

COMMUNITY WILDFIRE PROTECTION PLAN

FOR

CRESCENTA VALLEY
(UNINCORPORATED LOS ANGELES COUNTY
AREA KNOWN AS "LA CRESCENTA")

Community Wildfire Protection Plan Mutual Agreement Page

The Community Wildfire Protection Plan developed for the unincorporated Crescenta Valley area of Los Angeles County:

- Was collaboratively developed. Interested parties and federal land management agencies managing land in the vicinity of Crescenta Valley have been consulted.
- This plan identifies and prioritizes areas for hazardous fuel reduction treatments and recommends the types and methods of treatment that will protect Crescenta Valley.
- This plan recommends measures to reduce the ignitability of structures throughout Crescenta Valley.

The following entities mutually agree with the contents of this Community Wildfire Protection Plan:

Recommend by: _____
CRESCENTA VALLEY FIRE SAFE COUNCIL

Approved by: _____
California Department of Forestry and Fire Protection

Approved by: _____
Los Angeles County Fire Department

Approved by: _____
Los Angeles County

Approved by: _____
United States Department of Agriculture, Forestry Service

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1. INTRODUCTION

This Crescenta Valley Community Wildfire Protection Plan (“CWPP”) is being sponsored by the Crescenta Valley Fire Safe Council (“CVFSC”), a non-profit corporation staffed by volunteers who live in Crescenta Valley. The CWPP has been developed in response to the Healthy Forests Restoration Act of 2003 (HFRA). This legislation established unprecedented incentives for communities to develop comprehensive wildfire protection plans in a collaborative, inclusive process. The HFRA directs the Departments of Interior and Agriculture to address local community priorities in fuel reduction treatments, on both federal and non-federal lands.

The HFRA emphasizes the need for federal agencies to collaborate with communities in developing hazardous fuel reduction projects and places priority on treatment areas identified by communities themselves through development of a Community Wildfire Protection Plan. Priority areas include the WUI, municipal watersheds, areas impacted by windthrow or insect or disease epidemics, and critical wildlife habitat that would be negatively impacted by a catastrophic wildfire. In compliance with Title 1 of the HFRA, the CWPP requires agreement among local government, local fire departments, and the California Department of Forestry and Fire Protection (CAL FIRE), the state agency responsible for forest management. The CWPP must also be developed in consultation with interested parties and the applicable federal agency managing the land surrounding the at-risk communities.

1.1 CRESCENTA VALLEY, A COMMUNITY AT RISK

The unincorporated hillside community of Crescenta Valley includes a Wildland-Urban Interface (WUI) with Angeles National Forest. That puts Crescenta Valley at great risk from wildfires, a problem exacerbated by a dense canopy and understory, and limited evacuation routes.

In the past 40 years, two major wildfires have touched the borders of Crescenta Valley. However, no wildfire in recent history has burned through Crescenta Valley. In the more hazardous sections of the community, the vegetation is dense. Non-native trees also have grown to create a dense canopy that can hasten the spread of a wildfire. Moreover, homes have been built one at a time on narrow, curving mountain roads. Many of the homes were built before the WUI building codes were enacted. Setbacks have often been waived or ignored, increasing the risk of a wildfire spreading through the community.

Perhaps what makes the community most at risk is the lack of adequate evacuation routes. The Briggs Terrace area has only one way out, a winding two-lane road with no shoulders, criss-crossed by power lines on 60-year old wooden poles, over an earthquake fault line. The need to reduce the risks of wildfires is paramount in this area. In addition, the lack of safe evacuation routes will prevent firefighters from entering the area to protect homes and fight the wildfire, particularly if there is a Santa Ana event driving the wildfire.

1.2 PURPOSE, GOALS AND OBJECTIVES OF THE CWPP

The inaugural CVFSC sponsored event, “Surviving A Wildfire” Expo took place on May 30, 2009. After taking a ground and aerial survey of the Briggs Terrace area of Crescenta Valley, retired Chief Roy D. Pike, Cal Fire (Retired), who was the Incident Commander at the 1991 “Tunnel Fire” in Oakland Hills, addressed residents gathered at Two Strike Park. He described the worst case scenario if a wildfire came to this area.

"Should an East Wind driven fire start East/Northeast of your location [Briggs Terrace] in the night or early morning, your community would experience the same massive destruction that Oakland experienced in 1991. There would undoubtedly be fatalities, maybe as many as Oakland had (25) and there would be scores of homes destroyed, maybe into to the hundreds, or more. The situation would be worsened by the inability or refusal of firefighters to take their fire engines onto those one way in and out narrow roads that are overgrown with vegetation, and that have no turnarounds at the dead ends. One can expect the overhead power lines to fall down and block vehicular traffic and perhaps even electrocute people as they did in Oakland. Fire resources would be forced to stay in remote staging areas, taking no firefighting action."

Two months and 10 days later, under the unified command of the LA County Sheriff and the LA County Fire Department, CVFSC assisted in conducting an evacuation drill of Briggs Terrace. This exercise began in planning some three months earlier at the urging of the CVFSC and community activists. The timing of the drill (16 days prior to the ignition of the Station Fire) could not have made for a more valuable experience.

