



2018

Final Recommendations for the Town of Mammoth Lakes, CA



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About the 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. It is supported through grants from the U.S. Forest Service, the LOR Foundation, and other private foundations. It is a program of Headwaters Economics and Wildfire Planning International.

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Introduction

Each year, wildfires affect communities across the United States. These wildfires—both human- and lightning-caused—can have a variety of impacts on communities’ built and natural environments. Some of these impacts bring positive ecological outcomes, such as improved forest health and habitats. Other wildfires, however, can have devastating social, economic, and environmental consequences to communities’ public and first responder safety, homes and businesses, parks, roads, watersheds, forests, hospitals, and more.

Communities have many options to address and reduce their wildfire risk. The Community Planning Assistance for Wildfire (CPAW) program offers a unique approach to help community stakeholders identify what’s at risk in the “wildland-urban interface” (WUI, pronounced “WOO-EE”) and determine ways to address this risk through improved land use planning strategies.

❖ Community Planning Assistance for Wildfire

CPAW was established by Headwaters Economics and Wildfire Planning International in 2015, and is funded by the U.S. Forest Service (USFS) and other private foundations. Since its inception, CPAW has worked with communities of varying sizes, capacities, and geographical locations across the United States.

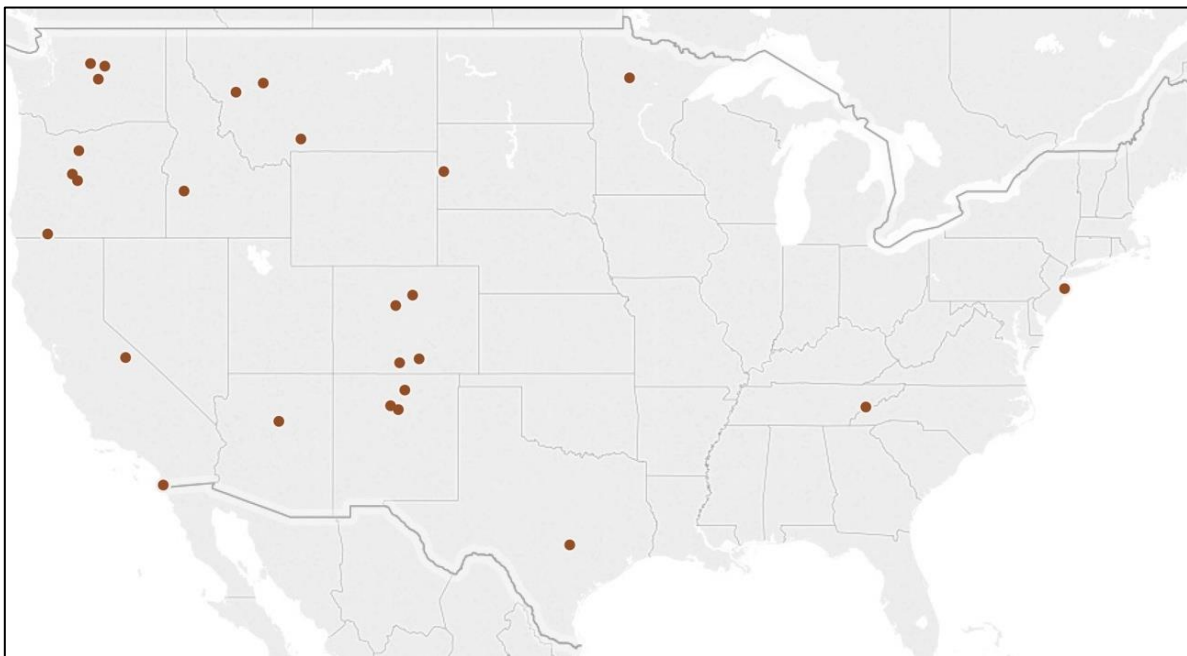


Figure 1. Map of communities that have been engaged in the Community Planning Assistance for Wildfire program.

Community Selection and Services

Each year, communities voluntarily apply and are competitively selected to participate in the program. Communities must show commitment and engagement from both local 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 modelers, 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 CPAW process play a critical role to project success. While services are provided at no charge to the community, each community signs a Memorandum of Understanding with CPAW to outline its mutual 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 channels to other local groups.

CPAW Process

The CPAW community planning process typically occurs over the course of one year (Figure 2). 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. Team members also thoroughly review community planning documents to analyze gaps and opportunities for strengthening wildfire policies and regulations. At the end of the process, team members provide the community with a set of voluntary recommendations to more effectively address the WUI through appropriate land use planning strategies. Follow-up implementation assistance may also be available to communities depending on their unique needs and CPAW's program funding.



Figure 2. The CPAW processes engages with stakeholders through meetings, field tours, and other facilitated opportunities. Image credits: CPAW (left), TOML (right)

CPAW Recommendations

There are many planning tools available to communities to help address challenges associated with the wildland-urban interface. 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). See Figure 3 for more examples.

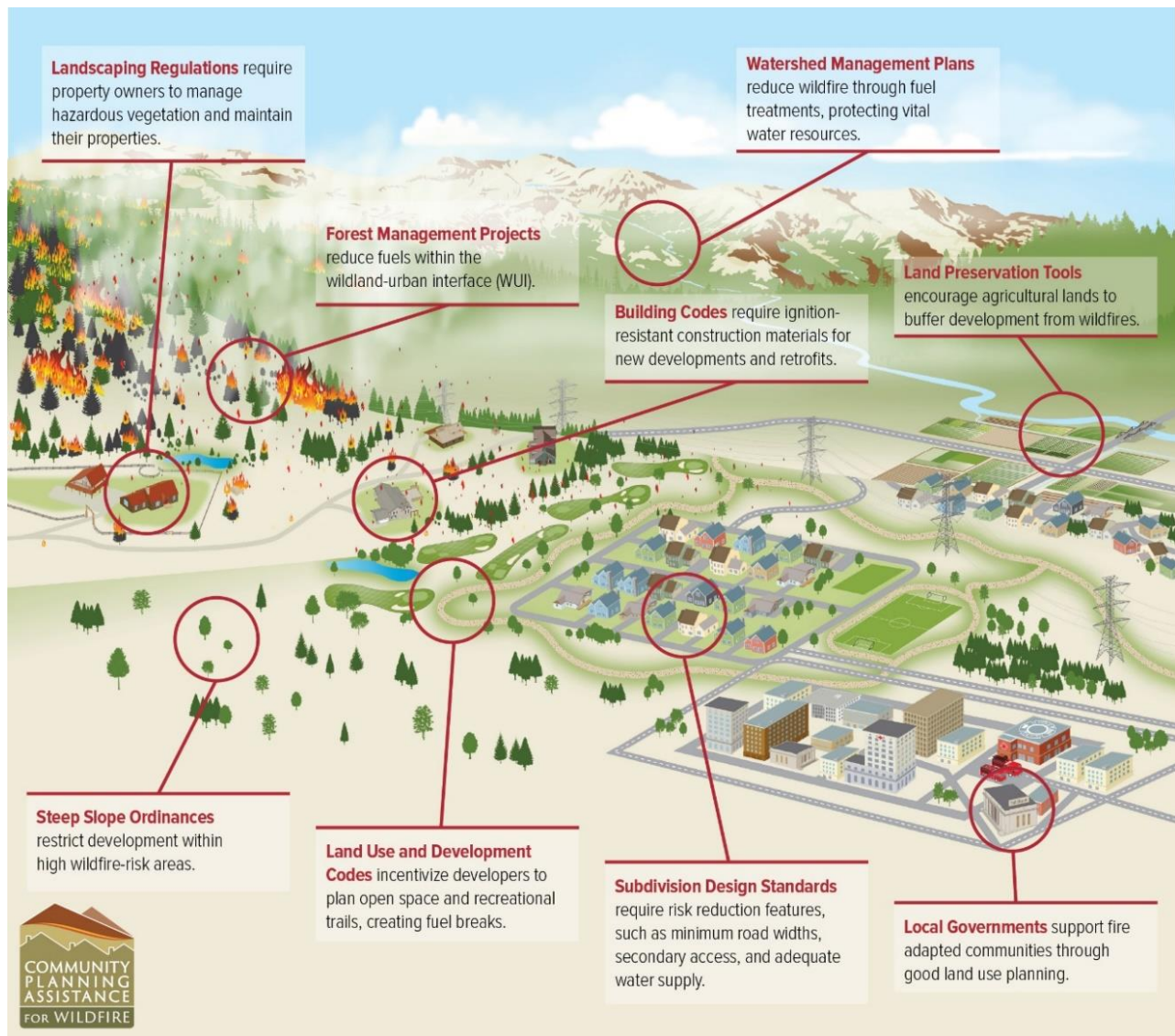


Figure 3. Community planning tools for wildfire.

CPAW expertise builds on research, science, and national best practices to customize recommendations for each local community. Additional inputs include community observations and stakeholder feedback. Recommendations focus on the nexus between land use planning, forestry, hazard mitigation, and wildfire risk-reduction strategies. Implementation of CPAW

recommendations is voluntary; local governments retain sole authority for the decision to move any recommendations forward.

❖ Community Planning Context

Geographic Location and Significant Features

The Town of Mammoth Lakes sits at an elevation of approximately 7,800 feet within an ancient volcanic caldera. The town is surrounded by a diverse environment of mountains, forests, and desert. One of its most prominent peaks is Mammoth Mountain, a lava-dome complex with an elevation of 11,053 feet that lies on the southwest topographic rim of Long Valley Caldera.¹ The Mammoth Lakes Basin, partially located within the John Muir Wilderness, includes Lake Mary. The Inyo National Forest, which covers parts of the eastern Sierra Nevada and White Mountains, is responsible for the federal lands surrounding the town. Other significant features in the region are Devil's Post Pile National Monument, Hot Creek Geological Site, Mono Lake to the northeast and Yosemite National Park to the northwest.

Land Area, Ownership, and Distribution

Mammoth Lakes is the only incorporated community in Mono County. The town's municipal boundary is 24.4 square miles. Per the General Plan Update (2007), the town adopted an Urban Growth Boundary (UGB) in 1993, which is approximately 4.6 square miles. Land outside of the UGB, but still within the municipal boundary, consists largely of public lands administered by the Inyo National Forest, 80 acres of patented mining claims (on top of Sherwin ridge), Valentine Reserve of the University of California, Mammoth Mountain Ski Area (leased from Inyo National Forest), and the City of Los Angeles' Camp High Sierra.²

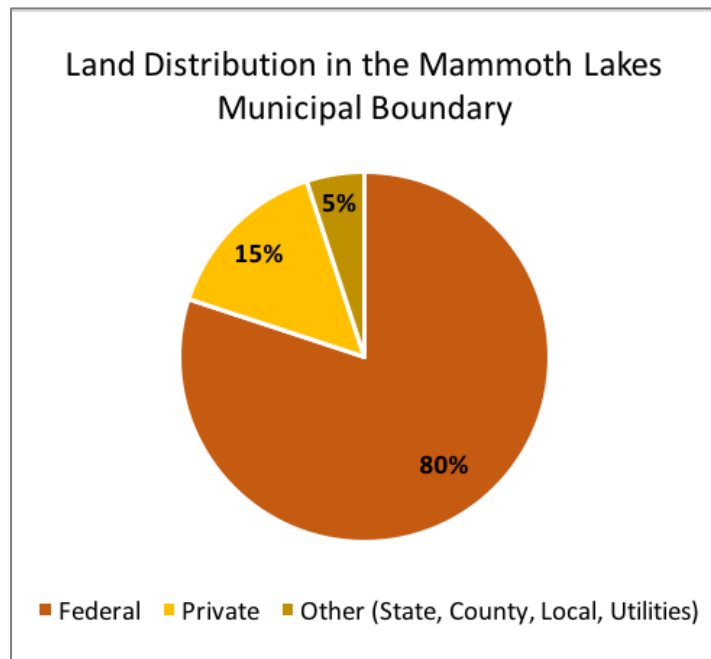


Figure 4. Mammoth Lakes Land Ownership (by percentage).
Data source: 2018 MJHMP, Table 2.3

¹ USGS Volcano Hazards Program, Mammoth Mountain. Accessed on August 10, 2018. Available at: https://volcanoes.usgs.gov/volcanoes/mammoth_mountain/.

² Town of Mammoth Lakes 2014-2019 Housing Element Update. Chapter 3, p.19.

