeat every five years thereafter. If available, recommendations made by the Board should feed directly into the community's general plan update. For more information, please refer to the Board's Subdivision Review Program and their Development Identification Process.

Tentative Map and Parcel Map Requirements in the SRA and VHFHSZ

GC § 66474.02 requires that a legislative body of a county make specific findings before approving a tentative map, or a parcel map for which a tentative map was not required, for an area located in the SRA or VHFHSZ. The findings must show that that the subdivision is consistent with regulations adopted by the State Board pursuant to Sections 4290 and 4291 of the Public Resources Code (PRC) (refer to the Fire Safe Regulations section of the TA) or consistent with local ordinances certified by the

State Board as meeting or exceeding the State regulations. The county must also submit a copy of the findings to the State Board. Certain tentative maps or parcel maps for purposes of open space and conservation are exempt, as specified in the statute.

Note that the findings described above must be made in order to approve a tentative or parcel map. Even if the lead agency adopts a statement of overriding considerations for a proposed project, or if the lead agency determines a project to be exempt to CEQA, the substantive requirements in the Government Code regarding fire protection must be satisfied. Information on how to submit these subdivision maps to the State Board can be found in the California Code of Regulations (CCR), Title 14, §§ 1266.00, 1266.01, and 1266.02.

State Responsibility Area

Public Resources Code (PRC) Section 4102 defines "state responsibility area" (SRA) to mean areas of the state in which the financial responsibility of preventing and suppressing fires has been determined by the State Board to be primarily the responsibility of the State. As of July 2020, approximately 31% of the state is within the SRA. Any areas outside the SRA are either within the Local Responsibility Area (LRA), or Federal Responsibility Area (FRA) if on federal lands. Approximately 21% of the state is within the LRA, while 48% of the state is within the FRA. (Data Source: State Board, SRA20_2 dataset, July 2020). Maps of the SRA, LRA and FRA can be viewed at one or more of the following websites:

https://frap.fire.ca.gov/mapping/ and http://myhazards.caloes.ca.gov/

Fire Safe Regulations

PRC Section 4290 gives the State Board the authority to adopt regulations for minimum fire safety standards applicable to SRA lands under the authority of the department, and to VHFHSZs. The Fire Safe regulations are codified in CCR, Title 14 (Natural Resources), Division 1.5 (Department of Forestry), Chapter 7 (Fire Protection) under Subchapter 2 (SRA Fire Safe Regulations). These regulations generally address the following:

- Standards for signs identifying streets, roads, and buildings.

- Minimum private water supply reserves for emergency fire use.

- Fuel modification[2] standards for fuel breaks and greenbelts.

- Road and driveway standards for emergency fire equipment access and public evacuation.

They do not supersede local regulations that equal or exceed minimum regulations adopted by the State (PRC § 4290(c)).

Pursuant to SB 901 (2018), the State Board is also required on and after July 1, 2021, to periodically update these regulations for fuel breaks and greenbelts near communities to provide greater fire safety for the perimeters to all residential, commercial, and industrial building construction within the SRA and VHFHSZs. These updated regulations "shall include measures to preserve undeveloped ridgelines to reduce fire risk and improve fire protection." (PRC § 4290(b).) The board also, by regulation, must define "ridgeline." (PRC § 4290(b).)

Defensible Space Regulations

PRC Section 4291 defines and describes mandatory fire protection measures and responsibilities for maintaining defensible space that apply to all property within the SRA in California. Per GC § 51182, defensible space regulations also apply to all property in the VHFHSZ within the Local Responsibility Area (LRA). The defensible space requirements generally include, but are not limited to, the following:

- 100 feet minimum of vegetation management ("defensible space") around homes

- Removal of dead/dying vegetation

- Vegetation removal around chimneys/stovepipes

Depending on the area, defensible space requirements may include certain exemptions and exceptions from code. Moreover, jurisdictions may require extension of the minimum distance beyond property lines or as needed for insurance. The State Board provides direction for complying with the defensible space regulations in CCR Title 14, §§ 1299.01-1299.05 which incorporates by reference additional information outlined in the State Board's General Guidelines for Creating Defensible Space.

Due to the recent passage of AB 3074 (2020), defensible space compliance will soon require more intense fuel reduction activities and the creation of an ember-resistant zone within 5 feet of a structure. The State Board will provide additional guidance and must amend the regulations to reflect these changes on or before January 1, 2023.

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[2] For a definition of fuel modification, please refer to Appendix E within this document.

California Environmental Quality Act (CEQA)

CEQA is California's statewide environmental review law that requires state and local government agencies to inform decision makers and the public about the potential environmental impacts of proposed projects, and to reduce those environmental impacts to the extent feasible. The laws and regulations governing the CEQA process are contained in the CEQA statute (PRC Section 21000 et seq.), the CEQA Guidelines (CCR, Title 14, Section 15000 et seq.), published court decisions interpreting CEQA, and locally adopted CEQA procedures.

The California Natural Resources Agency, with assistance from OPR, completed a comprehensive update to the CEQA Guidelines in late 2018. As part of this update, and pursuant to SB 1241 (2012), wildfire was added to the list of environmental topics that should be analyzed in the Environmental Checklist, which is contained in Appendix G to the State CEQA Guidelines.

The wildfire section in the CEQA Appendix G checklist includes the following questions:

XX. WILDFIRE. If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:

a) Substantially impair an adopted emergency response plan or emergency evacuation plan?

b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations 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?

The addition of these wildfire questions into the Environmental Checklist clarifies that wildfire hazards, associated risks, and other wildfire-related impacts should be analyzed during the CEQA process for projects located in or near SRAs or VHFHSZs

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4.   Fire Hazard Planning Guidance

This section provides guidance for addressing fire hazards and related risks during the general plan update process, including guidance for community and stakeholder engagement, preparing fire hazard and risk assessments, and policy development and implementation considerations to ensure long-term safety and resilience. The guidance incorporates the requirements under existing law for general plans, as well as opportunities for integration and coordination of fire hazard planning with hazard mitigation plan updates, climate adaptation planning, CWPPs, and other plans.

In general, local governments have wide discretion in addressing locally important issues in their general plans. While the types of safety issues that concern each city or county may vary, most rural, suburban, and even urban communities recognize wildland fire hazard as a growing concern—one that is exacerbated by climate change, the expansion of development in the WUI, and increasing demands on natural resources. As noted in the previous section, some communities are required by law to address specific wildfire hazard and risks in their safety elements, pursuant to GC § 65302(g) and 65302.5; however, all California communities subject to fire hazards may benefit from the planning guidance provided herein.

OPR's 2017 General Plan Guidelines recommend that for every locally relevant issue, the local government should articulate one or more broad objectives, establish policies that would help achieve those objectives, and finally, devise implementation measures (specific action items or funding programs) to carry out the policies. Additionally, adequate and accurate data and information should be collected and analyzed to provide the basis for sound policy decisions.

The primary steps or phases in the fire hazard planning process include:

- Outreach to and engagement with the community and responsible agencies;

- Preparation of a fire hazard and risk assessment; and,

- Development of goals, objectives, policies, and implementation programs that address fire hazards and reduce risk.

Each of these steps or phases is described within the following sub-sections.

4.1   Outreach and Engagement

The General Plan Guidelines encourage active engagement and involvement of the community, public agencies, subject matter experts, and other interested stakeholders throughout the general plan update process. More detailed guidance on this topic is included in the General Plan Guidelines under Chapter 3 (Community Engagement and Outreach) and the State's Adaptation Planning Guide.

Additional community engagement and outreach considerations relative to fire hazard planning are described further below.

Community Engagement
Local agencies should engage tribal governments, residents, business-owners, military representatives and other interested stakeholders early in the planning process to

establish an understanding of existing conditions as well as community issues and concerns regarding fire hazards. Fire Safe Councils, "Firewise" communities, or similar organizations and programs often already exist in communities subject to fire hazards and can play an important role during the planning process.

Fire Safe Councils: A Planning Partner

Fire Safe Councils can play an important role in the development of LHMPs, CWPPs, and general plans.

Councils may consist of state and federal fire agencies, tribal government representatives, local fire districts, businesses, local government staff, and local concerned residents. They are usually formed to enhance the effectiveness of fire protection. Some Councils have also combined with neighboring Fire Safe Councils to develop countywide CWPPs or similar plans.

Fire Safe Councils may be an excellent resource to planners and elected officials as they develop fire protection and prevention policies and implementation measures in the general plan. OPR encourages engagement of these Councils for both their expertise and as a means for expanding public participation in the general plan update process.

Vulnerable and Disadvantaged Communities

While the impacts of California's wildfires can be felt across the state, these events more acutely affect low-income, vulnerable, and disadvantaged communities which often have less capacity to adapt to hazards due to:

- inequities created and perpetuated by institutionalized racism and exclusion;

- physical states or conditions that increase vulnerability;

- poor environmental conditions and access to services; and,

- lack of investment and opportunities.

Outreach and engagement efforts should ensure that these communities are properly identified and engaged as part of the fire hazard planning process, empowering them to influence the policies and programs that impact their health and wellbeing. Partnering with community-based organizations, advocacy groups, and trusted leaders that work within vulnerable and disadvantaged communities can help local agencies develop appropriate engagement strategies and increase participation.

To streamline engagement, wildfire planning activities may be integrated into the broader climate vulnerability and adaptation safety element requirements outlined in SB 379. Moreover, local agencies may choose to address wildfire as a "unique or compounded health risk" and coordinate these activities with the development of an environmental justice element pursuant to SB 1000. More information may be found in OPR's publication Defining Vulnerable Communities in the Context of Climate Adaptation, as well as the Environmental Justice element section of the General Plan Guidelines.

Tribal Government Engagement

Local governments must adhere to GC § 65352.3 and the provisions of SB 18 (2004), requiring local governments to consult with tribal governments prior to updating or amending their general plan and to provide notice to tribes at certain key points in the planning process. These consultation and notice requirements apply to adoption and

amendment of both general plans (defined in GC § 65300 et seq.) and specific plans (defined in GC § 65450 et seq.). Further, AB 52 (2014) added requirements to CEQA to require analysis of "tribal cultural resources" during the environmental review process and noticing and consultation with all California Native American tribes.

Many activities related to fire hazard mitigation can impact tribal cultural resources or sites, thus close coordination with tribal governments is imperative to protect such resources or sites from permanent damage. Developing partnerships and/or mutual aid relationships with tribes can also increase resilience to fire risks. Many tribes have unique insight into fire hazards, such as historical fire regimes and behavior gained through local traditional ecological knowledge, which can help local agencies implement fire mitigation and suppression programs that respect tribal culture and protect environmental and human health. Moreover, working with tribes to identify and establish evacuation routes, increase access to adequate water supplies, or support other activities included in plans can prove to be mutually beneficial. California's Fourth Climate Change Assessment Summary Report from Tribal and Indigenous Communities highlights how tribes are adapting to climate change and provides recommendations for better partnerships with tribes.

Pursuant to GC §§ 65351, 65352, 65352.3 and 65562.5, the Native American Heritage Commission (NAHC) maintains a list of California Native American tribes with whom local governments must consult. (See also GC § 65352.4 [defining "consultation"].) The NAHC's "California Tribal Consultation List" provides the name, address, and contact name for each of these tribes as well as telephone, fax and email information if available. Prior to initiating

consultation with a tribe, the city/county must contact the NAHC for a list of tribes to consult with. OPR maintains separate Tribal Consultation Guidelines that provides more detailed information and guidance on how and when to consult with California Native American tribes.

Interagency Outreach and Coordination

OPR recommends early consultation with public agencies, such as the State Board and CAL FIRE's Land Use Planning Program, local fire agencies, emergency management agencies, resource conservation districts, and other agencies with local land use jurisdiction. University of California Cooperative Extension fire advisors and forestry management professionals can also be a helpful resource.

Consultation with these agencies or organizations either prior to or early in the general plan update process can be beneficial to the local planning agency in scoping the fire hazard planning aspects of the project, particularly for jurisdictions required address wildfire hazards in the safety element pursuant to GC § 65302(g). For more detailed information regarding the mandatory State Board review process for the safety element pursuant to GC § 65302.5, see Appendix D (General Plan Safety Element Assessment).

Early and ongoing interagency consultation can help ensure that the latest resources or best practices are used to inform the planning process. Additionally, as noted earlier in this document, many programs and plans often already exist to address fire hazards and related risks, thus it is important to engage all agencies with responsibility for maintaining or updating related plans or programs during the general plan update to ensure that plans or related efforts are coordinated and aligned. Many of the agencies cited above often lead or

contribute to LHMPs, CWPPs, or related plans and thus can help inform the general plan update and avoid duplication of efforts.