Twelve months earlier, long-time friends Roger Young (CVFSC Founder) and Steve Pierce (Honorary Mayor and former President of the CV Town Council) had met over lunch to strategize how to address the need to bring our community to a higher level of awareness of the need to plan for the next wildfire. Through inquiry and providence, they were directed to the California Fire Safe Council where they learned that information and the opportunity to win grants for hazardous fuel removal were available.

After incorporating as a non-profit and forming a Board of Directors in the spring of 2009, CVFSC was given a grant of \$2,500 by Farmers Insurance. This donation allowed CVFSSC to purchase the services of ONE—CALL—NOW, a reverse call 911 data base.

The reverse call data base was populated with 2,000 phone numbers located along the WUI in Crescenta Valley. This tool gave CVFSC immediate access (by phone and email) to its primary prospects. Within one week of its purchase, CVFSC was able to prove its value to the community by helping the LASD locate an Alzheimer resident who had wandered from the safety of his home. At the LASD’s request, CVFSC turned a two hour search by helicopter and other resources into a five-minute event. Using the reverse call data base, CVFSC telephoned the neighborhood and asked residents to look around their property for the missing individual. He was found lounging in a nearby neighbor’s back yard. The One-Call-System showed its value in the event of a major disaster, such as a wildfire.

Since the informal organization of CVFSC beginning in August of 2008, its board has been made up of active community members who have continued to serve:

Roger Young, Former CV CERT Team 2 Assistant Captain, Hopeton Road Neighborhood Watch Captain, former CVTC member, Founder, appointed President of CVFSC;

Don Ross CV CERT Team 2 Assistant Captain, , CAL-EMA SAP Architect, appointed Vice President of CVFSC;

Jean Maluccio, President of the Crescenta Valley Chamber of Commerce appointed to Treasurer;

Judy Turner, Briggs Terrace resident, founder of Upper Canyonside Community Association, CERT trained, appointed Secretary;

Steve Pierce, former Honorary Mayor and President of the CV Town Council, CV CERT trained, member of every notable organization in the Crescenta Valley.

Clair Ross, member of LASD Volunteers on Patrol and CV CERT;

CV Town Council has recognized the value of CVFSC and appoints council members to serve year-long terms as liaisons with CVFSC. The liaisons have included:

Cheryl Davis, former President of CV Town Council.

Steve Goldsworthy, LASD VOP, Montrose Search and Rescue,

Mike Claessens, Attorney and CV CERT trained, CVTC Roads and Community Safety Committee.

The CVFSC Board has met monthly for the last 48 consecutive months. It functions as a steering committee and sees as its mission:

To empower our community with fire safety education, mobilize neighborhoods to collectively protect themselves, and provide access to resources for those efforts.

Since inception, CVFSC's major accomplishments include: creation & distribution of a "Pre-
vacuation Guide"; providing information at Preparedness Expos and neighborhood meetings; partnering with local fire & sheriff departments in execution of evacuation drills for a hillside residential area of 360+ homes; establishing an emergency reverse call system (used extensively during the Station Fire and subsequent mudflow evacuations); building a mobile trailer to provide a valuable communications and emergency medical information center in the event of a disaster; and establishing and stocking a community storage shed in the Briggs Terrace WUI with emergency tools and supplies. CVFSC also has obtained a \$500 grant from US National

Bank, a \$15,000 grant from FEMA (administered through the Los Angeles County Department of Public Health), and other community donations to fund these efforts. In 2010 CVFSC was recognized by the Montrose Chamber of Commerce as “Organization of the Year” (an honor shared with CERT), and received commendations from local, county, state and federal representatives. In 2011 President Roger Young was recognized by the CV Chamber as volunteer of the year for his work with CVFSC.

Working with Upper Canyonside Community Association (UCCA), CVFSC has co-hosted the annual Station Fire Memorial and Briggs Terrace work day and block party annually since 2010.

CVFSC also is working to establish an alternate escape route to Shields Avenue (the only street providing entry into, or exit out of, Briggs Terrace).

CVFSC also seeks resources to manage the health of the Briggs Terrace Forest in order to minimize the risk from fire to that community by preparing and offering a “Fire-Wise Structure Assessment” along the WUI. This year CVFSC obtained the cooperation of the Los Angeles County Fire Department’s Department of Forestry to provide \$30,000 worth of labor and supplies to reduce the thin the understory in the WUI and reduce the chance of a wildfire spreading.

CVFSC also raises funds to support its educational and informational programs, and sustain community interest following the Station Fire so there will not be a false sense of security and complacency about the ongoing risk of a wildfire.

CVFSC works on finding effective ways for the Fire Department and CVFSC to join together to assess house hardening strategies and to conduct “Fire-wise Assessments” of homes, first in Briggs Terrace and then all along the entire WUI in the Crescenta Valley.