Key Demographic and Economic Trends

As the only incorporated community within Mono County, Mammoth Lakes houses a significant amount of people and jobs. Table 1 describes several key demographics of the community, indicating comparisons to Mono County characteristics. The town is a key economic driver for Mono County and the eastern Sierra Nevada communities.

Table 1: Overview of Demographics in Mammoth Lakes		
Topic	Key Statistic	Notes
Current population	8,035 ^a	Mono County population is 14,202 ^a
Population density	331 ppl/sq. mile ^b	Mono County average is 4.7 people/sq. mile ^b
Median age	32 years ^a	Compared to 38.9 years in Mono County ^a
Total number of housing units	9,829 ^a	90% of housing units were built before the year 2000 ^a
Housing units for seasonal, recreational or occasional use	4,981 ^b	n/a
Median home price	\$471,000 ^c	Home prices increased 18.8% January 2017 to February 2018 ^c
Median household income	\$60,899 ^a	Compared to \$58,937 in Mono County ^a
Workforce employment	5,237 ^a	The largest sectors of the workforce are in management, business, science, and arts ^a
Poverty rate	7.0% ^a	Compared to 8.8% in Mono County ^a
Data Sources: a. U.S. Census Bureau, 2012-2016 American Community Survey 5-Year Estimates. b. U.S. Census Bureau, 2010. c. Zillow Home Values for Mammoth Lakes, CA. February 2018. https://www.zillow.com/mammoth-lakes-ca/home-values/		

Unique Planning Considerations in California

Communities located in California are required to prepare comprehensive plans (commonly referred to as “General Plans”) that are consistent with Section 65300 of the California Government Code. The provisions of this section are as follows:

Each planning agency shall prepare and the legislative body of each county and city shall adopt a comprehensive, long-term general plan for the physical development of the county or city, and of any land outside its boundaries which in the planning agency’s judgment bears relation to its planning.

The Town of Mammoth Lakes General Plan was comprehensively updated and adopted by the Town Council in 2007. The following nine elements are contained in the town’s General Plan:

- Economy
- Arts, Culture, Heritage & Natural History
- Community Design
- Neighborhood and District Character

- Land Use
- Mobility
- Parks, Open Space, and Recreation
- Resource Management and Conservation
- Public Health and Safety

Since 2007, a number of these elements have been updated to address minor inconsistencies that have arisen since its adoption. The Safety Element (aka Public Health and Safety Element) is one of seven elements required by the state in any general plan. Topics that must be covered in the Safety Element include:

- Identify hazards in the community and disaster risk-reduction strategies.
- Involve the provisions of or direct incorporation of the Local Hazard Mitigation Plan.
- Address climate change issues.
- Visually display areas of risk pertaining to seismic and geologic hazards.
- Lay out all potential evacuation routes.
- Plan for those with access and functional needs (people with disabilities, seniors, children, limited English proficiency, transportation-disadvantaged).

Hazards within the scope of a Safety Element may include, but are not limited to: seismic events, slope instability, subsidence, liquefaction, flooding, and fires (wildland and urban). The California Governor's Office of Planning and Research encourages jurisdictions to jointly produce and adopt their Safety Elements with their Local Hazard Mitigation Plans. This currently aligns with the Mono County Multi-Jurisdictional Hazard Mitigation Plan update, which includes Mammoth Lakes.

Fire Environment and Wildfire History

The natural vegetation in the general area surrounding the Town of Mammoth Lakes is indicative of a fire history ranging from high-frequency fire occurrence/ low fire intensity in the lower elevations to low-frequency fire occurrence/ high fire intensity in the higher elevations. Although most higher-elevation fires occur during summer months, fires that have significantly impacted the community have occurred during winter months; therefore, there is a year-round potential for wildfire. Specifically, the natural vegetation types within the Town of Mammoth Lakes are typical of an ecosystem that is historically dependent on relatively high-frequency / moderate-intensity fire. To date, aggressive fire suppression throughout the region has resulted in the exclusion of fire and significant alteration of vegetation.³ In many locations, this altered vegetation (considered fuel to a wildfire) will now support more aggressive fire behavior. This altered condition resulting from fire suppression has inadvertently increased the threat to many of the community forest ecosystem values that these policies were intended to protect.

³ Mono County Community Wildfire Protection Plan (2009).

Additionally, many of the construction choices and landscaping associated with human development within the town further alter these fuel characteristics to a point where fire suppression efforts are likely to fail. There is still a strong public expectation that 100% of wildland fires within the Mammoth Lakes area are suppressed; however, this is not actually an achievable goal for fire suppression resources in light of the fuel conditions, nor is it a desirable goal from an ecosystem health perspective. Table 2 and Figure 5 show the recent large fire history surrounding Mammoth Lakes.

Table 2: Overview of Significant Fire History				
Fire Name	Year	Size (acres)	Location	Significant effects
Rainbow	1992	8,347	Devils Postpile National Monument	Most destructive fire in Town of Mammoth Lakes' history
Cannon	2002	22,750	Walker	3 fatalities, \$7.9 million damages; hundreds of evacuations; US 395 closures
Gate Complex	2002	9,866	West side of Antelope Valley	\$1.6 million in damages
Birch Place Fire	2002	2,500	Birch Canyon near Small Meadows	\$386,000 in damages; evacuations
Sawmill	2006	7,434	Sawmill Canyon, Adobe Hills, Black Mountain	2 structures destroyed
Larsen Fire	2007	1,080	Coleville	Evacuations, Hwy 395 closures
Indian	2012	12,576	Southeast of Mono Lake and North of Highway 120	Destroyed several major transmission lines; destroyed Sage-Grouse habitat
Van Dyke	2015	509	Point Ranch, South of Bridgeport	Winter fire
Round Fire	2015	7,000	South of Small Meadows	Most destructive fire in recent local history; winter fire (February); 40 homes destroyed; evacuations
Walker	2015	3,676	North of Walker Lake & north of June Lake Loop	Closure of SR120 and Tioga Pass Rd; mandatory evacuations
Marina	2016	650	Hwy 395 & Mono Lake	1 structure destroyed
Rock Creek	2016	122	Southeast of Mammoth Lakes and a mile north of the community of Small Meadows	
Owens River	2016	5,443	Owens River (Mono County)	4 structures destroyed; winter fire (November); evacuations; road closures
Slinkard	2017	8,925	West of US 395, north of Hwy 89, south of Topaz	Hwy 395 closures; evacuations
Chris	2017	370	Hwy 395, north of Hwy 108, Walker Watershed, south of Walker	Winter fire
Lyons	2018	13,347	7 miles south of Mammoth Lakes	Large fire close to town

Table 2: Overview of Significant Fire History				
Fire Name	Year	Size (acres)	Location	Significant effects
Hot Creek	2018	436	8 miles northeast of the Town of Mammoth Lakes	Multiple incidence (Owens River Fire) Close proximity to the Town of Mammoth Lakes
Owens River	2018	312	8 miles northeast of the Town of Mammoth Lakes	Multiple incidents (Hot Creek Fire) of close proximity to the Town of Mammoth Lakes
Boot	2018	6,974	South of Walker	

Data Sources:
 CAL FIRE Historical Wildfire Statistics http://www.fire.ca.gov/fire_protection/fire_protection_fire_info_redbooks
 Mammoth Lakes Area Wildfire History 1900- 2015 Cal-Fire Records; Mono County and the Town of Mammoth Lakes Hazard Mitigation Plan (Administrative Review Draft)

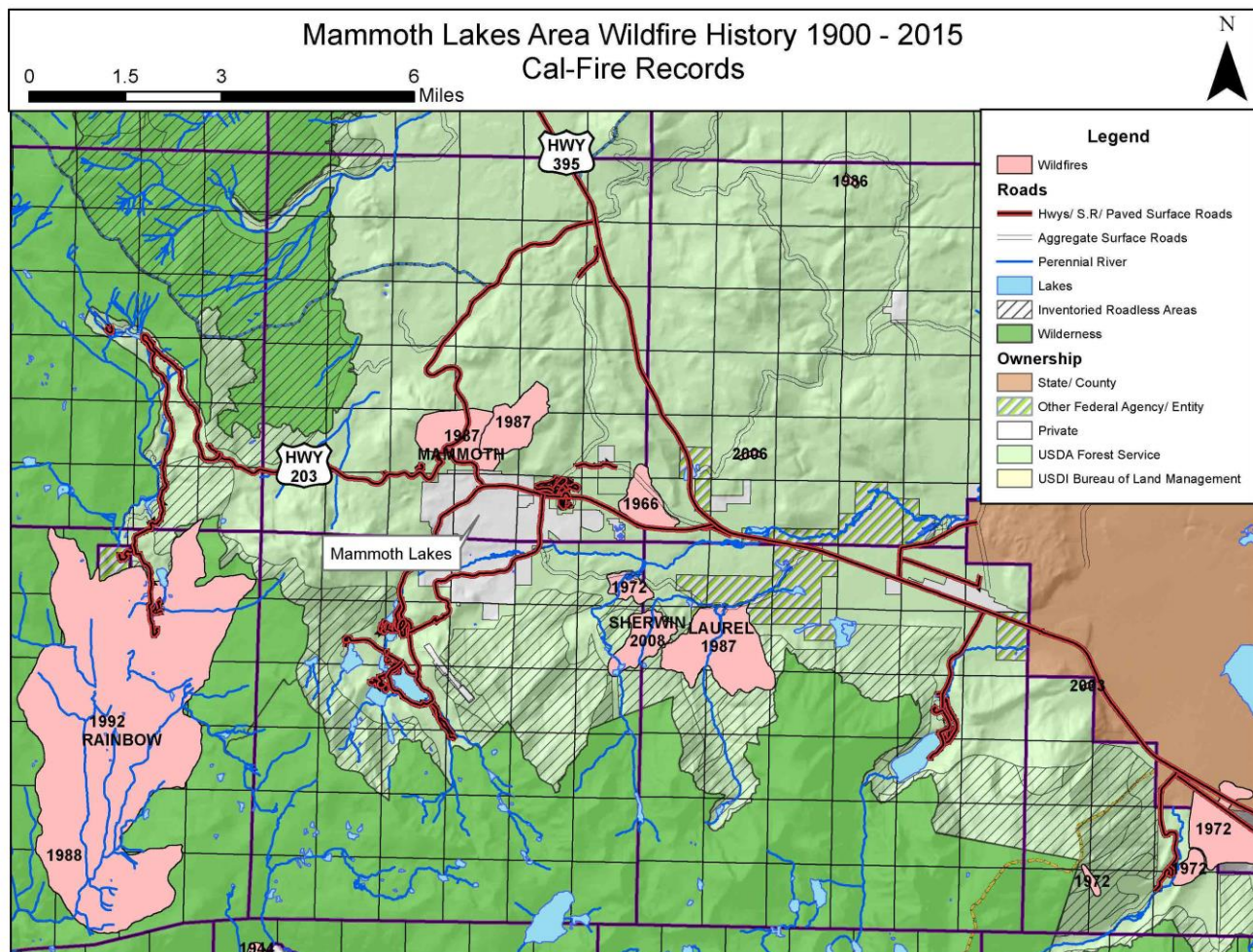


Figure 5. Mammoth Lakes Wildfire History Map (1900 - 2015)

❖ Community Analysis

In addition to understanding the local planning context, CPAW team members gather information through facilitated conversations and meetings with stakeholders, field tours, and internal research. CPAW team members also review and analyze community plans, policies and regulations to determine their level of effectiveness for community wildfire mitigation. This information is compiled into an internal audit and reviewed with the local CPAW steering group. Based on the outcomes from this process, the CPAW team identified local planning challenges and opportunities.

Local Planning Challenges

- **“Village in the Trees” concept that shaped previous landscaping and design decisions.** For aesthetic and lifestyle reasons, past development in the UGB encouraged a “village in the trees” concept. This concept largely ignored wildfire hazard as part of landscaping or design standards and has impacted the healthy structure of the forest, subsequently increasing the potential for significant tree canopy and structure (property) loss to fire. In addition to residential neighborhoods, this concept was also applied to areas within town such as Camp High Sierra. As a result, the town has a continuous layer of tree canopies (i.e., crown fuels) that extends across much of the UGB.
- **Existing development prior to WUI construction requirements.** Many homes within Mammoth Lakes (predominantly in Old Mammoth) were built prior to state and local WUI construction requirements. Older homes constructed with wood siding and roofs that have not been retrofitted are more susceptible to radiant heat, convective heat, and embers. Resistance to building improvements can also be amplified by real or perceived additional costs associated with retrofitting, particularly when land values are



Figure 6. Current challenges for wildfire risk include neighborhoods with limited access and existing development within densely forested areas. Image credits: CPAW.

already high and some residents may be weary of the added expense associated with wildfire mitigation.

