



Addendum to Revised Annex 4 Los Altos Hills County Fire District Overview

This Overview provides suggestions and information to residents and the public and discusses:

- **Factors that contribute to and influences spread of wildfire**
- **Self-reliance measures by residents and building managers for wildfire protection and pre-planning actions to enhance safety of persons and property**
- **Programs and Projects supported by the Los Altos Hills County Fire District to achieve its mission of protection of persons and property from wildfire and disaster**

Safe and proper evacuation of people (residents, workers, and visitors), pets and livestock are very critical component of preparation for wildland urban interface (WUI) fires. Evacuations are the primary jurisdictional responsibility of law enforcement with assistance from fire and other agencies. However, there will likely be a shortage of public safety responders to assist in the evacuation or other stages of a fire during a serious emergency event. Residents must be prepared to react in event of wildfires by pre-planning and building knowledge and skills to be self-reliant in event of any disaster that strikes the community.

UNDERSTANDING WILDFIRE

The wildland fire environment consists of four factors that influence the spread of wildfire:

- **Fuels**
- **Topography**
- **Weather**
- **Bio-physical Factors**

Understanding how these factors interact to produce a range of fire behavior is fundamental to determining treatment strategies and priorities in the WUI.

FUELS

In the wildland environment, vegetation is synonymous with fuels. When sufficient fuels for continued combustion are present, the level of risk for those residing in the WUI is heightened.

Fire spreads in three ways:

1. **Surface fire spread**—the flaming front remains on the ground surface (in grasses, shrubs, small trees, etc.) and resistance to control is comparatively low
2. **Crown fire**—the surface fire “ladders” up into the upper levels of the forest canopy and spreads through the tops (or crowns) independent of or along with the surface fire, and when sustained is often beyond the capabilities of suppression resources
3. **Spotting**—embers are lifted and carried with the wind ahead of the main fire and ignite in receptive fuels. If embers are plentiful and/or long range (>0.5 mile), resistance to control can be very high. Spotting is often the greatest concern to communities in the path of a wildland fire. In areas where homes are situated close to timber fuels and/or denser shrubs and trees, potential spotting from woody fuels to adjacent fuels should be acknowledged.

Homes are more likely to survive a wildfire due to use of fire-resistant building materials and designs, and vegetation clearance around the dwelling, than by a reliance on fire suppression resources i.e. firefighter availability to stop the fire.

Pre-planning to lower risk of wildfire spread on property:

- remove flammable vegetation from around buildings
- construct the building of fire-resistant material

However, it must be noted that a lack of access to water supply, and roads which are too narrow to allow transport of water by fire apparatus to structures threatened by wildfire, will complicate the suppression of wildfire and the protection of structures.

Mitigations: Many methods are available to mitigate the available burnable fuel hazard, whether buildings or native or ornamental vegetation. Mitigations typically refer to reducing the amount of hazardous vegetation available to burn or the expected intensity of the fire when it does burn. Providing **defensible space** around structures is one example of reducing the hazard through the mitigation effort of removing and/or thinning of flammable vegetation. **Structural mitigations** include replacing wooden shake shingle roofs or preventing embers from entering attics through improved vent systems.

Most structure ignitions are from flying embers landing on flammable components of the building and setting the building on fire.

- The single most vulnerable area for flying ember caused ignition is wooden roofs and wooden siding
- Flammable vegetation burning adjacent to structures and igniting the building through direct flame contact is the second most common source of ignition
- The third source is from radiant heat from burning (vegetation or other burning buildings) close to the structure. Burning structures can be the most significant cause of flying ember and radiant heat generator. Embers can ignite neighboring structures, or if closer than 30 feet the radiant heat is likely to ignite the adjacent building.

WUI Defensible Space: The definition of **defensible space**, via state and local codes, is maintenance by homeowners, and enforcement, as needed, by fire agencies are common practice of wildfire risk mitigation. The California State Board of Forestry issued *General Guidelines for Creating Defensible Space* in 2008, following a change in PRC 4291 **that expanded defensible**

space clearance requirements from 30 to 100 feet around buildings and structures in State Responsible Areas.

Building codes are intended to improve the resilience of a building to ignition from either direct flame contact or from airborne embers. In incidents in which the rate of wildfire spread, and the number of homes at risk from the wildfire, exceeds fire suppression capacity. This resilience may determine whether the building survives.