CVFSC also is studying a “Shelter in Place” educational and training strategy for residents of Briggs Terrace who may not be able to leave if their single road out is blocked.

Through this CWPP, the CVFSC seeks to:

- To identify priority projects to reduce risks and hazards from wildfire while protecting environmental stewardship values in the WUI and adjacent developed areas, including critical infrastructure, recreational resources, and private property. Goals are to be achieved principally through prioritization and implementation of fuel hazard reduction, building sustainability, community education, and fire-suppression projects and activities.
- To provide an adaptable guidance document for future actions of the County government and the Los Angeles County Fire Department working with local, county, state and federal resources.
- To examine current practices and recommend improvements in wildfire mitigation, preparedness, response and recovery.

- To develop best management practices for vegetation management and building sustainability.
- To provide community priorities and direction for stewardship-based fuel reduction on open space lands.
- To provide fire safety educational information to the residents of Crescenta Valley.
- To provide a positive balance among fire prevention, stewardship, and wildlife protection.
- To coordinate fire protection strategies across property boundaries.
- To integrate private land management goals with community needs and expectations for fire safety.
- Finally, this document is being written as a Community Wildfire Protection Plan, in order to meet the requirements of future National Fire Plan(s) and other government funding sources, and to provide community direction for local land management within the planning area.

2. THE CRESCENTA VALLEY COMMUNITY

2.1 PHYSICAL DESCRIPTION OF CRESCENTA VALLEY

Crescenta Valley consists of 3.437 square miles of unincorporated area in Los Angeles County, bounded by the City of Glendale on the west and south, the City of La Canada Flintridge on the east, and Angeles National Forest on the north. Crescenta Valley is the census-designated place known as “La Crescenta-Montrose.” The population of Crescenta Valley is 19,653, per the 2010 census.

2.2 COMMUNITY PRINCIPLES FOR WILDFIRE PROTECTION

Crescenta Valley is in the foothills of the San Gabriel Mountains at the border of the Los Angeles coastal plain. Crescenta Valley is actually a foothill slope rising from approximately 1,500 feet above sea level to more than 2,700 feet. Most residents choose to live here because of the community and small town charm, combined with the natural beauty and recreational opportunities of our location. Many homeowners also embrace the idea that living adjacent to wildlands carries a responsibility to be good stewards of the land, learning to live sustainably in the natural world, of which wildfire is a significant part. This CWPP summarizes what residents can do to coexist safely with fire within the Crescenta Valley WUI. It will examine how we can provide a positive balance among wildfire prevention, stewardship and wildlife protection in our community. We choose to live here, and with that choice we have accepted a stewardship responsibility.

2.3 CRESCENTA VALLEY FIRE HAZARD CONDITIONS

Southern California's Mediterranean climate conditions create a high level of risk for wildland fires. The wet, mild winters and dry, hot summers provide a long growing season that produces an abundance of plant fuel. Heavy rains, and seasonal or prolonged drought all result in excessive plant fuel accumulation and the potential for catastrophic wildfires.

Crescenta Valley is located along the southern foothills of the San Gabriel Mountains. Throughout history, the San Gabriel Mountains have been subjected to repeat burning. A major fire threat exists in the steeper slopes of the San Gabriel Mountains to the north with potential to sweep into the hillsides and residential foothill developments. The northern portion of Crescenta Valley, comprising over 300 homes and critical infrastructure, is located in an area designated by the State of California as a Very High Fire Severity Zone (in accordance with AB337) based on topography, vegetation and climate conditions [INSERT CHART].

The main weather patterns associated with severe wildfire in this area are 1) lightning, which is common with summer thunderstorms and 2) the Santa Ana Wind, a warm, dry wind that blows from the north and northeast over the mountains from the desert, typically occurring in the autumn, further drying the vegetation. Previous fires have attested to the extensive damage that can take place from brush fires. Although periodic fires are a natural and essential component of the ecology of certain of our habitats such as coastal sage scrub and chaparral, increased fire frequency and associated changes in vegetation may increase the severity of a wildfire and threaten native habitat and neighboring development. Areas most susceptible to fire have three common characteristics: 1) steep slopes; 2) medium to heavy fuel loading; and 3) frequent critical fire hazard weather conditions. Fire hazards are generally highest during late summer and fall when moisture levels in vegetation have fallen, however, fire season is increasingly viewed as a year-round phenomenon in southern California. A wildfire has the potential to denude hillsides and render them susceptible to landslides. A wildfire also has the potential to denude the watershed, leading to severe flooding that endangers homes and critical infrastructure.

2.4 LIVING WITH THE THREAT OF WILDFIRE

Fire is a dynamic element within Southern California.

Our foothill lands have burned at various times in the past and can be expected to burn again sometime in the future. While it is rarely practical to completely "fire proof" homes and private property, there are many steps you can take to make sure that you and your house survive the likely event of wildfire. The community will benefit if landscape on private homesites can quickly recover afterwards, to continue providing you with the many benefits of plants, including slope stability – this is what we mean by a more fire-resilient landscape.

One size does not fit all in terms of homeowner fire safety.