- **Overwhelmed suppression and evacuation capabilities.** Operating out of two fire stations, MLFPD is a combination fire district with eight full-time and 45 part-time personnel. While supporting resources are in the area (Inyo National Forest, Bureau of Land Management), multiple incidents could quickly overwhelm local resources, and additional crews needed for a major event may be unavailable within the first 24 hours.
- **Dispersed number of tourists during fire season months.** As a high tourist area, the population within Mammoth Lakes fluctuates seasonally. Tourist populations are generally greater in the summer than winter as more people are dispersed within the town's municipal boundary due to the accessibility of campgrounds, resorts, and the wilderness areas. In the event of a wildfire, this creates a challenging situation for a coordinated and safe evacuation from threatened areas.
- **Limited access during evacuation and response.** In addition, some neighborhoods have a single point of ingress/egress, such as the Juniper neighborhood. Areas with limited access may be difficult for the fire department to access, and for residents to safely evacuate.
- **Significantly altered vegetation ("fuels").** Mammoth Lakes is within a largely fire-dependent ecosystem. Historical fire exclusion policies and human development practices have significantly altered the natural landscape. This has not only resulted in significant negative ecosystem health impacts but has significantly decreased the likelihood of fire suppression success.
- **Other challenges** that are difficult to control but which stakeholders noted were the predominant wind and weather patterns that can affect fire behavior, the impacts associated with smoke from wildfires across the state, and local water sources which could be affected by runoff, debris, or other post-fire concerns.

Local Planning Opportunities

- **Timing of General Plan updates.** Updates to the General Plan Safety and Housing Elements provide an upcoming opportunity to address wildfire through meaningful and robust local policies. These policies provide a future framework to guide the town and other stakeholders in mitigation, prevention, and resilience planning activities.
- **Community Wildfire Protection Plan (CWPP) local update.** As discussed in further detail in Recommendation 4, MLFPD recently engaged the original CWPP contractor to update portions of the 2009 CWPP that relate to the town and fire district. An updated CWPP provides a potential path for implementation or refinement of land use planning mitigation strategies as presented in this CPAW report. It also helps all of the mitigation pieces fit together for a coordinated approach to risk reduction.

- **Increased communication between planning and fire departments.** Part of the CPAW process focuses on bridging gaps in review, permitting, and other planning efforts associated with wildfire. Throughout this process—and prior to the delivery of CPAW’s final recommendations—planning and fire department staff have already begun to rethink current methods to WUI mitigation challenges, such as tree permits for removals, and coordinate on more effective approaches.
- **Collaboration with other agencies.** State and federal partners play a key role in supporting solutions at the local level. Both the town and MLFPD have good working relationships with the Inyo National Forest and CAL FIRE. The revival of the Mammoth Lakes Fire Safe Council creates a local mechanism to coordinate grants, fuel treatments, education and awareness campaigns, and other fire mitigation activities. Other landowners have also expressed interest in working with local stakeholders to address wildfire hazard concerns on parcels, such as UC Santa Barbara on the Valentine Reserve.
- **Future areas of resilience.** Although much of Mammoth Lakes has been built out, there is still potential for development within the UGB. Future development sites such as The Parcel could serve as models of resilience by employing both regulatory and voluntary wildfire mitigation practices on housing, landscaping, access, and other features.

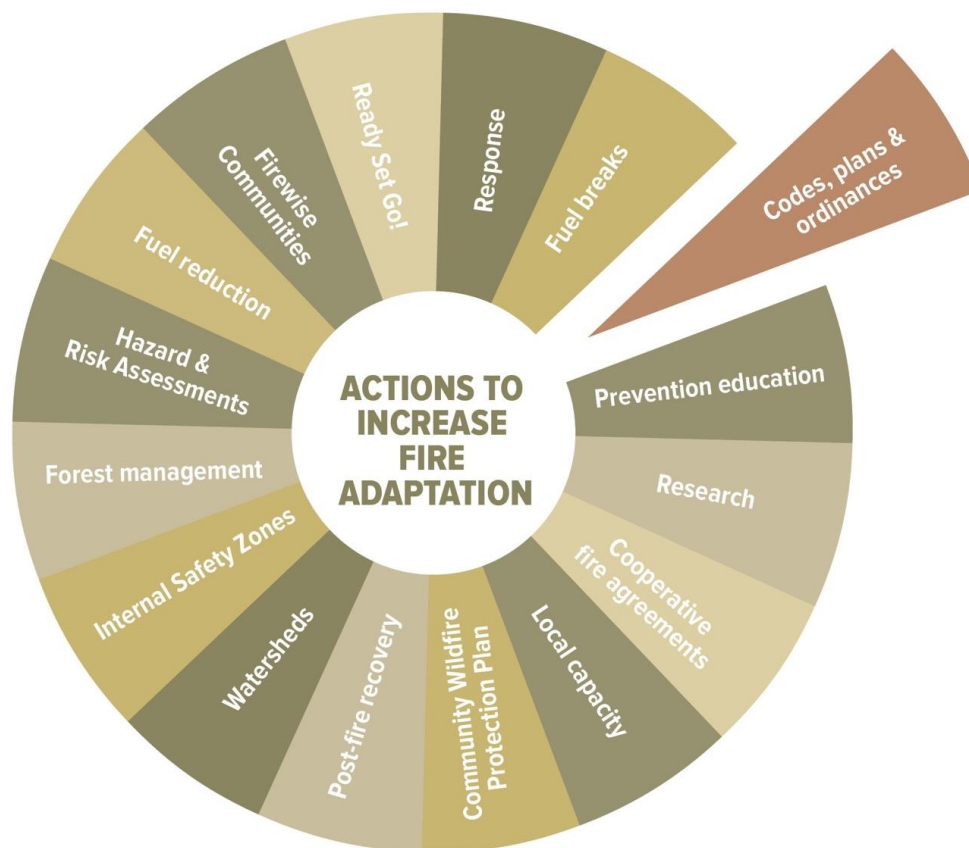


Figure 7: Community fire adaptation requires a coordinated approach. CPAW (codes, plans, and ordinances) is one piece of the fire adaptation “wheel”; other efforts include Community Wildfire Protection Plans, fuel reduction activities, hazard and risk assessments, and education.



Summary of Recommendations

Table 3. Overview of Recommendations

Recommendation	Summary	Key Points
1: Adopt a New Wildfire Hazard Assessment	Clearly define the Town of Mammoth Lakes' wildland-urban interface and integrate a risk assessment map as a component of the decision support tool for land use policies and regulations. Enhance, align, and incorporate parcel-level assessment information to support existing and new development.	<ul style="list-style-type: none"> • A comprehensive wildfire hazard assessment can be used to address the intensity, likelihood, and susceptibility of wildfire risk, providing a measure of exposure that the community values. • The hazard assessment can be further supported through the inclusion of parcel-level hazard assessment data to produce a complete wildfire risk assessment by addressing the susceptibility portion of risk. • A comprehensive risk assessment can provide an appropriate decision support tool for land use planning policy and regulation.
2: Adopt New Fire Mitigation Policies in General Plan	The Town of Mammoth Lakes General Plan Safety Element was last updated in 2007. New requirements enacted in 2014 as part of Senate Bill 1241 have changed what must be included in a Safety Element to address wildfire hazards. The town's Safety Element must be updated to comply with these requirements.	<ul style="list-style-type: none"> • Existing policies lack detailed guidance for fire hazard planning and are not context-sensitive. • New policies align with other CPAW recommendations and include: adopting a wildfire risk assessment, evaluating current and future land uses, creating linkages with hazard plans, identifying neighborhoods with limited access, integrating wildfire into trails and open space planning, identifying fuel treatments, updating landscaping requirements, addressing construction for new and existing development, mitigating critical infrastructure, collaborating with partners, and promoting policies for air and water quality. • Additional guidance is provided to help resolve policy conflicts and anticipate the adoption process.

Table 3. Overview of Recommendations		
Recommendation	Summary	Key Points
3: Update and Align Site and Structure Requirements, Guidelines	The Town of Mammoth Lakes and the Mammoth Lakes Fire Protection District should collaborate and coordinate to address gaps and streamline the permit approval process with regards to wildfire mitigation structure landscaping requirements.	<ul style="list-style-type: none"> • Application of requirements throughout designated WUI areas will ensure consistency. • A single streamlined permitting and tracking process that incorporates input from MLFPD will ensure that mitigation requirements are followed up and enforced. • Coordination of property inspections will increase efficiency and reduce conflicts. • Alignment of other requirements with wildfire mitigation will minimize conflicts.
4: Develop Local CWPP to Identify and Coordinate Mitigation Activities	Mono County/ Mammoth Lakes CWPP was first adopted in 2009. It was recently updated as part of the Mono County/ Mammoth Lakes Hazard Mitigation Plan, but significant portions of the CWPP chapter were not updated. This leaves a need for the town to develop a local CWPP to coordinate and prioritize mitigation activities at the appropriate scale.	<ul style="list-style-type: none"> • Create a Town of Mammoth Lakes/MLFPD CWPP and adopt as an addendum to the Mono County/Town MJHMP. • Ensure that the town's CWPP provides an updated hazard assessment to inform land use planning decisions, local fuel treatments, and other community-based activities. • Utilize the town CWPP to refine and implement General Plan Safety Element policies and implementation actions. • Create additional actions to support wildfire risk reduction, such as outreach and education with specific sectors (contractors, developers, residents, visitors, businesses).



RECOMMENDATION 1: Adopt a New Wildfire Hazard Assessment

❖ Why This Recommendation Matters

Overview Mammoth Lakes Wildfire Risk Assessment History

Currently, there are two separate wildfire risk/hazard assessments that can potentially influence planning decisions within the Town of Mammoth Lakes. The first is the California Department of Forestry and Fire Protection wildfire hazard severity assessment adopted (with modifications) by the Mammoth Lakes Fire Protection District Board of Commissioners. The second is the community wildfire hazard assessment that was undertaken as part of the 2009 Mono County Community Wildfire Protection Plan (CWPP).

The Need for an Updated, Cohesive and Consolidated Risk Assessment

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). One cohesive and comprehensive town-wide risk assessment and spatial definition of the WUI is necessary to provide consistent decision support for developing and implementing land use policies and regulations. The Mammoth Lakes Fire Protection District has recently engaged with the Anchor Point Group to produce a wildfire risk assessment in a format and scale that will support land use planning decisions and provide context for individual parcel-level assessments.

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 (HRVA's). 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 8).



Figure 8. 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.

Implementing this recommendation will provide clear definition of the Town of Mammoth Lakes' wildland-urban interface and integrate a hazard assessment map as a component of the decision support tool for land use policies and regulations. The further incorporation of a property-specific assessment system to complement the hazard assessment with a built environment susceptibility component will provide a comprehensive risk assessment.

Mammoth Lakes Fire Protection District Wildfire Hazard Severity Map

The Mammoth Lakes Fire Protection District currently uses a modified version of the 2008 California Department of Forestry and Fire Protection (CAL FIRE) Wildfire Hazard Severity Assessment that was developed by the Fire and Resource Assessment Program (FRAP).

According to the CAL FIRE⁴ 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

In 2007, based on findings supported by substantial evidence of local conditions as recommended by the fire chief, MLFPD Board of Fire Commissioners adopted the Very High Fire Hazard Severity Zone as well as declared an additional “Wildland Rural Interface Area” to extend into the Town of Mammoth Lakes.

CAL FIRE is currently in the process of updating the FRAP Fire Hazard Severity assessment process and expects to have draft outputs completed within one year.

Mono County CWPP Community Hazard Ratings

A Community Wildfire Hazard Rating assessment was also undertaken as part of the 2009 Mono County CWPP and carried over into the 2018 CWPP update. This assessment also included communities within the Town of Mammoth.

The Wildfire Hazard Rating provides assessments of individual existing communities within the Town of Mammoth Lakes based on the assignment of up to a maximum of 60 points based on seven categories:

⁴ Fire Hazard Severity Zone Re-Mapping Project <http://frap.fire.ca.gov/projects/hazard/fhz>.

- average lot size
- slope
- primary aspect
- average fuel type
- fuel continuity
- dominant construction type
- surface fuel loading

The higher the community scores, the lower its wildfire hazard.⁵ As a summary, each community is provided a ranking, from Low to Extreme.