Coordination and alignment with other agencies can also mitigate unintended conflicts between different agencies' land use policies and regulations. For example, working with agencies enforcing vegetative erosion control measures, or coordinating with urban greening programs and projects, can reduce instances where agencies have competing priorities over vegetation management in high wildfire risk areas. Agencies can also partner with entities, such as investor-owned utilities (IOUs), to align

general plan efforts with IOUs' Wildfire Mitigation Plans, where applicable.

Finally, local agencies should also consider engaging with insurance companies in their area to identify ways to align insurance policies and incentive programs with wildfire mitigation priorities, such as maintaining defensible space requirements or home hardening programs and ensure that affordable and accessible wildfire insurance is available to all residents. This form of engagement can further help to increase long-term resiliency against wildfire risks.

4.2 Fire Hazard and Risk Assessment

The technical phase of the fire hazard planning process is generally referred to in this document as the "fire hazard and risk assessment". Fire hazard mitigation, risk management, and resource protection all can be enhanced if the fire hazard and risk assessment phase of the planning process adequately describes the existing fire hazard environment, projected future changes in fire hazard severity, and relevant community values and assets that could be considered vulnerable or "at risk" to fire hazards. Figure 7 generally characterizes the key elements in the fire hazard and risk assessment.

The fire hazard and risk assessment should occur as early as possible in the safety element update and/or general plan update process. If a local agency is preparing or updating a LHMP or

CWPP, it may be appropriate for the fire hazard and risk assessment process to occur during the preparation of such plans and then later integrated into the safety element as part of the general plan update. More information and guidance provided by federal and state agencies related to these plans is referenced in the Appendices. The data collection and analyses required to complete the steps below may include narrative descriptions, numerical data, maps, charts, and any other means of providing information about fire hazards and associated risks or related issues of concern. The result of the analysis should be summarized and included in the general plan and/or in technical background documents adopted with, or incorporated by reference into, the general plan.

Figure 7: The relationship between wildfire risk and wildfire hazard and the factors that influence the components of each (Source: Wildland Professional Solutions)
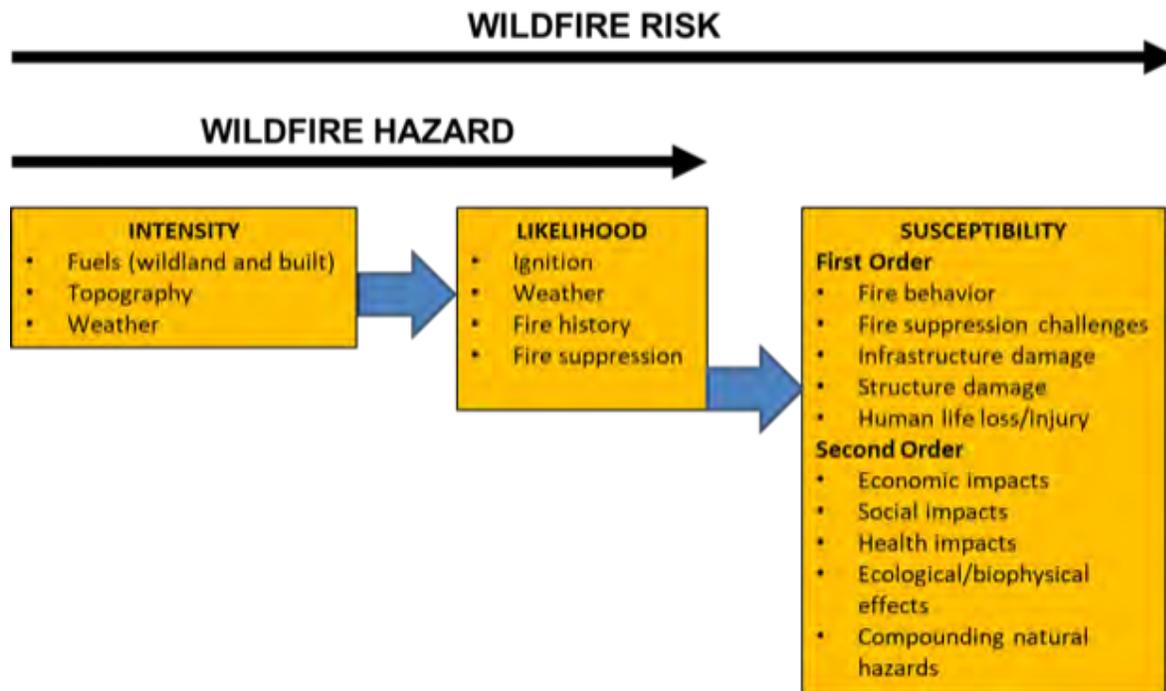
Fire Hazard Assessment

The first step in the fire hazard and risk assessment process should begin with data collection and analysis of fire hazards. A "hazard" can be defined generally as an event that could cause harm or damage to human health, safety, or property. A "wildfire" can be generally defined as any unplanned fire in a "wildland" area or in the WUI, while a "wildfire hazard" is the potential fire behavior or fire intensity in an area, given the topography, weather, and type(s) of fuel present – from both the natural and built environment – and their combustibility.

Local agencies should determine the appropriate data necessary to describe existing conditions related to fire or wildfire hazards, forecasts or projections of future hazards, and other characteristics of the community and its environs that relate to fire hazards. For communities in SRAs and VHFHSZs, the minimum statutory requirements for information that must be included in this first step are included under GC § 65302(g)(3)(A). Local agencies should also consider addressing post-fire hazards that may be triggered by wildfire events (e.g., flood, debris flow, landslide, toxic releases). Such information can be addressed in other sections of the safety element and cross-referenced to the wildfire section where appropriate. Table 1 includes a summary of data sources that can incorporated in the fire hazard assessment process.

Moreover, pursuant to SB 379 (2015) and codified in GC § 65302(g)(4), local governments are required to analyze and identify their community's vulnerability to climate change and climate-related hazards in the safety element. OPR thus recommends that local agencies coordinate their fire hazard and risk

assessment process with preparation of the climate vulnerability assessment to determine how climate change may increase or exacerbate wildfire hazards and risks. More detailed guidance on climate vulnerability and adaptation requirements for the general plan is included under the Safety Element section of Chapter 4 of OPR's General Plan Guidelines. The State's Adaptation Planning Guide published by CalOES also provides more detailed guidance on preparing a climate vulnerability assessment and adaptation strategies.

Table 1 identifies required data and mapping as well as additional inputs that may be helpful to consider during the fire hazard assessment process. While conducting this assessment, cities and counties with lands in the SRA or

VHFHSZs must reference CAL FIRE's FHSZ Maps, historical data on fires, and information about wildfire hazard areas that may be available from the U.S. Geological Survey. In addition, the following resources may also be useful in this analysis:

- Cal-Adapt

- CAL FIRE's Wildfire Perimeters Map, WUI Map, and Landcover Map

- US Forest Service's (USFS) Wildfire Hazard Potential Tool and CALVEG (Vegetation) Map

- CalOES MyHazards Tool

- California Public Utilities Commission Fire-Threat Maps

Table 1: Data for Consideration during the Wildfire Hazard Assessment Process Data Type Examples

Data Type	Examples
Fire History Data (Required)[3]	Fire perimeters
	Average fire danger
	Worst fire danger
	Rates of spread
	Ignition Causes
Additional Historical Data	Flooding Frequency
	Precipitation
Fire Hazard Mapping	**Fire Hazard Severity Zone Maps (Required)[3]**
	Wildland-Urban Interface (WUI) Maps
	Wildfire Hazard Potential
Topographic characteristics	Slope and Aspect
	100-year and 500-year floodplains
	Landslide prone areas
	Soil moisture, erosion, and permeable surface loss

[3] Jurisdictions with lands in the SRA or VHFHSZ must incorporate data and analysis requirements specified in GC § 65302(g)(3).

Data Type	Examples
Fuel Characteristics	Fuel loading
	Shifting plant composition
	Dominant vegetation change
	Vegetation die-off
	Landscaping hazards
Climate and Weather	**Climate change exposure (Required)[4]**
	Climate change impact on flooding frequency & intensity
	Temperature
	Prevailing winds
	Regionally specific wind events or patterns
	Water table, precipitation, and seasonal water availability
Post-Fire Hazards	Post-fire fuel hazard ratings
	Fuel conditions relative to future flood control
	Areas prone to flooding, landslide, and debris flow
	Post-fire air, water, and soil quality

Risk Assessment

The second step in the fire hazard and risk assessment process is determining the current and projected wildfire risk to values or assets in the community as well as the risk to the jurisdiction's population, for both pre- and post-fire scenarios. "Risk" builds upon the concept of "hazard", taking into account not only the intensity and likelihood of an event to occur but also the chance, whether high or low, that a hazard such as a wildfire will cause harm. "Wildfire risk" can be determined by identifying the susceptibility of a value, asset, or population to the potential direct or indirect impacts of wildfire hazard events.

For communities in SRAs and VHFHSZs, the minimum statutory requirements for information that must be included in this step are also included under GC § 65302(g)(3)(A). This section identifies both required data and mapping, as well as additional sources and analysis that may be helpful in conducting the fire risk assessment.

Identifying Susceptible Values and Assets

Below is a list of data and analyses that may be useful in establishing a current picture of community values and assets that could be at risk. "Values and assets" refers to accepted principles or standards along with any constructed or landscape attribute that has

[4] Climate change vulnerability assessment and adaptation requirements for the safety element are specified in GC § 65302(g)(4). For more information, see the Safety Element section of the General Plan Guidelines and the Adaptation Planning Guide.

value and contributes to community or individual wellbeing and quality of life. Examples include public health and safety, property, structures, physical improvements, natural and cultural resources, community infrastructure, commercial standing timber, ecosystem health, and production of water. Local agencies should check with the local CAL FIRE Unit for information with regard to values and assets at risk.

- Identify the location and distribution of existing and planned land uses in the WUI, including structures, roads, utilities, and essential public facilities. (Note: this is a requirement for communities in the SRA and Very High FHSZs pursuant to GC § 65302(g)(4).)

- Identify values and assets that are currently, or projected to be, susceptible to direct or indirect wildfire impacts. Examples of values and assets include:

  o Recreational areas
  o Scenic areas
  o Urban forests
  o Ecologically significant areas
  o Critical watersheds
  o Public and private timberland
  o Wildlife habitat
  o Rangelands
  o Sensitive soils
  o Cropland
  o Water supplies
  o Air quality
  o Historic sites
  o Cultural sites or resources
  o Tourism sites
  o Military sites
  o Emergency shelters/ navigation centers
  o Homeless shelters
  o Structures, such as homes and business
  o Utilities & accompanying infrastructure

  o Roadways and bridges
  o Population and economic centers

- Classify values and assets by:

  o Evaluating the identified values and assets based on economic, environmental, and social value to the community. For example, valuation may consider materials replacement, health and safety, or carbon sequestration costs.

  o Prioritizing the values and assets to assist in the selection of mitigation efforts and development of fire response plans. Prioritization can be accomplished in a variety of ways: most difficult or expensive to replace, most necessary for communities (especially vulnerable members of the community), easiest to protect, broadest benefit to community, closest to urbanized areas, or any other priority system that may be relevant to the community.

Further analysis may be appropriate based on local conditions and geographic circumstances. Table 2 identifies additional examples of data and analyses that may be considered during the risk assessment process.

Example Plan: Riverside County

The Riverside County General Plan Safety Element addresses secondary risks associated with wildfire, including landslides, rockfalls, and debris flows, and includes erosion and sedimentation control plans in design requirements in high-risk areas. To learn more, refer to Appendix C.

Table 2: Data for Consideration when Identifying Susceptible Values and Assets Data Type Examples

Data Type	Examples
Landscape Vulnerability	Pest and drought damaged locations
	Fire damaged forests
	Neighborhood defensible space
	Vulnerabilities within flooding areas
	Landslide and debris-flow susceptibility
Structural Vulnerability	Age and condition of critical infrastructure
	Structure density and size
	Use and occupancy of structures
	Fire-rated roofing prevalence
	Fire-rated construction material prevalence

Identifying Susceptible Populations

Wildfires can directly impact the public health and safety of communities. The increased severity and frequency of wildfires and length of the fire season may result in additional injuries and deaths from burns and smoke inhalation, eye and respiratory illnesses and exacerbation of asthma, allergies, chronic obstructive pulmonary disease (COPD), and other cardiovascular diseases from air pollution (Stone et al., 2019; Centers for Disease Control and Prevention, 2020). Illness and injuries can also result from the release of toxins from inorganic burning material into the water and soil. Post-fire flooding and landslides pose additional health risks and can further impair water quality. The resulting evacuations, temporary displacement, and infrastructure damage from wildfire also have adverse physical and mental health effects for those living and working in the affected area (Hill et al., 2020).