Work with the Los Angeles County Fire Department and/or contractors to design the appropriate fire-safe practices and defensible space for homes and private property.

Private homes exist within a larger watershed.

Each homesite is located in the midst of a much larger landscape. Think about where the homesite is on the slope. Is it on top of a ridge, where fire will more easily burn toward the homesite? Most all of Crescenta Valley's hillside development is in steep terrain. Many homesites abut steep undeveloped canyons. Wildfire moves quickly up steeper slopes, which means that a larger defensible space is needed. What is below and above the homesite? What direction, or "aspect," does the homesite face? Overall, Crescenta Valley has a southwest-facing aspect, although homesites in some of the canyons may face east or west. Generally, south-facing properties are hotter and drier; they can therefore be more susceptible to fire. Are there any natural firebreaks around homesites such as streams, streets, or rocky outcrops where a wildfire might naturally slow its progress? Do wildlife use or move through homesites to get to food, shelter, or water? Do the roads in and out of the community follow ridges or canyons? Look beyond individual homesites to understand the ecological perspective of your place.

Fire can behave both predictably and unpredictably.

The Fire Department can generally predict fire direction and behavior; it will typically go the way the wind is blowing and only burn if fuel is available. Predicting the exact time and place where fire will burn is less obvious. As fire moves across the landscape it can climb up into trees, given the right conditions. A key fire safety objective is to prevent that spread. Excessive dead leaves and branches on the ground (surface fuels) act as a wick to move fire horizontally across the land. Shrubs, small trees, branches and foliage (ladder fuels) can carry fire vertically into the larger trees. Too much of these surface and ladder fuels can cause the overstory trees to burn up in what is called a "crown fire"—when fire spreads from tree to tree in the forest canopy (or tree tops). One of the main principles in creating defensible space and reducing hazardous fuel conditions is to create physical space between vegetation layers (both vertically and horizontally) so a fire cannot climb easily from the ground into the trees or to a house.

Timing is everything.

There are appropriate times for different actions on the homesites, much as there are different seasons of work in your garden. Defensible space and fuel reduction work should be done well the hotter, drier seasons to avoid having sparks from equipment start fires in dry vegetation. It is better – for safety, for the environment and for cost and labor-savings -- to make defensible space a year-round project. Other considerations are to avoid ground disturbing activities when the ground is too wet or when birds and animals are nesting. In general, don't try to do everything at once—think about your fire safety seasonally: plan your activities in the winter and spring; start clearing when the ground begins to dry; finish treatments by early summer before the vegetation is dry; continue with grooming as needed throughout the dry season; do your defensible space maintenance around and inside your home in the fall and do major tree or shrub removal, or trimming of dormant trees in winter, if possible, before bird nesting season begins.

Houses are likely fuel sources.

Many homes are located in places where a fire can start and spread into surrounding vegetation. Fire prevention experts promote the "house-out" approach: the more homeowners prepare their houses and other structures, the less they will have to treat the surrounding vegetation. The biggest improvement homeowners can make to reduce fire risk is to build or remodel their houses to resist the millions of tiny embers created by ember-attack from wildfires. When

wildfires burn in extreme conditions they send burning firebrands (embers) ahead of them; these firebrands ignite new fires. Using fire-resistant building materials and appropriately designed structures will give homeowners the best chance to survive wildfire. Don't let your home be part of the problem. An interactive source of information to reduce homeowner risk in the wildland-urban interface is provided by the University of California Center for Fire Research and Outreach; it's called the Fire Information Engine Toolkit. *See* <http://firecenter.berkeley.edu/toolkit/homeowners.html> for details on how this web-based program can help you make better decisions to reduce your fire risk, and the related UC Extension's Homeowner's Wildfire Mitigation Guide. When building a new home, slope, aspect, surrounding fuels and potential environmental impacts should be considered in deciding where to situate the house. This may be more important than the view in the long term.

Firefighters need your help to protect your home.

Residents should make it safe for firefighters and their equipment to get to and from their houses, with visible road and address signs. Remember that fire-safe landscaping and construction greatly improves firefighters' ability to protect individual homes.

2.5 STEWARDSHIP PRINCIPLES

Homeowners should consider the Stewardship Principles below in how they approach wildfire safety and defensible space. It's all about balance. It is possible to have an aesthetically pleasing landscape that is fire-safe, supports local plant and animal species, and still provides you with privacy and plantings. These Stewardship Principles were adapted from the Draft Santa Monica Mountains Community Wildfire Protection Plan (Katelman, Tracy, et al. 2010 ForEverGreenForestry) accessed at: http://www.forevergreenforestry.com/smmcwpp_pub.html; and the Monrovia Community Wildfire Protection Plan accessed at <http://www.cityofmonrovia.org/fire/page/community-wildfire-protection-plan>.

Remembering the Vegetation (Native Trees and Other Plants)

a. Discovering and monitoring your vegetation's dynamic changes.

Thinking both in the short term (what will happen this year) and the long term (what will happen over time) can help homeowners make small changes that will add up over time to give themselves a lower-maintenance and more firesafe landscape.

b. Acting conservatively.