This assessment is useful in understanding the wildfire hazard, and to some extent the susceptibility, that a community faces. However, it does not provide a suitable format to develop policy and regulation for new development, nor does it address the susceptibility of individual structures.

The current CWPP does include fire behavior modeling (and mapping) that addresses the intensity component of the risk triangle, but there is no modeling that includes the probability of fire occurrence to address the likelihood component.

Finally, the wildfire hazard rating was completed nine years ago, and conditions (and assessment methodology) have changed since then. The fire behavior modeling and wildfire hazard assessment were not updated and therefore remain outdated.

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. MLFPD has been actively conducting parcel-level assessments on existing lots; however, the focus has only been on the fuels and not the structure. In order to address the susceptibility component of the risk triangle, comprehensive parcel-level assessments that include the entire Structure Ignition Zone should be conducted for both existing and new development.

⁵ Mono County Community Wildfire Protection Plan, 2009.

❖ Implementation Guidance

Wildfire Risk Assessments and Mapping

To provide an effective decision support tool for the Town of Mammoth Lakes and MLFPD in a timely manner, the CPAW team recommended that the town and MLFPD work together to acquire a consolidated and comprehensive wildfire risk assessment process that:

1. appropriately identifies the WUI;
2. provides a ranked and spatially delineated wildfire hazard assessment based on intensity and likelihood; and
3. incorporates complete Structure Ignition Zone (parcel-level) assessments to inform the susceptibility component of the risk triangle.

Wildfire Hazard Assessment

The CPAW team presented the Town of Mammoth and the MLFPD with the following options that the team felt were the most reasonable for moving forward with obtaining a wildfire hazard assessment:

1. Wait for the draft outputs resulting from the current update process that the state is undertaking with regards to the FRAP Wildfire Hazard Severity Assessment. The current expected timeline for these outputs is at least one year.
2. Engage with a third party in developing a comprehensive wildfire hazard assessment and associated map that can inform wildfire planning and regulations as well as CWPP objectives on the potential wildfire that community values are exposed to and meets or exceeds FRAP outcomes.

Based on conversations with the Town of Mammoth Lakes Steering Group and the expected timeline for the FRAP Hazard Severity updates, the CPAW team recommended pursuing option 2 immediately, to consolidate the updated assessment with the updated Mono County CWPP.

During the CPAW process, the MLFPD immediately responded to this recommendation and engaged with the Anchor Point Group to develop an updated risk assessment for the fire district and including the town.

According to the Scope of Work provided by the Anchor Point Group, they will use the following approach to develop the updated risk assessment:

Mapping Fuels and Hazards

Accurate fuels data was established for the original CWPP. Anchor Point Group will utilize this fuels data and modify / enhance, if needed, to reflect current conditions.

Community Fire Hazard Assessments

The assessment methodology employs the Wildfire Hazard Rating (WHR) system, which was developed specifically to evaluate communities in WUI areas. This system has been used to rate more than 1,400 communities throughout the western U.S. It is based on a nationally recognized system developed with the National Wildfire Coordinating Group. Anchor Point Group will utilize the original CWPP community delineations and assign updated hazard and risk data to each community through the No-HARM assessment.

Custom Data Enhancements

Anchor Point Group will work with the Fire Protection District and stakeholders to refine the National No-HARM model with local data and customize the final product.

The custom level of No-HARM refines the national- and regional-scale data inputs to local and neighborhood levels to provide for increased accuracy of risk assessment.

- Custom No-HARM includes:
 - Custom fuel modeling- Includes field verification where needed.
 - Modification of the existing fuels layer to include completed fuel reduction projects.
 - Refinement of the WUI line that separates FireSheds from Ember Zones. For example, it is possible to utilize home footprints to ascertain the location of the wildland urban interface.
 - Digitizing golf courses, ball fields, open spaces, ski runs and fuel islands to allow for enhancements in the model.
 - Street distance travel to fire stations.
 - Detailed ember zone / suburban fire penetration modeling.
 - Ensure the stakeholder group agrees with the model's accuracy, form, and function.

Parcel-Level Assessments

The CPAW team recommends that MLFPD update the current parcel-level assessment process by including both the structure and site components to produce a complete Structure Ignition Zone assessment. The CPAW team also recommends that the town and MLFPD enter into an agreement that supports MLFPD in conducting these enhanced assessments on existing *and* future development in a coordinated and prioritized approach with the town.



RECOMMENDATION 2: Adopt New Fire Mitigation Policies in General Plan (Safety Element)

❖ Why This Recommendation Matters

Overview/ Background

The Town of Mammoth Lakes General Plan Safety Element was last updated in 2007. Since that time, new requirements enacted in 2014 as part of Senate Bill 1241 have changed what must be included in a Safety Element to address wildfire hazards. In accordance with Government Code §65302 (g) 3,⁶ revisions of the Housing Element that occur on or after January 1, 2014 also require the Safety Element to be reviewed and updated as necessary to address the risk of fire for land classified as State Responsibility Areas (SRAs) and land classified as Very High Fire Hazard Severity Zones (VHFHSZs). This review must consider the advice in the Office of Planning and Research’s “Fire Hazard Planning, General Plan Technical Advice Series” and include the following:

- Information regarding fire hazards, including but not limited to:
 - Fire hazard severity zone maps available from CAL FIRE;
 - Historical data on wildfires available from local agencies or an applicable reference;
 - Information about wildfire hazard areas that may be available from the United States Geological Survey;
 - General location and distribution of existing and planned uses of land in VHFHSZs and SRAs, including structures, roads, utilities, and essential public facilities;
 - Local, state, and federal agencies with responsibility for fire protection.
- A set of goals, policies, and objectives based on the information above for the protection of the community from the unreasonable risk of wildfire.
- A set of feasible implementation measures designed to carry out the identified goals, policies, and objectives based on the information above. These may include avoiding or minimizing wildfire hazards associated with new uses of land, locating essential public facilities outside of high fire risk areas, designing adequate infrastructure for safe

⁶ Title 7. Planning and Land Use, Division 1. Planning and Zoning, Chapter 3. Local Planning, Article 5. Authority for and Scope of General Plans (available at: <https://bit.ly/2onAMOK>).

emergency responder access, and working cooperatively with public agencies responsible for fire protection.

Analysis of Current General Plan and Community Plans

CPAW conducted a comprehensive analysis of the town's General Plan and other relevant community plans to determine how the WUI and wildfire concerns are addressed through goals, policies, actions, or other supplemental documentation. This analysis was supplemented by the preliminary (draft) General Plan Safety Element Assessment provided by the CAL FIRE Land Use Planning Program. Based on these analyses, CPAW found:

- **The town has several policies in its General Plan Public Health and Safety Element related to fire and emergency preparedness** (S.3.L., S.3.M., S.3.N., S.3.O., S.3.P., S.3.Q., S.4.A., S.4.B., S.4.C.). These policies enact Goal S.3 “Minimize loss of life, injury, property damage, and natural resource destruction from all public safety hazards.” Policies address construction standards, emergency access, coordination with local agencies and departments, funding, mutual aid agreements, fuel management, emergency evacuations, and response. Several policies include implementation actions which partially or fully meet the requirements set forth in Gov. Code §65302 (g) 3.
- **There are multiple shortcomings to the town's current Safety Element based on the requirements in Gov. Code §65302 (g) 3.** Key components missing include: identifying CAL FIRE Hazard Severity Zone maps or locally adopted wildfire hazard zones, references to historical information on wildfires, a description of existing and planned land uses in SRAs and VHFHSZs, and detailed policies that address local planning concerns for wildfire.
- **The General Plan contains sections that could conflict with the implementation of wildfire policies.** For example, the town's Vision Statement depicts the community as a “village in the trees,” which may be at odds with implementing appropriate fuel treatments to landscapes and properties. In addition, Landscaping Plan requirements conflict with or do not follow best practice defensible space standards as outlined by CAL FIRE.
- **Other elements of the General Plan do not account for wildfire.** For example, the Mobility Element does not address seasonal variations (e.g., summer tourist traffic) in transportation demand, and evacuation routes are not discussed in the transportation policies.
- **Other community plans do not support wildfire mitigation.** For example, the North Village Specific Plan states in Land Use Policy 9 (page 20): North Village shall appear to be nestled within a forest, with native trees surrounding the pedestrian core and integrated into the development where practical.

Overall, there is a lack of detailed fire hazard planning for the town; policies are overly general and/or are not context-sensitive. There is an opportunity and need to update the Safety Element based on state requirements.

❖ Implementation Guidance

The following guidance is recommended to assist with the update of the General Plan Safety Element to better address wildfire hazards and comply with Government Code requirements.

Provide Background Statement on Wildfire

Rather than a vision statement that encourages a village in the trees, include a message that recognizes the role of fire in the ecosystem. Wildfires have shaped the town's landscape and will continue to do so in the future. Learning to live with wildfire through appropriate resilience, mitigation, and preparedness efforts can promote long-term sustainability of development in the region. Information on wildfire history can reference other documents. Helpful resources include this CPAW report, the approved MJHMP, and the future locally-adopted CWPP.

Adopt New Goals

Goals should reflect public input and local priorities that align with the Safety Element update. The following two additional goals may serve as a starting point to build on existing goals:

S.7. Expand coordination and resource sharing with the U.S. Forest Service, CAL FIRE, and Mammoth Lakes Fire Protection District.

S.8. Promote community resilience through integration of the Local Hazard Mitigation Plan and Community Wildfire Protection Plan with the General Plan.

Adopt New Policies and Implementation Actions

Policies and actions below are based on local information gathered during the CPAW process. Stakeholders may wish to further refine these to incorporate additional details.

Table 4: Recommended Policies and Actions		
Policy	Actions	Notes
1. Adopt a wildfire hazard assessment to identify areas of the town that have a wildfire hazard.	<ul style="list-style-type: none"> Align wildfire hazard assessment with future updates to CAL FIRE VHFHSZs. Determine appropriate thresholds that trigger applicability of land use requirements (e.g., moderate, high, extreme), including ember impact zones. 	See recommendation #1 for more details. Intended to meet fire risk identification requirement.
2. Evaluate current and future land	<ul style="list-style-type: none"> Evaluate allowable land uses that may pose as wildfire hazards to determine whether 	Second bullet relates to The

Table 4: Recommended Policies and Actions		
Policy	Actions	Notes
uses for wildfire risk reduction.	<p>additional conditions of approval should be required.</p> <ul style="list-style-type: none"> • Incorporate wildfire mitigation requirements and best practices into future town developments to demonstrate the compatibility of risk reduction with other planning objectives. • Evaluate future land uses for their potential impacts on risk reduction, such as the location of golf courses, community parks, and other uses that are fire-adapted or incorporate significant areas of fuel modification. 	Parcel and future evacuation center developments.
3. Link land use planning activities to hazard plans.	<ul style="list-style-type: none"> • Designate a CWPP coordinator from the Town of Mammoth Lakes Planning Division to facilitate CWPP reviews. • Establish a regular update cycle to review the MJHMP, CWPP, and Safety Element to incorporate the latest information and data and evaluate progress on actions. • Identify potential post-fire recovery assistance needs, including hazardous tree and debris removal and other landowner recovery measures. 	See recommendation #4 for more details.
4. Identify neighborhoods with limited access that may require secondary routes for first responders and the public during a fire event.	<ul style="list-style-type: none"> • Evaluate alternative emergency access routes in neighborhoods that have single ingress/egress. • Develop an evacuation plan for high tourism seasons/events. 	
5. Consider wildfire as part of trails and open space planning activities.	<ul style="list-style-type: none"> • Work with local stakeholders to identify increased risks associated with trails and open space. • Incorporate healthy forest management policies in the Open Space and Conservation Elements of the General Plan, including actions to integrate wildfire mitigation into trails and open space management practices. 	
6. Identify fuel treatments that	<ul style="list-style-type: none"> • Participate in CWPP development and updates to provide input on fuel treatment priorities. 	See recommendation

Table 4: Recommended Policies and Actions		
Policy	Actions	Notes
will reduce wildfire threat to the town.	<ul style="list-style-type: none"> • Coordinate with the Valentine Reserve and other partners to identify potential fuel mitigation projects that reduce wildfire risk. • Seek grant funding for fuel mitigation in Camp High Sierra to reduce wildfire risk. 	#4 for more details.
7. Update landscaping requirements and review procedures to streamline approach with fire review.	<ul style="list-style-type: none"> • Adopt wildfire mitigation landscaping standards to address wildfire hazard within the Structure Ignition Zone. • Develop a list of low-flammability plants to provide to landscape contractors and the public. • Review zoning code for conflicts such as tree preservation requirements, attachments, screening and other development standards, and modify where applicable. 	See recommendation #3 for more details. CPAW will also develop a suggested plant list for the final report.
8. Ensure construction methods for new and existing development reduces wildfire risk.	<ul style="list-style-type: none"> • Research funding sources to implement a program to support wildfire mitigation retrofits for residential and commercial development. • Review and align design guidelines with wildfire construction standards adopted by the town and MLFPD. • Establish minimum slope setbacks for new construction in identified wildfire risk areas. 	This is particularly relevant for areas such as Old Mammoth and the commercial corridor.
9. Review and mitigate critical infrastructure for wildfire vulnerabilities.	<ul style="list-style-type: none"> • Conduct an inventory of existing critical infrastructure to determine whether it is in identified wildfire risk areas. • Coordinate with MLFPD to conduct parcel-level assessments of critical infrastructure and provide mitigation recommendations. • Develop mitigation requirements for future critical infrastructure and facilities. 	
10. Collaborate with local, state, and federal fire protection and land management agencies to advance wildfire mitigation and safety.	<ul style="list-style-type: none"> • Participate in Fire Safe Council meetings and activities. • Continue to work with MLFPD to communicate on wildfire and planning topics. • Continue to work with U.S. Forest Service and other federal land managers on fuel mitigation opportunities that benefit ecological goals and achieve wildfire risk reduction. • Continue to work with CAL FIRE to coordinate mitigation activities and responsibilities. 	

