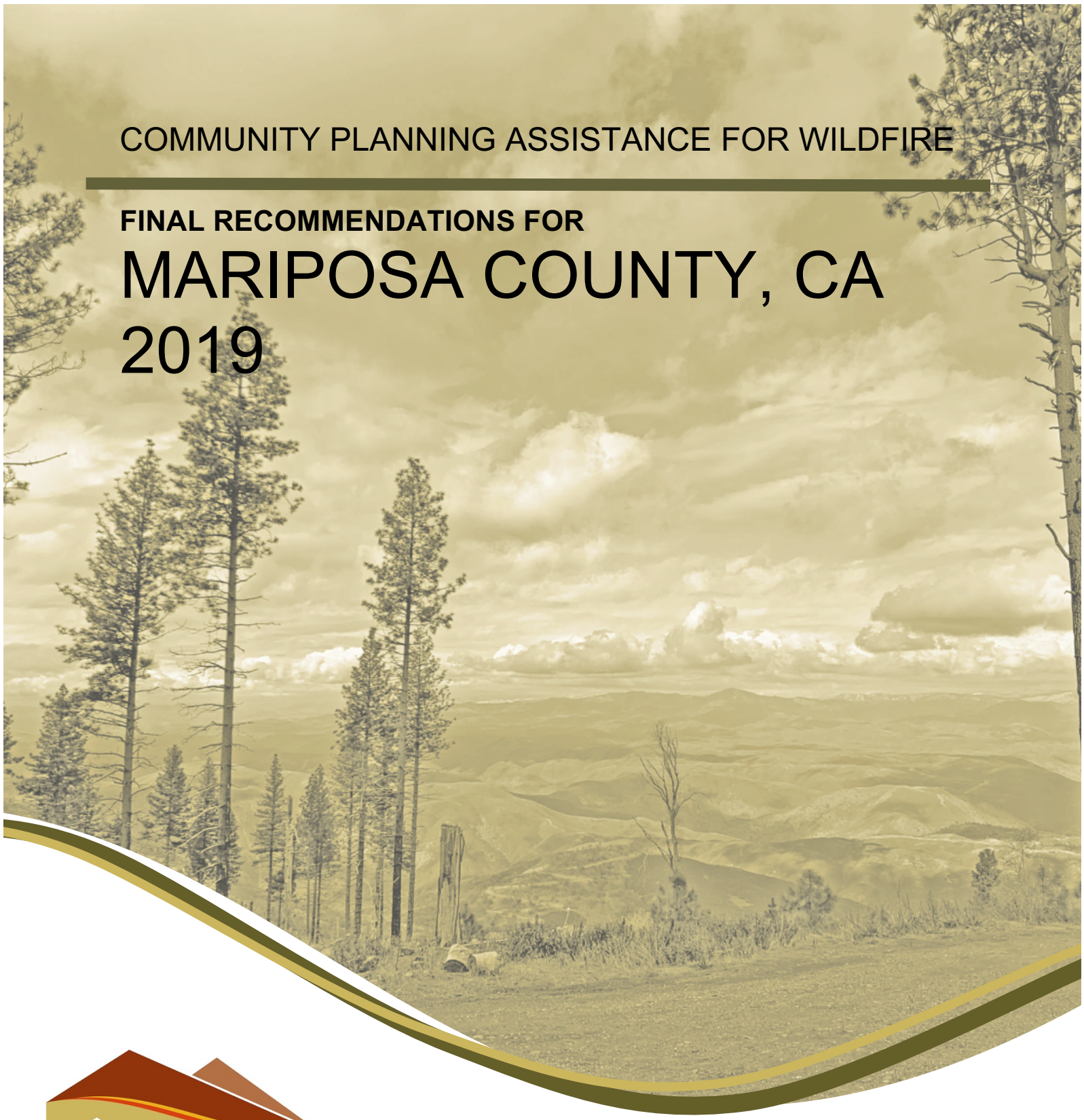

COMMUNITY PLANNING ASSISTANCE FOR WILDFIRE

FINAL RECOMMENDATIONS FOR

MARIPOSA COUNTY, CA
2019

COMMUNITY PLANNING ASSISTANCE FOR WILDFIRE

PREPARED BY:

Wildfire Planning International, LLC

Wildland Professional Solutions, Inc.

ABOUT

Community Planning Assistance for Wildfire Program

The Community Planning Assistance for Wildfire (CPAW) program works with communities to reduce wildfire risks through improved land use planning. The CPAW program is a partnership between Headwaters Economics and Wildfire Planning International. It is funded by grants from the USDA Forest Service and private foundations.

Author Information

CPAW engages qualified professionals with expertise in land use planning, forestry, risk modeling, and fire behavior. This report was produced by:

Molly Mowery, AICP – Wildfire Planning International, LLC

Kelly Johnston, RPF, FBAN – Wildfire Professional Solutions, Inc.

Additional authors and contributors included: Darrin Punchard, AICP, CFM – Punchard Consulting, LLC, and Hannah-Hunt Moeller. For questions related to this report, please contact: info@wildfireplanning.com

Acknowledgments

CPAW relies on collaboration with local stakeholders to provide meaningful feedback throughout the process. Our team would like to thank the agencies, organizations, and individuals who contributed their time to our CPAW activities in the Mariposa County community, including Mariposa County Planning Department, Mariposa County Fire Department, Mariposa County Board of Supervisors, CAL FIRE, Mariposa County Fire Advisory Committee, Mariposa County Fire Safe Council, and the Midpines Community Planning Advisory Committee. Any omissions from this list are are not intended to reflect the value of other participants.



P.O. Box 7059
Bozeman, MT 59771
https://planningforwildfire.org

Cover photos provided by CPAW.

In accordance with Federal law and the U.S. Department of Agriculture policy, this institution is prohibited from discriminating on the basis of race, color, national origin, sex, age, or disability. (Not all prohibited bases apply to all programs.) To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 1400 Independence Avenue, SW, Washington, DC 20250-9410 or call (202) 720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.

CONTENTS

INTRODUCTION **1**

Community Planning Assistance For Wildfire 3
Mariposa County Planning Context 4
Mariposa County Community Analysis 10

SUMMARY OF RECOMMENDATIONS **13**

RECOMMENDATION 1 ..... **14**

Assess and Identify the Wildland-Urban Interface (WUI) and Wildfire Risk 14
Overview 14
Considerations in Identifying County Wildland-Urban Interface Areas 14
What is Wildfire Risk? 15
Current Mariposa County Wildfire Hazard Severity Map 16
Parcel-Level Susceptibility Assessments 17
WUI and Risk Assessment Recommendations 18
Property Assessment Program Examples 18

RECOMMENDATION 2 ..... **19**

Elevate the CCWPP as the Primary Planning Document to Guide Local Wildfire Strategies and Activities 19
Overview of Current Plans 19
Analysis of Plans 20
Planning Recommendations 22
Community Wildfire Protection Plan (CWPP) Examples 24

RECOMMENDATION 3 ..... **25**

Adopt and Implement Robust and Streamlined Approach to County Regulations for Wildfire Hazard 25
Overview of Current Regulations 25
Analysis of Regulations 26
Regulatory Recommendations 27
Regulatory Examples 32

FUNDING STRATEGIES **33**

Secure Rural Schools Act: Title III - County Funds 33
Federal Grants (FEMA) 34
Good Neighbor Authority (GNA) – Federal/State Funds 35
Countywide Tax: Examples from Chaffee and Summit Counties, Colorado 36

CONCLUSION AND NEXT STEPS **37**

APPENDIX A: CWPP EXAMPLE OUTLINE **38**

APPENDIX B: DEFINITIONS **41**

ACRONYMS

BRIC	Building Resilient Infrastructure and Communities
CAL FIRE	California Department of Forestry and Fire Protection
CCWPP	Countywide Community Wildfire Protection Plan
CEQA	California Environmental Quality Act
CPAW	Community Planning Assistance for Wildfire
CWPP	Community Wildfire Protection Plan
CCR	California Code of Regulations
DMA	Disaster Mitigation Act
DRRA	Disaster Recovery Reform Act
FEMA	Federal Emergency Management Agency
FMAG	Fire Management Assistance Grant
FRA	Federal Responsibility Area
FRAP	Fire and Resource Assessment Program
GNA	Good Neighbor Authority
HMA	Hazard Mitigation Assistance
HMGP	Hazard Mitigation Grant Program
HVRA	Highly Valued Resources and Assets
ICC	International Code Council
LHMP	Local Hazard Mitigation Plan
LRA	Local Responsibility Area
LUPP	Land Use Planning Program
MCFAC	Mariposa County Fire Advisory Committee
MMU	Madera-Mariposa-Merced Unit
NFPA	National Fire Protection Association
NPS	National Park Service
PDM	Pre-Disaster Mitigation
PRC	Public Resources Code
SIZ	Structure Ignition Zone
SRA	State Responsibility Area
SRS	Secure Rural Schools
USDA	United States Department of Agriculture
VHFHSZ	Very High Fire Hazard Severity Zone
WUI	Wildland-Urban Interface

INTRODUCTION

In 2018, more than 25,000 structures were destroyed from wildfires that occurred in the United States.[1] This staggering figure is a result of several factors, including long-term changes to the fire environment and landscapes, and increased exposure of development in areas known as the wildland-urban interface (WUI, pronounced "WOO-EE").

Wildfires in the WUI can threaten communities in different ways (Figure 1). Dispersed, rural development patterns on the edge of a community can experience wildfire from adjacent wildland areas. Suburban and urban areas with more dense development may be subject to home-to-home ignitions. Embers can make contact with any development pattern, and likewise wildfires can quickly overwhelm local fire protection resources.

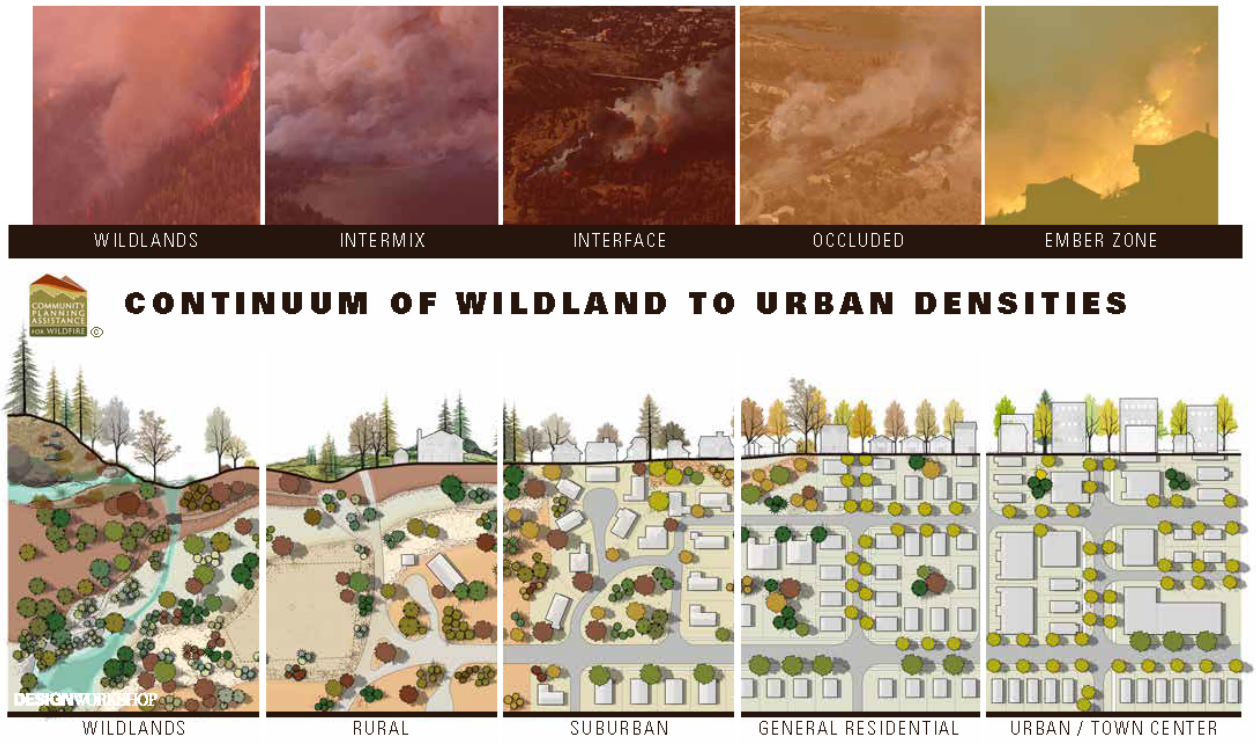

Figure 1. Communities in the wildland-urban interface can be affected by wildfire in different ways, depending on their development patterns and other factors of wildfire susceptibility.

[1] National Interagency Coordination Center 2019 Annual Wildfire Statistics Report

Development location and density of structures are just two features that contribute to how a wildfire may affect a community. Other influences include the type of land use, landscaping decisions at the property and community scale, choice of building materials and construction, access and egress, available resources for response, and level of preparedness. These factors form the basis for how land use planning decisions can shape WUI communities.

Communities have a variety of planning tools available to address challenges associated with the WUI (Figure 2). These tools include plans and policies (e.g., growth management plans, neighborhood plans, open space management plans), and codes and regulations (e.g., subdivision regulations, landscaping ordinances, steep-slope ordinances, zoning codes, building codes, and wildland-urban interface codes).