The guidelines note, some aspects about WUI **defensible space**, are often overlooked:

- Greater **defensible space** may be needed due to local conditions, such as slope and fuel density
- Fuel reduction has more to do with disrupting fuel continuity so that the spread of fire is impeded, rather than creating a denuded zone around a home. For example, pruning the lower limbs of trees create a break between ground fuels and tree canopies, reducing the chances that a fire will move from a ground fire to a crown fire.
- Communities may wish to develop **defensible space areas** that are greater than 100 feet for even better protection. State and local codes only set a minimum distance.
- **Defensible space** also provides a safer environment in which firefighters can work. This environment is more than vegetation clearance; **defensible space** also involves emergency vehicle access, water supply, and visible street signs and addresses.

TOPOGRAPHY

Topography is important in determining fire behavior. Steepness of slope, aspect (direction the slope faces), elevation, and landscape features can all affect fuels. local weather (by channeling winds and affecting local temperatures), also impacts and affects the rate of spread of wildfire.

WEATHER

Extreme Fire Behavior includes Diablo winds in the Bay Area. Such winds tend to be stronger in southern California, in part because topography and orientation of canyons also channels these winds and increases their strength, but also as they are associated with high pressure systems over Sierras and concurrent lows off the coast.

Of the three fire behavior components, weather is the most likely to fluctuate. Accurately predicting fire weather remains a challenge for forecasters, particularly during drought conditions. As summer winds and rising temperatures dry fuels, conditions can deteriorate rapidly, creating an environment that is susceptible to wildland fire.

Fine fuels (grass and leaf litter) can dry rapidly, making them highly flammable in as little as 1 hour following light precipitation. Low live fuel moistures of shrubs and trees can significantly contribute to fire behavior in the form of crowning and torching. The presence of very low relative humidity, warm to hot temperatures, and strong winds, along with continuous wildland vegetation and moderate to steep topography, can quickly lead to disastrous wildfire behavior even if conditions persist for only a few hours. Spotting behavior is especially active because of low relative humidity causes extremely dry, receptive fuels to occur and spot fires often ignite more than a mile in front of the fire itself.

Fire suppression operations are further complicated in high winds because air tankers cannot fly safely and winds disperse retardant before it hits the ground, and/or smoke obscures the location of the fire. Therefore, while relatively rare, extreme fire behavior patterns can cause the vast

majority of damage and cost associated with the fire season. Moreover, failure to plan and prepare for this type of fire behavior leaves virtually no time to correct defensible space or communication deficiencies.

BIO-PHYSICAL FACTORS

Bio-physical factors relates to flammable vegetation and buildings, weather, topography, road, and water systems. These factors help determine the level and nature of hazard that exists. Various mitigation methods can be applied to reduce the hazard and make the community safer

Flammable vegetation: Ornamental landscape, particularly in foundation plantings, can expose buildings to ignition. Many ornamental plants are very flammable especially when in flower beds with flammable mulches, which serve as a receptive bed for flying embers. Plants ignite and expose siding and under eave area to direct flame contact.

Reducing the loading of hazardous fuels should reduce fire intensity. This can be achieved through community-wide **defensible space compliance**, proper landscape plantings and maintenance of open space or common owned lands in planned unit developments, and community fuel breaks. Vegetation fuel reduction projects require compliance with all federal, state, or local environmental protection laws.

Road systems: Less expensive road system improvements can be achieved by simple actions such as posting clear road signs, evacuation routes, and addresses. These solutions can aid fire suppression efforts and reduce injury. Changing and adding road systems are financially difficult and often not feasible. Current roads need to display clear signage. When new subdivisions are developed, road designs and improvements can be coordinated with the land use planning agencies.

Water systems: Water availability can have a significant effect on firefighters being able to suppress fires and protect buildings. Community water systems with proper volume in storage is ideal, followed by fire department accessible water tank storage on each parcel, and lastly with scattered water tanks throughout the community. If firefighters must shuttle water back and forth, success rates drop dramatically.

Property hygiene: Property hygiene is the presence of clutter, debris piles, firewood stacks, lumber, or other flammables within the 100-foot **defensible space zone**. If the community characteristics is generally poor property hygiene, the risk of fire spreading is greater. Good property hygiene reduces fire spread.