Table 4: Recommended Policies and Actions		
Policy	Actions	Notes
11. Promote integrated policies that consider water and air quality impacts associated with wildfire hazard risk and mitigation.	<ul style="list-style-type: none"> Ensure that wildfire risk areas in close proximity to water sources and waterways are prioritized for fuels treatment and mitigation. Pursue grant funding sources focused on water quality and air quality as part of the community's wildfire strategy. 	
12. Develop a smoke management initiative with local and federal partners.	<ul style="list-style-type: none"> Facilitate educational and relationship-building events that bridge public concerns on smoke with land management policies to improve understanding and communication between federal land managers, local residents, and businesses. 	

Resolve Existing and Future Policy Conflicts

The proposed recommendations are intended to reduce existing and future policy conflicts. A major concern identified by the CPAW team focused on the desire to plant trees as a form of mitigation or ornamental landscaping that increases the wildfire potential for structures. The policies recommended are intended to allow for tree mitigation (if necessary) in areas where risk to life and property is less of a concern. Promotion of forest health should be a foundation of town wildfire policy, as well as open space and conservation policy. Completion of the proposed Safety Element recommendations should also include a cross reference to applicable open space and conservation-oriented policies in those respective General Plan elements.

Final Steps: Anticipate Plan Adoption Process

Upon approval of the recommended policies by town staff, the General Plan Safety Element should be updated to incorporate these policies and commensurate mapping to depict the current wildfire hazard conditions within the town. Once updated, this element should be transmitted to CAL FIRE and the State Board of Forestry and Fire Protection to begin this agency review process, which requires up to 90 days for agency review and recommendation to improve the Safety Element.⁷ Upon completion of this review by CAL FIRE, the element should be adopted by the Town Council.

⁷ Governor's Office of Planning and Research, *Fire Hazard Planning, General Plan Technical Advice Series*, pp.8-11.



RECOMMENDATION 3: Update and Align Site and Structure Requirements, Guidelines

❖ Why This Recommendation Matters

Overview/ Background

The vulnerability of structures depends on the condition of both the structure and its immediate surroundings. When we describe this condition, we are describing the Structure Ignition Zone. The conditions within the Structure Ignition Zone that contribute to the wildfire vulnerability are prioritized as follows:

1. **Primary structure design and fire resistance of construction materials:** specifically, roof, gutters, eaves, vents, walls, windows, decks, and other components.
2. **Projections and adjacent structures:** design and fire resistance of construction materials of decks, fences, accessory structures or neighboring buildings, and proximity to the primary structure.
3. **Landscaping:** proximity, type, structure, arrangement, flammability and health of natural and cultivated vegetation adjacent to the primary structure.
4. **Topography and Terrain:** position and setback of structure in relation to slopes and terrain features that influence fire behavior.

Summary of Current Approach

Structure Requirements

Currently, new development within the Town of Mammoth Lakes is required to follow the California Building Code, which includes requirements to address wildfire vulnerability through design and building materials in designated WUI areas. Compliance with these requirements is enforced through the Certificate of Occupancy inspection by the local building code authority. Only modifications requiring a building permit are subject to these requirements on existing structures.

Landscaping Requirements

The Town of Mammoth Lakes Zoning Code currently regulates landscaping under the following circumstances:

- **Water Efficient Landscape Regulations.** All new and re-designed landscaping associated with new construction on an individual lot, a building project, or a multi-phased development, with exemptions for: landscape projects that consist of new construction and re-designed landscapes for public agency and private development projects with a total landscape area less than 2,500 square feet; registered historic sites; temporary irrigation systems; community gardens; commercial cultivation of agricultural products (§17.40.020).
- **Design Review of Landscaping Plans.** Unless exempt, all new construction, reconstruction, rehabilitation, alteration, or other projects involving improvement to the exterior of a structure, site, or parking area shall be subject to a design review for the location and type of landscaping including selection, size, and water-efficiency of plant materials, design of hardscape, and irrigation (§17.88.040).

Additional uses are also subject to landscaping requirements, such as tree planting requirements for mobile homes (§17.32.070.E.4.), properties adjacent to or involving riparian areas, and other land uses.

General requirements for landscaping require that plant materials and mulches be in compliance with local Fire Codes, and fire prevention measures shall be addressed in areas that are fire prone as identified by The Mammoth Fire Severity Zone Map (§17.40.040.A.3.). The Town of Mammoth Lakes also provides fire ratings for many of the plants they recommend in their “Making the Most of Every Drop” publication,⁸ as well as a list of highly flammable plants that should be avoided; however, these are not requirements.

MLFPD enforces the requirement for a wildland fuel modification plan for new construction in all very high fire hazard severity zones and wildland/rural interface areas. A fuel management plan may be required for multi-family housing projects, planned unit developments, land subdivision, or remodeling or modification to an existing structure where the square footage is expected to increase by 50 percent or more.

MLFPD also requires that any vacant lots, buildings or structures within the district maintain a fire break in a manner that vegetation and flammable combustible materials will not form a means of transmitting fire from the native growth to any building or structure.

Current Administrative Challenges

At this time, an applicant is required to complete two separate applications, one to the town and one to the fire protection district to develop or build on a piece of land. The town is ultimately responsible for approving the development or building permit. The only requirement in this process that links the town to the fire department is to confirm that they have also applied for a

⁸ 2014. Town of Mammoth Lakes. Making the Most of Every Drop, Water-Efficient Landscapes for Mammoth Lakes, CA Recommendations and Requirements User Guide.

permit to the fire protection district. The following gaps associated with this process have been identified:

1. The town only requires landscaping plans in select cases and does not have wildfire mitigation requirements as part of these plans; the town is the approving authority for ensuring compliance.
2. The town also enforces the tree removal and protection ordinance that focuses on tree preservation.
3. MLFPD has the authority to require a wildfire mitigation plan; however, they are not the approving authority for development or building permits.
4. MLFPD is limited on capacity to follow-up on new development or building permit applications appropriately.
5. There is no formal relationship between the town and MLFPD with regards to enforcing wildfire mitigation requirements. Therefore, the town does not and cannot currently enforce wildfire mitigation requirements.
6. MLFPD currently undertakes inspections and enforces requirements on individual existing properties only.

❖ Implementation Guidance

Develop Streamlined Approach to Address Landscaping

To address the identified gaps, the CPAW team recommends the following steps:

1. Designate the WUI as all areas of the town rated as moderate or above, or within ember zones.
2. Create an established permit application and plan submission and tracking process in which a single application is reviewed by all required departments, including MLFPD.
3. Modify the current MLFPD ordinance to include a prescriptive approach for wildfire mitigation landscaping to address the following requirements, supported by state and nationally accepted science-based defensible space best practices:
 - There shall be no combustible fencing material within five feet of a habitable structure or its projections.
 - All projections and accessory buildings within 50 feet* of a habitable structure shall be mitigated to the same standard as the habitable structure.
 - There shall be a minimum of five feet of non-combustible surface, free of vegetation and combustible material between the outer walls and projections of a habitable structure.
 - A minimum of 10 feet* horizontal distance between individual tree crowns shall be maintained for all conifer trees within 30 feet* horizontal distance of a habitable structure.

- A minimum of 10 feet* horizontal distance between tree crowns and the furthest extent of any habitable structure shall be maintained as determined by the Town Manager, Fire Marshal, or their designees.
 - All retained conifer trees within 30 feet* of a habitable structures shall be pruned to the highest roof deck height, or a maximum of 1/3 of the total crown height.
 - All grasses, weeds and forbes within 30 feet* of a habitable structure shall be maintained at a height no higher than 6 inches.
 - All firewood and combustible material shall be stored a minimum distance of 30 feet* from a habitable structure, or within an approved ember-proof structure.
 - All surface litter, organic material or other vegetative debris within 30 feet* of a habitable structure shall be maintained at a depth of no deeper than four inches.
 - All propane tanks shall have a non-combustible surface maintained under and within 5 feet of them; and shall have a minimum clearance of 10 feet from any vegetation or combustibles.
 - No trees or plants listed in the prohibited plant list shall be planted or maintained on the property.
 - Plants from the recommended plant list⁸ should be used for required and desired screening; plants that are not on the list shall be submitted for review.
4. Provide an alternative appeal process within MLFPD ordinance in which a wildfire mitigation plan developed by a qualified professional is submitted for review and approval by MLFPD staff.
 5. Establish a coordinated final inspection (new development for Certificate of Occupancy) and existing property inspection and enforcement process for MLFPD staff.

*Mitigation must occur to minimum distance stated, or property line, whichever is less

Resolve Regulatory Conflicts

The Tree Removal and Protection standard of the Town of Mammoth Lakes Zoning Code (§17.36.140) addresses fuel reduction on public lands as an exemption to requiring a tree removal permit (for trees 12 inches in diameter at breast height or greater); however, it does not specifically address fuels reduction on private lands as an automatic exemption. Wildfire mitigation within the Structure Ignition Zone on private parcels typically requires vegetation management, including tree removal for successful outcomes. Tree removal permits must be applied for through the Town of Mammoth Lakes; however, the MLFPD ordinance provides the authority to MLFPD staff in directing landowners to remove trees for defensible space requirements. Although tree removal for defensible space requirements is a documented consideration for exemption, it is not automatic and therefore presents an additional administrative burden within the current standard. Integrating MLFPD into a single application and plan review process, and providing MLFPD staff with the authority to designate trees to be removed, would prevent the unintended consequences of giving landowners free reign on tree

removal under the guise of “wildfire mitigation,” such as view enhancement. An additional exemption, such as the language below, should be included:

“Tree removal for fuels reduction purposes on privately owned lands, as determined by the Town Manager, Fire Marshall, or their designees.”

Other landscaping requirements in the Zoning Code that contradict or prevent wildfire mitigation efforts should also be reviewed and resolved. For example, landscaping is frequently encouraged throughout the code to lessen the visual impact of uses, such as surface parking (§17.24.030.E.2.), outdoor storage (§17.52.240.A.4), screening of satellite dish antennas (§17.52.280.E.1.e), and temporary uses (§17.56.050.H).

Similar screening requirements for fencing should also be reviewed to determine whether they contribute to fire hazard.

Update Plan Submittal and Review Process Requirements

The following recommended updates to the plan submittal and review process can streamline the integration of wildfire mitigation requirements and ensure compliance prior to any final approvals. Specifically, this process should apply to:

- new development,
- new building construction,
- existing structure external modifications requiring building permits,
- tree removal permits;

and be implemented by:

1. Adding the requirements for a defensible space plan to the process, including adding it as its own section to Part II (PLANS & SPECIFICATIONS) of the Plan Submittal and Plan Check document⁹ with reference to the recommended MLFPD prescriptive ordinance (above).
2. Provide a handout and checklist to applicant outlining the requirements for a Defensible Space Plan that demonstrates that the prescriptive requirements have been met.
3. Provide prescriptive standards (see above), including a prohibited plant list, to guide planning staff guidance in their review of the plans.
4. Include the MLFPD as an internal approval department for reviewing wildfire mitigation plans submitted under the appeal process, rather than the current reference under Part V (Other Agencies).