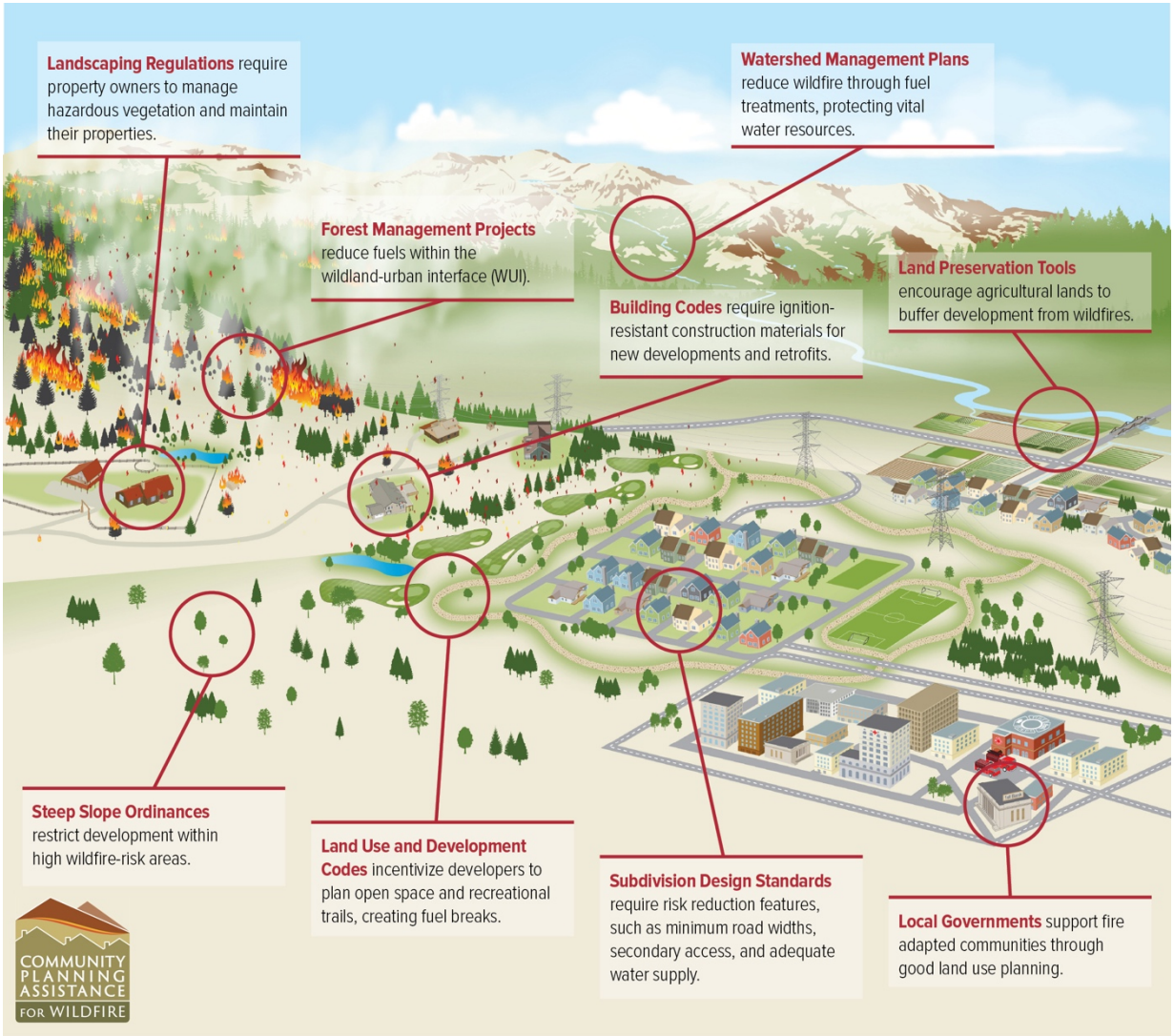

Figure 2. Examples of different policy and regulatory options available to communities when planning for wildfire.

Community Planning Assistance For Wildfire

Identifying appropriate land use planning tools to result in more resilient WUI communities was the catalyst for the Community Planning Assistance for Wildfire (CPAW) program. The CPAW program helps communities make more informed decisions about current and future development to better integrate wildfire-resilience into the planning process. CPAW was established by Headwaters Economics and Wildfire Planning International in 2015 and is funded by the USDA Forest Service and private foundations. Since its inception, CPAW has worked with communities of varying sizes, capacities, and geographical locations across the United States (Figure 3).

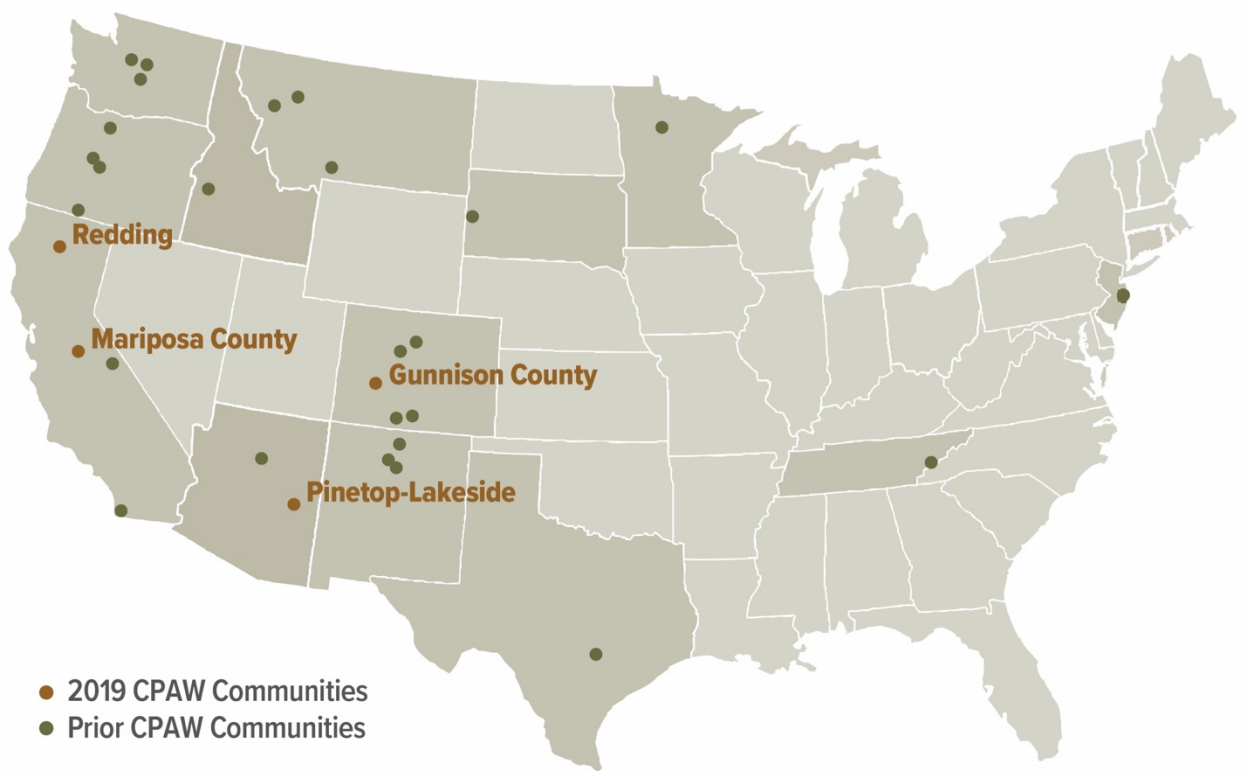

Figure 3. In 2018, Mariposa County was one of four communities selected to receive customized technical land use planning assistance during the 2019 calendar year.

Communities voluntarily apply and are competitively selected to participate in the program on an annual basis. Communities must show commitment and engagement from both the planning and fire departments to reflect the collaborative nature required for CPAW success. If selected, communities receive customized technical consulting services from CPAW's team of professional land use planners, foresters, risk analysts, and researchers. Specific services vary based on community needs, and may include capacity-building trainings on WUI planning topics, risk modeling and spatial analysis, guidance on wildfire mitigation plans and policies, and other strategies to address local wildfire risk.

Stakeholder Engagement

Community members engaged in the process play a critical role in project success. While services are provided at no charge to the community, each community signs a Memorandum of

Understanding with CPAW to outline its understanding of roles and responsibilities and project commitments. CPAW teams engage with a variety of local stakeholders who may serve as steering group members, local experts, or interested parties. These stakeholders provide valuable input and feedback, represent diverse wildfire and community development interests, and act as communication channel to other local groups.



Figure 4. Team members and stakeholders orient during the field tour of the first CPAW site visit to Mariposa County.

CPAW Process and Recommendations

The CPAW community planning process occurs over the course of one year. During that time, CPAW team members meet with stakeholders to discuss local issues, conduct several field tours to learn about unique wildland-urban interface and wildfire mitigation challenges, and provide presentations to help the community understand CPAW's program goals (Figure 4). Team members also review community planning documents to identify gaps and opportunities for strengthening wildfire policies and regulations. The CPAW team delivers a final set of recommendations by the end of the assistance year. Follow-up implementation assistance may also be available to communities depending on their needs and CPAW's program funding.

CPAW recommendations are customized to each local community based on field visit data gathering, stakeholder feedback, research, science, best practices, and national expertise in planning, forestry, hazard mitigation, and wildfire risk reduction. All recommendations are voluntary. Local governments retain sole authority for the decision to implement any recommendations delivered by CPAW.

Mariposa County Planning Context

Mariposa County is a rural county situated in central California, adjacent to the San Joaquin Valley and within the western foothills of the Sierra Nevada mountains (Figure 5). It is one of the state's least populated counties yet remains an international tourist destination because of Yosemite National Park, which is located in the county's northeastern section and serves as a key driver of the local economy.

There are no incorporated jurisdictions in Mariposa County; however, there are many small towns and residential communities with concentrated clusters of homes. The Town of Mariposa, with approximately 2,200 people as of the 2010 U.S. Census, is the county seat and largest community.



Figure 5. Mariposa County is located in the western foothills of the Sierra Mountains.

The second largest community, Yosemite Village, is also the headquarters for Yosemite National Park and has more than 1,300 full-time residents. About half of the county's population lives in these and other small communities with the balance residing in sparsely populated settings throughout the area.

One of Mariposa County's most notable assets is its scenic character, and there is an extraordinary diversity of natural resources contributing to the county's overall character and its tourism base. The county is also greatly defined by its rural settlements with direct access to recreational open spaces and the natural environment. Western portions of the county are in proximity to the City of Merced, easily accessible by Highway 140 which traverses the county and provides direct, all-weather access to Yosemite Valley on the more mountainous eastern side. The larger cities of Fresno and Modesto are also within commuting distance for county residents.[2]

Geographic Location and Significant Features

Mariposa County's unique location between the San Joaquin Valley and Sierra Nevada range means the topography and terrain is not uniform across the county. Elevations range from approximately 300 to more than 10,000 feet above sea level, with terrain that varies from grassy rolling hills to alpine-like mountains. The western edge of the county is characterized by gentle terrain that blends into the agricultural and grazing lands of the San Joaquin Valley. The Town of Mariposa and most other small communities lie within the low-to-mid-elevation foothills and valleys of the Sierra Nevada's west slope. The eastern portion of the county, part of the famed High Sierra region, includes rugged mountainous terrain with several high-elevation camps that are used only during summer months.[3]



Figure 6. Highway 140 serves as one of the primary connector routes for visitors to access Yosemite National Park from Mariposa. The highway has been affected by an active landslide in the Merced River Canyon, referred to as the Ferguson Slide.

Heavily forested ridges and valleys, agricultural landscapes, small lakes, and free-flowing rivers and streams are found throughout the county. The Merced River is the primary watercourse flowing through the county and is most known for its swift and steep course through the southern part of the Yosemite Valley. The river's character changes dramatically once it reaches the western plains and becomes a slow-moving meandering stream that enters Lake McClure.

The county's transportation network relies heavily on state highways, county roadways, and private connector or backcountry roads that cut across the area's rugged terrain. Highway 140 is the most traveled route, serving as the primary gateway to Yosemite National Park (Figure 6). Yosemite is considered a crown jewel of the National Park system and is internationally recognized as one of the natural wonders of the world. The park features El Capitan, the largest

[2] County of Mariposa General Plan – Volume I. Chapter 1.
[3] Ibid.

granite monolith in North America; Yosemite Falls, the highest waterfall in North America; and Half Dome, one of the most iconic mountains in the world.[4]

Land Area, Ownership, and Distribution

Mariposa County's jurisdictional boundaries encompass a total area 1,463 square miles, of which 1,449 square miles is land and 14 square miles is water.[5] More than 1,000 square miles are forested lands, most of which include large tracts in public ownership such as large portions of the Stanislaus and Sierra National Forests (Figure 7). There are also privately-owned wooded lands including approximately 100 square miles of commercially valuable timber.

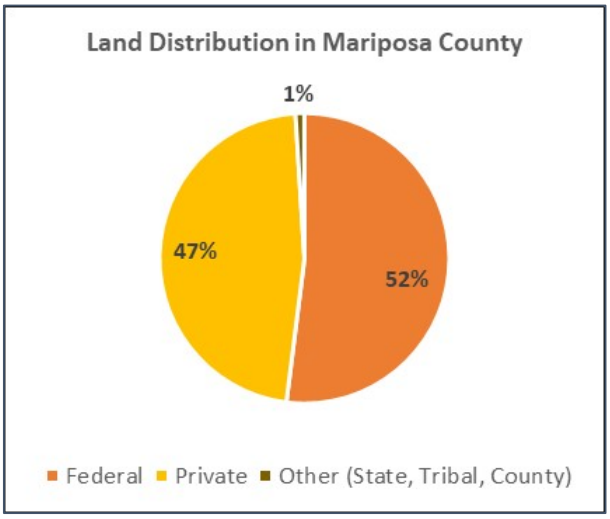

Figure 7. Mariposa County land ownership by percentage. Data Sources: U.S. Geological Survey, Gap Analysis Program. 2016. Protected Areas Database of the United States (PADUS) version 1.4, as reported in Headwaters Economics' Economic Profile System (headwaterseconomics.org/eps).

Several governmental agencies manage vast expanses of land, with approximately 53% of the county's land in public ownership. Public land managers include the Department of Interior's National Park Service and Bureau of Land Management (whose combined holdings total over 40% of the county); remaining federal land is under the jurisdiction of the U.S. Department of Agriculture. The State of California has minor land ownership with Caltrans responsible for state highway rights-of-way and maintenance facilities located throughout the county. Other significant public landowners include the Merced Irrigation District, which owns lands along the Merced River and around Lakes McClure and McSwain, and the Mariposa County Unified School District.[6]

Of the privately-owned lands in the county, approximately 400 square miles are utilized for agriculture and timberland preservation. This represents nearly 56% of the total land in the county under private ownership.[7] Most residential development occurs close to existing infrastructure with access to state highways or county roads, and the county generally keeps commercial development within town planning areas with services to deter sprawl into rural areas.[8]

Key Demographics and Economic Trends

Mariposa County's year-round population has remained relatively steady in recent years, though it experienced an estimated decline of 632 residents (-3.5%) between 2010 and 2017. It ranks as California's sixth least-populated county with residents dispersed throughout many rural areas.[9] Mariposa County's median age (51.1 years) is also much higher than the state average

[4] Seven Wonders: https://sevenwonders.org/yosemite-national-park.
[5] U.S. Census Bureau. 2010.
[6] County of Mariposa General Plan – Volume I. Chapter 5.
[7] County of Mariposa General Plan – Volume I. Chapter 11.
[8] County of Mariposa General Plan – Volume I. Chapter 5.
[9] U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates.

(36.1 years) and the population has been steadily aging over the past several decades.[10] This may require mitigation programs that consider any potential barriers associated with an older demographic, such as fixed incomes, limited mobility, or capacity to install and maintain mitigation features. Table 1 lists additional key demographic characteristics of the county with comparisons to statewide statistics.

TABLE 1. DEMOGRAPHIC AND ECONOMIC OVERVIEW

Statistic	Mariposa County	California
Total Population	17,658[a]	38,982,847[a]
Population Density (ppl/ sq. mile)	12.6[b]	239.1[b]
Median Age (years)	51.1[a]	36.1[a]
Housing Units	10,378[a]	13,996,299[a]
Median Home Value	$259,500[a]	$443,400[a]
Median Household Income	$51,385[a]	$67,169[a]
Poverty Rate	15.1%[a]	15.1%[a]
Unemployment Rate	10%[a]	7.7%[a]

Data Sources:
a. U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates.
b. U.S. Census Bureau. 2010.