Each homeowner should create a landscape that are both more resistant to fire and more resilient if it does burn. In doing this, we need to apply the general concepts of the precautionary principle while implementing fuel treatments: you can always remove more trees and vegetation at a later time, but you cannot immediately replace what you have cut. The vegetation you leave is ultimately most important. Be sure that what you remove is done with careful planning and consideration to ensure that what you leave standing is healthy and resilient.

c. Protecting native species that share your home.

Look at the native vegetation around your property—or ask a local plant or forestry specialist for help—to see what different plants share your neighborhood. There may even be plants that are increasingly rare. You will be doing future generations of Californians a service by protecting those plants. The California Native Plant Society and the Theodore Paine Foundation for Wild Flowers and Native Plants are excellent sources of information about both common and rare native plants. Watch for invasive weeds. The Fire Department can provide you with illustrated pamphlets and other information sources to help you identify the invasive weeds typical to Southern California. Some of these are of particular concern for their ability to ignite or spread fire or damage watersheds; and many of the invasive weeds are serious threats to wildlife habitat as well. Homeowners should follow up their work by monitoring and removing weeds that grow back, and avoid unnecessarily introducing water into your landscape, as water will generally help non-native plants outcompete native plants.

d. Managing the urban forest.

Avoid harming your oldest and biggest native trees, and, recognizing that no tree lives forever, also foster the establishment of the next generation of trees. The key principal is “the right tree in the right place” – based on the tree's size at maturity, its requirements for soil, water, sun and space, and your needs and desires. Los Angeles County protects certain native oak trees by law, and, moreover, oaks and other native trees provide numerous benefits, such as slope

stabilization, shade, wildlife habitat and resilience to fire, as well as shielding your home from flying embers during a wildfire.

Remembering the Soil

e. Maintaining the life in your soil.

There is as much or more activity below the ground on your property as there is above the ground. Keep this in mind in terms of what you do above ground. Minimize activities that could compact, flood, or poison your soil. The health of your land is directly dependent on the health of your soil. As such, the soil is one of the most valuable assets of your property.

f. Ensuring that your soil cover is fire safe.

Replace cover that burns easily (such as pine needles) with cover that is less flammable (e.g. gravel, fleshy green plants, etc.). The objective is to ensure that if and when a fire comes through, it is not so hot that it kills the life in your soil. Rather, it should move through without a lot of fuel to consume in its path. For example, a very light layer of fallen leaves can help with soil erosion (see below), but too much can be a fuel problem.

g. Minimizing erosion.

Protect your soil by keeping it covered. Cover helps to prevent erosion, especially on ground that is not flat; it keeps the soil in place. Don't let soil move across your property, most importantly not into streams or other natural water sources. Keep ground-disturbing activities away from unstable areas and riparian areas. Pay special attention on steep slopes. The steeper the slope, the faster the soil can move downhill if it's disturbed, and the faster a fire can climb uphill under the right (or wrong!) conditions.

h. Protecting your soil after a fire.

Soil can be most fragile after a wildfire. This is often exacerbated when winter rains come soon after a fire. The potential for erosion and loss of soil is huge with this combination of conditions. If you have experienced fire on your property, first employ the precautionary principle: do not disturb the soil if you can avoid it. Note that many of the deep-rooted native plants may actually be alive under the soil surface, and may soon resprout. Do not seed or hydro seed, but if conditions are extreme, contact the Los Angeles County Department of Public Workd for advice regarding netting, wattles, or other protection measures.

Remembering the Wildlife

i. Protecting wildlife habitat.

Crescenta Valley residents value our local wildlife – whether it be the birds overhead and singing in the bushes, the lizards on our fences, the deer sheltering in the shade of an oak, or even the bobcats, bears and mountain lions. Of course, our wildlife comes with certain problems as well – we may be concerned with rattlesnakes in our woodpiles, bears in our garbage, or deer eating our prize roses. However, overall, wildlife enhances our lives, and Monrovia residents choose to live with wildlife. Find ways to balance your land management activities with their needs, and leave some areas untreated for the birds and wildlife using them, while maintaining your defensible space. Protect them as you would your home by creating defensible space while still considering

their needs for cover.

j. Protecting future generations of wildlife.

Avoid harming nesting or breeding animals when working in and around your wildlands. The Migratory Bird Treaty Act (MBTA) applies to everyone and protects most of our local bird species during their breeding season. The Los Angeles Audubon Society is an excellent source of information. See http://www.audubon.org/bird/at_home/SafeMisc.html for more information.

k. Conserving rare and endangered species.

One of the bonuses—and responsibilities—of living in the Wildland Interface is living with the many rare and endangered species with which you share habitat. Consider rare and endangered species and plan your fuel reduction actions around the needs of these species. Often by a fairly minor refinement of your activities, such as timing, technique, or extent, you can protect species while realizing your fuel reduction goals.

Remembering the People

l. Planning your actions with your neighbors.