This process change would provide clear guidance to the applicant and the plan review staff and ensure the automatic internal involvement of MLFPD, as opposed to reliance on the applicant to

⁹ Accessible at: www.townofmammothlakes.ca.gov/DocumentCenter/View/3490/-Plan-Submittal-Requirements-01-2015?bidId=.

engage MLFPD separately. These changes should result in increased integration of, and compliance with, wildfire hazard mitigation standards while reducing the complexity of plan submission and without a significant increased demand on capacity.

Develop a Landscaping Education Campaign

Changes to landscaping procedures will require educating local contractors (e.g., developers, landscapers) and residents. In coordination with the Mammoth Lakes Fire Safe Council, the Town of Mammoth Lakes and MLFPD should work with local landscaping suppliers and local contractor association to develop a comprehensive outreach and education program targeted at educating landscapers, developers, and the public. This should include the distribution of printed materials to help inform the community and ease the transition of implementing changes to the regulations.



RECOMMENDATION 4: Develop Local CWPP to Identify and Coordinate Mitigation Activities

❖ Why This Recommendation Matters

Overview of CWPPs

CWPPs are essential planning documents that coordinate wildfire preparedness, mitigation, and response activities for local communities. Mono County/ Mammoth Lakes CWPP developed its first CWPP in 2009. Since that time, many changes have occurred across the region, including new structures and/or changes to existing development, changes to the landscape following fires, and fuel mitigation treatments near communities. These changes affect the way a community plans for fire and recently prompted a CWPP update.

A CWPP update was undertaken by a third-party consultant as part of a countywide update to the Mono County and the Town of Mammoth Lakes Hazard Mitigation Plan (MJHMP), currently available in draft form as of this CPAW draft. The CWPP update is Chapter 7 of the draft MJHMP; wildfire-specific actions are discussed in Chapter 7 and contained in Table 5.1 Plan Hazard Measure.

CPAW team members reviewed the MJHMP draft with the local steering group. Although the current draft provides updated content related to wildfire, significant changes were not made in the CWPP. For example, no updates were made to the local wildfire hazard assessment that was initially performed for the 2009 CWPP. In addition, the draft CWPP does not connect with land use planning mechanisms (policies, regulations) to help address wildfire risk in the WUI. Finally, the plan lacks specific detail on local actions related to fuel treatments, access, or other mitigation strategies that local stakeholders can implement within the town boundaries.

As a result, there is insufficient material to guide the town in implementing future wildfire planning activities. Without this level of detail and guidance, local stakeholders will not be able to evaluate future mitigation activities and their effectiveness on risk reduction—a core component of successful CWPPs.

CPAW recommends that MLFPD, in partnership with the town, develop a CWPP addendum to the forthcoming final hazard mitigation plan that sets forth an updated wildfire hazard assessment to reflect changes since 2009, a re-evaluation of the WUI within the town based on local changes, and a prioritized set of mitigation actions for land use, fuels, response, structural ignitability, and preparedness that implements new policies set forth in the General Plan.

Plan Requirements and Additional Considerations

CWPPs have been in practice across the country since 2003 when the Healthy Forests Restoration Act (HFRA) was signed into law. HFRA gave statutory incentives for the U.S. Forest Service and the Bureau of Land Management to consider the priorities of local communities that developed and implemented forest management and hazardous fuel reduction projects.

HFRA requires that CWPPs meet three *minimum* requirements¹⁰:

1. Be collaboratively developed by local and state government agency representatives, in consultation with federal agencies and other interested parties;
2. Identify and prioritize areas for hazardous fuel reduction treatments and recommend the types and methods of treatment that will protect one or more at-risk communities and essential infrastructure;
3. Recommend measures that homeowners and communities can take to reduce the ignitability of structures in areas addressed by the plan.

In addition, HFRA requires that the following three entities must mutually agree to the final contents of the CWPP: applicable local government, local fire department(s), and state entity responsible for forest management.

Many communities also address a range of other topics in their CWPPs, such as public education and outreach activities, potential mitigation resources, and other local community information. Unlike codes or ordinances, CWPPs are not legally-binding documents. However, given the myriad benefits that come with developing CWPPs, they are an effective local tool to help communities plan for uncertainties and increase wildfire resilience.

Jurisdictions frequently have “overlapping” CWPPs that are implemented at multiple scales. For example, counties can have CWPPs that cover county boundaries while local municipalities may also have CWPPs to provide the level of detail and information appropriate for local implementation. In some cases, subdivisions or HOAs also develop a CWPP to reflect unique considerations and create detailed mitigation activities. Development of multiple CWPPs with varying levels of appropriate detail is especially relevant when communities view wildfire as a priority hazard.

❖ Implementation Guidance

Pursue Adoption of HMP Addendum for Mammoth Lakes

At the time of this final report, MLFPD recently hired the original CWPP contractor to develop a new wildfire hazard assessment and update the 2009 CWPP contents. This update will be applicable to the municipal town boundary. This process is currently scheduled for completion by mid-March 2019.

¹⁰ Accessible at: Preparing a Community Wildfire Protection Handbook. 2004. Available at: www.forestsandrangelands.gov/communities/documents/cwpphandbook.pdf.

Upon completion, town stakeholders and MLFPD should coordinate with Mono County to request that the local CWPP be adopted as an addendum to the final MJHMP. Advantages to including the local CWPP as an addendum include: increasing future funding opportunities for wildfire mitigation; aligning future CWPP updates with the MJHMP update cycle; and coordinating mitigation actions between the county, town, and MLFPD.

Coordinate Activities Among Plans/Policies

Mammoth Lakes is in the process of updating its General Plan Safety Element and Housing Element. These elements will contain new policies to address wildfire and the WUI (see Recommendation 2). Policies listed in the General Plan related to wildfire will be implemented in a variety of ways. Some policies will require action by the planning division, other policies will require further coordination between the town and fire department, and others may be coordinated through the Mammoth Lakes Fire Safe Council and U.S. Forest Service.

One specific action that this report recommends is that the Town of Mammoth Lakes Planning Division

designate a staff member as the CWPP coordinator (see Recommendation 2, Table 4). MLFPD is leading the development of the CWPP update; however, implementation and future updates will require a primary point of contact to facilitate stakeholder discussions, check in on actions, and monitor the work plan. Based on discussions during the CPAW process, MLFPD and planning division staff agreed that this should be a recommendation for further consideration.

Current MJHMP draft actions for the town will require further discussion, including:

- Complete a parcel-level analysis of wildfire hazards. Incorporate into a GIS system, and use to prioritize parcel-level defensible space improvements. Upon completion of analysis, update the Community Wildfire Protection Plan to incorporate information.
- Educate homeowners about forest health, fire prevention, and home defense and distribute information on fire prevention resources.

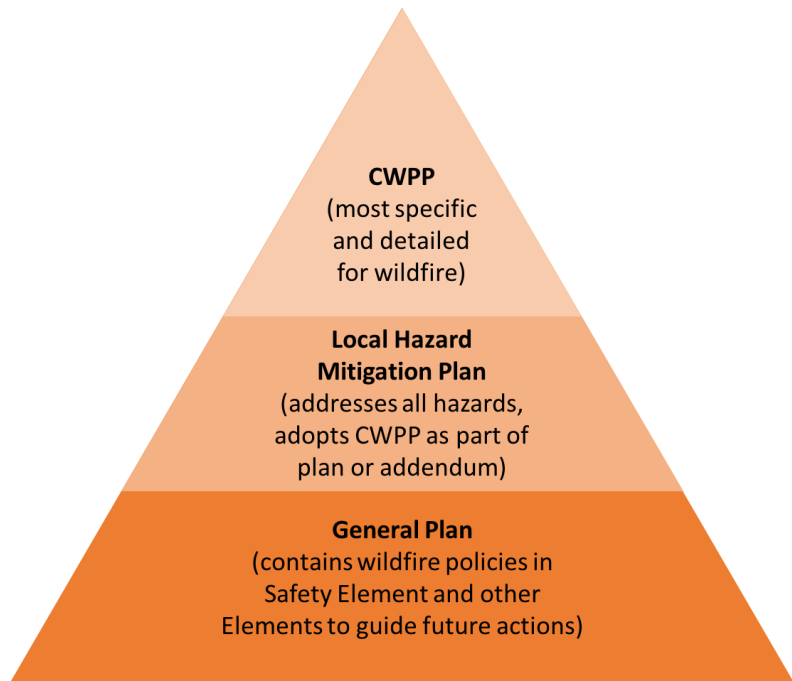


Figure 9. This graphic shows the typical relationship between the General Plan, Local Hazard Mitigation Plan, and Community Wildfire Protection Plan in terms of level of detail related to wildfire planning and implementation actions.

- Require local landowners to participate in state and federal programs for fuel reduction on private property, such as the CAL FIRE Vegetation Management Program, CAL FIRE hazardous fuel reduction program, and Bureau of Land Management Wildland Urban Interface Grant Awards Program.
- Develop a grant program that provides residents who own older, non-compliant wildland-urban interface structures the opportunity to make the exteriors code-compliant.¹¹

Ideally, General Plan policies and MJHMP actions related to wildfire activities in the town will be further refined and implemented through a locally-adopted CWPP. The CWPP contains the highest level of specificity and detail and can be updated more easily than General Plan amendments (Figure 9).

Create Education and Outreach Opportunities to Support Implementation

During CPAW discussions with planning staff, the group acknowledged the need to educate specific sectors to provide input and support the implementation of future mitigation actions. These groups and opportunities include:

- **Landscape contractors:** to understand landscaping techniques that align with defensible space requirements.
- **Developers:** to understand construction methods and materials that conform to building code requirements in the WUI.
- **Residents:** to implement mitigation projects on their property that reduce individual and neighborhood-level risk; to understand evacuation procedures for their neighborhood in the event of a wildfire.
- **Summer tourists/visitors:** to increase awareness of their surroundings, prevent wildfire ignitions, and know evacuation procedures.
- **Local Businesses:** to support mitigation efforts that reduce risks to commercially-owned properties and engage with the community on wildfire educational opportunities.

CWPP actions that target these sectors may include:

- Contractor trainings for landscapers and developers to provide information on new landscaping requirements.
- Creation of new education materials to help applicants understand changes to the application process.
- Development of incentive programs that may waive fees or expedite processing for additional (voluntary) mitigation performed by applicants.

Many of these actions will require coordination, support, or assistance from local stakeholders, such as the Mammoth Lakes Fire Safe Council, U.S. Forest Service, and/or CAL FIRE.

¹¹ Mono County, *Hazard Mitigation Plan Chapter 5 Mitigation Measures*, 2018, pp. 5-6.

Identify Local Fuel Reduction Projects

The draft CWPP provides a helpful review of major fuel reduction projects conducted in Mono County in the last decade (2009-2018) by the U.S. Forest Service (section 7.5.5). There are not, however, any specific fuel reduction projects identified for future implementation, aside from a general recommendation to maintain previous treatments.

Local stakeholders and residents—including the town, MLFPD and Mammoth Lakes Fire Safe Council—have been actively engaged in fuel management projects with the U.S. Forest Service, including a grant to start fuel treatments in the Mammoth Lakes Basin in September 2019, and additional mowing near the Snow Creek development. In addition, the town has expressed interest in pursuing fuel reduction projects on existing and future sites, such as Camp High Sierra and The Parcel which will be developed for future housing. These projects will require further collaboration, and the CWPP provides an excellent mechanism for coordinating such efforts.

Capture Unique Wildfire Concerns

A locally-adopted CWPP also provides the town with an opportunity to address unique topics and concerns. For example, during CPAW meetings, many stakeholders voiced concerns about smoke and its effects on tourism and outdoor recreational activities. The town also signaled an interest in tying open space management and trails planning into wildfire risk reduction. These types of activities are well-suited for inclusion in the CWPP.



Tips and Resources

❖ Grant and Funding Sources

The town, MLFPD, and other local partners rely heavily on grants from state, federal and other sources to implement wildfire mitigation projects. Without these valuable funds, much of the work would not be possible. As a resource to continue supporting wildfire implementation activities, grant and funding sources are listed below. (Note: some of the resources listed below may already be in use by local stakeholders.)