Tourism is the primary industry in Mariposa County. In 2016, nearly 47% of all jobs were in industries that include travel and tourism (compared to a statewide average of 17%).[11] Yosemite National Park is a major economic generator, but the county is beginning to undergo a transition from a predominantly resource- and tourism-based economy to a more varied population and economic base. While tourism and agriculture still make up a significant part of the county's land use, greater diversification is occurring. Despite this trend, Mariposa County remains a predominantly rural county with no truly urban communities, and its extensive areas of public land and steep terrain affect land use patterns and limit development potential.[12]

Fire Environment and Wildfire History

The natural fire regime within Mariposa County is that of frequent fires. In many areas, particularly the settled areas of the county, this natural regime has been significantly altered by human and forest health impacts, such as insect outbreaks and drought-induced tree mortality contributing to more aggressive and harder to control wildfires near human development. Current and forecasted changes to climate conditions are also expected to further exacerbate

[10] Mariposa County Needs Assessment. 2017.
[11] U.S. Department of Commerce. 2018. Census Bureau, American Community Survey Office, Washington, D.C, as reported in Headwaters Economics' Economic Profile System (headwaterseconomics.org/eps).
[12] County of Mariposa General Plan – Volume III. Technical Background Report.

this situation. The 2012 Mariposa Countywide Community Wildland Fire Protection Plan[13] states: "Every community in Mariposa County has been threatened by major wildland fires within the past twenty years. The Town of Mariposa has burned down several times since 1854, the original county seat, Aqua Fria, was destroyed by fire in the 1800's and was not rebuilt." The threat of wildfire to human development and life is a significant and frequent concern within the county. Table 2 and Figure 8 provide details on wildfire history.

TABLE 2. SIGNIFICANT RECENT WILDFIRES AND IMPACTS [12,14,15,16]

Date	Fire Name	Size (acres)	Start Location	Community Impacts
October 6, 2019	Briceburg	4,905	Highway 140 and Briceburg Bridge Road north of Midpines	• 1 structure destroyed • Evacuation advisory • Highway 140 closed • Still active (30% contained) as of October 11, 2019
July 13, 2018	Ferguson	96,901	Highway 140 and Hites Cove, near El Portal	• Two firefighter fatalities • 10 structures destroyed • $171.2 million in suppression costs • Yosemite National Park and area evacuated and park closures • Compromised air quality
August 29, 2017	Railroad	12,407	Highway 41, south of Fish Camp	• Mandatory evacuations of the Sky Ranch Road area and Cedar Valley Subdivision and closures in Tenaya • Threatened structures in the Nelder Grove Historic Area
August 14, 2017	South Fork	7,000	East of Wawona (off Wawona Road)	• Community of Wawona evacuated
July 16, 2017	Detwiler	81,826	Detwiler Road and Hunters Valley Road, 2 miles east of Lake McClure	• 5,000 structures threatened • Community of Mariposa evacuated • 131 structures, 63 homes destroyed; 21 damaged • Compromised air quality

[13] Mariposa County Firesafe Council. 2012. Mariposa Countywide Community Wildland Fire Protection Plan.
[14] California Department of Forestry and Fire Protection Incident Database https://www.fire.ca.gov/incidents/IncidentSearch?q=mariposa
[15] Mariposa County. 2015. Mariposa County Local Hazard Mitigation Plan.
[16] Inciweb https://inciweb.nwcg.gov/

TABLE 2. SIGNIFICANT RECENT WILDFIRES AND IMPACTS [12,14,15,16]				
Date	Fire Name	Size (acres)	Start Location	Community Impacts
July 26, 2014	El Portal	4,689	Near Highway 140 and community of El Portal	• Evacuations • Structures threatened
August 17, 2013	Rim	257,314	3 miles east of Groveland along Hwy 120	• Primarily burned in Tuolumne County, impacted some portions of Mariposa County
June 16, 2013	Carstens	1,708	East of Highway 140 in the Midpines area (off Carstens Road)	• 500 evacuated • Structures threatened
August 25, 2011	Motor	5,231	Hwy 140 near the Ferguson rock slide, southwest of Yosemite National Park	• Caused by motor home • Closed Hwy 140 entrance into park until Aug 30 • Threatened 70 structures • Evacuations
August 26, 2009	Big Meadows	7,425	Foresta Community	• Escaped prescribed fire
June 21, 2008	Oliver	2,789	Oakhurst east to Fishcamp and north to Merced River Canyon	• 200 residences, 225 outbuildings threatened
July 25, 2008	Telegraph	34,091	Telegraph Road and Sherlock Road in the Midpines Area	• 4,000 residences were threatened • 100 structures destroyed, including 30 residences

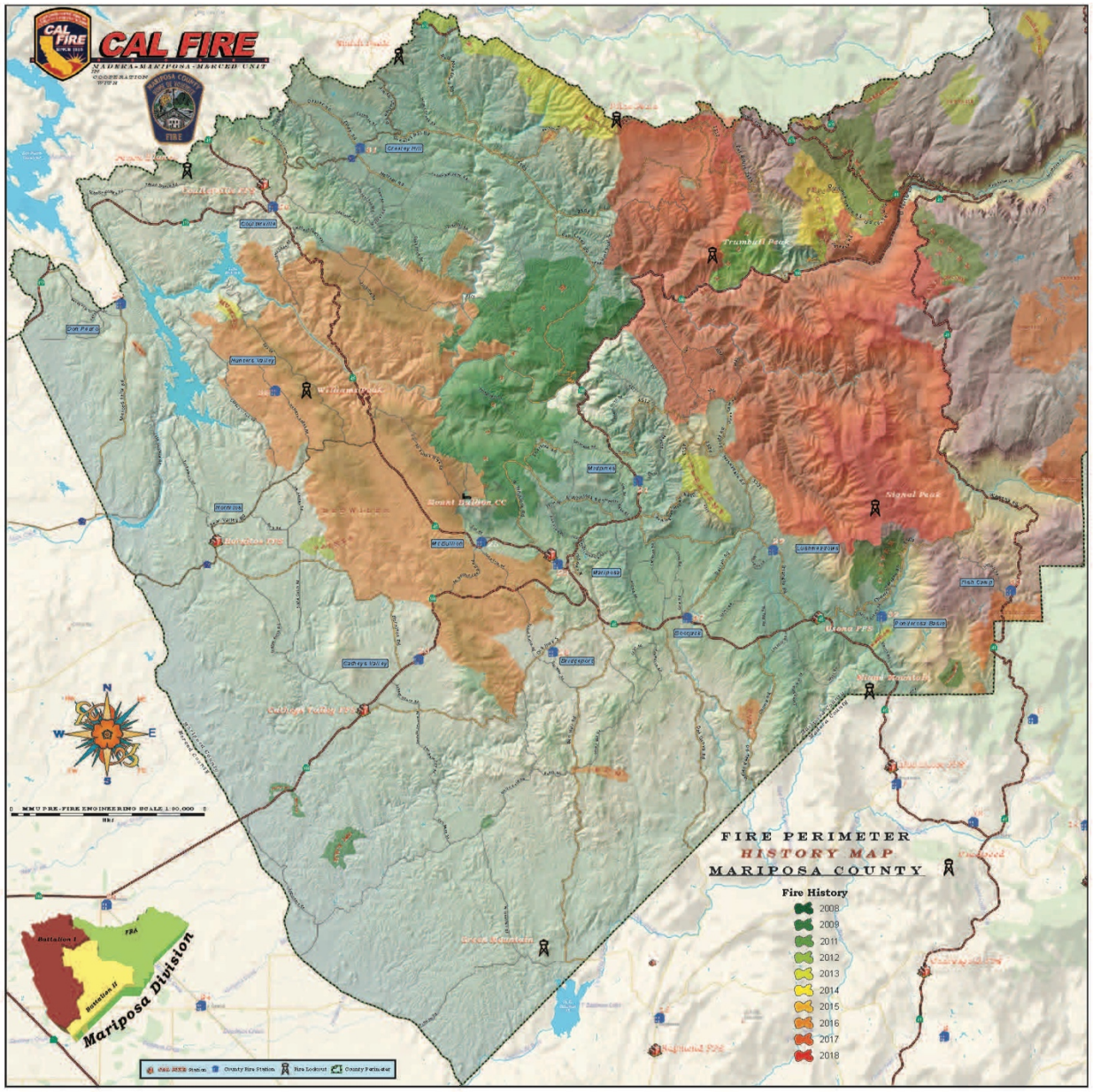

Figure 8. Mariposa County wildfires 2008 to 2018

Mariposa County Community Analysis

CPAW identified challenges and opportunities related to wildfire and land use planning in Mariposa County. These findings inform the development of the most effective recommendations, and help anticipate potential barriers that could occur during the implementation process.

Local Planning Challenges

- **Inspection Gaps.** Existing gaps or inefficiencies exist regarding roles and responsibilities in the inspection and enforcement of the built environment. For example, CAL FIRE is legally mandated to inspect defensible space in accordance with the state

PRC 4290 minimum requirements within State Responsibility Areas (SRA) only. Any additional best practices are not enforced by CAL FIRE inspectors. CAL FIRE and the county have limited internal capacity to perform additional defensible space inspections beyond SRAs. To further compound this challenge, gaps also exist due to jurisdictional overlaps and jurisdictional responsibility agreement areas resulting from a large amount of publicly-managed lands in the county. Many developments in the national park and national forest areas (i.e., federal responsibility areas [FRA]) are currently not being regularly inspected by partner agencies. Example areas include Yosemite West, Wawona, Fish Camp, El Portal, Jerseydale, and Foresta.

- **Regulatory Gaps.** The county has WUI building requirements for CAL FIRE's designated Very High Fire Hazard Severity Zones (VHFHSZ). Other areas in the county that include developed areas with higher density, potential areas of future growth, and a history of significant and reoccurring wildfire impacts are not included in the VHFHSZ, and therefore are not subject to important wildfire risk-reduction regulations.
- **Rapid Conversion of Local Housing to Rental Market.** Across the county, housing has been rapidly converting from long-term residences to short-term rental units (Figure 9). This pattern is accommodating the growing number of tourists, seasonal visitors, and part-time or second home owners, and reflects a larger industry-wide shift in housing preferences and rental opportunities. The unpredictable nature of visitors' knowledge about the local environment and wildfire risk can set up a challenging dynamic communicating with visitors and property managers regarding potential evacuation notices, wildfire prevention, safety, and maintenance of mitigation measures.



Figure 9. Areas such as Yosemite West (above) are experiencing a high conversion rate to rentals.

- **Planning in the Context of Multiple Hazards.** The county has an active fire history and can anticipate future wildfire activity to increase in the face of changing climatic and forest health conditions (e.g., insect outbreak and drought impacts). In addition, the topography and geology lend themselves to other hazards including floods and landslides. This underscores the added challenges of planning for multiple hazards.
- **Existing Infrastructure and Development.** Many roads, driveways, and homes were built prior to any state or local wildfire mitigation requirements. In addition, the county does not have a comprehensive database of all structures because some may have been built without obtaining the proper permits or they pre-dated local requirements for permits. Regulated new construction, including applicable additions, will help to improve risk reduction, but turnover may be slow and cannot always impose all required mitigation solutions, such as widening narrow roads or building a secondary access.

Local Planning Opportunities

- **Multi-Stakeholder Coordination through Mariposa County Fire Advisory Committee**. Mariposa County recently established the Mariposa County Fire Advisory Committee (MCFAC)[17] to facilitate the implementation and maintenance of the Countywide Community Wildfire Protection Plan (CCWPP) and recommend the implementation of additional fire-related projects, programs, and policies. Members include representatives from CAL FIRE, Mariposa County Fire Safe Council, Mariposa County Planning Department, Mariposa County Resource Conservation District, USDA Forest Service, Yosemite National Park, members of the public, and more. This multi-stakeholder group provides an important mechanism to increase local coordination and collaboration for both short-term and long-term projects.
- **Timely Updates to Plans and Regulations.** In addition to the upcoming update of the CCWPP, the county is undertaking a comprehensive update to their subdivision regulations (Title 16) and zoning ordinance (Title 17); an update to the Mariposa County Local Hazard Mitigation Plan (LHMP) is also scheduled to begin Fall 2019. The combination of these plan and regulatory updates provides stakeholders with an opportunity to incorporate CPAW's recommendations into the appropriate policies and regulations as these updates occur.
- **Urgency to Mitigate Based on Insurance Market Changes.** Due to the wildfire losses in 2017 and 2018 in California, some insurance companies have notified their members they are significantly increasing rates or choosing not to renew policies in specified areas (generally those areas in or near high or very-high wildfire risk zones).[18] This has prompted urgent discussions among elected officials, local residents, and professional groups (e.g., realtors) to identify appropriate solutions to maintain a healthy local housing market. While not a wholesale fix, wildfire mitigation policies and regulations can support the goal of retaining effective local insurance coverage options by implementing measures that decrease community and parcel-level wildfire risk.
- **Creative Outreach and Capacity-Building Strategies**. County and local stakeholders have found creative solutions to implement outreach and capacity-building strategies for wildfire risk reduction. For example, the Mariposa County Resource Conservation District is developing a digital library of online wildfire videos for local residents (available on YouTube under Mariposa.R.C.D.). The Mariposa County Fire Department also worked with the Tenaya Resort community to increase fire suppression response capacity by ensuring resort staff are trained, made available, and paid by the resort to respond to fire calls within the response area while on shift. Finding solutions to the variety of wildfire challenges complements the implementation of land use strategies to achieve a holistic fire-adapted community approach in Mariposa County.

[17] Mariposa County Resolution No. 2019-303

[18] Based on communications during the CPAW process and news articles, including: Kasler, Dale and Sabalow, Ryan. July 29, 2019. California wildfire insurance is in crisis. And the real estate market is suffering. *The Sacramento Bee*. Available at www.sacbee.com/news/business/article233012587.html

SUMMARY OF RECOMMENDATIONS

The 2019 CPAW report for Mariposa County provides the county with three recommendations to implement the most appropriate tools for addressing local conditions and opportunities. Each recommendation includes background information describing current conditions, an analysis of challenges or shortcomings, recommendations for moving forward, and community examples. Following these recommendations is an implementation section that provides more information on potential funding sources.