While an entire community can be at risk to fire-related health and safety impacts, certain groups are more susceptible to the health and safety impacts of fires than others. Climate vulnerable and disadvantaged communities often have less adaptive capacity to respond to catastrophic events which compound existing environmental, physical, and socioeconomic inequities. Specific adaptive capacity indicators are shown in Table 3 and Figure 8.

During the risk assessment process, local agencies should identify the ways in which people who live and work in their communities are susceptible to wildfire's effects and use this information to develop policies and programs to protect public health. The following resources and example data within Table 3 may be helpful in this analysis:

- OPR's Defining Vulnerable Communities Guide

- OPR's Environmental Justice Element guidance

- [CalEPA CalEnviroScreen](#)
- [CAL FIRE's Communities at Risk List](#)
- [CAL FIRE's Priority Landscapes Viewer](#)
- [CDPH Climate Change and Health Vulnerability Indicators for California](#)

Figure 8: Wildfire Vulnerability Indicators (Source: Davies et al., 2018)
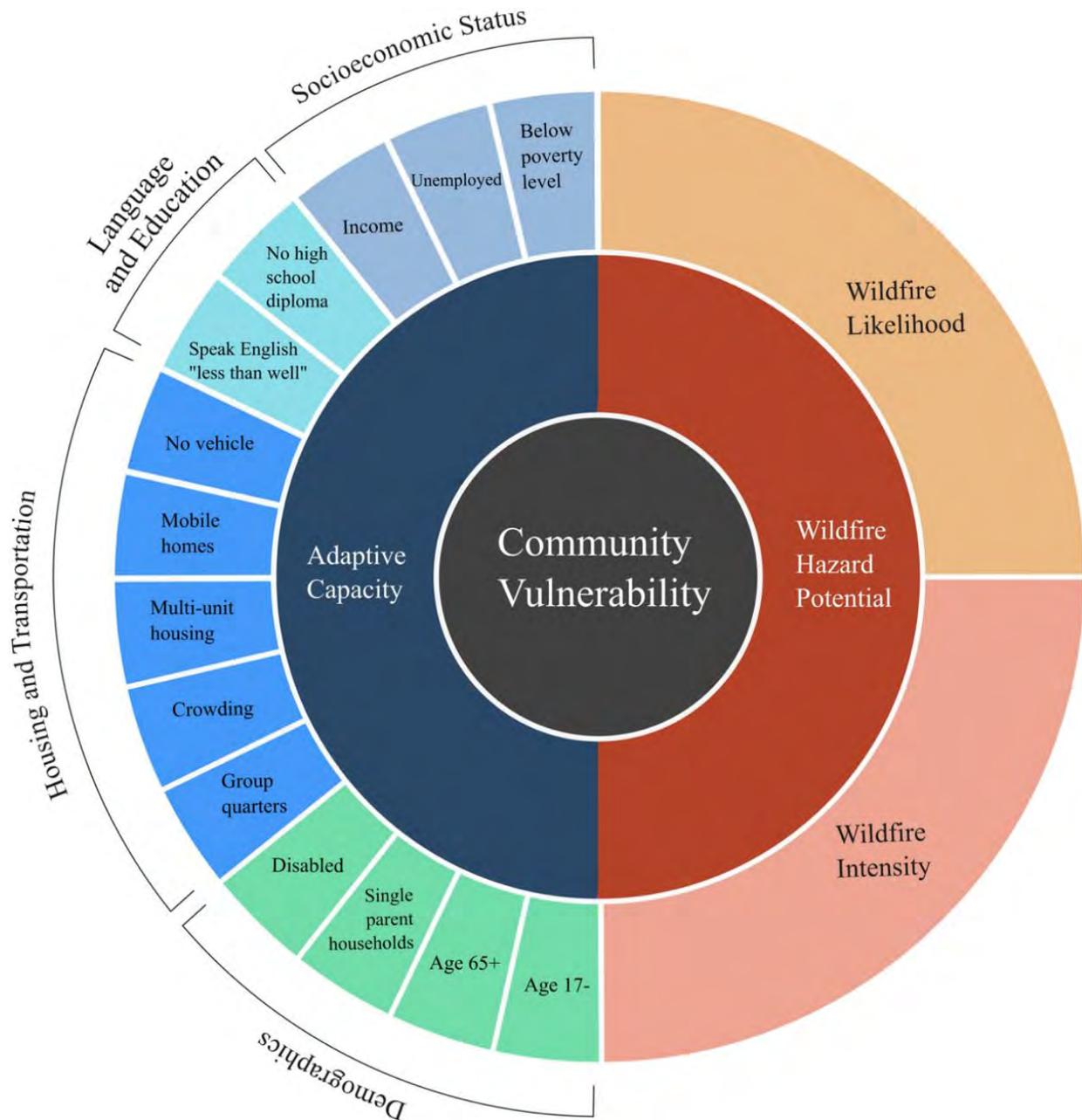
Table 3: Additional Data for Consideration when Identifying Susceptible Populations Data Type Examples

Data Type	Examples
Community Vulnerability	Communities that are most at-risk to wildfire
	Disadvantaged communities
Social Isolation	Access to fire safety information
	Ability and health
	Undocumented community status
Financial Support and Stability	Home insurance status
	Health insurance status
	Informal working arrangements

Assessing Risk and Identifying Opportunities for Resilience

As part of the risk assessment process, local agencies should anticipate community needs in the event that a wildfire occurs and explore both short and long-term opportunities to reduce risk and improve resilience moving forward. As local agencies conduct this analysis, they should:

- Evaluate potential primary, secondary, and tertiary impacts of different wildfire scenarios on community values and assets as well as environmental and public health.

- Evaluate the success of previous suppression and risk mitigation efforts.

- Evaluate the jurisdiction's capacity to adequately suppress wildfire, taking into account adequacy of fighting resources, firefighter safety, water supply availability, fuel breaks, equipment maneuverability, funding, and other factors.

- Evaluate the jurisdiction's capacity to mitigate wildfire risks through activities such as

    o Short-term evacuation and crisis management

    o Short-term landscape management

    o Fire-rated infrastructure implementation and long-term maintenance

    o Long-term environmental and public health management

- Evaluate opportunities to build resilience against wildfires through activities such as

    o Community education and capacity building,

    o Strategic land use and development

    o Strategic partnerships

    o Economic development

- Evaluate existing plans and the safety element for adequacy.

This evaluation may be integrated into a broader climate vulnerability assessment. More extensive guidance may be found in California's Adaptation Planning Guide.

4.3 Policy Development

After completing the wildfire hazard and risk assessment process, an analysis of costs and benefits as well as land use alternatives can inform local planning agencies as they work with community members as well as local and regional partners develop, align, and adopt policies and programs. Analyses may address primary, secondary, and tertiary impacts of wildfires in order to capitalize on mutually beneficial opportunities for resilience. Considerations for these analyses as well as general policy development guidance is included in this section.

Analyzing Costs and Benefits

As communities determine appropriate policies and programs for their jurisdiction, they should analyze the costs and benefits of a mix of activities that address fire hazard as well as the associated risks. Local agencies should consider a holistic planning approach to identify potential co-benefits and ensure that proposed policies or programs do not exacerbate or cause disparities, harm or injury, mal-adaptation, or other misaligned consequences.

This analysis can be included as a key input to technical studies conducted to determine "best fit" policies and programs to support the general plan's goals and objectives, and/or as part of studies conducted during the land use alternatives analysis phase of the general plan update. Issues that policy makers can consider in such analyses include, but are not limited to:

- Costs of fire effects as a function of fire hazard severity, frequency, and potential for repetitive loss;

- Impact of the loss of critical or irreplaceable community assets;

- Impacts to community income and insurance costs;

- Fuel modification costs versus suppression costs;

- Costs and benefits of mitigation at the building or parcel level versus the landscape or community level;

- Balancing urban greening and vegetative soil cover/erosion management vs. defensible space priorities where appropriate

- Costs and benefits of replacing a community asset versus hardening and resilient design;

- Potential impacts of hazard mitigation measures on areas of special concern (e.g., cultural, environmental); and,

- Fixed fire defense opportunities versus land management opportunities.

For this analysis, communities should reassess as circumstances change, as specified in GC § 65302(g)(6).

Analyzing Land Use Alternatives to Avoid, Reduce or Minimize Risk

During the general plan update process, local agencies frequently develop, analyze, and compare land use alternatives or scenarios when updating the land use element. Local agencies also must consider the land use implications of updates to other elements, including the safety element and housing element, to maintain internal consistency between elements (see GC §§ 65300.5, 65583(c)). These options can take into account and balance many factors, including geography, multiple hazards, infrastructure needs and costs, and community needs such as the need for additional housing and economic

development. Land use alternatives can highlight several paths a jurisdiction can take to further general plan requirements, including the statutory requirement for the safety element to "[protect] the community from any unreasonable risks" associated with various hazards per GC § 65302(g).

Using information from the fire hazard and risk assessment process, outlined earlier in this technical advisory, local agencies should identify high risk areas prone to wildfire. Combining this information with other hazard information and risk factors, local agencies should then consider this information when developing land use alternatives or strategies to help avoid, reduce, and/or minimize risk. During this process, local agencies may take into consideration the following wildfire related strategies.

1) Avoidance: Local agencies can consider whether to avoid placement of new land uses or new growth designations in areas subject to high or extreme wildfire threats that could place future development at unreasonable risk. For example, potential avoidance criteria could include:

   - All or portions of the High or Very High FHSZs;

   - Areas mapped as having high or extreme wildfire threat on CAL FIRE's Fire Threat maps;

   - Specific sites or areas within the planning area that technical studies or fire behavior modeling demonstrate could place new development at unreasonable risk to extreme and catastrophic wildfire events; and

   - Specific sites or areas within the planning area deemed indefensible or unsafe to fire fighters during extreme or catastrophic wildfire events.

Avoidance is particularly important to consider during the general plan update process because the land use element and land use diagram establish the long-range direction and pattern of growth for a community. Potential avoidance areas can be considered during the analysis of land use alternatives and selection of a preferred alternative, as well as the environmental impact report prepared for the general plan update.

Example Plan: Berkeley

The policy background section of Berkeley's Disaster Preparedness and Safety Element includes a 2010 ordinance that prohibits residential units on Panoramic Hill until an adequate Specific Plan is adopted. For more information on this plan and others, see Appendix C.

Patterns of development influence a community's adaptive capacity and even impact fire probabilities/frequencies in the surrounding environment (Mann et al., 2016). Local agencies can consider designating high or very high fire hazard severity or avoidance areas as open space or other similar land use designations to buffer against wildfire threats (refer to figure 9), in combination with policies and programs promoting land management activities that mitigate wildfire risk, such as fuel modification, designing and constructing fuel breaks, or related activities at the landscape scale in undeveloped areas. Local agencies can also consider the range of socioeconomic and environmental benefits of a more compact, infill-focused, and efficient land use and development strategy consistent with the state's planning priorities established in GC § 65041.1, which can also help to avoid or minimize further expansion of the WUI and associated risks. Wildfire hazard avoidance

could also be combined with "no net loss" policies to ensure that housing or other development needs can be accommodated in lower-risk areas within the community.

2) Reduce or minimize risk: Local agencies can reduce or minimize risk through development project review and approval processes by incorporating specific policies or implementation programs in the land use element and/or safety element that are designed to mitigate hazards and reduce or minimize risk. For example, the land use element and/or the safety element of a general plan can establish policies and implementing mechanisms, such as specific zoning and subdivision requirements that require project-specific review requirements to incorporate wildfire risk reduction measures (see Section 5 for detailed examples). Policies and

implementation programs to reduce or minimize risk should, at a minimum, be consistent with applicable state regulations and codes outlined earlier in Section 3 (Regulatory and Policy Background).

Local agencies can consider applying such policies, standards or mitigation requirements in areas determined to have high fire risk (e.g., high or very High FHSZs, or high or extreme fire threat), but in which wildfire hazards and associated risks would not be considered unreasonable with application of such policies, standards, or implementation programs.

The general plan can employ these strategies to varying degrees, based on local context. Technical studies and modeling can help determine which strategy, combination of strategies, or alternative best meets a range of community needs based on the community's vision and priorities.

Figure 9: Example of Conventional Versus Clustered Development in the WUI (Source: Martin Dreiling Smart Code Module)

Local planning agencies may employ a variety of development patterns to meet community goals. Each strategy will influence a community's resilience in different ways. The above example compares conventional versus clustered development pattern in the WUI. Both development models contain the same amount of housing. The clustered pattern, however, allows for a larger agricultural buffer between the development and wildlands, requires less fire suppression resources, and is easier to defend (Moritz and Butsic, 2020)

Developing Fire Hazard Mitigation and Risk Reduction Policies

Goals, objectives, policies and implementation measures should be developed based on the outcomes of community and stakeholder engagement, interagency consultation, fire hazard and risk assessment process, costs and benefits analysis, and land use alternatives analysis. Policies should be action-oriented and linked to city or county ordinances or other feasible implementation mechanisms. Goals, objectives, policies and implementation measures will vary between jurisdictions.