Coordinated work amongst neighbors will have a greater impact on your individual fire safety. Finding ways to cooperate in your land management actions could make it more cost-effective for both of you. Your defensible space will likely impact your neighbor's chances of surviving a wildfire and vice-versa. Talk about what to do in an emergency and how to most safely evacuate. Help make your entire community a Firewise community.

Finding qualified workers and treating them well.

If your objective is to reduce fuels while still maintaining ecological integrity and diversity on a site, your workers must have the knowledge and experience to help you achieve this. Inexperienced or unqualified workers can do more damage than good in the long-term. This is particularly true when it comes to trimming trees – improper pruning methods can harm and eventually kill your valued trees causing you to incur considerable expense in the future. Use properly licensed workers and pay them appropriately. Involve the workforce in the design, planning, and monitoring of projects. Talk to your neighbors and check references to find reputable licensed contractors. See the California State Licensing Board's website (<http://www.cslb.ca.gov/>).

m. Working with the Fire Department.

Register with the County's public safety alert system, called Nixle, by texting 888-777 or online at www.nixle.com. Talk to your local firefighters when they come to make their annual inspection, or go to the Los Angeles County Fire Department website. Find out what the firefighters need to safely get to your house and back out. Make sure that your access roads are safe; maintain your fuel treatments along all roads, both for firefighter safety in protecting your home and your safety in case of evacuation. Have street and address signs visible so out-of-town firefighters can find you if there is a big fire. These preparations and more are explained in the Ready, Set, Go! program brochure, available from the Crescenta Valley Fire Safe Council.

3. THE COLLABORATIVE PROCESS

4. FUEL ASSESSMENT AND REDUCTION PLAN

4.1 WILDFIRE HISTORY

Over the past 40 years, only two wildfires have burned to the border of Crescenta Valley, the Mill Fire in 1975 and the Station Fire in 2009. The Mill Fire began in Big Tujuna Wash and burned approximately 49,200 acres aided by Santa Ana winds. The Station Fire, started by an arsonist on August 26, 2009, near the U.S. Forest Service ranger station on the Angeles Crest Highway, burned 160,577 acres, destroyed 209 structures (including 89 homes) and killed two Los Angeles County firefighters (Captain Edmund Hall and Firefighter Specialist Arnie Quinones). The Station Fire is the largest wildfire in the County's recorded history, even though there were no Santa Ana winds driving the fire. The Mill Fire burned down to the Northern border of Crescenta Valley. The Station Fire burned to the Eastern and Northern borders of Crescenta Valley. However, no wildfire has burned within the borders of Crescenta Valley. The understory and canopy in the Briggs Terrace area remains quite dense.

[INSERT UPDATE OF LACoFD's 2/10/2009 MAP OF FIRE HISTORY]

4.2 HOW A WILDFIRE BURNS

In order to effectively take on fire protection, it is important to understand how fire works. Fire is manipulated by fuel, oxygen and heat. Once ignited, the key to determining how big or fast a brush fire will grow is based upon three major factors: Topography, Fuel and Weather.

TOPOGRAPHY: Southwest facing slopes and steeper terrain, like the hillsides in Crescenta Valley hillsides, are more prone to fire.

FUEL: This refers to how much there is to burn and how easily it ignites. The drier the vegetation, the harder the fire will be to control.

WEATHER: The combination of heat, humidity and wind. Fire season is a bygone term. The danger of wildfires is now year round. Heat, drought and wind may occur every month of the year in Southern California. Embers are products of combustion that are a major hazard in wildfires, especially those wind-driven events. Some embers can travel several miles, causing wildfires to spread, making them difficult to control.

Crescenta Valley hillsides are dominated by shrub-like vegetation called chaparral. Development around this natural vegetation influences natural fire cycles with emphasis on control as a key fire department strategy. Chaparral is a much-misunderstood type of vegetation. One of the myths is that chaparral "should" burn frequently in less-intense fires. This myth is a carryover from timber stands, which can be protected from conflagrations by frequent burn-offs. But frequent burns cause chaparral to be replaced by weedy fields, which carry both environmental and fire hazards. Management of chaparral in Crescenta Valley hillsides is discussed in this CWPP.

Removal of large swaths of native vegetation – also known as landscape-level fuel treatment – is not recommended in communities like Crescenta Valley. Based on currently-recognized best practices, this CWPP focuses on individual homeowner responsibility, and creating defensible space around buildings, roads and infrastructure.

The concept of fire season is changing – we can no longer count on fire season to be limited to the summer and fall months. Instead, fire season has become a year-round phenomenon. This CWPP proposes ways that our fire prevention strategies can adjust to this fact.

4.2.1 Fire Behavior Characteristics and Terminology

Knowing the attributes of fire behavior is important in order to communicate the various threats from any fire and the benefits of mitigation. Flame lengths, fire intensity [a measurement of the heat released in an area during a specific amount of time (btu/ft/sec)], heat output [the total amount of heat a fire released in a specific area during the passing of the flaming front], rate of spread, residence time, and whether the fire burns on the surface or crown are all ways to describe fire behavior and to relate its resistance to control the managing a fire, which generally entails a completed control line around the fire] and potential damage or positive impacts from fire. The following paragraphs describe these terms.