TABLE 3. OVERVIEW OF RECOMMENDATIONS

Recommendation	Why This Matters	Key Actions
1. Assess and Identify the Wildland-Urban Interface (WUI) and Wildfire Risk	Mariposa County does not identify or delineate the WUI beyond requirements for the Very High Fire Severity Zones (VHFHSZ). Many other areas of current or future growth are not in the VHFHSZ. These areas have been repeatedly challenged by wildfire and should be identified to support future wildfire risk reduction plans and regulations.	• Clearly identify and spatially delineate the WUI to encompass all wildfire hazard severity zones on FRA, SRA, and local responsibility area (LRA) lands. • Include parcel-level Structure Ignition Zone (SIZ) assessments.
2. Elevate the CCWPP as the Primary Planning Document to Guide Local Wildfire Strategies and Activities	Four primary plans guide short- and long-term wildfire risk reduction and mitigation activities: Mariposa County General Plan, Mariposa Countywide Community Wildfire Protection Plan (CCWPP), Mariposa County Local Hazard Mitigation Plan, Madera-Mariposa-Merced Strategic Fire Plan. An analysis indicates a need to re-evaluate plan linkages and strengthen future policies and actions.	• Take advantage of the upcoming CCWPP comprehensive update to redefine the CCWPP's status as the county's primary document for wildfire planning. • Link other related plans to the CCWPP in a coordinated and consistent approach.
3. Adopt and Implement Robust and Streamlined Approach to County Regulations for Wildfire Hazard	Mariposa County relies on a combination of regulations that are defined at the state or local level to regulate wildfire hazard across the county. The current approach to regulating wildfire has multiple moving parts due to different agencies administering, reviewing, inspecting, and enforcing applications at various stages of the development and enforcement process. This approach increases the complexity of the process and has resulted in gaps and inefficiencies.	• Adopt additional development standards and subdivision regulations that increase requirements above the minimum requirements established by the SRA Fire Safe Regulations. • Apply these requirements to all areas designated as the WUI. • Certify new ordinance with the state.

RECOMMENDATION 1

Assess and Identify the Wildland-Urban Interface (WUI) and Wildfire Risk

Clearly identify and spatially delineate the WUI to encompass all wildfire hazard severity zones on SRA, LRA, and FRA lands. Include parcel-level Structure Ignition Zone (SIZ) assessments.

Overview

The California Department of Forestry and Fire Protection's (CAL FIRE's) Fire Hazard Severity Zone Map for State Responsibility Areas (SRAs) was adopted for use by Mariposa County in 2007 and is updated biennially (Figure 10). The map shows the southern portion of the county largely classed as Moderate or High Fire Severity Hazard Zones, while the northern portion of the county consists of SRA pockets classed mostly as High or Very High Fire Hazard Severity Zones (VHFSHZ). Overall, most of the county falls within SRA (443,891 acres) or Federal Responsibility Areas (FRA).

Considerations in Identifying County Wildland-Urban Interface Areas

Current WUI research and best practices typically describe the wildland-urban interface as a "set of conditions" in which both vegetation (wildland fuels) and the built environment (built fuels) are influenced by weather and topography to create an environment where fire can ignite and spread through this combined fuel complex (the combination of wildland and built fuels). The identification and spatial delineation of the WUI is necessary to provide consistent decision support for developing and implementing land use policies and regulations that reduce wildfire risk. Mariposa County does not specifically identify or delineate the WUI beyond requirements for the VHFHSZ. Many of the areas of higher development density or expected growth are not within the VHFHSZ. These developed areas have been repeatedly challenged, and in some cases (e.g., Mariposa) destroyed by wildfire more than once.

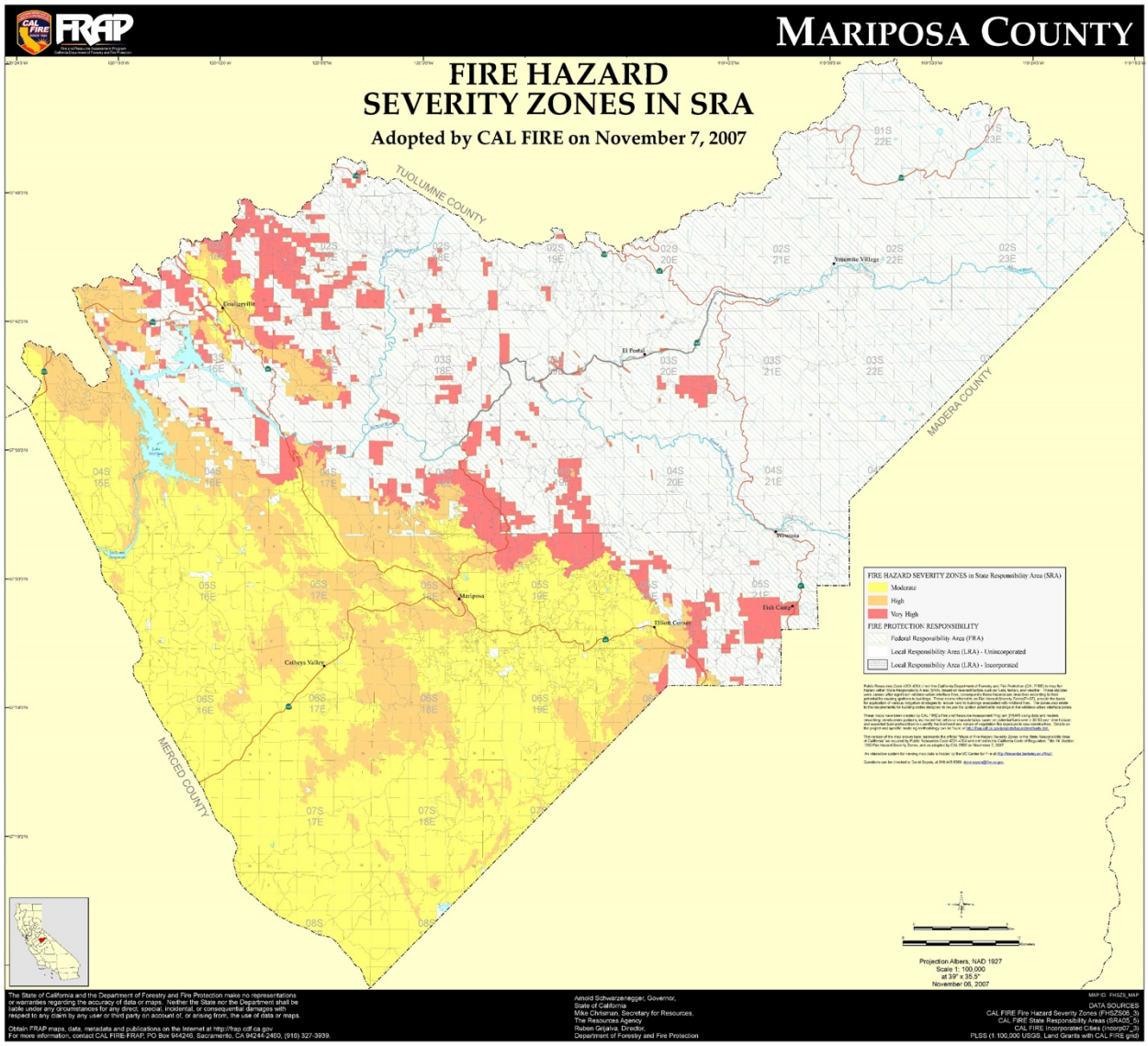

Figure 10. CAL FIRE 2015 Fire Hazard Severity Zone map for Mariposa County

What is Wildfire Risk?

Wildfire risk can be visualized as a triangle consisting of three components:

1. Likelihood of a wildfire occurring based on topography, weather, and ignition patterns; this can also include ignition sources from hazardous land uses (e.g., sawmills or propane storage facilities);

2. Predicted intensity of a wildfire (usually measured in flame length) based on vegetation type and weather conditions;

3. Susceptibility of values, sometimes referred to as Highly Valued Resources and Assets (HRVAs). For land use planning purposes, values typically consist of communities, structures, and infrastructure, but other values that may be considered can include:

- Recreation, tourism-based activities
- Viewsheds
- Watersheds
- Timber
- Ecosystem values
- Other community values

Together, these components complete the wildfire risk triangle (Figure 11).



Figure 11. Components of the wildfire risk triangle

Land use planning largely focuses on mitigating the susceptibility portion of the wildfire risk triangle. There are two important susceptibility inputs that should be evaluated to appropriately determine wildfire risk in the context of land use planning:

- The location and density of structures and infrastructure;
- The ignition potential of individual structures and infrastructure.

Current Mariposa County Wildfire Hazard Severity Map

Mariposa County uses the 2007 CAL FIRE Wildfire Hazard Severity Assessment that was developed by the Fire and Resource Assessment Program (FRAP). This product provides the likelihood and intensity information of the wildfire risk triangle.

According to the CAL FIRE[19] FRAP project website and associated literature, the project uses the following criteria:

- **Defining Fuel Hazard** - fire behavior potential of the wildland fuel, given average bad fire weather conditions.
- **Probability of Burning** - vegetative fuel condition, weather, ignition source, fire suppression response, and other factors based on historical data between 1950 and 1997.
- **Defining the Urban-Interface** - structure density of 1 house per 40 acres, or denser, as calculated from the 1990 census block data.
- **Assessing Fire Threat** - numerical rating based on hazard rank and probability.
- **Identifying Fire Threatened Wildland-Interface Areas** - all areas within 1.5 miles of a fire threat.

As a final output, the FRAP project produces the following three Fire Hazard Severity Zones as recommendations for local jurisdictions:

- Moderate
- High
- Very High

CAL FIRE is in the process of updating the FRAP Fire Hazard Severity assessment process and expects to have draft outputs completed within the next few years.

Parcel-Level Susceptibility Assessments

Individual parcel-level assessments complete the risk triangle by providing the susceptibility component. This focuses on assessing each structure and the immediate surroundings, or Structure Ignition Zone (SIZ). In order to address the susceptibility component of the risk triangle, comprehensive parcel-level assessments that include the entire SIZ should be conducted for both existing and new development.

Findings

- **CAL FIRE** has been actively conducting parcel-level defensible space assessments on existing lots within the SRA; however, the focus has only been on the minimum brush clearing requirements referenced in the state PRC 4290 and 4291, which only extend to 100 feet from the structure, or the property boundary (whichever is less), and do not require mitigation on undeveloped lands unless required by a local ordinance, rule, or regulation, or through written consent by the neighboring property owner. The current standards also do not address existing landscaping features (i.e., non-combustible zone), combustible material storage, or building and built accessory features (e.g., fences, outbuildings, decks), or neighboring undeveloped lands.
- **Mariposa County** does have building and brush-clearing requirements for new developments within the WUI as well as brush-clearing requirements (under review; see Recommendation 3) for all existing properties; however, these requirements only extend

[19] Fire Hazard Severity Zone Re-Mapping Project http://frap.fire.ca.gov/projects/hazard/fhz.

to 30 feet from the structure, or the property boundary (whichever is less), and do not address undeveloped lands. There are no ongoing parcel-level assessments currently being conducted.

- **Federal land management agencies** responsible for the FRA—including the USDA Forest Service, the National Park Service, and the Bureau of Land Management—are not currently undertaking parcel-level assessments on private land-holdings adjacent to the FRA, or on SRA lands they are responsible for under agreement with CAL FIRE.

WUI and Risk Assessment Recommendations

To provide an effective decision support tool for Mariposa County in a timely manner, the CPAW team recommends that the county consider the following:

1. **Spatially Identify the WUI** by including the Moderate and High Fire Hazard Severity classifications.
2. **Enhance current minimum defensible space inspection requirements** to include a comprehensive SIZ assessment (see Recommendation 3).
3. **Build capacity and realize efficiencies** to facilitate undertaking SIZ assessments on LRA, SRA, and FRA parcels by working with state and federal partners.
4. **Integrate the resulting SIZ assessment** information with the fire hazard severity zone information to support a comprehensive countywide wildfire risk assessment.
5. **Appropriately reference the assessment** in county policy and regulations as a consistent decision support tool.

Property Assessment Program Examples

Two examples of programs that offer customized individual parcel-level SIZ assessments and one-on-one education opportunities include the Wildfire Partners and REALFire programs—both in Colorado. These programs can align or integrate regulatory requirements. They also provide both measurable and trackable risk reduction, with additional economic benefits to the property owners. Both programs consist of an assessment and follow-up inspection and provide a resulting property-specific report to the property owner. Upon completion of required action outlined in the report, the property owner receives a certificate that can be used as proof of mitigation for insurance or real estate transactions.

Wildfire Partners Program, Boulder County, CO. This program is part of Boulder County's Land Use Department and is incorporated into Boulder County's building code. https://www.wildfirepartners.org/

REALFire, Community Wildfire Planning Center, Eagle County, CO. This program was developed in partnership with the Vail Board of Realtors®. The program is part of Eagle County's Land Use Department and aligns with the county's building regulations. http://realfire.net/

Additional information related to funding opportunities, such as federal grants and property tax programs, is provided in the Funding Strategies section (following Recommendation 3).

RECOMMENDATION 2

Elevate the CCWPP as the Primary Planning Document to Guide Local Wildfire Strategies and Activities

Take advantage of the upcoming CCWPP comprehensive update to redefine the CCWPP's status as the county's primary document for wildfire planning. Link other related plans to the CCWPP in a coordinated and consistent approach.

Overview of Current Plans

Mariposa County has four primary planning documents that guide short- and long-term wildfire risk reduction and mitigation activities: Mariposa County General Plan, Mariposa Countywide Community Wildfire Protection Plan (CCWPP), Mariposa County Local Hazard Mitigation Plan (LHMP), and Madera-Mariposa-Merced Strategic Fire Plan. Some of these documents have state or federal requirements; they are in various stages of being updated or implemented (see Table 4).

TABLE 4. OVERVIEW OF PLANS THAT ADDRESS WILDFIRE IN MARIPOSA COUNTY

Plan	Relevance to Fire	State or Federal Requirements	Approval Agencies	Implementation Lead	Last Update	Anticipated Update
Mariposa County General Plan – Safety Element	• Safety Element addresses all local hazards • Other Elements, such as Land Use, include references to wildfire • Strategic Implementation Work Plan includes fire hazard as emerging planning issue and contains fire safety tasks	Must meet state planning requirements for fire hazard in Senate Bill 1241(2012); codified in Government Code §65302 (g)(3)	County Board of Supervisors; CA Board of Forestry and Fire Protection	Mariposa County Planning Department	2017	2020
Mariposa Countywide Community Wildfire Protection Plan (CCWPP)	• Includes county fire history, fire regimes; identifies wildfire hazard, communities at risk, information on fire response resources, evacuation, assets	Must meet minimum requirements established by the Healthy Forests Restoration Act (2003)	Mariposa County Board of Supervisors	Mariposa County Fire Advisory Committee (MCFAC)	2012	Under way

TABLE 4. OVERVIEW OF PLANS THAT ADDRESS WILDFIRE IN MARIPOSA COUNTY						
Plan	Relevance to Fire	State or Federal Requirements	Approval Agencies	Implementation Lead	Last Update	Anticipated Update
	at risk, structural ignitability • Prioritizes fuels reduction, education and outreach projects • Provides grant and funding opportunities					
Mariposa County Local Hazard Mitigation Plan	• Addresses all local hazards • Wildfire mitigation actions primarily focused on fuel management and infrastructure retrofits	Must meet requirements of federal Disaster Mitigation Act (DMA) of 2000	Federal Emergency Management Agency	Mariposa County Office of Emergency Services	2015	Begins Fall 2019
Madera-Mariposa-Merced (MMU) Strategic Fire Plan	• Provides pre-fire management strategies (fire prevention, structure ignitability, education, vegetation management, defensible space inspections), and post-fire management strategies and tactics	Aligns with CAL FIRE's Strategic Plan and California Fire Plan pursuant to Public Resources Code §4114 and 4130	CAL FIRE Madera-Mariposa-Merced Unit Chief	CAL FIRE Madera-Mariposa-Merced Unit (MMU)	2019	2020

Analysis of Plans

The plans listed in Table 4 address wildfire activities in a variety of ways. Some of these plans have stronger connections to the land use planning process than others. An analysis on plan content and usage related to wildfire planning activities is provided in Table 5.