Generally, every aspect of an issue identified during the community and stakeholder engagement process, interagency consultation process, and fire hazard and risk assessment process should be addressed by a corresponding goal, policy, or objective. For example:

- Areas identified as being subject to extreme wildfire threat or "unreasonable risk" should be addressed through policies and programs in the land use or safety element that avoid or reduce risks to existing or new development.

- If fuel loading is identified as an issue contributing to elevated fire hazard risk, policies or programs requiring development or land management activities to be designed or required to modify, treat or reduce the volume of fuel in certain areas should be incorporated into the safety element.

- If emergency vehicle access and evacuation is identified as a problem or constraint, policies to improve roadway design, identify shelter-in-place facilities or locations, or improve notification and evacuation assistance procedures should be included in the safety element.

Fire hazard mitigation and risk reduction policies can be developed and implemented in a variety of ways. While the safety element is the primary general plan element where wildfire hazards must be addressed by law, other elements, such as land use, circulation, housing, conservation, or open space may also be appropriate for identifying complementary policies and programs. For example, GC § 65564 requires that every local open-space plan contain an "action program consisting of specific programs which the legislative body intends to pursue in implementing its open-space plan." Fire mitigation policies could be implemented through this action program with regards to fuel break/fuel reduction programs within designated open-space areas. Additionally, GC § 65910 requires each city and county to "prepare and adopt an open-space zoning ordinance consistent with the local open-space plan." Table 4 provides a crosswalk between various fire-hazard planning topics and the required general plan elements. More detailed examples are also provided in the next section.

Development of goals, policies, objectives, and implementation measures addressing fire hazards should be coordinated with climate vulnerability and adaptation requirements for the safety element. Similarly, coordination and integration of the policy development process with the LHMP, CWPP, or other related plans is also appropriate and encouraged. For more detailed guidance refer to OPR's General Plan Guidelines. Finally, GC § 65302(g)(5) requires that the wildfire, flood, and climate adaptation portions of the safety element be regularly reviewed and updated at least every eight years to identify new information and resiliency strategies that was not available during the previous revision of the safety element.

Table 4: Opportunities for Fire Hazard Mitigation and Resource Protection in General Plan Elements

Elements	Opportunities
Land Use	Fuel breaks and fuel reduction zones, buffer zones, water supply requirements, hazard avoidance areas, fire protection standards and development review requirements
Housing	Definition of appropriate mitigation for protecting existing housing stock or building new housing in higher-risk areas, fire protection standards, building codes, structural and home hardening
Circulation	Strategic access, road standards, helibases, helistops, air tanker base locations, evacuation routes (ground and air), ingress/egress, early warning and notification systems
Conservation	Fuel breaks and fuel reduction zones, additional design requirements for development near commercial timber zones, use of conservation easements or transfer of development rights (TDR) to avoid hazards and protect open space, water supplies
Open Space	Fuel breaks and fuel reduction zones, strategic access, water supplies, off-site linking of strategic improvements, use of conservation easements or TDR to avoid hazards and protect open space
Safety	Identification and mapping of fire hazards and risks, evacuation routes, water supplies, road standards, fuel breaks and fuel reduction buffer zones, air access, definition of hazard areas and mitigation requirements, house and road signage, early warning and notification systems
Environmental Justice	Promotion of safe housing, reduction of air pollution (smoke) exposure, addressing the needs of vulnerable communities, prioritizing measures to reduce disproportionate wildfire-related health and safety risks in disadvantaged and vulnerable communities

5. Example Policies

This section provides example fire hazard policies and programs that could be included in the general plan. The subsections are organized by specific topics related to fire hazards and risks that should be considered during the general plan update process. For each policy topic, the subsection identifies the general plan elements where it may be appropriate to address fire hazard mitigation and risk reduction followed by examples of policies and programs. The subsections are not organized in any particular order and each plays an integral part in fire hazard mitigation planning.

The conceptual goals, objectives, polices, and implementation measures included in this section are primarily intended for use in general plans, but in some cases they may also be suitable for inclusion in more detailed plans, codes or other implementation programs (e.g., CWPPs, LHMPs, consolidated fire codes, or other local plans, ordinances and codes) that implement the overall goals and policies of the general plan. Local governments should develop and implement fire hazard policies in their general plan or other plans, codes and programs that are relative to their local conditions and context. The policy examples included vary in range of scope and level of detail. Because these policies below are merely examples, any of them can be modified by the local public agency in a way that may be appropriate for that particular community. OPR's WUI Planning Guide provides additional information and best practice case studies to help communities leverage additional plans, regulations, and tools to advance general plan policies and programs.

5.1 Minimizing Risks to Existing and New Land Uses

Based on the analysis and prioritization of the local values and assets during the fire hazard and risk assessment phase, appropriate policies should be developed to mitigate fire hazards and reduce risks to existing and new land uses, particularly in areas that could be subject to unreasonable wildfire risks.

Local agencies should devote particular attention to addressing vulnerabilities of existing development located in the WUI, such as home hardening measures for existing residential land uses, improving compliance with and enforcement of defensible space and fire safe regulations, or other protective policies to address specific values and assets at risk.

Policies governing land use and future growth also provide an opportunity to integrate resilience into long-range plans by avoiding placing new development or new growth designations for expansion of development in areas with extreme threat or elevated hazard severity that pose an unreasonable risk or introducing new zoning or building code requirements that help to avoid or minimize risks in such areas. Local agencies can also prioritize new growth in infill areas with existing infrastructure and adequate fire protection capacity in lower-risk areas to reduce overall wildfire risk in the future.

Potential General Plan Elements

The following general plan elements may be appropriate for incorporating fire hazard and risk reduction information and policies related to existing and new land uses:

- Land Use

- Housing
- Conservation
- Open Space
- Safety
- Circulation (critical infrastructure)
- Environmental Justice

Wildland Urban Interface (WUI) Definition

WUI areas can be defined broadly as "any developed area where conditions affecting the combustibility of natural and cultivated vegetation (wildland fuels) and structures or infrastructure (built fuels) allow for the ignition and spread of fire through these combined fuels" (Mowery et al. 2019). WUI areas can be further defined by different spatial configurations. The "interface" WUI condition exists where development and/or structures are adjacent to wildland areas, in which there may be clear demarcation or a hard edge between developed and undeveloped areas. By contrast, the "intermix" WUI condition refers to areas in which structures or semi-developed areas are mixed with wildland areas and vegetation, such as in rural, ex-urban, or large-lot semi-rural developed conditions. In the "occluded" WUI condition within an urban environment, structures may abut an island of wildland fuels, such as a community park, open space, greenbelt, or other natural area. (Mowery et al. 2019).

A broader term that further describes conditions that may be adjacent to either the intermix or interface WUI is the "wildfire influence zone", which can be characterized by susceptible vegetation up to 1.5 miles from the WUI (CAL FIRE 2019). Similarly, in areas where wildfires can occur under high-wind conditions near urbanized areas, the "ember zone" can extend up to several miles into more densely-developed areas that are outside of the WUI or wildfire influence zone areas, in which new spot fires could occur far ahead of the main wildfire perimeter.
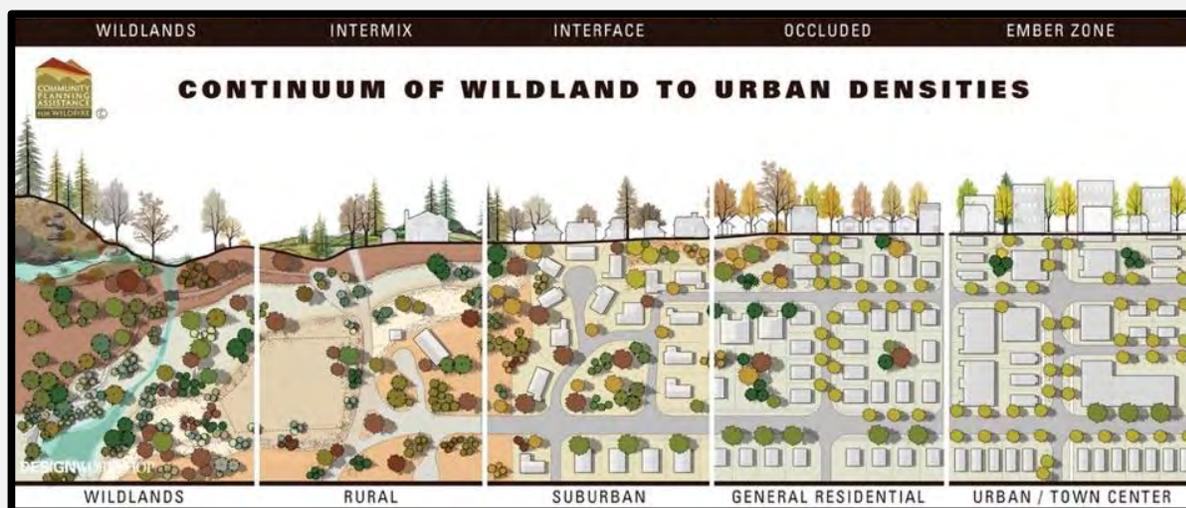

Image of the continuum of wildland to urban densities. (Source: Community Planning Assistance for Wildfire with permission by Wildfire Planning International)

Policy and Implementation Program Examples

Examples of specific policies or implementation programs that address wildfire hazards and reduce risk are listed below according to their applicability in different land use and development contexts, including existing development, infill development, and new development. These examples are meant to provide potential model policies or programs; local agencies are not required to adopt or incorporate any of them into their planning documents. For a more detailed analysis and compilation of community risk reduction measures that could be incorporated into the general plan policies or implementation measures, see Building to Coexist with Fire: Community Risk Reduction Measures for New Development in California (Moritz and Butsic, 2020), and other resources cited in Appendix B.

Existing Development

Policy	Increase resilience of existing development in high-risk areas built prior to modern fire safety codes or wildfire hazard mitigation guidance.
Policy	Ensure that public and private landowners for all existing land uses comply with all applicable state and local requirements and implement site-specific safety measures that mitigate to a low risk condition around or near public facilities, infrastructure, and natural resources.
Policy	Use public and private funding, where available, to the greatest extent practical to assist private landowners in implementing defensible space and building retrofits to achieve a low risk condition.
Policy	Ensure public and private landowners minimize the risk of wildfire moving from wildland areas to developed properties, or from property to property, by increasing structural hardening measures (e.g., fire-rated roofing and fire-resistant construction materials and techniques), maintaining and improving defensible space on site, and supporting vegetation management in adjacent undeveloped areas.
Policy	Require structures with fire protection sprinkler systems to provide for outside alarm notification.
Policy	Publicly disclose development locations without sufficient emergency route access or capacity.
Program	Update building codes in high fire hazard severity areas to meet or exceed hardening requirements in Chapter 7A of the California Building Code or other applicable codes, based on local studies or conditions identified in the local fire hazard and risk assessment.
Program	Develop a comprehensive WUI risk reduction program and associated funding/financing for existing development to improve defensible space, increase home and structural hardening, and increase vegetation and fuels management in wildland areas adjacent to existing development.

Infill Development

Policy   Prioritize infill development within the existing developed footprint to reduce vehicle miles traveled; improve access to jobs, services, and education; increase active transportation choices; avoid future unfunded infrastructure repair and maintenance liabilities; and avoid hazardous or environmentally sensitive open space areas.

Policy   Require all infill development projects within the SRA or VHFHSZ to comply with all applicable state or local fire safety and defensible space regulations or standards, and any applicable fire protection or risk reduction measures identified in locally adopted plans.

Policy   Discretionary infill projects may be required to prepare a project-specific fire hazard and risk assessment and incorporate project-specific risk reduction measures, subject to the determination and approval of the local agency.

Program   Develop streamlined wildfire risk assessment and mitigation procedures for infill projects in the SRA and VHFHSZ.

Program   Conduct a feasibility study for a TDR program that identifies undeveloped wildland areas within high or very high FHSZ or subject to extreme threat as "sending areas" and areas outside of FHSZs or high fire threat areas as "receiving areas".

New Growth

Policy   Avoid significant expansion of new development, critical facilities, and infrastructure in areas subject to extreme threat or high risk, such as High or Very High FHSZs or areas classified by CAL FIRE as having an Extreme Threat classification on Fire Threat maps, unless all feasible risk reduction measures have been incorporated into project designs or conditions of approval.