SELF-RELIANCE and PRE-PLANNING ACTIONS

The safe and efficient evacuation of people from wildfire requires several factors. Most WUI fires require immediate “No Notice” evacuations, meaning little or no warning time exists between fire origin and the need for evacuation. There is likely a shortage of public safety responders to assist in the evacuation during early stages of a fire. Notification will be through Reverse 9-1-1 type phone calls or other mass notification systems, and people will need to be prepared, have a plan of action and conduct their own self-evacuation. Careless populations, schools, rest homes, or other non-ambulatory facilities require significant pre-planning by residents or building managers to accommodate evacuation of these facilities. Pre-planning for evacuation is crucial.

Emergency notification methods: These methods include Emergency Alert System, email and telephone, television, and public address systems on emergency vehicles. Specifically, Santa Clara County has recently established **AlertSCC** to provide information and instructions on incidents such as wildfire, as well as post-disaster information on shelters. The notification system is offered to residents by Santa Clara County and 15 constituent cities.

Pre-planning supports self-reliance: Pre-planning by residents and the public about how to evacuate and where to go is critical. Locked gates, poor or missing signage, and conflicts with emergency vehicles driving into the community versus the public trying to leave complicate the evacuation process. Uncertainty about where to find temporary refuge can cause families to become separated and delay reunions. Some individuals without transportation or with limited mobility require pre-planning for evacuation.

ENCOURAGEMENT TO RESIDENTS AND THE PUBLIC

Residents are encouraged to prepare and pre-plan with their families an evacuation plan, alternate evacuation routes, assembled GO-Bags to quickly grab at notice of evaluation, plans for pet and livestock evacuation and a communication plan to find and gather family members once an evacuation is in process.

Firefighters and emergency responders will be responding to fighting wildfires and providing emergency medical assistance to victims. It's critical that residents are aware of how to evacuate and have already ensured that their property is in the best condition, utilizing principles of property hygiene, to withstand wildfire and their property is in a defensive condition when firefighters arrive.

TRAINING AND WORKSHOPS FOR RESIDENTS AND THE PUBLIC

Santa Clara County Fire Department hosts and presents workshops to assist residents in all aspects of preparation and evacuation as well as workshops on **creating defensive space** on property and how to harden and condition property, homes and buildings for resistance to wildfire and to be defensible if firefighters arrive.

FIRE PROTECTION AND PREVENTION PROGRAMS AVAILABLE FROM LAHCFD

Los Altos Hills County Fire District (LAHCFD) funds multiple programs and projects aimed at reducing the risk of wildfire. These programs and projects provide resources and support residents' efforts and abilities to become self-reliant in evacuation. Courses instruct residents on how to create **defensible spaces** on property so that structures are more resilient from devastations of wildfire.

ADDITIONAL PROGRAMS PROVIDED BY LAHCFD

LAHCFD (District) provides fuel mitigation resources for residents through its Residential Programs that include: Dead Tree and Eucalyptus Tree Removal Program, Brush Chipping, Weed Abatement, Monthly Yard Waste Drop-Off The District also funds programs to increased summer fire patrol service, funding for a year-round additional Battalion Chief staffed at El Monte Fire Station, replacement of fire hydrants throughout the District, programs to increase water pipeline resilience and fire flow in event of fires or earthquake, support of training classes, workshops and community meetings in partnership with the Santa Clara County Fire Department and other program providers.

In addition, LAHCFD provides an Emergency Services Manager (ESM) who is available to support and assist in the organization of the LAH CERT Program (Los Altos Hill Citizen Emergency Response Team). LAH CERTs are a team of volunteers available to be deployed in event of emergency, earthquake or wildfire and available to assist with after-incident recovery efforts. The ESM also provides support and assistance to the ham radio volunteers who provide communication support in event of emergency. These resident volunteer teams meet, learn, train and drill together as a service to their community.

LAHCFD Programs are governed by the LAHCFD Board of Commissioners and are provided to residents and the public in an effort to support the District's mission. This mission is to protect lives and property from fires, natural disasters, and hazardous material incidents for the prevention of fires through protection, prevention and education programs.

Please refer to the Fire District website at www.lahcfd.org for addition information about fire protection Residential Programs, training and workshops that are available to residents. Information on how to train and become a LAH CERT and/or ham volunteer and member are also available on the LAHCFD website.

IN SUMMARY

LAHCFD is dedicated to support all these many initiatives, programs and efforts to help ensure protection of persons and property from the devastations of wildfires and to foster the ability to respond in event of disaster.

LAHCFD is working in partnership with the Santa Clara County Fire Department, Town of Los Altos Hills and other local agencies and personnel in its mission to provide fire prevention, protection and safety to person and property within its jurisdiction and to the greater Bay Area region.