TABLE 5: ANALYSIS OF PLANS THAT ADDRESS WILDFIRE IN MARIPOSA COUNTY	
Plan	Comments on Plan Content and Usage
Mariposa County General Plan - Safety Element	• Goals, policies, and implementation measures are linked to wildfire planning activities, but the status of implementation measures is not clearly understood or tracked • Some fire hazard information is either duplicative or would be appropriate in CCWPP and LHMP • Incorporates by reference the CCWPP and LHMP, but no reference to MMU Strategic Fire Plan • Recent feedback (2019) from Board of Forestry and Fire Protection requires additional policy updates
Mariposa County Community Wildfire Protection Plan (CCWPP)	• Analyses of individual communities are somewhat repetitive • Current organizational structure creates cumbersome update process • References pre-suppression and fuels plans but no reference to LHMP or General Plan • Limited connections to land use planning as a mitigation strategy for wildfire
Mariposa County Local Hazard Mitigation Plan (LHMP)	• Fire history section could become redundant with CCWPP • Incorporates by reference the CCWPP and General Plan, but no reference to the MMU Strategic Fire Plan • Limited connections to land use planning as a mitigation strategy for wildfire • Next update will also trigger Safety Element review
Madera-Mariposa-Merced (MMU) Strategic Fire Plan	• Detailed list of projects and fire history in appendices could inform other planning activities • Other plans have not fully established meaningful ties to this document (beyond limited references)

Findings

The four plans summarized in Table 5 contain important information related to wildfire and identify activities to reduce risk throughout the county. Findings based on discussions with local stakeholders and CPAW's internal review indicate a need to re-evaluate how plans relate to one another and suggest potential changes during future updates.

- **Inconsistent linkages**. The references, or linkages, are inconsistent among plans. In some instances, one plan may formally reference another plan, but not vice versa (e.g., the CCWPP does not reference the LHMP or General Plan, even though each of those plans references the CCWPP). This creates a disjointed network of plans and may result in gaps, redundancies, or oversights during individual plan updates.
- **Unclear implementation process.** Aside from the General Plan's Strategic Implementation Work Plan, there are limited formal channels to note wildfire planning priorities and accomplishments for budgetary and resource planning purposes. Similarly, monitoring and plan update procedures for the CCWPP are not clearly defined.
- **Repetitive information.** Some of the information is repetitive, making it difficult to determine which plan is the "driver" of local planning activities. For example, wildfire history sections appear in the CCWPP, LHMP, and Strategic Fire Plan—all with slight

variations. This makes it difficult to determine which plan is the most accurate and requires duplication of effort for each update process.

Planning Recommendations

The county has an opportunity to address these findings with the upcoming full updates of the CCWPP and LHMP, annual updates of the General Plan's Strategic Implementation Work Plan and Strategic Fire Plan, and future updates to the General Plan Safety Element. CPAW recommends the following approaches:

1. Establish the CCWPP as the Go-To Plan for County Wildfire Strategies and Activities

The CCWPP should serve as the primary strategic planning document to identify values at risk and priorities for protecting, mitigating, and preventing wildfire threats to these values. Specific considerations for the CCWPP update include:

- **Explain roles and responsibilities:** Create a table of partners to identify each entity's role (MCFAC, Fire Safe Council, CAL FIRE, County Departments, NPS, USFS, property owners, etc.), and responsibilities in wildfire planning, decision making, and implementation. This helps delineate legal authority and responsibilities, such as regulatory agencies who implement adopted laws, agencies responsible for response and suppression, and organizations that provide assistance, such as educational or financial resources.
- **Create a comprehensive action table:** Create a comprehensive table to serve as an easy-to-reference list of priorities for the county and individual communities. Ensure the table has fields for project/activity title, description, responsible parties, timeframe for implementation, resources required, and funding options. This improves transparency, accountability, and planning outcomes.
- **Move individual communities-at-risk to operational appendices:** Consider a structure that eliminates duplication of content. For example, if all communities could benefit from an educational campaign, make this a countywide priority rather than including it in each community.
- **Expand CCWPP topics:** Expand CCWPP topics to address a broader range of issues facing the county, including: post-fire recovery planning, multi-hazard/cascading hazards, anticipated climate change and its impacts on fire activity, the use of prescribed fire for resource management, mitigation activities for existing and future development, economic impacts of wildfire, agricultural and ranching activities, and other wildfire hazard planning topics that are not meaningfully addressed in other plans. CCWPP topics should connect directly to potential actions. For example, insurance coverage concerns can link to support for incentive-based programs to increase voluntary implementation of wildfire mitigation.
- **Define relationship to existing plans:** Coordinate with MCFAC and other partners engaged in the CCWPP update to ensure they understand other plans that address wildfire to create synergies and avoid duplication. Prior to its final adoption, MCFAC should also conduct a crosswalk of the updated CCWPP to ensure consistency with other planning efforts. A crosswalk would include a checklist of other plans that relate to the CCWPP and an internal review of each plan's relationship to wildfire (Figure 12). For example, a crosswalk between the CCWPP and General Plan Land Use and Safety

Elements would ensure that planning policies related to guiding the type, density, and location of new development, property maintenance requirements, and requirements for new and existing development are consistent with actions in the CCWPP.

- **Develop an update and monitoring schedule:** Add a table at beginning of the CCWPP to track updates. Plan for regular (annual) updates to the action plan and operational appendices. Larger updates to the strategic portion of the document may only be required every five years and are ideally timed with other plan updates, such as the LHMP. This effort could be paired with mechanisms to track and report accomplishments to help elected officials, stakeholders, and the public provide continued support for the wildfire planning process.



Figure 12. Recommended relationship between the CCWPP and other plans to guide the county's short- and long-term wildfire risk reduction activities. Note that other linkages may exist between plans shown above, such as the LHMP and General Plan.

2. Strengthen Role of Land Use Planning in Wildfire Plans

Wildfire is a prominent concern in the General Plan (e.g., Safety Element, Land Use Element), but land use planning as a tool to mitigate wildfire threat does not translate into the CCWPP or LHMP. During the update of the CCWPP and LHMP, consider how land use planning strategies can be further leveraged to address the susceptibility of existing and future development to wildfire, including strategies to improve implementation capacity and long-term maintenance. During the next Safety Element update, CPAW also recommends that the county work closely with the CAL FIRE Land Use Planning Program (LUPP) regional coordinator assigned to Mariposa County to ensure that revised goals and policies meet state planning requirements.[20]

Community Wildfire Protection Plan (CWPP) Examples

Every CWPP is unique and there are many examples of successful plan features that MCFAC may want to review prior to the CCWPP update. Appendix A provides an example CWPP outline; in addition, the following CWPPs share examples of best practices:

- Humboldt County, CA, CWPP (2019) developed 14 planning unit action plans that function as "mini-CWPPs" within the larger document. The plan is easily downloadable in separate sections online: https://humboldtgov.org/2431/CWPP-2019.
- Marin County, CA, CWPP (2016) has a table for tracking plan amendments, guidance on update fuel map generation, definitions, a dedicated section on collaboration, and other user-friendly features for maintenance, readability, and engagement: https://www.firesafemarin.org/cwpp.
- Leavenworth, WA, CWPP (2018) contains a robust action plan that identifies priorities, timelines, implementation metrics, and actions for post-fire recovery: https://www.dnr.wa.gov/publications/rp_burn_cwpp_leavenworth.pdf?c5s9r2.
- Missoula County, MT, CWPP (2018) is organized according to the National Cohesive Wildland Fire Management Strategy's three goals: Resilient Landscapes, Fire Adapted Communities, Safe and Effective Wildfire Response. The plan is linked closely to the General Plan and was promoted through a story map: https://www.missoulacounty.us/government/public-safety/office-of-emergency-management/community-wildfire-protection-plan.
- Summit County, CO, CWPP (2018) establishes a charter for its Summit County Wildfire Council and includes a summary of accomplishments since its last CWPP update: https://www.summitcountyco.gov/909/Wildfire-Protection-Plan.

[20] Government Code (GC) 65302.5(b) 14 CCR §§ 1265.00-1265.03 requires the draft element of or draft amendment to the safety element of a county or a city's general plan be submitted to the State Board of Forestry and Fire Protection for any county that contains SRAs, or city or county that contains VHFHSZs. More information is available on the Board of Forestry and Fire Protection website: https://bof.fire.ca.gov/projects-and-programs/local-government/.

RECOMMENDATION 3

Adopt and Implement Robust and Streamlined Approach to County Regulations for Wildfire Hazard

Adopt additional development standards and subdivision regulations that increase requirements above the minimum requirements established by the SRA Fire Safe Regulations. Apply these requirements to all areas designated as the WUI. Certify new ordinances with the state.

Overview of Current Regulations

Mariposa County relies on a combination of regulations that are defined at the state or local level to regulate wildfire hazard across the county, as summarized in Table 6. It should be noted that some development activities may also be subject to additional state laws, including the California Environmental Quality Act (CEQA), which applies to all discretionary projects proposed to be conducted or approved by a California public agency, including counties, cities, and special districts.[21] Some types of fuel management activities are exempt from CEQA; the state also recently amended several sections to add new requirements for projects located in or near SRAs, or lands classified as VHFHSZ, to address potential impacts on wildfire hazards.[22]

TABLE 6. SUMMARY OF CURRENT WILDFIRE REGULATIONS IN MARIPOSA COUNTY

Applicable Codes/ Regulations	Overview of Requirements for Wildfire Hazard	Administration and Enforcement	Important Notes
Title 15. Buildings and Construction *adopted by reference:* CCR Title 24 Building Standards California Fire Code (Ch.1-80) California Residential Code (with local amendments)	• Building materials and construction methods for habitable and accessory dwellings over 120 sq. ft. in the VHFHSZ • Driveways • Additions • Water supply	➢ Administered, reviewed and inspected by County Building Department ➢ Reviewed and inspected by CAL FIRE for compliance with state building requirements ➢ Reviewed and inspected by County Fire Dept. for compliance with Fire Code	Title 15 references NFPA 1142 Standard on Water Supplies for Suburban and Rural Fighting (2017)

[21] Governor's Office of Planning and Research http://www.opr.ca.gov/ceqa/; California Department of Fish and Wildlife https://www.wildlife.ca.gov/Conservation/CEQA/Purpose. Accessed October 1, 2019.
[22] The California Environmental Quality Act is codified in PRC Section 21000 et seq.

TABLE 6. SUMMARY OF CURRENT WILDFIRE REGULATIONS IN MARIPOSA COUNTY			
Applicable Codes/ Regulations	Overview of Requirements for Wildfire Hazard	Administration and Enforcement	Important Notes
Title 8. Health and Safety 8.26 Clearing of Brush References PRC	• Vegetation within 30-100 ft. of structures • Chimney/stovepipe screens	➢ Enforced by Fire Warden (i.e., Fire Chief or delegated to the Fire Marshal)	Section is dated and is being reviewed for revisions
Title 16. Subdivisions In SRA, subdivisions are required to meet minimum standards set forth by CA Code of Regulations Title 14	• County standards for streets and roads (e.g., grading, length, identification signs) • Emergency access and access improvements • Signing and building numbering • Emergency water supplies • Fuel modification areas	➢ Administered by Planning Department ➢ Reviewed and inspected by CAL FIRE ➢ Reviewed and inspected by County Fire Department	Title is being updated by a consultant
Title 17. Zoning	• Adequate fire protection resources and conformance with other codes • Fire-resistant building materials in Mariposa Town Planning Area • Applicable development standards (e.g., minimum setbacks) • Allowable land uses and density	➢ Administered and reviewed by Planning Department ➢ Reviewed by County Fire Warden (i.e., Fire Chief)	Title is being updated by a consultant

Analysis of Regulations

During discussions with CAL FIRE, Mariposa County Fire Department, and Mariposa County Planning Department, CPAW found that the current approach to regulating wildfire has multiple moving parts due to different agencies administering, reviewing, inspecting, and enforcing applications at various stages of the development and enforcement process. This increases the complexity of the process and reveals gaps and inefficiencies, including:

- **Current adoption of Fire Code does not include appendices.** Mariposa County has adopted the state fire code (Title 24), but has not adopted the appendices. The appendices provide additional requirements and information, some of which supplement or strengthen the county's current approach to reducing risk in the WUI.
- **Some vulnerabilities in the built environment are not being regulated.** There are no requirements for the removal of combustible materials or flammable vegetation within the first five feet of a structure. Structures less than 120 sq. ft. are exempt from WUI construction requirements, even those accessory structures which may be within 100 ft. of a primary dwelling and pose a threat. Some vacant or large parcels are also unmitigated, leaving adjacent property owners more susceptible to wildfire hazard.
- **Inspections do not always align with timing to address wildfire hazard mitigation.** Final building inspections are conducted by multiple agencies and departments for different purposes, including those requirements regulated by the State Fire Marshal's office, CAL FIRE, or the Building Department. When CAL FIRE inspections occur, landscaping is often incomplete, therefore approvals have not always considered defensible space compliance.
- **No readily accessible list of SRA Fire Safe Regulations.** There is no specific reference to the state's Fire Safe Regulations (CCR Title 14, Division 1.5 Dept of Forestry and Fire Protection, Chapter 7. Fire Protection, Subchapter 2. SRA Fire Safe Regulations) in the Subdivision title, where these requirements would be most applicable when subdivisions occur in the SRA. There is a reference to these regulations in the Land Division General Information and Application materials (21-page packet) provided by the Planning Department during time of application. However, these materials do not provide any explicit detail on requirements.
- **SRA Fire Safe Regulations are minimum requirements.** CA Fire Safe Regulations are minimum requirements for implementing the PRC 4290 standards in the SRA. For example, 14 CCR §1276.01 *Setback for Structure Defensible Space*, requires that "all parcels 1 acre and larger shall provide a minimum 30 feet setback for buildings and accessory buildings from all property lines and/or the center of a road, and; for parcels less than 1 acre, local jurisdictions shall provide for the same practical effect." This does not consider local factors such as topography that may require changes to increased setbacks.