Policy   Prohibit land uses that could exacerbate the risk of ignitions in High or Very High FHSZs, such as outdoor storage of hazardous or highly flammable materials, automobile service or gas stations, or temporary fireworks sales.

Policy   Prohibit land uses that could place large numbers of occupants at unreasonable risk in high or very high fire hazard severity areas, such as areas with large events or assembly of people, health care facilities, etc.

Policy   Encourage the use of conservation easements or establish a TDR program in undeveloped wildland areas within high fire hazard severity zones.

Policy   Ensure that all residential, commercial and industrial construction and development complies with the statewide Fire Safe Regulations (see CCR, Title 14, Sections 1270 et seq.) relating to roads, water, signing and fuel modification.

Policy   Plan and construct urban development to resist the encroachment of uncontrolled wildfires from adjacent WUI or wildland areas.

Program   Update local zoning and subdivision codes to designate wildfire hazard overlay zones and associated conditional use, site development standards, and design criteria to mitigate wildfire hazards and reduce risks to new development within the overlay zones.

Program   Update local codes and ordinances to require preparation of a project-specific fire protection plan (FPP) for all new development projects in high fire hazard severity areas and require that such projects incorporate all recommended risk reduction measures from the FPP into project designs or conditions of approval.

5.2   Fuel Modification and Land Management

This section contains examples of policies that a local government might adopt with regards to fuel modification and other land management activities that promote resilience by reducing wildfire hazard severity and associated risks. Policy considerations for fuel modification or other land management activities may vary considerably for communities based on their development context (e.g., wildland, WUI, or urban areas).

"Wildland areas" generally refer to rural or undeveloped lands outside of the WUI. In some cases, wildland areas might be adjacent to the WUI and may be referred to in some cases as the "Wildfire Influence Zone," which can be defined as wildland areas with susceptible vegetation within 1.5 miles of the WUI. Addressing and mitigating fire hazards in wildland areas will most often involve land management strategies that address the conditions that lead to uncontrolled wildfire. This may include a variety of vegetation treatments or "fuel modification" strategies designed to reduce the primary driver of wildfire that is within control of managing agencies or entities, which is the biomass or fuel that feeds a wildfire under favorable conditions. Local agencies may partner with regional, state, or federal agencies, as well as private landowners to increase the pace and scale of fuel modification efforts.

Vegetation treatment and fuel modification activities can be coordinated with other policy objectives, including managing open spaces and natural resources, or enhancing economic development activities associated with forestry, timber production, and harvesting thinned biomass for energy production and other useful end-products such as cross-laminated wood products, biochar, or other end uses. Such coordination can produce a range of integrated climate, health, and economic benefits (California Forest Management Task Force, 2021). To align policy objectives jurisdictions should engage land management agencies and other resource professionals.

For more urbanized conditions or interface WUI conditions, local agencies may consider additional strategies such as fire-adapted landscaping, agricultural or managed open space buffers, or urban forest management. Generally, when developing policies, jurisdictions should consider the acceptable level of fire risk, the degree of consistency and coordination between federal, state and private landowner fuel modification activities, the variety of fuel modification techniques, as well as public awareness and ability to comply with residential vegetation clearance (i.e., defensible space) regulations or policies.

Potential General Plan Elements

- Land Use
- Conservation
- Open Space
- Safety
- Air Quality[5]
- Environmental Justice

Policy Examples

The following are examples of policies that a local government might adopt with regards to fuel modification and landscaping considerations.

General Considerations

Policy   Coordinate with CAL FIRE, local fire agencies, tribes, fire safe councils, private landowners, and other responsible agencies to identify the best method(s) of fuel modification to reduce the severity of future wildfires, including:

- Prescribed fire
- Forest thinning
- Grazing
- Mechanical clearing
- Hand clearing (piling, burning/chipping)
- Education
- Defensible space

Policy   Encourage open space preservation and conservation of sensitive areas within natural and working lands, including wildlands, to achieve multiple benefits including (but not limited to) species and habitat protection, agricultural and forest resource protection, water quality, carbon sequestration and storage, and wildfire hazard and risk mitigation.

Policy   Balance and integrate fuel modification with habitat and open space management, vegetative soil cover/erosion management, and urban greening, to reduce the potential for conflicts between safety and environmental goals.

Program   Facilitate and maintain agreements to provide fuel reduction efforts between public and private landowners where recommended clearances extend onto public lands. This may require collaboration with the USFS or other federal or state agencies.

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[5] Air quality is a generally an optional element for local governments. GC § 65302.1 requires each city and county within the jurisdictional boundaries of the San Joaquin Valley Air Pollution Control District to either adopt an air quality element or amend appropriate elements of their general plan to include data and analysis, comprehensive goals, policies, and feasible implementation strategies to improve air quality.

Program	Create a special assessment district to fund and maintain a fuel modification program to reduce wildfire risk.
Program	Develop a local program to identify, prioritize, and fund fuel modification projects in the Local Responsibility Area, and leverage the California Vegetation Treatment Program (CalVTP) and Program EIR for eligible projects in the State Responsibility Area.

Defensible Space

Policy	Ensure that public landowners provide a minimum of a one quarter mile defensible fuel profile (buffer zone) at property lines and near points of special interest.
Policy	Ensure that public landowners implement safety measures that result in a low risk category designation for wildfires threatening the urban interface.
Policy	Prioritize public and private funding for fire risk hazard reduction to assist private landowners in implementing safety measures to achieve a low risk condition.
Policy	Ensure public and private property owners maintain property in a low risk category (PRC Section 4291 and GC § 51182).
Policy	Ensure landowners maintain minimum defensible space from all structures or improvements on their property and work with neighbors and local government to address defensible space within 100' of structures that lies on adjacent property.

Wildland Considerations

Policy	Monitor plant communities in wildland areas over time for changes in potential fire hazard severity or risks.
Policy	Promote and encourage the conversion of biomass removed during vegetation treatment and fuel modification activities to energy, cross-laminated timber, engineered wood products, biochar, or other end uses.
Program	Support economic development programs and projects related to productive use of biomass from vegetation treatment and fuel modification projects.
Program	Update codes and ordinances to identify potential sites, land uses, development standards, and other development criteria for biomass facilities and related industrial projects.

Urban Considerations

Policy	Prepare a site-specific fuel modification plan prior to the construction of any structure, whether residential, recreational, or commercial. The location and development of any road, or any other man-made structure that may act as a fuel barrier, will be done in consideration of its maximum benefit as a fuel barrier/fire break. The plan will cover the entire parcel and include measures for modifying fuel loading prior to development and a plan to maintain that protection over time.

Policy   Ensure all residences comply with the fuel modification requirements of PRC Section 4291, whether located in state responsibility or local responsibility areas.

Policy   Plan, design, and manage urban open space facilities to reduce wildfire hazards and associated risks.

Policy   Maintain open spaces and urban forests so that ground fuels do not promote the spread of wildfire and aerial fuels do not allow the spread of a fire through the tree canopy.

Policy   Use public open spaces as demonstration areas and examples to neighborhood residents for fire-adapted landscapes.

Program   Update site landscaping standards to be fire-adapted using native vegetation or fire-resistant planting palettes and prohibit flammable landscaping plantings or materials storage within the structure ignition zone (e.g., within 0-5 feet of the structure).

Program   Develop a comprehensive vegetation management and weed-abatement program for open-space areas, including those that are located in or adjacent to existing subdivisions and new development areas.

Program   Develop a program to reduce highly flammable invasive species that have a low drought tolerance and easily spread without intentional propagation.

5.3   Protecting Public Health and Increasing Equity

Fire hazard planning presents an opportunity for local planning agencies to identify just and equitable solutions to fire hazard and risk mitigation when updating general plan policies and programs. Local agencies should coordinate fire hazard planning with environmental justice requirements in the general plan update process where applicable, pursuant to GC § 65302(h). In addition, because wildfire-related vulnerabilities will be exacerbated by climate change, general plan updates should coordinate wildfire-related health and safety vulnerability with climate vulnerability and adaptation requirements that must be included in the safety element pursuant to GC § 65302(g)(4). Local agencies may also incorporate this topic into a separate health element within their general plan. Adopting a Health in All Policies approach and focusing on equity and inclusion is key to increase resilience within communities.

More information may be found in the Equitable and Resilient Communities and Healthy Communities chapters of the General Plan Guidelines.

Wildfire policies and programs focused on outreach and engagement to vulnerable populations should focus not just on health and safety, but also on education and capacity-building needs. Local agencies can identify the most vulnerable populations and develop a plan to disseminate information about evacuation procedures, develop measures for protecting sensitive receptors from wildfire smoke, or designate locations and programs for sheltering in place or providing temporary housing, and other measures.

Perhaps the most important step for a community is to identify and empower existing organizations or networks (e.g., community-

based organizations, faith communities, philanthropic organizations, and others) who can reach, organize, and build capacity among residents and vulnerable communities most susceptible to wildfires, including people who live alone, the elderly, outdoor workers (including undocumented and migrant workers) and their employers, asthmatics, the differently abled, chronically ill individuals, and populations with literacy/language needs.

Potential General Plan Elements

- Safety
- Land Use
- Air Quality[6]
- Housing
- Circulation
- Environmental Justice

Health Equity in the Recovery Process

Following the 2017 fires in Sonoma County, the Bay Area Regional Health Inequities Initiative documented lessons learned and outlined key strategies related to:

- Addressing the needs of tenants
- Supporting displaced workers
- Addressing the concerns of undocumented people
- Removing language barriers
- Enhancing training and coordination
- Promoting community engagement

The findings contained in the North Bay Fires Brief can assist jurisdictions as they promote health equity and resilience in their communities.

Policy Examples

The following are examples of policies that a local government might adopt to consider and mitigate impacts to public health and promote equitable fire hazard planning policies and programs:

Disaster Preparedness Activities

Policy   Ensure completeness and availability of identified emergency supplies and resources to all segments of the population, focusing especially on vulnerable and disadvantaged communities, including but not limited to temporary shelter or housing, and items such as medical supplies and services, water main repair parts, generators, pumps, sandbags, road clearing, and communication facilities.

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[6] Air quality is a generally an optional element for local governments. GC § 65302.1 requires each city and county within the jurisdictional boundaries of the San Joaquin Valley Air Pollution Control District to either adopt an air quality element or amend appropriate elements of their general plan to include data and analysis, comprehensive goals, policies, and feasible implementation strategies to improve air quality.

Policy   Maintain and improve disaster response and recovery capabilities to protect and meet the needs of all members of the community, especially the most vulnerable and disadvantaged.

Policy   Translate disaster preparedness and response messaging into the community's threshold languages and make available in multiple formats.

Program   Update existing emergency preparedness and response plans and conduct community-facing exercises to enhance disaster preparedness and build local capacity to better address and mitigate health and safety impacts resulting from wildfires.

Program   Identify and catalogue the current supply of housing, services, and supplies and procure additional items and services to ensure preparedness and availability in the event of a wildfire emergency.

Program   Identify older homes and facilities susceptible to poor indoor air quality and retrofit or replace HVAC systems to mitigate health and safety impacts resulting from wildfire smoke.

Program   Partner with existing public health community outreach and engagement efforts to address fire-related health and prevention needs.

Program   Engage with Firewise USA, Fire Safe Councils, and other networking organizations to improve local and regional coordination when addressing wildfire risks.

Public Education and Financial Assistance

Policy   Work cooperatively with other agencies and private interests to educate private landowners on fire-safe and defensible measures to increase compliance with existing regulations to achieve a low risk condition.

Policy   Establish public education services through the appropriate fire protection agencies.

Program   Identify or develop programs to provide financial incentives or assistance to low-income households for defensible space maintenance, home hardening, and other measures to reduce risk.

5.4   Disaster Response, Recovery, and Maintenance

In California, wildfire is inevitable. Therefore, in addition to minimizing wildfire risk through land use and fuel modification strategies, local agencies should also build resilience through policies that address wildfire response, recovery, and maintenance.

Considerations for the response phase may include policies regarding fire suppression that address firefighter safety, response times, mutual aid agreements, water supply, as well as defensible space. The recovery and maintenance phase, meanwhile, presents an opportunity for the community and landowners to reevaluate land uses and practices following

a wildfire event or disaster. A current general plan or LHMP will usually have the baseline data for the analysis.

Based on the data and analysis, policies should be developed for short-term recovery methods that are appropriate for local conditions to mitigate potential future losses or impacts due to wildfire. Issues that public policy makers may choose to consider include but are not limited to, benefit of recommended measure commensurate with the protection needed, immediate recovery needs versus long-term environmental health, debris removal versus habitat health, opportunities for re-introduction of native species, and short-term flood risks and mitigation opportunities.