Surface Fires

On flat or moderate) terrain in light fuels, fires usually burn as a surface fire. Surface fires may advance quickly with short or long residence time [how long the flaming front burns in any one location] and low to high heat output, and as such, they respond well to suppression. A manageable fire is one of the desired results of fuel modifications [the management of fuels for fire safety. Examples include thinning of vegetation and creation of barriers to fire spread].

Crown Fire Potential

Crowning activity indicates locations where fire is expected to travel into and possibly consume the crowns (or tops) of trees, or the uppermost vegetation layer. In areas of continuous shrub coverage, such as chaparral, the uppermost vegetation layer consists of shrubs. Crown fires typify a fire of high intensity and exhibit high heat output and rates of spread. These attributes challenge suppression efforts. When a fire burns through tree or shrub crowns, countless embers are produced and distributed, sometimes over long distances. These embers can start new fires (spot fires), which can each grow and confound the finest fire-suppression forces. Crown fire initiation (or torching) occurs when ladder fuels [shrubs or small trees connecting the ground to the tree canopy or uppermost vegetation layer. In forests, this allows fire to climb upward into trees] are present, providing a connection between the surface fuels and the crown fuels. The higher the base of the tree canopy from surface fuels, the more difficult it is for crown fires to ignite. Once in the tree canopy, crown fire spread is more likely in dense canopies and with high wind speeds.

Fire Intensity

Fire intensity describes the amount of heat that is released by flaming combustion in a specific unit of time (BTU/ft/sec¹⁵). This measurement captures the energy of a fire in any location; it is often confused with fire severity, which is a term describing fire effects.

Fire Severity

Fire severity describes the resulting effects of a fire, based on the amount of soil damage and tree mortality. It is determined by observing vegetation and soil conditions after a fire. The relationship between predicted fire behavior characteristics (flame length, heat per unit area, fireline intensity, etc.) and fire severity are being explored but are not yet well established. Long flame lengths, large amounts of torching, crown fire presence, high fireline intensity, and high heat per unit area are all indicators of potentially severe fires.

Flame Length

Flame length is the span of the flame from the tip to the base, irrespective of its tilt. This factor most influences the difficulty or ease of fire suppression. Flame length is highly correlated with fire intensity, which can help predict fire severity. Flame lengths that are less than four feet are associated with fires that are more easily controlled—generally with hand crews. In contrast, flame lengths longer than twelve feet often thwart suppression efforts and are associated with crown fires seen on the front pages of newspapers. Typically fuel management goals aim for production of flame lengths less than four feet in areas where managers anticipate suppression efforts.

Rate of Spread

The rate of spread (ROS) measures how fast the leading edge of a fire advances. A ROS faster than fire-linebuilding capacity will challenge fire suppression efforts. High spread rates also indicate the potential for quick changes in fire spread direction, which could endanger firefighters and increase the potential damages. Grass fires can result in very high ROS, possibly exceeding three hundred feet per minute (300 ft/min, or over 3 miles per hour). Slow-burning fires in forested fuel types spread at a rate of two to eight feet per minute. In rare crown fires, rates of spread can exceed one hundred feet per minute (100 ft/min). In extreme conditions such as those found at times during the Station Fire, rates of spread up to 600 ft/min may occur.

Residence Time

The residence time of a fire defines how long the leading edge of the fire burns in any one location. Usually grass fires are consumed quickly and have a short residence time (e.g. 30 seconds), in contrast to the residence time of fires in a deep duff [decomposing organic matter such as leaves, pine needles and small branches] layer, which can burn for hours. Foliage and suspended dead material composed made up of dead needles, foliage, twigs, branches, stems, bark, vines, moss and high brush not in direct contact with the ground, but draped on living brush, are usually consumed in less than 90 seconds. Residence time is useful in predicting tree mortality and potential for fire-induced hydrophobic soils that will no longer absorb water

Heat Per Unit Area

Heat per unit area is defined as the total heat produced by flaming combustion in any one location. This does not include long burn-out times [the length of time in which flaming and smoldering phases occur in a given area or for the whole fire] and smoldering. Heat per unit area is especially important in determining soil heating and is a fairly good predictor of potential root damage and cambium [The growing layer of a tree, located between the bark and wood of the stem] heating, all indicators of fire severity.

4.3 WILDFIRE ASSESMENT

4.3.1 California Fire Hazard Severity Zones

California law requires the California Department of Forestry and Fire Protection (also “Cal Fire”) to map areas of significant fire hazards based on fuels, terrain, weather, and other relevant factors. These zones, referred to as Fire Hazard Severity Zones (FHSZ), then define the application of various mitigation strategies to reduce risk associated with wildfires, including the application of WUI building standards to new construction and other regulations. Classification of a zone as moderate, high or very high fire hazard is based on a combination of how a fire will behave and the probability of flames and embers threatening buildings. Each area of the map gets a score for flame length, embers, and the likelihood of the area burning. Scores are then averaged over the zone areas. Final zone class (moderate, high and very high) is based on the averaged scores for the zone.