Regulatory Recommendations

Goals for addressing the findings from CPAW's analysis should result in a more transparent and objective process for all types of applications, and ensure a more comprehensive approach toward mitigating wildfire risk to people, property, and other values at risk. The following recommendations aim to achieve these goals:

1. Adopt Fire Code Appendices

Adopt additional Fire Code appendices to create a more robust approach toward future subdivision regulation in the county. These appendices include Fire Hydrant Locations and Distribution (Appendix C) and Fire Apparatus Access Roads (Appendix D). Selection on appendices should ensure a joint discussion between the county fire and planning departments.

2. Adopt Additional Subdivision Regulations and Development Standards

Adopt additional subdivision regulations and development standards to supplement the county's current approach to implementing PRC 4290 standards and Fire Safe Regulations.

Applicability

Standards should apply in all WUI-designated areas (areas of the county rated as moderate or above). See Recommendation 1 for more details. Applicability should also be expanded to include minor alterations and additions, permits for swimming pools, and all phases of a development project.

Reviews, Approvals, Inspections

Set up staff and applicants for increased success by making improvements to the development review and application process:

a) Evaluate the current permit application submittal and review process to identify where capacity issues can be addressed by streamlining the plan submission and tracking process. For example, planning staff can review and approve prescriptive regulatory requirements prior to County Fire Department staff review of performance-based alternatives to ensure they meet the same intent.

b) Provide an alternative process in which a wildfire mitigation plan developed by a qualified professional is submitted for review and approval by county staff for both the subdivision and individual lot scales.

c) Establish a coordinated final inspection (new development for subdivisions or Certificate of Occupancy) and property inspection and enforcement process for county staff to address capacity issues, for example:

- Mariposa County Fire staff conducting defensible space inspections in conjunction with other required certificate of occupancy inspections;
- Building inspectors conducting defensible space inspections while conducting certificate of occupancy inspections.

d) Develop a website or standalone packet of materials that provides explanatory information for current and prospective property owners, developers, builders, landscapers, real estate and insurance agents, and other industry professionals and members of the public. This information would cover the types of permits subject to wildfire regulations by the county and CAL FIRE, the process for application, review, approval, and inspection, guidance on achieving mitigation (e.g., photos, illustrations, design manuals), and any complementary programs and resources. This promotes wildfire as a top priority for the community and helps remove barriers for compliance.

New Requirements – Access and Water Supply

a) Require permits for the installation of swimming pools to identify additional fire water supply sources.

b) Require emergency fire apparatus access to open spaces from subdivisions.

c) Require unimpeded emergency firefighter access to private water sources and open spaces/wildland through private lands.

d) Include reference to NFPA 1142 for water supply alternatives where hydrant requirements cannot be achieved.
e) Include reference to NFPA 1141 for specific access and signage requirements.

New Requirements – Defensible Space

Add/modify the following prescriptive landscaping requirements supported by state and nationally accepted, science-based, defensible space best practices:

a) No combustible fencing material should be located within five feet of a habitable structure or its projections.
b) All projections and accessory buildings* within 50 feet** of a habitable structure should be mitigated to the same WUI standards as the habitable structure.
c) There should be a minimum of five feet of non-combustible surface, free of vegetation and combustible material extending horizontally from the outer walls and all projections of a habitable structure.
d) A minimum of 10 feet* horizontal distance between individual tree crowns should be maintained for all conifer trees within 30 feet* horizontal distance of a habitable structure.
e) A minimum of 10 feet** horizontal distance between tree crowns and the furthest extent of any habitable structure should be maintained as determined by the County Manager, Fire Marshal, or their designees.
f) All retained conifer trees within 30 feet* of a habitable structure should be pruned to the highest roof deck height, or a maximum of 1/3 of the total crown height.
g) All grasses, weeds and forbs within 30 feet* of a habitable structure should be maintained at a height no higher than six inches.
h) All firewood and combustible material should be stored a minimum distance of 30 feet* from a habitable structure, or within an approved ember-proof structure.
i) All surface litter, organic material or other vegetative debris within 30 feet* of a habitable structure should be maintained at a depth of no deeper than four inches.
j) All propane tanks should have a non-combustible surface maintained under and within five feet of them; and should have a minimum clearance of 10 feet from any vegetation or combustibles.
k) Develop a prohibited plant list; no trees or plants listed in the prohibited plant list should be planted or maintained on the property.
l) Develop a recommended plant list; plants from the recommended plant list should be used for any required and desired screening; plants that are not on the list shall be submitted for review.

*** This includes accessory buildings not requiring a building permit.**
****Mitigation must occur to minimum slope adjusted distance stated, or property line, whichever is less.**

3. Update §8.26 Clearing of Brush

Revise existing §8.26 Clearing of Brush to address different challenges associated with parcels of various size and use:

- Vacant parcels that pose a threat to adjacent land uses due to overgrown hazardous vegetation that is not being treated to mitigate wildfire through mowing, thinning, cutting, prescribed burning or other appropriate methods.
- Larger parcels that may have adequate defensible space for the structures on their property but pose a threat to neighboring properties (particularly structures) due to overgrown hazardous vegetation that has not been mitigated beyond their property's defensible space requirements.
- Smaller parcels that pose a threat to structures on their own property and adjacent neighbors due to overgrown hazardous vegetation, debris, or the storage of combustible materials (e.g., unused lumber, equipment, rubbish).

It is difficult to define size thresholds for "large" and "small" parcels due to multiple factors that may include: the location and size of existing structures on a parcel; setback requirements based on zoning; relationship (distance) between structures on adjacent property; and topography (slope) or other site features that would extend defensible space requirements beyond 100 ft. See Figure 13 for an example of overlapping Home (Structure) Ignition Zones.

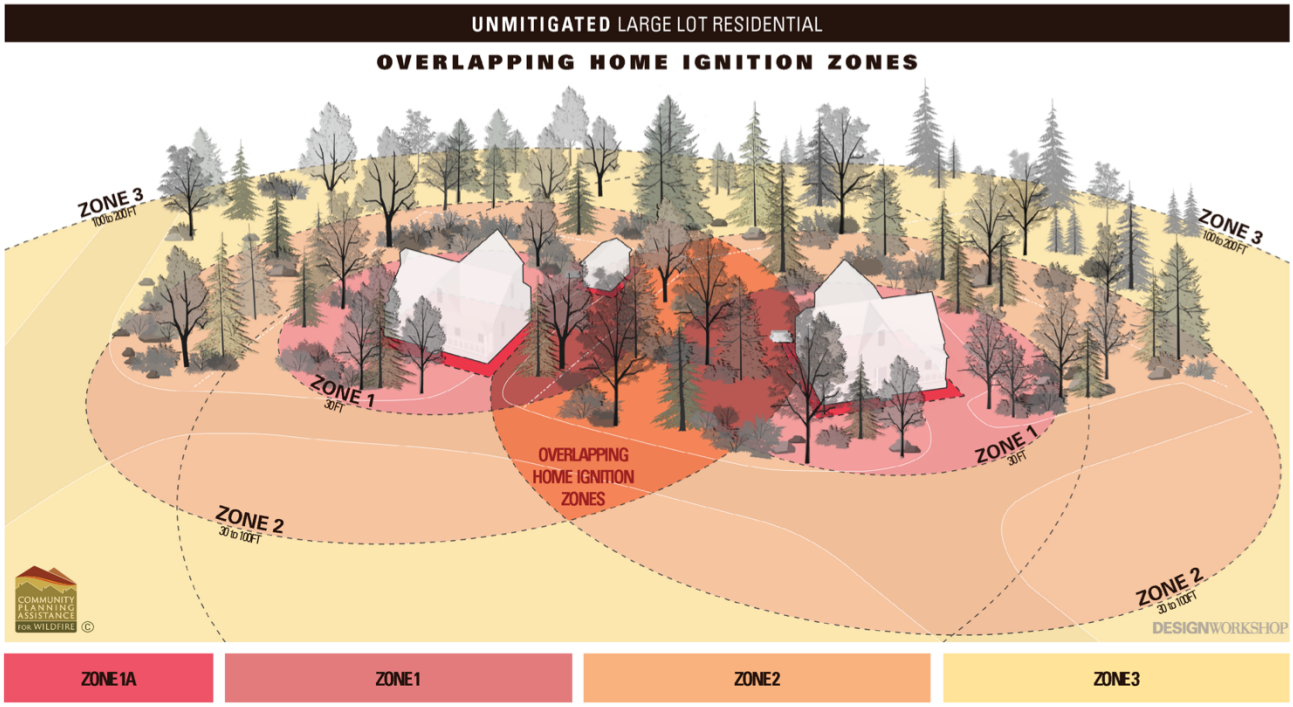

Figure 13. Property owners have a difficult time achieving defensible space requirements when the Home Ignition Zone overlaps with adjacent properties, as shown in this example of two unmitigated large residential lots. Note: Zone requirements and distances may vary based on local or state codes.

As a result, brush clearance requirements should **achieve the following outcomes**, regardless of parcel size:

- Vacant properties that pose no threat to adjacent properties and structures.
- Structures and properties that minimize the risk of wildland fires caused by a structure fire spreading to the property and adjacent properties.
- Properties that minimize the risk of wildland fires spreading and posing threats to existing structures and neighboring properties and structures.
- Properties that minimize the risk of wildland fires compromising the safety of the public and first responders.

To accommodate the number of factors that may exist across different sites, CPAW recommends that the county use a combination of prescriptive and performance-based hazard abatement approaches as described below:

- Maintain defensible space requirements of 100 feet per county code (see additional recommendations above) around all structures within the WUI.
- Maintain defensible space on any portion of the property that is within 100 ft. of adjacent habitable structures.
- Maintain defensible space along private driveways and all roads to achieve a minimum distance of 100 ft. (or further, when adjusting for slopes) from the center line of the road or driveway.

4. Certify New Fire Safe Ordinance with State Regulations

The recommendations above are intended to build on the current SRA Fire Safe Regulations (14 CCR 1270 et seq.) to provide a more robust approach toward wildfire risk reduction in both the SRA and LRA. CPAW recommends that once the county has identified and refined which additional requirements it wants to adopt, including revisions to brush clearance and maintenance standards, staff should compile these with the Fire Safe Regulations to produce a comprehensive draft of all provisions that development must comply with in the WUI.

Staff should send this draft set of provisions to the California Board of Forestry and Fire Protection for review. The Board can provide comment and suggest edits to ensure that provisions meet or exceed the SRA Fire Safe Regulations.

After Mariposa County adopts its new set of wildfire regulations, the county can submit the official ordinance to the Board of Forestry and Fire Protection for “Fire Safe Ordinance Certification.” This certification allows the locally-adopted requirements to be used in lieu of the SRA Fire Safe Regulations and makes it very clear to applicants what provisions apply. CAL FIRE retains authority to enforce state standards in the SRA. Local adoption should either provide the authority for CAL FIRE employees to enforce these additional requirements of the county code within the SRA as part of their current inspection process, or the county should pursue hiring an additional staff member. This structure, combined with the recommended roles and responsibility changes at the county level, will further address capacity issues. The development of a Memorandum of Understanding, or similar agreement framework between the county and CAL FIRE, may be required to facilitate the former process. More information about the Fire Safe Ordinance Certification process is available at https://bof.fire.ca.gov/projects-and-programs/local-government/.

Regulatory Examples

The success of regulations varies broadly based on a combination of local factors. Community examples that showcase helpful features include the following:

- **San Bernardino, CA's** Development Code (Chapter 82.13) establishes a Fire Safety Overlay that applies additional development standards in designated areas: http://www.sbcounty.gov/Uploads/lus/DevelopmentCode/Chapter8213FireSafetyOverlay.pdf. The county's Fire Hazard Abatement program enforces the fire hazard requirements by proactively conducting surveys throughout the year and issuing violations: https://cms.sbcounty.gov/lus/FireHazardAbatement/FireHazardAbatementHome.aspx.
- **El Dorado County, CA**'s Vegetation Management and Defensible Space Ordinance (Chapter 8.09 of Title 8: Public Health and Safety) requires the removal of hazardous vegetation and combustible materials in the unincorporated areas of the county: https://www.edcgov.us/Government/CAO/VegetationManagement.
- **Summit County, CO's** Land Use and Development Code's Subdivision Regulations (Chapter 8) require forest management, fuels reduction plans, and other mitigation measures for all subdivisions determined to have significant wildfire hazard. Zoning Regulations (Chapter 3) includes standards for non-combustible fencing and low-flammability mulch or ground cover within the first five feet, and firewood storage distances of 30 feet from a habitable structure during summer months: http://www.co.summit.co.us/255/Land-Use-Development-Code.

FUNDING STRATEGIES

Policies and regulations aimed at reducing the risk of wildfire can support community goals for a healthy economy, environment, and society. For example, local insurance coverage options may expand after implementing measures that decrease community and parcel-level wildfire risk. However, implementing these activities often requires funds to build program capacity and incentivize participation. This section provides funding strategies to support implementation of CPAW recommendations and future CCWPP activities.

Secure Rural Schools Act: Title III - County Funds

The Secure Rural Schools and Community Self-Determination Act (SRS Act) was signed into law in 2000. The SRS Act was most recently reauthorized by P.L. 115-141 and signed into law by the President on March 23, 2019. This reauthorization extended the date by which SRS Title III projects (County Funds) must be initiated to September 30, 2020. The date by which Title III funds must by obligated is also extended to September 30, 2021. Authorized uses of Title III funds include the following activities[23]:

(1) To carry out activities under the Firewise Communities program;

(2) To reimburse the participating county for search and rescue and other emergency services, including firefighting and law enforcement patrols;

(3) To cover training costs and equipment purchases directly related to the emergency service;

(4) To develop and carry out community wildfire protection plans (CWPP).

Many counties in the Mountain West have utilized Title III funding for CWPP implementation, including counties in Colorado and Oregon. Mariposa County has elected a 15% allocation for Title III of the total SRS funds available. In 2018, this amounted to approximately $35,700.[24] The amount of Title III funds allocated nationally to counties has decreased annually since 2008. Therefore, counties must account for a diminution of monies when budgeting to utilize Title III funds. Additional information about funding allocation and documentation for Title III – County Funds is available at the USDA Forest Service webpage: https://www.fs.usda.gov/main/pts/countyfunds

[23] USDA Forest Service Secure Rural Schools Reauthorization webpage: www.fs.usda.gov/main/pts/home (updated April 15, 2019).
[24] USDA Forest Service Rural Schools Title III Regional Summary: https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd622642.pdf.