CAL FIRE grant program information: <http://www.fire.ca.gov/grants/grants>

Various grants include:

- California Climate Investments (CCI) Forest Health Grant Program
- CCI Urban and Community Forestry Grant Program
- Fire Prevention Grant Program (http://calfire.ca.gov/fire_prevention/firepreventiongrants)
- California Forest Improvement Program (CFIP)
- Local Assistance for Tree Mortality (LATM) Grant Program
- Volunteer Fire Assistance

California Fire Safe Council (includes link/information on the Fire Prevention Grant Program and other CWPP-related resources): www.cafiresafecouncil.org/resources/cwpp/

Federal Emergency Management Agency (FEMA):

1. Hazard Mitigation Grant Program
2. Pre-Disaster Mitigation Grant Program

❖ Education and Outreach

Several recommendations in this CPAW report relate to mitigation, education, and outreach. To support stakeholder and public understanding of wildfire planning and mitigation concepts, CPAW created a series of technical visuals. These visual resources can be used in the development of public and vendor education programs. Appendix B contains examples of these resources for reference; they will also be made available to the town in original formats.



Conclusion

Like many wildland-urban interface communities, the Town of Mammoth Lakes has several wildfire planning challenges that pose a future threat to residents and visitors. These challenges include unmitigated existing development, neighborhoods with limited access, a buildup of fuels within a fire-dependent ecosystem, and a high number of tourists during fire season.

However, several current planning opportunities can be leveraged to address wildfire. Opportunities include the timing of plan updates, such as the General Plan, that can incorporate new goals and policies for wildfire, increased collaboration among stakeholders resulting from engagement in the CPAW process, and a willingness for stakeholders to explore innovative solutions to current planning and mitigation activities.

To address these challenges and build on opportunities, CPAW recommends four approaches for the Town of Mammoth Lakes, in partnership with MFLPD:

1. Adopt a new wildfire hazard assessment.
2. Adopt new fire mitigation policies in the General Plan (Safety Element).
3. Update and align site and structure requirements and guidelines.
4. Develop a local CWPP to identify and coordinate mitigation activities.

These recommendations are focused on planning and regulatory mechanisms to reduce wildfire risk – the core aspect of the CPAW program. CPAW recognizes that many other related activities, such as fuel mitigation projects, are complementary to a comprehensive risk management program.

Many of CPAW's recommendations are interconnected and present immediate opportunities for implementation. For example, developing and adopting a new wildfire hazard assessment is an appropriate policy to be included in the General Plan and will also drive development of a local CWPP. Local stakeholders have already taken action to move some of these activities forward, which will support implementation of other CPAW recommendations.

Ultimately, CPAW recommendations are voluntary and may be modified to best meet the needs of the local community. Where applicable, this report has provided detailed guidance to offer as much assistance as possible.

CPAW also recognizes that addressing the WUI and wildfire risk is a complex and nuanced process that requires long-term commitment. Many educational, outreach, and public engagement activities will be required to successfully implement new wildfire mitigation practices. For example, there is a strong public expectation that 100% of wildland fires within

the Mammoth Lakes area are suppressed. This is not actually an achievable goal for fire suppression resources in light of the fuel conditions, nor is it a desirable goal from an ecosystem health perspective. Navigating through these expectations may require time, and are also reflected in recommendations such as new General Plan policies. In some cases, CPAW can also offer limited supplemental support in the form of additional advisory services to promote long-term success.

In summary, this report reflects a year-long process of stakeholder engagement, coupled with local and national expertise and best practices, to culminate in a final set of recommendations. The Town of Mammoth Lakes, MLFPD, and additional stakeholders provided valuable direction and insight and are well-suited to advance their wildfire planning activities.



Figure 10. Stakeholders and CPAW team members gather during the first CPAW site visit in April 2018. Photo credit: TOML.



CPAW Definitions

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

Built Fuels - Man-made structures (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.

Community Based Ecosystem Management - With an emphasis on local stakeholder participation, allowing the local community to manage their ecosystem based on the unique characteristics of an area.

Community Wildfire Protection Plan (CWPP) - Established by the 2002 Healthy Forest and Restoration Act, A CWPP is a plan that identifies and prioritizes areas for hazardous fuel reduction treatments 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, and structure protection.

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

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

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.

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

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

Embers - A small piece of burning material that can be thrown into the air due to the convective heating forces of a wildfire. Larger embers and flammable materials have the ability to sustain ignition through transport.

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.

Fire Adapted Communities - A group of partners committed to helping people and communities in the wildland urban interface adapt to living with wildfire and reduce their risk for damage, without compromising firefighter or civilian safety.

Fire Effects - The physical, biological, and ecological impacts of fire on the environment.

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

Firewise - Program administered by the National Fire Protection Association which teaches people how to adapt to living with wildfire and encourages neighbors to work together and take action to prevent losses. The program encourages local solutions for wildfire safety by involving homeowners and others in reducing wildfire risks by fostering defensible space and resilient structures for homes and communities.

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

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

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 - The characteristics of a home and immediate surrounding area when referring to ignition potential during a fire event.

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

Prescribed Fire - A planned controlled wildland fire that is used to meet a variety of objectives for land managers.

Radiation Heat - Transmission of heat through waves or particles.

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

Resilience - The ability to recover from undesirable outcomes, both individually and organizationally.

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

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 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.

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 measure 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, resources, system, or geographic area.

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.

Wildfires - Unplanned wildland fires resulting in a negative impact.

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

Wildland Fuels - All vegetation (natural and cultivated).

Wildland Urban Interface (WUI) - Any developed area where conditions affecting the combustibility of both wildland and 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.



Appendix A: Prohibited Plant List

For the purposes of water conservation, the Town of Mammoth currently requires that new and rehabilitated (re-landscaping) projects over 2,500 square feet be approved by the Town of Mammoth Lakes prior to landscape installation to show compliance with the Water Efficient Landscape Ordinance. The Town provides three submittal options. Landscape projects with the lowest water use have a simpler application process than higher water-use projects, which require more complex documentation. To help the user meet these requirements, the Town refers to their “Making the Most of Every Drop” publication.¹² In addition to water usage information, this publication includes the “fire rating” for many of the recommended plants, as well as a list of highly flammable plants that should be avoided. However, these are not requirements.

The CPAW Team recommends (Recommendation #3) that prescriptive standards be provided to the applicant as part of the application and plan review process for all areas within the WUI. The provision of a prohibited plant list is part of this recommendation. Below is the prohibited plant list the CPAW team recommended for adoption within the Town of Mammoth Lakes Zoning Code:

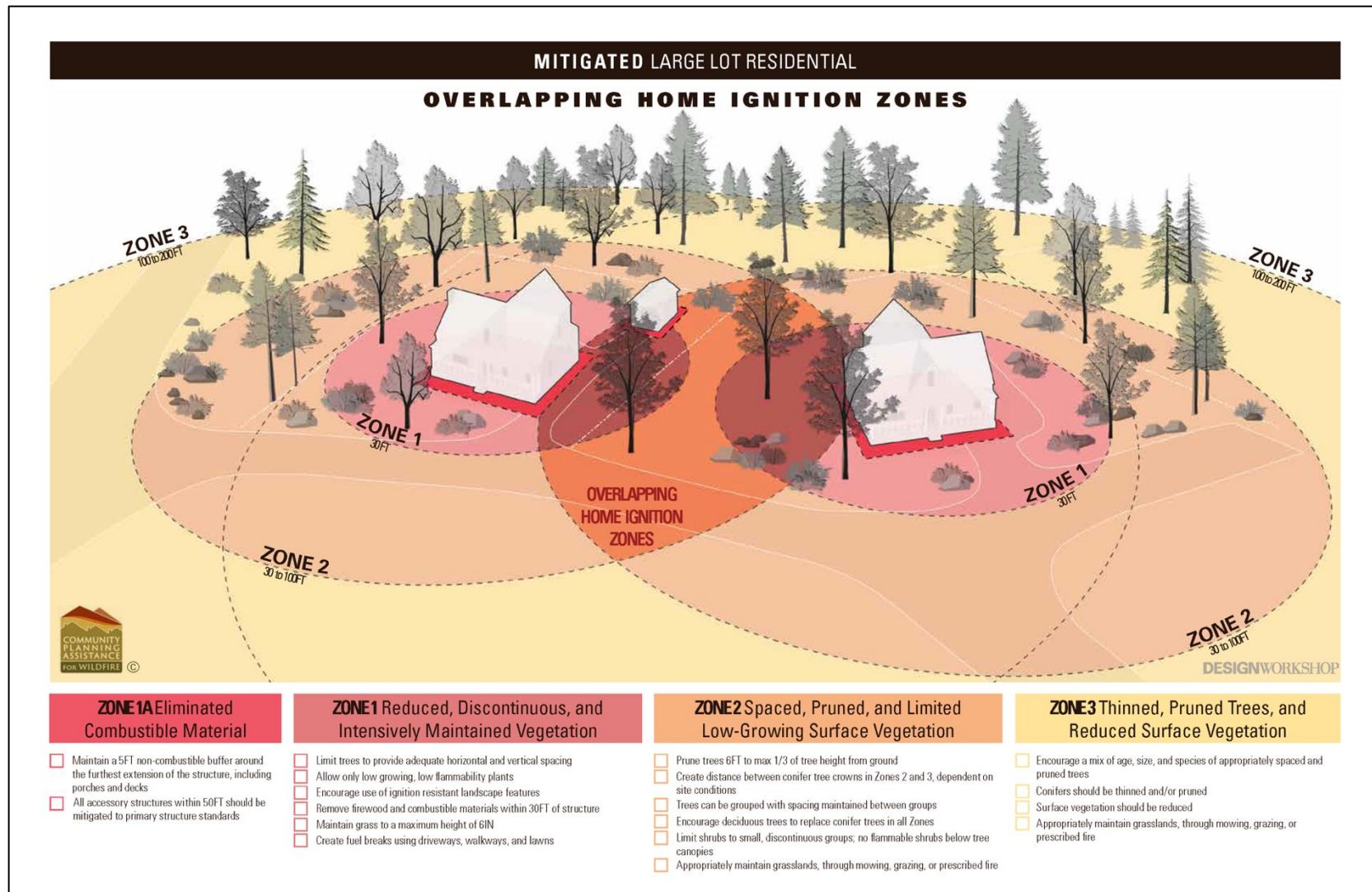
Mammoth Lakes Prohibited High Fire Hazard Plant List	
Latin Name	Common Name
<i>Artemisia</i> spp.	Sage or Wormwood
<i>Calamagrostis acutiflora</i>	Feather Reed Grass
<i>Cercocarpus ledifolius</i>	Mountain Mahogany
<i>Chrysothamnus nauseosus</i>	Rubber Rabbitbrush
<i>Cupressaceae</i>	Cedars and Junipers
<i>Cytisus</i> spp.	Broom
<i>Genista</i> spp.	Dwarf Broom
<i>Picea</i> spp.	Spruce
<i>Purshia tridentata</i>	Antelope Bitterbrush
<i>Pinus mugo mughus</i>	Mugo Pine
All Conifers Less than 30 Feet Tall Within 30 feet of the Structure	