Wildfires can directly cause or exacerbate flooding, debris flow, and landslide hazards because vegetation losses and disruptions or changes in soil permeability and slope stability, which reduce the ability of the landscape to absorb or slow down precipitation and storm runoff. In some cases, these induced or exacerbated hazards can rival the severity of a

wildfire event. General plan updates should account for the potential for wildfires to increase or exacerbate flooding, debris flow and landslide hazards and related risks.

Long-term recovery and maintenance policies should also be developed to mitigate future loss due to wildfire. Issues that public policy makers may choose to consider include (but are not limited to) the extent to which existing land use and zoning designations are appropriate, the potential for the re-evaluation of community assets, the success of past mitigation measures, sustainability of recommended fire mitigation measures, and assurance that mitigation measures will continue to be implemented. Examples of potential policies are presented below; the applicability of these policies is at the discretion of local agencies.

Potential General Plan Elements

- Safety
- Land Use
- Open Space
- Conservation
- Housing

Policy Examples

Wildfire Response Considerations

Policy Identify low risk fire safety areas, including locations that may serve as temporary shelter or refugia during wildfire events.

Policy Identify fire defense zones where firefighters can control wildfire without undue risk to their lives.

Policy Designate and publicize areas where firefighter safety prohibits ground attack firefighting.

Policy Maintain fuel breaks and other fire defense improvements on both public and private property.

Policy Provide for adequate fire suppression resources in the local responsibility area, and coordinate with CAL FIRE regarding state responsibility area and scenarios where wildfires affect both areas.

Program	Develop or amend special assessment districts to ensure adequate fire suppression resources in the most vulnerable areas of the community.
Program	Develop and adopt coordinated emergency notification and evacuation procedures that may be required across jurisdictional boundaries under extreme wildfire event scenarios.
Program	Review and update emergency response and evacuation plans and procedures at least every 5 years to reflect current conditions and community needs.

Short-term Recovery Considerations

Policy	Prioritize the needs of vulnerable and disadvantaged communities during emergency response and disaster recovery efforts.
Policy	Ensure displaced workers are informed of and can access jobs generated during the post-fire recovery process.
Policy	Reduce post fire recovery time by replanting native species.
Policy	Ensure fire protection measures enhance sustainability of restoration projects.
Policy	Ensure reduced future fire risk by removing sufficient dead woody vegetation while retaining reasonable wildlife habitat (cross-link with water quality).
Policy	Retain sufficient downed logs for erosion control as well as habitat maintenance.
Program	Evaluate and update disaster recovery plans every 5 years to respond to changing needs and characteristics of the community.
Program	Coordinate with planning, housing, health and human services, and other local, regional or state agencies to develop contingency plans for meeting short-term, temporary housing needs of those displaced during a catastrophic wildfire event.
Program	Research and develop general rules and procedures that would govern planning and permitting requirements for construction of temporary housing or permanent rebuilding activities following a wildfire disaster, such as model emergency or urgency ordinances. This may also need to include staffing and tools needed to facilitate unique permitting needs in the recovery phase.

Flood and Debris Flow Considerations

Policy	Ensure wildfire burned areas are treated to control storm water runoff prior to winter rains.
Policy	Restore wildfire impacted areas by planting native vegetation cover or encouraging the re-growth of native species using best practices as soon as possible to aid in control of storm water runoff.

Policy	Reduce the potential for future flood hazard by sufficiently removing dead, woody vegetation along watercourses following a catastrophic fire to reduce the risk of future catastrophic fires.
Policy	Fire hazard reduction measures should balance forest health with fuel reduction activities while considering the potential effect on flood management. Reduction in fire risk will simultaneously reduce flood risk.
Policy	Treat all wildfire areas prone to landslides to avert storm water runoff prior to winter rains.
Policy	Plant native vegetation cover and/or install temporary slope stabilization measures as soon as possible to aid in landslide control.
Policy	Reduce potential for landslides by sufficiently removing dead, woody vegetation following a catastrophic fire.

Long-Term Considerations

Policy	Design subdivisions and developments to exist in concert with the natural ecosystem and to promote forest health and stewardship.
Policy	Periodically review trends and projections of future fire risk and fire risk reduction capabilities to ensure that mitigation measures are adequate.
Policy	Incorporate forecasted impacts from climate change into trends and projections of future fire risk and consideration of policies to address identified risk.
Policy	Require defensible space maintenance agreements for new development projects and require extension of defensible space maintenance agreements to subsequent landowners.
Policy	In high fire hazard severity areas, rebuild structures with a minimum 100' setback (when feasible) from property lines.
Policy	Rebuild residential dwellings using best practices for fire-resistant or fire-proof construction methods, materials and landscaping to reduce their susceptibility to wildfire.
Policy	In high fire hazard areas, use fire rated roofing and construction materials in reconstruction and new development pursuant to Section 703.1 of the California Fire Code (CCR, Title 14, Part 4).
Program	Update codes and ordinances to specify procedures and standards for planning and permitting the reconstruction of buildings destroyed by wildfire.
Program	Update codes and ordinances to require all replacement structures or redevelopment projects following a wildfire to comply with applicable project-level wildfire risk reduction measures and WUI building codes in high hazard areas.

Program   Periodically review fire history and lessons learned to ensure that hazard mitigation measures and future disaster recovery needs are being managed to optimize effectiveness.

Program   Using best available data and tools, update the fire hazard and risk assessment regularly to account for climate change or other factors, and alert public and private landowners in future high-risk areas regarding changes in hazard severity or risk levels.

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Appendices

A.   Acronyms and Abbreviations

CAL FIRE – California Department of Forestry and Fire Protection

CalOES – California Governor's Office of Emergency Services

CalVTP—California Vegetation Treatment Program

CCR – California Code of Regulations

CEQA – California Environmental Quality Act

COPD – Chronic Obstructive Pulmonary Disease

CWPP – Community Wildfire Protection Plan

DMA – Disaster Mitigation Act

FEMA – Federal Emergency Management Agency

FHSZ – Fire Hazard Severity Zone

FPP – Fire Protection Plan

FRA – Federal Responsibility Area

GC – Government Code

HMGP – Hazard Mitigation Grant Program

IFR – Interim Final Rule

ICARP – Integrated Climate Adaptation and Resiliency Program

LHMP – Local Hazard Mitigation Plan

LRA – Local Responsibility Area

NAHC – Native American Heritage Commission

OPR – Governor's Office of Planning and Research

PRC – Public Resources Code

PSPS—Public Safety Power Shutoff

PTSD – Post Traumatic Stress Disorder

SRA – State Responsibility Area

State Board – State Board of Forestry and Fire Protection

TAC – Technical Advisory Council

TDR – Transfer of Development Rights

USFS – United States Forest Service

VHFHSZ – Very High Fire Hazard Severity Zone

WUI – Wildland-Urban Interface

B.   Resources

The table below describes and provides links to a variety of resources that may be helpful for local fire hazard planning and implementation efforts.

Name	Description	Funding	Guidance	Networks	Examples	Tools & Data
State of California's Grants Portal	OPR recommends using this portal to find out about the latest grants that could support fire hazard planning or related implementation efforts that support fire hazard mitigation, climate adaptation, forest management, and other related projects and programs.	X				
California Air Resources Board Funding Wizard	The Funding Wizard is a tool provided by the California Air Resources Board that aggregates current federal, state, regional, foundation and other funding opportunities for environmental and sustainability projects. It allows entry of keyword search terms to identify possible funding for identified projects.	X				
California Forest Improvement Program	California Forest Improvement Program (CFIP) program encourages private and public investment in, and improved management of, California forest lands and resources. This focus of CFIP is to ensure adequate high-quality timber supplies, related employment and other economic benefits, and the protection, maintenance, and enhancement of a productive and stable forest resource system for the benefit of present and future generations. Cost-share assistance is provided to private and public ownerships containing 20 to 5,000 acres of forest land. Cost-shared activities include management planning, site preparation, tree purchase and planting, timber stand improvement, fish and wildlife habitat improvement, and land conservation practices.	X				
CalOES / FEMA - Hazard Mitigation Grant Program (HMGP)	The HMGP program provides grants to states and local governments to implement long-term hazard mitigation measures after a major disaster declaration.	X				

Name	Description	Funding	Guidance	Networks	Examples	Tools & Data
CAL FIRE Grant Programs	CAL FIRE offers several different grant opportunities related to fire prevention, hazard mitigation, forest health, many of which can fund implementation of activities identified in or consistent with local plans. Specific CAL FIRE grant opportunities are also outlined in this resource table.	X				
Community Development Block Program (CDBG)	This program supports housing for persons of low and moderate incomes.	X				
Fire Prevention Grants Program	CAL FIRE provides funding for local projects and activities that address the risk of wildfire and reduce wildfire potential to forested and forest adjacent communities. Funded activities include hazardous fuel reduction, fire prevention planning, and fire prevention education with an emphasis on improving public health and safety while reducing greenhouse gas emissions. This program is funded by California Climate Investments (CCI).	X				
Forest Health Grant Program	CAL FIRE funds projects that proactively restore forest health to reduce greenhouse gases, protect upper watersheds where the state's water supply originates, promote the long-term storage of carbon in forest trees and soils, minimize the loss of forest carbon from large, intense wildfires, and further the goals of the California Global Warming Solutions Act of 2006 (AB 32). This program is funded by CCI.	X				
Local and Regional Early Action Planning Grants	These programs provide technical assistance and funding to accelerate housing production in California.	X				

Name	Description	Funding	Guidance	Networks	Examples	Tools & Data
Northern California Forests and Watersheds Program	The National Fish and Wildlife Foundation has partnered with the U.S. Forest Service to restore and enhance National Forests and watersheds affected by wildfires within Northern California. The Northern California Forests and Watersheds program will administer an initial $6 million in grants to projects that increase wildfire resiliency for Northern California National Forests and associated watersheds.	X				
Urban & Community Forestry Grant Programs	CAL FIRE provides local grants that optimize the benefits of trees and related vegetation through multiple-objective projects as specified in the California Urban Forestry Act of 1978 (PRC Section 4799.06-4799.12). These projects further the goals of AB 32, result in a net greenhouse gas benefit, and provide environmental services and cost-effective solutions to the needs of urban communities and local agencies. This program is funded by CCI.	X				
Wildfire Resilience and Forestry Assistance Grant – Prop 68	CAL FIRE has created a new grant opportunity focused around providing funding for eligible entities to provide technical and financial assistance to forestland owners for projects that provide ecological restoration of forests. Projects may include forest restoration activities for forestland already impacted by natural disturbance such as fire, insect, and disease, and forest management practices that promote forest resilience to severe wildfire, climate change, and other disturbances. CAL FIRE expects to award at least $2,200,000 of Proposition 68 funding for Forestry Assistance in the fiscal year 2019/2020 for projects that propose to provide financial and technical assistance to private, nonindustrial landowners for the goals stated above.	X				

Name	Description	Funding	Guidance	Networks	Examples	Tools & Data
Western Forestry Leadership Coalition	Formally established in 2000, the Western Forestry Leadership Coalition is comprised of members across federal and state agencies of the west who work together to assist family forest owners, rural and state fire organizations, and community forestry groups; improve forest health, encourage land conservation, and stimulate community economic recovery. The Coalition provides funding opportunities such as the Landscape Scale Restoration (LSR) Competitive Grant Program, which prioritizes landscapes of national importance, using the Forest Action Plans and the national themes (specifically the National Themes/Priorities identified in the federal Farm Bill consistent with P.L. 110-246 Section 8001). The objective is to focus competitive LSR funds on activities that address priority areas, challenges, and opportunities facing Western lands. Funding for the LSR Competitive Process is made possible through the USDA Forest Service.	X		X		
California FireSafe Council and the Fire Safe California Grants Clearinghouse	The Council's intent is to bring together governmental agencies and corporations to provide education to the residents of California on the dangers of wildfires and how they can be prevented. As part of its mission, the Council maintains the Fire Safe California Grants Clearinghouse: a one-stop shop that simplifies the process of finding and applying for grants to improve California's community wildfire preparedness. The portal includes information on open grant programs and includes an online grants application process to makes it easier to find and apply for wildfire prevention grants to support community projects.	X		X		
Adaptation Clearinghouse	OPR's Adaptation Clearinghouse has numerous wildfire related resources such as funding opportunities, assessments, case studies, educational materials, data and tools, example plans and strategies, as well as additional policy guidance.	X	X		X	X