Federal Grants (FEMA)

The Building Resilient Infrastructure and Communities (BRIC) and Hazard Mitigation Grant Program – Post Fire (HMGP) are federal programs deployed by FEMA's Hazard Mitigation Assistance (HMA) Guidance. In October 2018, the Disaster Recovery Reform Act (DRRA) was signed into law as part of the Federal Aviation Administration Reauthorization Act of 2018. This law amends the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act)[25] and authorizes new authorities for FEMA to support disaster recovery and mitigation. BRIC and HMGP are each grant programs to support wildfire preparedness. To date, several counties have set a positive precedent by utilizing these funds and earlier versions of these funding mechanisms. Mariposa County received HMGP funding for mitigation efforts after the Detwiler Fire in 2017.[26]

Building Resilient Infrastructure and Communities (BRIC)

Building Resilient Infrastructure and Communities (BRIC) Section 1234 of the DRRA expands upon the previously authorized Pre-Disaster Mitigation (PDM) Grant Program in order to establish the new BRIC grant.[27] BRIC will replace and extend the authorized uses of the PDM funds. The BRIC grant aims to reduce risk nationwide by funding public infrastructure that increases community resilience before a disaster impacts the area. The funds will be available for disbursements in 2020. The projects funded will be those that drive risk reduction and build community capability in concordance with the three overarching strategic goals in FEMA's 2018-2022 Strategic Plan: Build a Culture of Preparedness, Ready the Nation for Catastrophic Disasters, and Reduce the Complexity of FEMA. Proposed grants funded by BRIC include forest health and wildfire mitigation. Applications for FY2019 funding are forthcoming. Further information about BRIC can be found at the following: https://fema.ideascale.com/a/ideas/recent/campaignfilter/byids/campaigns/61112/stage/unspecified.

Hazard Mitigation Grant Program – Post Fire (HMGP)

Section 1204 of the DRRA allows FEMA to provide HMGP grants in any area that received a Fire Management Assistance Grant (FMAG) declaration even if no major Presidential declaration was declared.[28] This grant authorizes additional application to the existing HMGP grants. Eligibility for the Post Fire HMGP are available with FMAG declarations, which can be accessed at www.fema.gov/disasters by selecting Fire Management Assistance as the declaration type. Applicants must have a FEMA-approved mitigation plan to receive HMGP funding. As of 2018, communities can apply for HMGP directly as sub-applicants, in addition to states, territories, and tribes. This provides an additional source of funding for Mariposa County, should it choose to apply. Approved uses of HMGP grant funds include:

(1) Activities that benefit the declared county, counties or burned tribal lands, with wildfire hazard mitigation projects such as defensible space measures, ignition resistant

---

[25] Disaster Recovery Reform Act of 2018: https://www.fema.gov/disaster-recovery-reform-act-2018 (updated September 20, 2019).
[26] Mariposa received $400,000 in grant funding through HGMP which funded clearing drainage paths and erosion control. Source: http://fema.maps.arcgis.com/apps/MapSeries/index.html?appid=0af286b758a44cbb98d7fffe38322464.
[27] Source: https://www.fema.gov/media-library-data/1538601697477-5a4a055c7600eaddad89348044fb664a/FY_2018_PDM_Fact_Sheet.pdf.
[28] Hazard Mitigation Grant Program Post Fire: https://www.fema.gov/hazard-mitigation-grant-program-post-fire (updated July 24, 2019).

construction, hazardous fuels reduction, erosion control measures, slope failure prevention measures, or flash flood reduction measures.

(2) Activities unrelated to wildfire hazard mitigation, such as generally allowable HMGP projects within the declared county or counties or burned tribal lands.

(3) Activities related to wildfire hazard mitigation, such as generally allowable HMGP projects, outside of the declared county or counties or burned tribal lands.

(4) Activities unrelated to wildfire hazard mitigation, such as generally allowable HMGP projects outside of the declared county or counties or burned tribal lands.

Each of these FEMA federal grants is available to communities and counties similar to Mariposa County. For application information, visit:

- BRIC: https://www.fema.gov/drra-bric
- HMGP Post-Fire: https://www.fema.gov/hazard-mitigation-grant-program-guide-state/local-governments

Good Neighbor Authority (GNA) – Federal/State Funds

The Good Neighbor Authority (GNA) was instituted by the 2001 Interior Appropriations Act. The program was launched as a pilot program in Colorado for 5 years, limited to the USFS and Colorado State Forest Service. In 2014, Congress expanded the program nationally through both the Farm Bill and the Interior Appropriations Act. The 2014 Farm Bill GNA permanently authorized the program. The GNA intends to expand federal capacity to plan and implement forest, rangeland, and watershed restoration projects by facilitating partnerships between Forest Service, BLM and state agencies. The agreements allow a state to perform restoration services on federal land. Restoration services include: habitat improvement, fuels management, fire related activities, insect and disease control, project planning, project preparation work, and commercial timber removal.

The authority also allows for the state to administer timber sales and to use the program income for restoration services. The authority precludes wilderness or wilderness study areas. In 2018, proposed changes to the program include the expansion of GNA authority to counties and tribes. GNA projects require agreement between a federal and state agency. These agreements are most commonly structured as Master Agreements by which the U.S. Forest Service identifies eligible participatory state agencies. Under the Master Agreement are Supplemental Project Agreements (SPA) which include specific restoration projects and budgets. This allows for flexibility of geographic scale of project and permits modifications as local projects develop.

Examples of implementing GNA funding include the following:

1. Colorado: 108-acre Deckers/Fletcher Project fuel break and restoration forest thinning; funded at $75,000.
2. California: Fuel breaks, fuel reduction, and treatment of insect mortality in the Eldorado and Sierra National Forests. State partner: CA Natural Resources Agency and CAL FIRE.
3. Oregon: wildlife surveys, timber sales, fuel reduction, and habitat restoration in Deschutes, Fremont-Winema, Malheur, Mt. Hood, Rogue River-Siskiyou, Wallowa-Whitman, and Willamette National Forests. State partners: OR Department of Forestry and OR Department of Fish and Wildlife.

The program is primarily aimed to support forested counties and those with legacy timber production. The GNA programs have been successful at generating program funds where there is timber production to fiscally support the GNA activities at the local level. These are states located in the Northwest such as Oregon, Washington, and Idaho. States in the arid Southwest have not been able to utilize GNA as there is limited timber production in these arid states to provide matching funds to the program.

Countywide Tax: Examples from Chaffee and Summit Counties, Colorado

Countywide taxation provides another method to gain funding for wildfire risk reduction. Mariposa County already has set precedent for taxation with the 2019 Transient Occupancy Tax (TOT) and Tourism Business Improvement District Assessment (TBID), which each tax visitors on stays less than 30 days through a Bed and Breakfast, Vacation Rental, or Hotel/Motel. Two examples from Colorado are provided below that highlight counties that passed countywide tax ballot measures to help fund ongoing wildfire risk reduction. These ballot measures occur in counties that exemplify similar characteristics to Mariposa County: the increasing presence of tourists, rental properties, and recreational activity occurring in the WUI.

In 2018, Summit County voters passed a mill levy called the Strong Future Fund to support wildfire risk reduction and other public services. The fund allocates $10 million for wildfire mitigation and prevention over the next decade, sunsetting in 2029. The property tax revenue will support additional federal and state forest service staff, CWPP implementation, and landscape-scale risk reduction programs throughout the county. Summit County is a popular destination for second-home owners, who often own residences in the wildland-urban interface (WUI). The property tax is aimed at taxing these residents whose presence in the WUI can increase the wildfire risk not only for their property, but for the broader community.

Chaffee County voters passed a sales tax measure to provide funding for countywide wildfire risk reduction. Many tourists visit Chaffee to recreate in the WUI and public lands. This sales tax targets these visitors who bear responsibility for their activities occurring in fire-prone locations. The sales tax will provide an estimated $250,000 annually to be allocated to wildfire prevention. These funds are earmarked for grants for landscape-scale countywide treatment projects, including fuel breaks and removal of beetle-infested pine trees.

CONCLUSION AND NEXT STEPS

Planning for wildfires is a dynamic process. At a state level, legislation in California is evolving to more comprehensively address risk reduction following years of devastating fires. At a local level, Mariposa County has multiple upcoming opportunities to update plans, revise or adopt new ordinances, and re-evaluate their applicability across the county. While some of these local opportunities are approaching quickly, such as the CCWPP and LHMP updates, others may take more time to fully develop and implement. In addition, planning cycles will continue into the future.

This report is intended to serve as a roadmap for Mariposa County in guiding a wildfire risk reduction process through appropriate land use planning strategies based on the following recommendations:

1. Assess and Identify the Wildland-Urban Interface (WUI) and Wildfire Risk
2. Elevate the CCWPP as the Primary Planning Document to Guide Local Wildfire Strategies and Activities
3. Adopt and Implement Robust and Streamlined Approach to County Regulations for Wildfire Hazard

CPAW recommendations were developed at a specific point in time, and it's important to recognize that as local and state conditions progress, so too may the implementation details of each recommendation. Moreover, these recommendations are purposefully ambitious in nature, and it's important to acknowledge that change does not occur overnight.

However, pressing issues of increasing wildfire risk and safety, changes in insurance coverage, the need to maintain healthy landscapes, and other local factors may necessitate swift action. This occurs against a backdrop of fire history that has affected the entire county over the past century of settlement. With a previous track record of collaboration and the recent formation of MCFAC, the county is well-positioned to conduct forward-thinking wildfire planning activities in a coordinated and effective manner.

APPENDIX A: CWPP Example Outline

CWPPs have been a national standard of practice since 2003 when the Healthy Forests Restoration Act (HFRA) was signed into law. CWPPs must meet three minimum requirements: 1) demonstrate collaboration between local and state agencies, in consultation with federal agencies and other interested parties; 2) identify and prioritize fuel treatments to reduce hazardous fuel areas; and 3) recommend strategies to reduce the ignitability of structures.

Outside of meeting the three requirements, CWPPs can vary greatly in their size, scope, level of detail, and organization. The following table provides an example outline for a CWPP that aligns with the National Cohesive Wildland Fire Management Strategy[29] by incorporating its three primary goals: resilient landscapes, fire adapted communities, and safe and effective wildfire response.

TABLE A.1: EXAMPLE OUTLINE FOR COMMUNITY WILDFIRE PROTECTION PLAN	
Front Matter/ Introduction	
Acknowledgments and Signature Page	• Shows collaboration and required agency signatures per Healthy Forest and Restoration Act requirements
Executive Summary	• Provide overview of CWPP • Align CWPP goals with Healthy Forest Restoration Act requirements • Summarize key topics and takeaways, such as priority actions, highest risk areas; notable achievements from prior CWPP • Identify other plans, policies, and regulations that support the implementation of CWPP
Part 1: Understanding the Local Environment	

Area Description of Community, Key Demographics	• Provide information to help readers understand broad influences on the planning area, including:
	  ○ Narrative description of geographic location and significant features
	  ○ Local land ownership
	  ○ Key demographics to consider when planning for local/vulnerable populations

[29] The Federal Land Assistance, Management, and Enhancement Act of 2009 (FLAME Act) mandated the development of a national cohesive wildland fire management strategy to comprehensively address wildland fire management across all lands in the U.S. Since that time, the National Cohesive Wildland Fire Management Strategy has worked collaboratively with federal, state, local, and tribal governments and non-governmental partners and public stakeholders to establish a national vision and priorities for wildland fire management. More information is available on the USDA Forests and Rangelands website: www.forestsandrangelands.gov.

TABLE A.1: EXAMPLE OUTLINE FOR COMMUNITY WILDFIRE PROTECTION PLAN	
Defining the Wildland-Urban Interface	• Provide a formal definition and spatial delineation of WUI areas that reflects the set of conditions resulting in negative wildfire impacts on the community.
Fire Environment, Fire Weather, Fire History	• Include inputs to the current hazard assessment to illustrate the fire environment and explain general implications for the community. • Reference other planning documents, such as the hazard mitigation plan, which may provide additional information on local fire history.
Part 2: Risk Assessment	
Risk Assessment	• Explain wildfire risk triangle to ensure readers understand the three primary components that drive risk: likelihood, intensity, susceptibility. • Describe the potential wildfire risk, and explain outputs with interpretations and general implications for the community. • See CPAW Recommendations for additional information related to hazard and risk assessments.
Part 3. Taking a Cohesive Strategy Approach	
Resilient Landscapes	• Describe resilient landscape concepts, including local fire ecology and ecosystems, habitat types, watersheds, and primary stakeholders engaged in resilient landscape activities: ○ Synthesizes risk assessment outputs for landscapes ○ Identifies prioritized recommendations for mitigation ○ Ecology/Ecosystem-based fire management ○ Fuel treatments for landscapes (public and private) ○ Role of prescribed fire and smoke management ○ Post-fire effects and recovery ○ Land management planning (state, national forest)
Fire Adapted Communities	• Describe fire adapted community concepts, including recent development trends and anticipated future growth in the WUI, and primary stakeholders engaged in fire adapted community activities: ○ Synthesizes risk assessment outputs for communities ○ Identifies prioritized recommendations for mitigation ○ Structural ignitability, property management and maintenance ○ Community values at risk (critical infrastructure, water supply, cultural/tribal/historical sites, open space/recreation) ○ Public education/outreach programs ○ Local government land use planning tools (policies, regulations, codes)

TABLE A.1: EXAMPLE OUTLINE FOR COMMUNITY WILDFIRE PROTECTION PLAN	
Response and Suppression Capabilities	• Describe response and suppression capability concepts, including fire response topics, challenges and opportunities, and primary stakeholders engaged in response and suppression activities: ○ Synthesizes risk assessment outputs for response agencies ○ Identifies prioritized recommendations for mitigation ○ Response and suppression capabilities ○ Limitations in the community (fire flow, ingress/egress) ○ Emergency management/evacuation planning ○ Interagency cooperation ○ Existing coverage gaps
Part 4: Implementation and Action Plan	
Implementation Strategy and Action Plan	• Provide an action table to identify all CWPP actions. • Include assigned lead agency, timeframe for implementation, funding or resources required, potential sources of funding, and other applicable notes for implementation.
Implementation and Plan Monitoring	• Identify frequency of plan updates and other monitoring mechanisms (e.g., if CWPP update is associated with other plan updates).
Appendices	
Definitions	• Include a glossary of definitions and list of acronyms.
Additional Materials	• Include record of public engagement, additional resources.

APPENDIX B: DEFINITIONS

The following list of definitions is intended to aid understanding of terms associated with CPAW recommendations.

Aerial Fuels - Standing and supported live and dead combustible materials not in direct contact with the ground and consisting mainly of foliage, twigs, branches, stems, cones, bark, and vines.[30]

Built Fuels - Combustible structures, including buildings and infrastructure.

Burn Probability - The probability or effect of a wildland fire event or incident, usually evaluated with respect to objectives.

Burn Severity - A qualitative assessment of the heat pulse directed toward the ground during a fire. Burn severity relates to soil heating, large fuel and duff consumption, consumption of the litter and organic layer beneath trees and isolated shrubs, and mortality of buried plant parts.[31]

Community Wildfire Protection Plan (CWPP) - A plan developed in the collaborative framework established by the Wildland Fire Leadership Council and agreed to by state, tribal, and local government, local fire department, other stakeholders and federal land management agencies managing land in the vicinity of the planning area. A Community Wildfire Protection Plan (CWPP) identifies and prioritizes areas for hazardous fuel reduction treatments and recommends the types and methods of treatment on federal and non-federal land that will protect one or more at-risk communities and essential infrastructure and recommends measures to reduce structural ignitability throughout the at-risk community. A CWPP may address issues such as wildfire response, hazard mitigation, community preparedness, or structure protection—or all the above.[32]

Conduction Heat - Transfer of heat through direct contact of material.