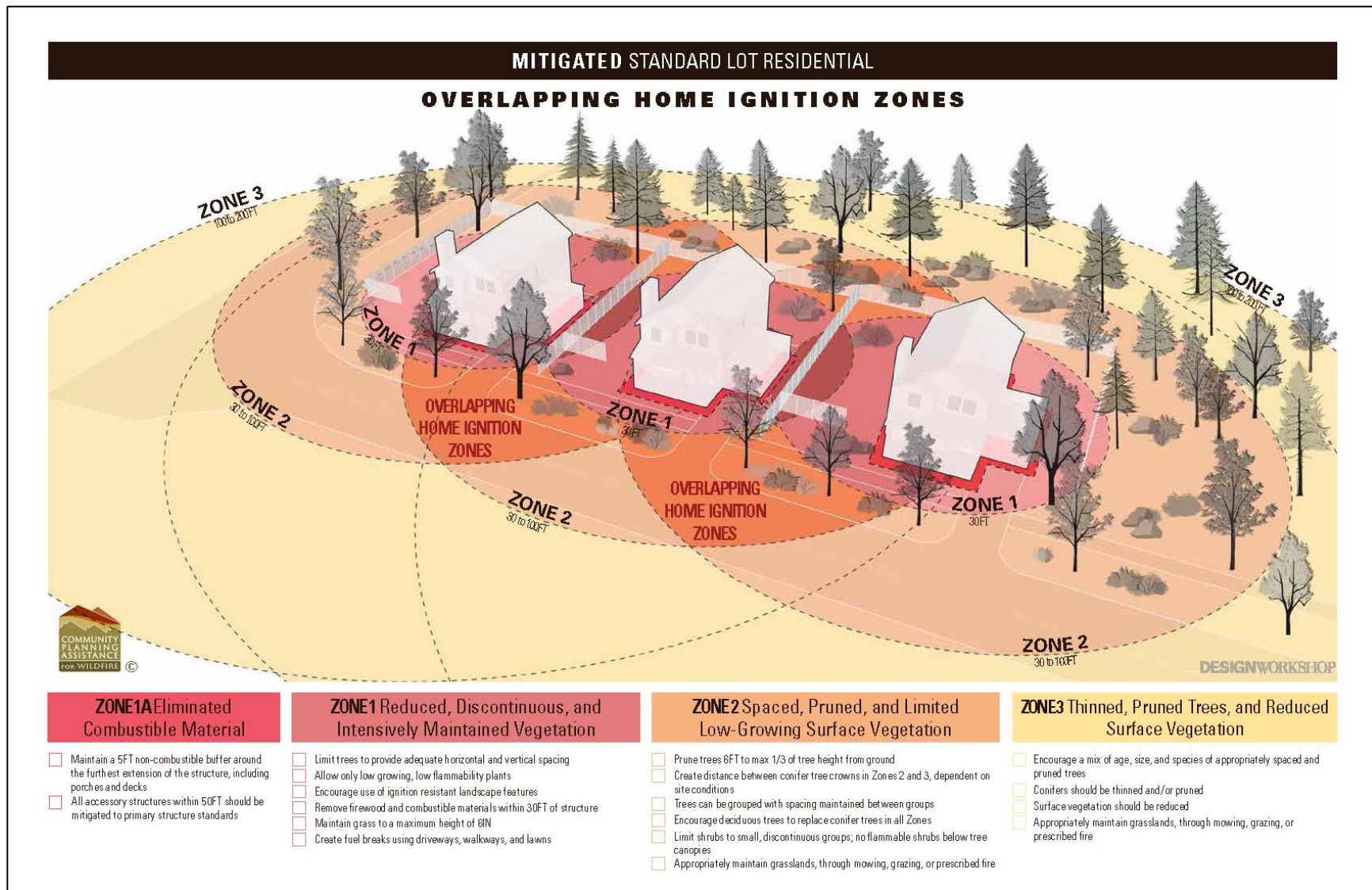
There are conflicts within the “Making the Most of Every Drop” publication between the recommended and fire hazard plant lists, as well as the above list. These conflicts should be resolved to align with the list above. Any plants that are not identified on the recommended plant list found in the “Making the Most of Every Drop” publication must be submitted to the Town of Mammoth for review and approval.

¹² 2014. Town of Mammoth Lakes. Making the Most of Every Drop, Water-Efficient Landscapes for Mammoth Lakes, CA Recommendations and Requirements User Guide

[https://www.townofmammothlakes.ca.gov/DocumentCenter/View/4512/Final-Making-the-Most-of-Every-Drop-User-Guide_Final?bidId=.](https://www.townofmammothlakes.ca.gov/DocumentCenter/View/4512/Final-Making-the-Most-of-Every-Drop-User-Guide_Final?bidId=)

Appendix B: Outreach Materials





MITIGATED RESIDENTIAL DEVELOPMENT

SLOPE HOME IGNITION ZONE PRACTICES

ALL 3 ZONES INCREASE ON SLOPED SITES

On a 30% slope, zones DOWNHILL of a structure DOUBLE in distance

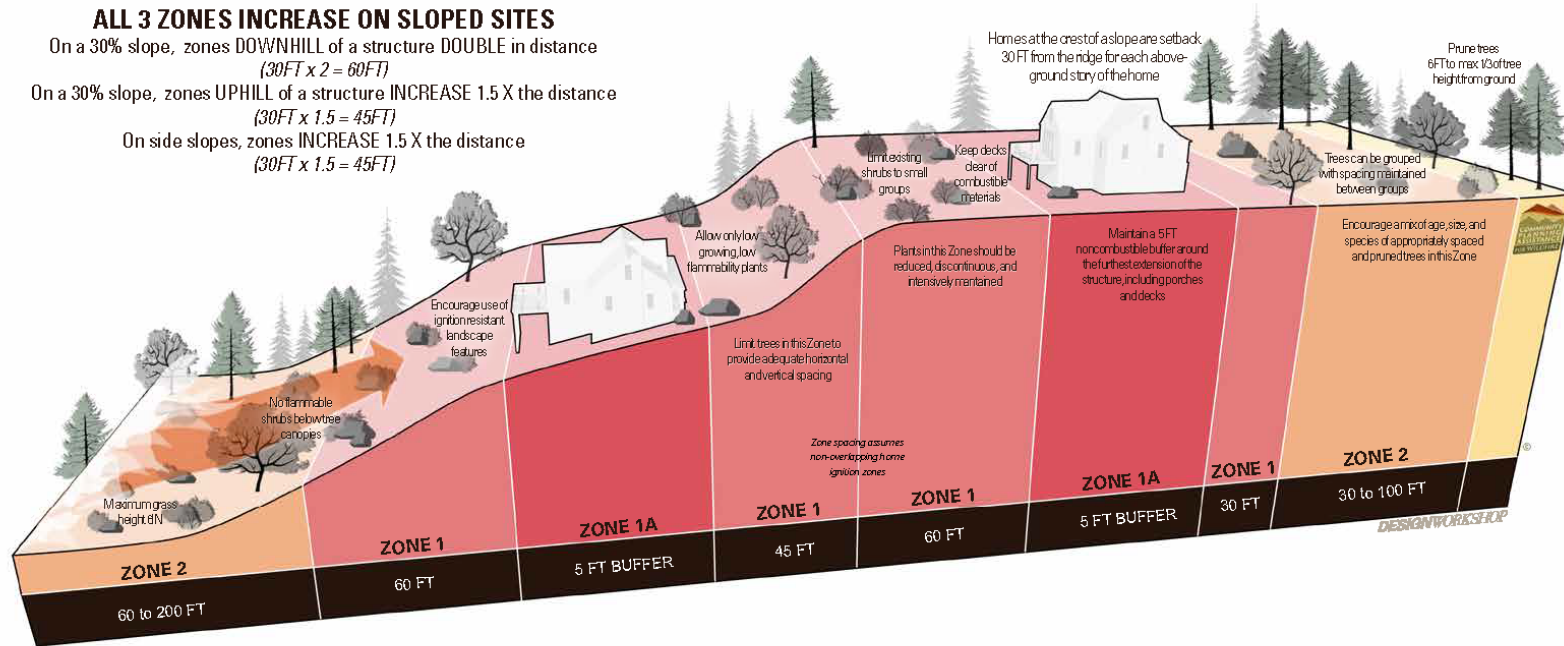
(30FT x 2 = 60FT)

On a 30% slope, zones UPHILL of a structure INCREASE 1.5 X the distance

(30FT x 1.5 = 45FT)

On side slopes, zones INCREASE 1.5 X the distance

(30FT x 1.5 = 45FT)



ZONE 1A Eliminated Combustible Material

ZONE 1 Reduced, Discontinuous, and Intensively Maintained Vegetation

ZONE 2 Spaced, Pruned, and Limited Low-Growing Surface Vegetation

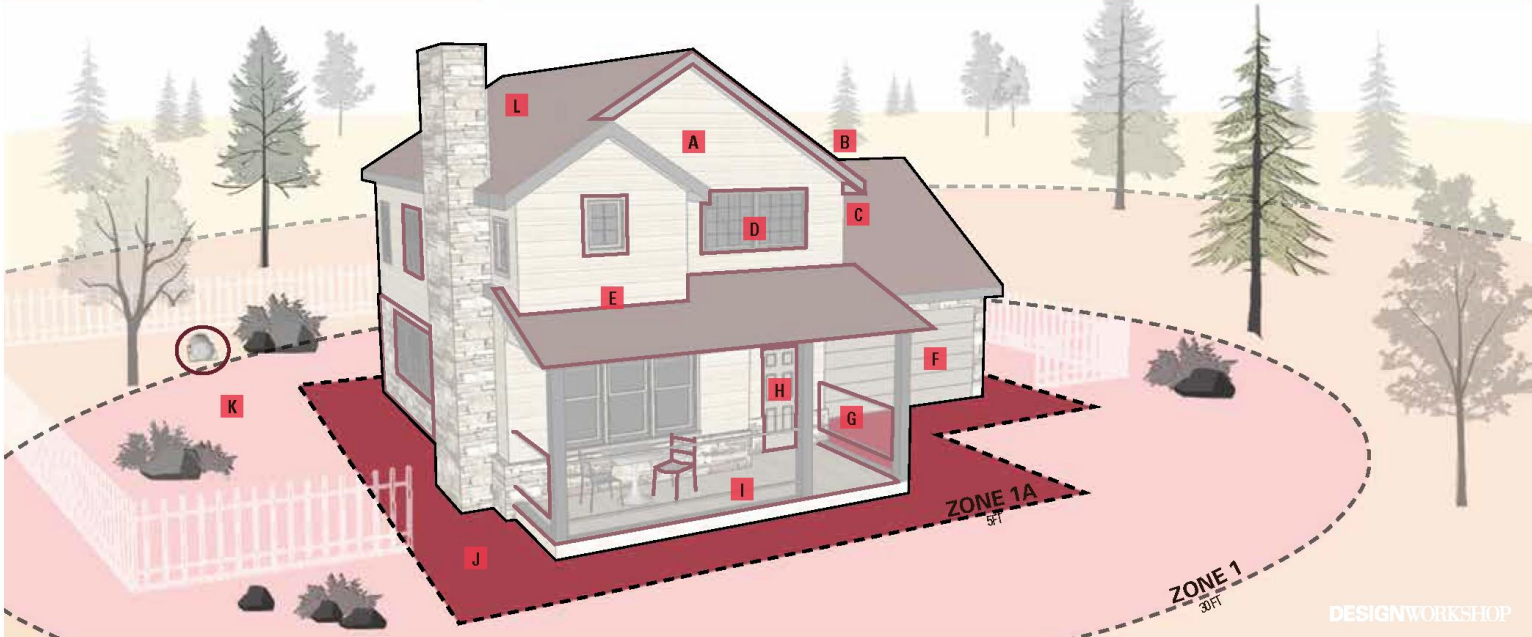
ZONE 3 Thinned, Pruned Trees, and Reduced Surface Vegetation

WILDFIRE MITIGATION CONCEPTS FOR THE HOME

MITIGATED HOME

WUI CODES

Even if homes are located outside of intermix or interface areas, they can still be susceptible to transported embers. WUI Codes can be adopted to incorporate best practices and specify materials to mitigate wildfire risk



DESIGNWORKSHOP

ZONE 1A 5FT NON-COMBUSTIBLE BUFFER AROUND THE FURTHEST EXTENSION OF THE STRUCTURE

A Use non-combustible or ignition resistant siding and trim

B Clear debris from roofs and gutters regularly

- Install non-combustible gutters and downspouts

C Install Class A fire-resistant roof assembly and enclosed non-combustible eaves with appropriately screened vents

D Install multi-pane windows or ideally tempered glass with:

- 1/8 IN metal window screens
- Window frames constructed with non-combustible materials

E Ensure 6IN vertical non-combustible surface on all gables above roof surfaces

F Conditions may require 1HR fire rated garage door; all gaps should be sealed

G Avoid use of combustible lattice, trellis, or other decorative features

H Conditions may require 1HR fire rated door (as opposed to non-combustible or solid wood) where conditions warrant

I Construct deck with heavy timber or UL/ASTM fire rated materials, and ensure:

- Crawl spaces are enclosed and regularly cleaned, or left open and regularly cleaned
- A non-combustible surface is maintained and no combustibles are stored under the deck
- No combustible patio furniture or accessories are on the deck

J Establish and maintain a 5 FT non-combustible buffer around the structure including:

- All vegetation material
- Firewood

K In Zone 1, allow:

- Only low growing, low flammability plants
- Only accessory structures (or adjacent structures) mitigated to primary structure standards
- No propane storage within 30FT of the building
- No storage of firewood or combustibles within 30FT

L Ensure any skylights present are glass