Name	Description	Funding	Guidance	Networks	Examples	Tools & Data
Building to Coexist with Fire: Community Risk Reduction Measures for New Development in California	This guidance document, published by University of California Agriculture and Natural Resources, includes a compilation of community risk reduction measures for California communities based on a literature review and professional experiences of both firefighters and planners.		X			
Climate Action for Health: Integrating Health into Climate Action Planning	This document helps communities that are working to create a Climate Action Plan identify the health co-benefits of reducing Greenhouse Gas Emissions and forge partnerships between planning and health organizations.		X			
California Climate Adaptation Planning Guide	This guide outlines a step-by-step process to help jurisdictions assess their climate vulnerability as well as develop, implement, and evaluate local and regional climate adaptation strategies.		X			
Defining Vulnerable Communities in the Context of Climate Adaptation.	This document defines vulnerable communities in the context of climate adaptation and summarizes existing assessment tools and indicators that can be used to identify vulnerable communities.		X			
General Guidelines for Creating Defensible Space	This guide outlines common practices for managing fuels and creating defensible space around structures.		X			
Reducing Wildfire Risks in the Home Ignition Zone	This document, created by the National Fire Protection Association, outlines actions that can be taken to reduce wildfire risks in the immediate, intermediate, and extended vicinity of a structure.		X			
Wildfire Smoke: A Guide for Public Health Officials	This guide characterizes the health effects of wildfire smoke on sensitive populations and provides several strategies for reducing smoke exposure and protecting public health.		X			

Name	Description	Funding	Guidance	Networks	Examples	Tools & Data
Nature-Based Climate Solutions: A Roadmap to Accelerate Action in California	This guide evaluates the potential of nature-based solutions in California and outlines strategies and actions to support their implementation. Regional and local case studies are included in the report.		X		X	
Planning the Wildland-Urban Interface	This document provides planners with an introduction to challenges in the WUI and highlights potential solutions to mitigate wildfire risk. In addition, case studies from communities across the US are included to showcase how a wide variety of jurisdictions are taking action.		X		X	
WUI Planning Guide: Examples and Best Practices for California Communities	This guide highlights how local agencies across California can leverage plans, regulations, and additional tools to reduce risk in wildfire-prone areas. The guide also features nine best practice case studies that offer opportunities for learning and solutions that may be suitable for adoption in other communities. The Guide is a complementary and supplemental resource to OPR's Fire Hazard Planning Technical Advisory.		X		X	
California Fire Science Consortium (CFSC), Northern California Module	The CFSC is a network of fire science researchers, managers, and outreach specialists tasked with improving the availability and understanding of fire science and management knowledge. This includes increasing communication between fire researchers, managers, policymakers, tribes, landowners, and other stakeholders.		X	X		
California Wildfire and Forest Resilience Task Force	This task force is responsible for implementing California's Wildfire and Forest Resilience Action Plan. This group provides a space for local governments to engage with each other, the state and the federal government around wildfire and forest related issues.			X		

Name	Description	Funding	Guidance	Networks	Examples	Tools & Data
Community Planning Assistance for Wildfire (CPAW)	This organization, funded by the U.S. Forest Service and private foundations, works with communities across the country to reduce wildfire risk in the WUI through land use planning strategies. One aim of CPAW is to build community capacity by providing technical consulting services, trainings, and other resources.			X		
Community Wildfire Planning Center (CWPC)	This non-profit organization supports communities through direct assistance, research, and training. As part of a grant agreement with CAL FIRE, the organization will develop land use planner trainings which will be available starting in 2022.			X		
ICARP Technical Advisory Council	The Advisory Council facilitates the development of holistic, complimentary strategies that increase California's resilience to climate change, advance equity and environmental justice, and benefit both greenhouse gas emissions reductions and adaptation efforts. The Council provides a space for state, regional, and local coordination.			X		
Northern California Prescribed Fire Council	The Northern California Prescribed Fire Council is a venue for practitioners, state and federal agencies, academic institutions, tribes, coalitions, and interested individuals to work collaboratively to promote, protect, conserve, and expand the responsible use of prescribed fire in Northern California's fire-adapted landscapes.			X		
California Society of American Foresters	The Society is a national organization representing all segments of the forestry profession in the United States. It includes public and private practitioners, researchers, administrators, educators, and forestry students.			X		

Name	Description	Funding	Guidance	Networks	Examples	Tools & Data
Fire-Adapted Communities Learning Network (FAC Net) and Self-Assessment Tool (FAC SAT)	The purpose of FAC Net is to exchange information, collaborate to enhance the practice of fire adaptation, and work together and at multiple scales to help communities live safely with fire. This includes embracing resiliency concepts and taking action before, during and after wildfires. The Fire Adapted Communities Self-Assessment Tool (FAC SAT) can also help communities assess their level of fire adaptation and track their capacity to live safely with fire over time. This tool can be used to assess individual neighborhoods, cities and even large counties.			X		X
Firewise Communities	The Firewise Communities/USA Recognition Program brings together homeowners, community leaders, planners, developers, and others in the effort to reduce wildfire risk. The program provides a number of resources and action steps homeowners can utilize now to reduce their community's risk of potential wildfire damage.			X	X	
Unit Fire Plans	Drawn from the California Strategic Fire Plan, the CAL FIRE Units and Contract Counties develop plans that 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.				X	
Cal-Adapt: Wildfire: Climate Change Fire Risk Map	Cal-Adapt is a statewide tool for viewing downscaled climate change exposure data and associated research on the effects of climate change for the entire state of California. Cal-Adapt includes numerous tools for viewing this data and research, including a Wildfire tool that allows a user to explore projected changes in average area burned by wildfires in California under various scenarios. The tool is based on wildfire scenario projections using a statistical model based on historical data of climate, vegetation, population density, and fire history coupled with regionally downscaled climate projections from Cal-Adapt.					X

Name	Description	Funding	Guidance	Networks	Examples	Tools & Data
CalEnviroScreen	This tool maps census tracts that are burdened by or vulnerable to environmental stressors. The map contains over 20 indicators including air quality, asthma, cardiovascular disease, housing burden and linguistic isolation.					X
CAL FIRE's Fire and Resource Assessment Program (FRAP)	The FRAP division within CAL FIRE provides a variety of maps, geospatial data, reports, and other products including a detailed report on California's forests and rangelands. FRAP provides extensive technical and public information for statewide fire threat, fire hazard, watersheds, socio-economic conditions, environmental indicators, and forest-related climate change.					X
Connecting Wildlands and Communities Project	This project is assessing the implications of connected landscapes on wildfire risks, patterns, and recovery. As part of the project, the CWC team plans to publish datasets and mapping tools to aid planners and other community stakeholders as they plan, prepare, and adapt to climate risks in southern California.					X
Contemporary Wildfire Hazard Across California Report and Webmap	With funding from USFS, Pyrologix LLC completed the first iteration of the California All-lands Wildfire Hazard Assessment for California in 2019. This assessment consists of four main parts: fuelscape calibration and update, wildfire likelihood (probability) simulations, potential wildfire behavior simulations, and assessment of the exposure of human communities to wildfire.					X
Headwaters Economics Wildfire Susceptibility Tool	Headwaters Economics developed an interactive mapping tool that highlights the unequal impacts of wildfire. The tools allows users to filter counties based on wildfire risks and demographic factors that impact a community's susceptibility to wildfires.					X

Name	Description	Funding	Guidance	Networks	Examples	Tools & Data
My Hazards	My Hazards is a tool for the general public to discover hazards in their area (e.g., earthquake, flood, fire, and tsunami) and learn about steps to reduce personal risk. Using the MyHazards tool, users may enter an address, city, zip code, or may select a location from a map. This website is provided by CalOES to allow users to easily make hazard maps for mitigation planning, report generation, and other tasks. The maps under "Fire Risk" depict the SRA according to Fire Hazard Severity Zone (FHSZ) classifications (i.e., Moderate, High and Very High).					X
U.S. Forest Service Fire, Fuel, Smoke Science Program Resources	The U.S. Forest Service's Fire, Fuel, and Smoke Science Program includes a list of applications that include possible models or tools to use for understanding fire behavior, fire danger ratings, wind, fire effects, fuels management, monitoring, and fire risk assessment. These tools are typically used by professionals with technical expertise in fire behavior and suppression, forest management, or other related disciplines.					X

C.   Wildfire Planning Examples

California courts have placed general plans "atop the hierarchy of local government law regulating land use." (See e.g., Neighborhood Action Group v. County of Calaveras (1984) 156 Cal.App.3d 1176, 1183.) The general plan is often analogized to "a constitution for all future development." (Ibid.) In that regard, all other land use plans and development approvals in that jurisdiction are subordinate to the general plan and must be consistent with it. For example, all subdivisions, zoning decisions, specific plans, and public works projects must be consistent with the general plan. On this basis, there are numerous planning tools that are used to implement the general plan.

OPR's WUI Planning Guide highlights how local agencies across California can leverage planning tools to reduce risk in wildfire-prone areas. The guide also features nine best practice case studies that offer opportunities for learning and solutions that may be suitable for adoption in other communities. The Guide is a complementary and supplemental resource to the Fire Hazard Planning Technical Advisory.

This section also provides brief examples of local agencies who have updated their safety element or other general plan elements to address wildfire hazards and risks, as well as local implementation measures or programs that address fire hazards and align with general plan policies/programs.

Berkeley
Population: 121,363
Region: Bay Area
Key Words: evacuation planning, community support

The City of Berkeley updated the Disaster Preparedness and Safety Element of its General Plan in 2019. Policies within the element include ensuring safety of residents with access and functional needs, identifying a contingency water supply, undergrounding utilities, and preventing future development in areas with increased fire hazard potential and limited access. The City also adopted its 2019 LHMP by reference into the General Plan, which includes a more detailed analysis of vulnerabilities and values at risk, protections for historically underserved communities, and details regarding mitigation work in progress. The plan includes local policy background, including a 2010 ordinance blocking establishment of residential units on Panoramic Hill until an adequate Specific Plan is adopted. These plans and the City's focus on resilience and disaster preparedness have led to an increased evacuation planning effort, including infrastructure and education surrounding pedestrian evacuation routes. The plan also supports ongoing Disaster Cache and Community Resilience Center programs, which have decentralized emergency resources and have been valuable to residents in decreasing secondary hazard related to wildfires, including Public Safety Power Shutoffs and air quality hazards from wildfire smoke.

Mammoth Lakes
Population: 8,235
Region: Sierra Nevada
Key Words: tourism, small town, secondary impacts, vulnerable communities, adaptation and resilience

The Town of Mammoth Lakes updated the Safety Element of its General Plan in 2019. The town faces unique wildfire safety challenges associated with tourism and seasonal residents, and limited evacuation access. Policies in the General Plan include incentivizing and funding to support mitigation retrofits, developing plans for emergency and evacuation access, increasing capability for Spanish language emergency notifications, and protecting water supply from wildfire impacts. The plan also includes policies related to secondary impacts from wildfires, including creating wildfire smoke relief centers and addressing the needs of vulnerable communities.

Santa Paula
Population: 29,806
Region: Central Coast
Key Words: land use, at-risk populations, financing fire protection services

The City of Santa Paula updated its General Plan, including its Hazards and Public Safety Element, in 2020. The plan includes a brief history of wildland fires in the area, acknowledges increased wildfire risks associated with climate change, and describes existing and proposed land use in FHSZs, including in the city's sphere of influence. The plan's policies include enforcing fire safe and defensible space regulations and standards, including the Ventura County Fire Code, which is more stringent than the State

requirements. Programs include public outreach targeting at-risk populations, identifying methods of establishing buffer zones between residential development and foothill vegetation, and regularly reviewing and updating fire hazard maps, fire codes, water supply, and the city's Emergency Operations Plan. The Public Services and Utilities element of the General Plan contains policies and programs related to fire protection services, including options for financing fire protection facilities using impact fees or development agreements, and continuation of a fire code compliance program.

Riverside County

Unincorporated Population: 385,953
Region: Inland Empire
Key Words: WUI, regulations, open space, secondary risks

The County of Riverside updated its General Plan Safety Element in 2019. The plan explains the wildfire regime in the area, and identifies unique vulnerabilities, including the large number of mobile homes in the County that are disproportionately vulnerable to wildfire. The plan includes policies to implement fire safe development standards, including additional standards and design requirements for high-risk facilities. These standards and requirements consider not only wildfire risk, but secondary risks associated with wildfire, including erosion control plans to address post-fire debris flow hazards. The safety element also includes background information and policies related to long-range fire planning, including open space, cluster developments, a TDR program, and a regional coordination program for fire protection and emergency service providers.

Colton

Population: 54,824
Region: Inland Empire
Key Words: WUI, fuel modification, interjurisdictional cooperation, impaired access, hazard recovery

The City of Colton updated its General Plan Safety Element in 2018. The plan identifies connections to other elements of the General Plan, including Land Use, Mobility, Housing, and Open Space and Conservation. The Safety Element of Colton's General Plan is supplemented by the 2018 City of Colton LHMP. This plan includes a more thorough wildfire hazard background and analysis of vulnerable populations, including disabled individuals, persons with limited English proficiency, households under the poverty limit, and senior citizens living alone, living in CAL FIRE identified Fire Hazard Severity Zones. The safety element describes implementation programs, including the preparation of a CWPP, an Impaired Access Analysis to re-examine circulation requirements, and the preparation of a Hazard Recovery Plan.