Convection Heat - The movement caused through the rising of a heated gas or liquid.

[30] National Wildfire Coordinating Group. 2018. "Glossary A-Z." Available at www.nwcg.gov/glossary/a-z.
[31] National Wildfire Coordinating Group. 2018. "Glossary A-Z." Available at www.nwcg.gov/glossary/a-z.
[32] National Wildfire Coordinating Group. 2018. "Glossary A-Z." Available at www.nwcg.gov/glossary/a-z.

Critical Facilities - FEMA defines critical facilities as "facilities/infrastructure that are critical to the health and welfare of the population and that are especially important following hazard events. Critical facilities include, but are not limited to, shelters, police, fire stations, and hospitals." In addition, CPAW recognizes emergency water pumping stations, egress routes, communication facilities, and backup power supplies as critical facilities.

Crown Fire - A fire that advances from top to top of trees or shrubs more or less independent of a surface fire. Crown fires are sometimes classed as running or dependent to distinguish the degree of independence from the surface fire.[33]

Defensible Space - The selection, location, grouping, and maintenance of vegetation on the property in such a manner that the opportunity for fire to burn directly to a structure is minimized.[34]

Ecosystem-Based Fire Management - The incorporation of the natural or desired ecological role of fire into the management and regulation of a community's natural areas.

Effects - The anticipated benefits and losses associated with exposure to a hazard or event, in this case fire.

Embers - *See firebrand.*

Exposure - The contact of an entity, asset, resource, system, or geographic area with a potential hazard. Note: In incident response, fire responder exposure can be characterized by the type of activity.[35]

Fire Adapted Community (FAC) - A human community consisting of informed and prepared citizens collaboratively planning and taking action to safely coexist with wildland fire.[36]

Fire Effects - The physical, biological, and ecological impacts of fire on the environment, or the physical, safety, health, social, and economic impacts of fire on humans and human development. This is often expressed as first order (immediate effects) and second order (subsequent effects as a result of first order effects).

Fire Intensity - Commonly referred to as fire line intensity, this is the amount of heat energy that is generated by burning materials.

---

[33] National Wildfire Coordinating Group. 2018. "Glossary A-Z." Available at www.nwcg.gov/glossary/a-z.
[34] National Fire Protection Association. 2018. NFPA 1144: *Standard for Reducing Structure Ignition Hazards from Wildland Fire.* Available at https://catalog.nfpa.org/NFPA-1144-Standard-for-Reducing-Structure -Ignition-Hazards-from-Wildland-Fire-P1414.aspx?icid=B575.
[35] Thompson, Matthew P., Tom Zimmerman, Dan Mindar, and Mary Taber. 2016. *Risk Terminology Primer: Basic Principles and A Glossary for the Wildland Fire Management Community.* Gen. Tech. Rep. RMRS- GTR-349. Fort Collins, Colo.: USDA Forest Service Rocky Mountain Research Station. Available at www.fs.usda.gov/treesearch/pubs/50912.
[36] Fire Adapted Communities Coalition. 2018. "What is a Fire-Adapted Community?" Available at https://fireadapted.org.

Fire Weather - Weather conditions that influence fire ignition, behavior, and suppression.[37]

Firebrand - Any source of heat, natural or human made, capable of igniting wildland fuels; flaming or glowing fuel particles that can be carried naturally by wind, convection currents, or by gravity into unburned fuels.[38]

Firewise USA - A program administered by the National Fire Protection Association that teaches people how to adapt to living with wildfire and encourages neighbors to work together and take action to prevent losses. Some communities have applied the term "firewise" more broadly to refer to wildfire mitigation activities.

Frequency - The number of occurrences of an event per a specified period of time.

Fuel Treatment - Manipulation or removal of fuels to reduce the likelihood of ignition or to lessen potential damage and resistance to control (e.g., lopping, chipping, crushing, piling, and burning).[39]

Fuels - All combustible materials in the wildland-urban interface, including but not limited to vegetation and structures.[40]

Ground Fuel - All combustible materials below the surface litter, including duff, tree or shrub roots, punky (rotted) wood, peat, and sawdust, that normally support a glowing combustion without flame.[41]

Hazard - Any real or potential condition that can cause damage, loss, or harm to people, infrastructure, equipment, natural resources, or property.[42]

Hazard Reduction - Coordinated activities and methods directed to reduce or eliminate conditions that can cause damage, loss, or harm from real or potential hazards.

Home Ignition Zone (HIZ) - Also see *structure ignition zone.* The area where the factors that principally determine home ignition potential during extreme wildfire behavior (high fire intensities and burning embers) are present. The characteristics of a home and its immediate surroundings within 100 feet comprise the HIZ.[34]

---

[37] National Wildfire Coordinating Group. 2018. "Glossary A-Z." Available at www.nwcg.gov/glossary/a-z.

38 National Wildfire Coordinating Group. 2018. "Glossary A-Z." Available at www.nwcg.gov/glossary/a-z.

39 National Wildfire Coordinating Group. 2018. "Glossary A-Z." Available at www.nwcg.gov/glossary/a-z.

40 National Fire Protection Association. 2018. NFPA 1144: Standard for Reducing Structure Ignition Hazards from Wildland Fire. Available at https://catalog.nfpa.org/NFPA-1144-Standard-for-Reducing-Structure -Ignition-Hazards-from-Wildland-Fire-P1414.aspx?icid=B575.

41 National Wildfire Coordinating Group. 2018. "Glossary A-Z." Available at www.nwcg.gov/glossary/a-z.

42 Thompson, Matthew P., Tom Zimmerman, Dan Mindar, and Mary Taber. 2016. *Risk Terminology Primer: Basic Principles and A Glossary for the Wildland Fire Management Community*. Gen. Tech. Rep. RMRS- GTR-349. Fort Collins, Colo.: USDA Forest Service Rocky Mountain Research Station. Available at www.fs.usda.gov/treesearch/pubs/50912.

Hydrophobic Soils - Resistance to wetting exhibited by some soils, also called water repellency.[43]

Infill Development - Development characterized by development or redevelopment of undeveloped or underutilized parcels of land in otherwise built-up areas, which are usually served by or have ready access to existing infrastructure and services.

Infrastructure - The basic physical structures and facilities (e.g., buildings, roads, and power supplies) needed for the operation of a community.

Initial Attack (IA) - A preplanned response to a wildfire given the wildfire's potential. Initial attack may include sizing up, patrolling, monitoring, holding action, or suppression.[44]

Ladder Fuels - Fuels that provide vertical continuity between strata, thereby allowing fire to carry from surface fuels into the crowns of trees or shrubs with relative ease. They help initiate and assure the continuation of crowning.[45]

Landscape Scale - A large spatial scale, which addresses multiple land uses, ecosystem services, and conservation objectives. Landscape-scale approaches focus on achieving multiple environmental, economic, and social objectives across the defined area.

Mitigation - The act of modifying the environment or human behavior to reduce potential adverse impacts from a natural hazard. Mitigation actions are implemented to reduce or eliminate risks to persons, property, or natural resources, and can include mechanical and physical tasks, specific fire applications, and limited suppression actions.[46]

Natural Hazard - Source of harm or difficulty created by a meteorological, environmental, or geological event.

Preparedness - Activities that lead to a safe, efficient, and cost-effective fire management program in support of land and resource management objectives through appropriate planning and coordination.[47]

Prescribed Fire - Any fire intentionally ignited by management actions in accordance with applicable laws, policies, and regulations to meet specific objectives.[48]

Prevention - Activities directed at reducing the incidence of fires, including public education, law enforcement, personal contact, and reduction of fuel hazards (fuels management); actions

---

[43] National Wildfire Coordinating Group. 2018. "Glossary A-Z." Available at www.nwcg.gov/glossary/a-z.
44 National Wildfire Coordinating Group. 2018. "Glossary A-Z." Available at www.nwcg.gov/glossary/a-z.
45 National Wildfire Coordinating Group. 2018. "Glossary A-Z." Available at www.nwcg.gov/glossary/a-z.
46 National Wildfire Coordinating Group. 2018. "Glossary A-Z." Available at www.nwcg.gov/glossary/a-z.
47 National Wildfire Coordinating Group. 2018. "Glossary A-Z." Available at www.nwcg.gov/glossary/a-z.
48 National Wildfire Coordinating Group. 2018. "Glossary A-Z." Available at www.nwcg.gov/glossary/a-z.

to avoid an incident, to intervene for the purpose of stopping an incident from occurring, or to mitigate an incident's effect to protect life and property.[49]

Radiation Heat - Transmission of heat through waves or particles.

Residual Risk - Risk that remains after risk control measures have been implemented.

Resiliency - The ability to prepare and plan for, absorb, respond, recover from, and more successfully adapt to adverse events.[50]

Risk - A measure of the probability and consequence of uncertain future events.[51]

Risk Acceptance - A strategy that involves an explicit or implicit decision not to take an action that would affect all or part of a particular risk.

Risk Assessment - A product or process that collects information and assigns values (relative, qualitative, quantitative) to risks for the purpose of informing priorities, developing or comparing courses of action, and informing decision making.

Risk Assessment - Product or process that collects information and assigns values to risks for the purpose of informing priorities, developing or comparing courses of action, and informing decision making.[52]

Risk Avoidance - A strategy that uses actions or measures to effectively remove exposure to a risk.

Risk Based Decision Making - A decision making process that relies on the identification, analysis, assessment, and communication of wildland fire risk as the principal factors in determining a course of action to improve the likelihood of achieving objectives.

Risk Communication - An exchange of information with the goal of improving the understanding of risk, affecting risk perception, or equipping people or groups to act appropriately in response to an identified risk.

---

49 National Wildfire Coordinating Group. 2018. "Glossary A-Z." Available at www.nwcg.gov/glossary/a-z.
50 National Academies of Sciences. 2018. "Resilience at the Academies." Available at www.nationalacademies.org/topics/resilience.
51 Thompson, Matthew P., Tom Zimmerman, Dan Mindar, and Mary Taber. 2016. *Risk Terminology Primer: Basic Principles and A Glossary for the Wildland Fire Management Community*. Gen. Tech. Rep. RMRS- GTR-349. Fort Collins, Colo.: USDA Forest Service Rocky Mountain Research Station. Available at www.fs.usda.gov/treesearch/pubs/50912.
52 Thompson, Matthew P., Tom Zimmerman, Dan Mindar, and Mary Taber. 2016. *Risk Terminology Primer: Basic Principles and A Glossary for the Wildland Fire Management Community*. Gen. Tech. Rep. RMRS- GTR-349. Fort Collins, Colo.: USDA Forest Service Rocky Mountain Research Station. Available at www.fs.usda.gov/treesearch/pubs/50912.

Risk Management - A comprehensive set of coordinated processes and activities that identify, monitor, assess, prioritize, and control risks that an organization faces.

Risk Mitigation - The application of measures to alter the likelihood of an event or its consequences.

Risk Perception - Subjective judgment about the characteristics and magnitude of consequences associated with a risk.

Risk Reduction - A decrease in risk through risk avoidance, risk control, or risk transfer.

Risk Transfer - A strategy that uses actions to manage risk by shifting some or all of the risk to another entity, asset, resource, system, or geographic area.

Structure Fire - Fire originating in and burning any part or all of any building, shelter, or other structure.[53]

Structure Ignition Zone (SIZ) - *Also see home ignition zone.* The area around a specific structure and associated accessory structures, including all vegetation that contains potential ignition sources and fuels.[54]

Suppression - A wildfire response strategy to "put the fire out" as efficiently and effectively as possible while providing for firefighter and public safety.[55]

Surface Fire - A fire that burns loose debris (e.g., dead branches, leaves, and low vegetation) on the surface of the ground.[56]

Surface Fuel - Fuels lying on or near the surface of the ground, consisting of leaf and needle litter, dead branch material, downed logs, bark, tree cones, and low-stature living plants.[57]

Urban Conflagration - A large, destructive fire that spreads unimpeded by fire suppression efforts or barriers, destroying large areas of structures and infrastructure.

Values - Items identified by a community as having measurable or intrinsic worth that could be negatively impacted by a wildfire. Values include property, structures, physical improvements, natural and cultural resources, community infrastructure, and economic, environmental, and social values.[58]

---

53 National Wildfire Coordinating Group. 2018. "Glossary A-Z." Available at www.nwcg.gov/glossary/a-z.
54 National Fire Protection Association. 2018. "NFPA 1: Fire Code Fact Sheet." Available at www.nfpa.org/Assets/files/AboutTheCodes/1/ NFPA1_Fact%20Sheet.pdf.
55 National Wildfire Coordinating Group. 2018. "Glossary A-Z." Available at www.nwcg.gov/glossary/a-z.
56 National Wildfire Coordinating Group. 2018. "Glossary A-Z." Available at www.nwcg.gov/glossary/a-z.
57 National Wildfire Coordinating Group. 2018. "Glossary A-Z." Available at www.nwcg.gov/glossary/a-z.
58 National Wildfire Coordinating Group. 2018. "Glossary A-Z." Available at www.nwcg.gov/glossary/a-z.

Values-At-Risk - Those ecological, social, and economic assets and resources that could be impacted by fire or fire management actions.

Vulnerability - The physical feature or attribute that renders values susceptible to a given hazard.

Wildfire - An unplanned wildland fire, including unauthorized human-caused fires and escaped prescribed fire projects. Wildfire management objectives may vary based on site-specific circumstances and conditions.[59]

Wildfire Hazard - The combination of the likelihood of a fire occurring and the intensity of the fire. Also refers to the wildland or built fuels present in a given area, or the combustibility of a given fuel type or fuel complex in general.

Wildfire Risk - The wildfire hazard plus the addition of the factors that contribute to susceptibility, or the impact of a wildfire on highly valued resources and assets.

Wildfires - Unplanned wildland fires resulting in a negative impact.

Wildland - An area in which development is essentially nonexistent, except for roads, railroads, power lines, and similar transportation facilities. Structures, if any, are widely scattered.[60]

Wildland Fire - Any non-structure fire that occurs in vegetation or natural fuels. Wildland fire includes prescribed fire and wildfire.[61]

Wildland Fuels - All vegetation (natural and cultivated).

Wildland-Urban Interface (WUI) - 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 the combined fuel complex.

Wildland-Urban Interface Hazard - Combustibility of the wildland or built fuels, fuel type or fuel complex.

Wildland-Urban Interface Risk - The WUI hazard accounting for factors that contribute to the probability and consequences of a WUI fire.

---

59 USDA Forest Service. 2009. Guidance for Implementation of Federal Wildland Fire Management Policy. February 13. Available at www.nifc .gov/policies/policies_documents/GIFWFMP.pdf.
60 National Wildfire Coordinating Group. 2018. “Glossary A-Z.” Available at www.nwcg.gov/glossary/a-z.
61 National Wildfire Coordinating Group. 2018. “Glossary A-Z.” Available at www.nwcg.gov/glossary/a-z.