Westlake Village

Population: 8,217
Region: Southern California
Key Words: open space, hillside, fire breaks

The City of Westlake Village updated its General Plan in 2019, including the Hazards and Public Safety Elements. This plan explains the current policy landscape around fire hazards, Hillside Development Standards, required fire flow levels, and brush clearance requirements imposed at a minimum of 30 feet from the structure up to 200 feet from the structure. It also explains current fire hazard conditions and

ongoing mitigation strategies the City has implemented related to local vegetation, community wildfire breaks, and evacuation access strategies. The plan contains objectives and policies that connect to implementation programs, including code enforcement, a feasibility study about funding for smoke alarms, and evaluating fire safety in the design review process. The plan also includes the Las Virgenes-Malibu Council of Governments 2018 Multi-Jurisdictional Hazard Mitigation Plan as an appendix to the General Plan.

Redlands

Population: 71,513
Region: Inland Empire
Key Words: zoning, development standards, open space, water supply, vegetation management

The City of Redlands updated its General Plan in 2017, including fire hazard planning under its "Healthy Communities" theme. The Fire Hazard section includes local wildfire history, explains mutual aid agreements, and describes areas of the city that are particularly susceptible to wildfire, including canyon areas with extreme topography and susceptible to drought conditions and high winds. The plan describes land use tools in place to address this vulnerability, including low housing density down to one dwelling unit per 40 acres; Open Space designations that prohibit residential, commercial, or industrial development; and City-owned land preserves maintained as open space. It also describes other current standards and requirements related to water supply, fire access standards, vegetation management, and building and signage. Fire hazard policies and principles in the general plan include 24 action items, which include maintaining updated hazard maps, continuing weed abatement, enforcing codes and standards, considering new fire protection standards and implementation measures for foothill development, and educating the public about fire prevention.

Humboldt County

Unincorporated Population: 70,234
Region: Northern Coast
Key Words: fire services financing, fire safe and defensible space regulations, prescribed burning, conservation

The County of Humboldt updated the Safety Element of its General Plan in 2017. The plan contains background information on local fire hazards and fire protection services and contains a summary of key findings from the 2013 Humboldt County Community Wildfire Protection Plan. These key findings include wildfire hazard areas in the county that are not included within designated fire districts and rely on "good will" service from nearby fire districts and an increase in hazardous fuel loading. Since then, these issues have been addressed through fire district boundary expansions, formation of a new fire protection district, funding through special tax districts and a County-wide Public Safety and Essential Services sales tax, and increased fuel-reduction efforts including a cost-share program for homeowner fuel reduction efforts. Policies for new development in designated high and very high fire hazard severity zones include requiring building materials conforming to fire safe regulations, and subdivision developments requiring consideration of wildfire hazard mitigation design and layout practices including lot clustering, irrigated green belts, perimeter roads, and slope development constraints. Other policies include encouraging prescribed burning and promoting fire safe practices that encourage conservation and use of native plants and native plant ecosystems. The County's 2014 LHMP, incorporated into the

Safety Element by reference, includes further policies and plans encouraging vegetation management and compliance with defensible space regulations. In 2019, Humboldt County updated it's LHMP, CWPP, and Housing Element in which they further updated their policies and programs. They are currently collaborating with CAL FIRE land use planning staff to update their Safety Element, while taking into consideration the recommendations from the Board of Forestry.

D.   General Plan Safety Element Assessment

State law requires that cities and counties adopt a comprehensive general plan with various elements, including a safety element for protection of the community from unreasonable risks associated with various hazards, including wildfires. CAL FIRE and the State Board of Forestry and Fire Protection (Board) have a long history of acknowledging the importance of planning and its importance to wildland fire safety and risk mitigation.

As described under Section 3 (Regulatory and Policy Background) in this technical advisory, pursuant to Government Code 65302.5, local agencies with land classified as SRA and/or VHFHSZ must submit copies of their draft safety element to the Board for review and comment no later than 90 days prior to adoption of the safety element and/or general plan update. CAL FIRE's Land Use Planning Program, within the Office of the State Fire Marshal, assists the Board with safety element reviews and provides information and technical assistance to local agencies.

CAL FIRE's Land Use Planning staff provide planning departments with feedback and guidance to develop draft goals, policies, programs and implementation measures to improve fire safety in the community. Land Use Planning staff attend stakeholder meetings to communicate the collaborative efforts the state and the local agencies are taking to address the threat posed by wildfire in the State of California. Land Use Planning Staff also provide legislative updates to City and County planning staff that relate to wildfire planning and risk mitigation, as well as conducting informal Safety Element Assessment pre-reviews of existing safety elements to provide local agencies a guideline for any planned future updates.

CAL FIRE and the Board encourage early consultation with the Land Use Planning staff when a general plan update is being considered by a local agency, so they can provide support and guidance through the process. For additional information on the CAL FIRE Land Use Planning Program, or your local CAL FIRE Land Use Planning staff member, you can go to their website at https://osfm.fire.ca.gov/divisions/wildfire-planning-engineering/land-use-planning/

A copy of the Safety Element Review Assessment Checklist and accompanying guidance for the safety element review process can be accessed at https://bof.fire.ca.gov/board-committees/board-standing-committees-forest-practice-management-resource-protection/

E.   Glossary

Climate Adaptation - Adaptation is an adjustment in natural or human systems to a new or changing environment. Adaptation to climate change refers to adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.

Climate Change – A change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods. (https://www.ipcc.ch/site/assets/uploads/2018/02/WGIIAR5-AnnexII_FINAL.pdf)

Communities at Risk – Defined by the Healthy Forest Restoration Act of 2003 as "Wildland- Urban Interface Communities within the vicinity of federal lands that are at high risk from wildfire." CAL FIRE expanded on this definition for California including all communities (regardless of distance from federal lands) for which a significant threat to human life or property exists as a result of a wildland fire event. California uses the following three factors to determine at risk communities: 1) high fuel hazard, 2) probability of a fire, and 3) proximity of intermingled wildland fuels and urban environments that are near fire threats.

Defensible Space – In PRC Section 4291, "defensible space" refers to a 100-foot perimeter around a structure in which vegetation (fuels) must be maintained in order to reduce the likelihood of ignition. This space may extend beyond property lines or 100 feet as required by State law as well as local ordinances, rules, and regulations.

Fire Hazard – Fire hazard is the potential fire behavior or fire intensity in an area, given the type(s) of fuel present (including both the natural and built environment) and their combustibility.

Fire Hazard Severity Zones – Fire hazard severity zones are defined based on vegetation, topography, and weather (temperature, humidity and wind), and represents the likelihood of an area burning over a 30- to 50-year time period without considering modifications such as fuel reduction efforts. CAL FIRE maintains fire hazard severity zone (FHSZ) data for the entire state. There are three classes of fire hazard severity ratings within FHSZs: Moderate, High, and Very High.

Fire Prevention – Activities such as public education, community outreach, planning, building code enforcement, engineering (construction standards), and reduction of fuel hazards that is intended to reduce the incidence of unwanted human-caused wildfires and the risks they pose to life, property or resources (https://www.nwcg.gov/glossary/a-z).

Fire Risk – "Risk" takes into account the intensity and likelihood of a fire event to occur as well as the chance, whether high or low, that a hazard such as a wildfire will cause harm. Fire risk can be determined by identifying the susceptibility of a value or asset to the potential direct or indirect impacts of wildfire hazard events.

Fire Safe Regulations – PRC Section 4290 gives the State Board the authority to adopt development regulations for minimum fire safety standards applicable to both SRA lands and to VHFHSZs within the

LRA. The Fire Safe Regulations are codified in CCR, Title 14 (Natural Resources), Division 1.5 (Department of Forestry), Chapter 7 (Fire Protection) under Subchapter 2 (SRA Fire Safe Regulations). These regulations generally address the following:

- Standards for signs identifying streets, roads, and buildings.
- Minimum private water supply reserves for emergency fire use.
- Fuel modification standards for fuel breaks and greenbelts.
- Road and driveway standards for emergency fire equipment access and public evacuation.

These regulations do not supersede local regulations that equal or exceed minimum regulations adopted by the State.

Fuel Modification – The manipulation or removal of fuels (i.e., combustible biomass such as wood, leaves, grass, or other vegetation) to reduce the likelihood of igniting and to reduce fire intensity. Fuel modification activities may include lopping, chipping, crushing, piling and burning, including prescribed burning. These activities may be performed using mechanical treatments or by hand crews. Herbicides and prescribed herbivory (grazing) may also be used in some cases. Fuel modification may also sometimes be referred to as "vegetation treatment".

Hazard – A "hazard" can be defined generally as an event that could cause harm or damage to human health, safety, or property.

Local Responsibility Area – Wildland fire protection in California is the responsibility of either the state, local government, or the federal government. The Local Responsibility Area (LRA) includes incorporated cities, cultivated agricultural lands, and portions of the desert. Local responsibility area fire protection is typically provided by city fire departments, fire protection districts, counties, and by CAL FIRE under contract to local government.

Resilience – Resilience is the capacity of any entity – an individual, a community, an organization, or a natural system – to prepare for disruptions, to recover from shocks and stresses, and to adapt and grow from a disruptive experience.

Safety Element – One of the seven mandatory elements of a local general plan, the safety element must identify hazards and hazard abatement provisions to guide local decisions related to zoning, subdivisions, and entitlement permits. The element should contain general hazard and risk reduction strategies and policies supporting hazard mitigation measures. (http://opr.ca.gov/planning/general-plan/guidelines.html)

State Responsibility Area – The state responsibility area (SRA) is a legal term defining the area where the State has financial responsibility for wildland fire protection. Incorporated cities and lands under federal ownership are not included in the SRA. Lands under federal ownership are in the federal responsibility area. See also the Local Responsibility Area definition above.

Transfer of Development Rights – Transfer of development rights (TDR), sometimes also known as transfer of development credits (TDC), is a market-based tool that allows communities to channel development toward designated growth areas and away from natural/wildland areas, drinking water sources, and farmland. Development rights are separated from a parcel of land that needs protecting

(the sending site) and transferred to a parcel of land more appropriate for development (the receiving site). Future development on the sending site is permanently restricted, thereby protecting that asset. The project in the receiving site where the TDR credit is applied gains a density bonus above what would otherwise be allowed by zoning.
(https://www.smartgrowthamerica.org/app/legacy/documents/transfer-development-rights-policy-toolkit.pdf)

Values and Assets at Risk – The elements of a community or natural area considered valuable by an individual or community that could be negatively impacted by a wildfire or wildfire operations. These values can vary by community and can include public and private assets (natural and manmade) -- such as homes, specific structures, water supply, power grids, natural and cultural resources, community infrastructure-- as well as other economic, environmental, and social values.
(https://www.nwcg.gov/glossary/a-z and https://www.fire.ca.gov/media/4934/fireplan.pdf)

Vulnerable Community – Vulnerable communities experience heightened risk and increased sensitivity to natural hazard and climate change impacts and have less capacity and fewer resources to cope with, adapt to, or recover from the impacts of natural hazards and increasingly-severe hazard events because of climate change. These disproportionate effects are caused by physical (built and environmental), social, political, and/ or economic factor(s), which are exacerbated by climate impacts. These factors include, but are not limited to, race, class, sexual orientation and identification, national origin, and income inequality. (http://opr.ca.gov/docs/20180723-Vulnerable_Communities.pdf)

Wildfire – A "wildfire" can be generally defined as any unplanned fire in a "wildland" area or in the wildland-urban interface (WUI).

Wildfire Influence Zone – A wildland area with susceptible vegetation up to 1.5 miles from the interface or intermix WUI.

Wildland –Those unincorporated areas covered wholly or in part by trees, brush, grass, or other flammable vegetation.

Wildland Fire – Fire that occurs in the wildland as the result of an unplanned ignition.

Wildland-Urban Interface (WUI) – The WUI can be defined broadly as "any developed area where conditions affecting the combustibility of natural and cultivated vegetation (wildland fuels) and structures or infrastructure (built fuels) allow for the ignition and spread of fire through these combined fuels". WUI areas can be further defined by different spatial configurations. The "interface" WUI condition exists where development and/or structures are adjacent to wildland areas, in which there may be clear demarcation or hard edge between developed and undeveloped areas. By contrast, the "intermix" WUI condition refers to areas in which structures or semi-developed areas are mixed with wildland areas and vegetation, such as in rural, ex-urban, or large-lot semi-rural developed conditions (Mowery et al., 2019).