The zones are:

- Moderate Fire Hazard Severity Zone (MFHSZ)
- High Fire Hazard Severity Zone (HFHSZ)
- Very High Fire Hazard Severity Zone (VHFHSZ)

Fire Hazard Severity Zone maps evaluate “hazard,” not “risk”. They are like flood zone maps. Wildfire hazard and wildfire risk are subtly different: “Hazard” is based on the physical conditions that create a likelihood that an area will burn over a 30 to 50-year period without considering modifications such as fuel reduction efforts. “Risk” is defined as the potential damage a fire can do to the area under existing conditions, including any modifications such as defensible space, irrigation and sprinklers, and ignition resistant building construction. Within areas of local jurisdiction, Cal Fire recommended zones in 2007 which could be adopted or amended by the local jurisdiction. A key outcome of the fire hazard zoning relates to the application of California building codes and defensible space codes. The exterior wildfire exposure protection codes apply to the design and construction of new buildings located in VHFHSZ in local responsibility areas.

In addition, California law requires defensible space and other wildfire safety practices for buildings in the VHFHSZ. Owners are also required to make a natural hazard disclosure as part of a real estate transfer.

4.3.2 Hazard Assessment

4.3.3 Risk Assessment

5. HOME HARDENING

Individual responsibility is paramount in reducing structural ignitability. Fire science research has demonstrated that ignition potential of structures, including homes, is minimized by modifying the home itself and the area within 100 to 200 feet around the home. A home should be examined for its ignition vulnerabilities to firebrands (embers) and flames. Firebrand ignition factors include structure locations of firebrand accumulations on flammable surfaces and unscreened openings allowing firebrand entry. Vulnerabilities to flames depend on the potential for any flame contact with the structure and preventing the occurrence of large flames of high-intensity fires to burn within 100 feet of a home including structures adjacent to a home. Homeowners have control over the structural components of their homes and the “home ignition zone.” The effectiveness of fire suppression/protection is subordinate to the individual’s responsibility for ignition resistance of their home. Replacing flammable or highly ignitable components of the home and removing fuels from around the home minimizes the ignition potential of the home. A model for engaging community residents on a neighborhood or subdivision basis can be found at www.firewise.org/usa, the national Firewise Communities/USA Recognition Program. Firewise communities are educated about how houses ignite, they provide risk assessments to homeowners, they invest in fuel-reduction projects annually, and they celebrate their successes, building community enthusiasm for fire safety. Education efforts should target homeowners, contractors, realtors and insurance companies emphasizing the homeowners’ responsibility to protect their homes.

It should be noted that Crescenta Valley, particular in the WUI and adjacent areas, is not likely to experience significant development in the future. The steep terrain and prohibitive grading costs preclude any multi-home development. Also, the County is not likely to allow any significant increase in the population above “Shields Bend,” the two lane road that serves as the only access (and exit) for the Briggs Terrace area. Zoning regulations and requirements for mitigation area in new subdivisions would likely have little impact on Crescenta Valley. However, building codes regulating residential building materials and design on new construction or remodels could help. See <http://osfm.fire.ca.gov/codedevelopment/wildfireprotectionbuildingconstruction.php>.

COMMUNITY FIRE SAFETY BEGINS AT HOME

Crescenta Valley residents can improve their chances to survive wildfire and minimize their losses. In fact, compared to hurricanes, tornadoes, earthquakes, avalanches, floods or tsunamis, wildfire is the most manageable of our natural perils because it is neither a force nor a material object. Instead, fire is simply a process—the process of combustion – and it is a process over which we can exert considerable control. For the process of fire to occur, three things are required:

HEAT OXYGEN FUEL

Without any one of these, the process of combustion will not occur, or if a fire has started, the removal of one of these items will cause combustion to cease. Of the three ingredients, there is only one that we can consistently manipulate – it is not heat, because there will be ignitions that we cannot predict or prevent; and it is certainly not oxygen, because we also require oxygen to

breathe. Of course, that leaves fuel – anything combustible – including living and dead plants, our homes and many of our possessions, including automobiles. Fortunately, to slow or stop combustion it is not necessary to remove all combustible materials, but only to limit their quantity, ease of ignitability and their arrangement that allows a fire to spread. Where fuels are abundant (including ignitable homes), a fire can burn very hot and move very quickly. When little fuel is present, fires tend to slow down and burn cooler. Cooler fires are easier to control fight. Reducing the amount, type, and arrangement of fuel in and around your home is your best defense against wildfire. It is the fuels closest to a home—including the home itself—that often make the difference between the home’s ability to survive a wildfire, or not. Preventative actions can help make your home an asset during a wildfire, instead of a liability.

THE HOME IGNITION ZONE

In Southern California, research and experience show that what you do to your house itself and the area directly adjacent to it will have the biggest impact on your home’s ability to withstand a wildfire. Therefore, this Community Wildfire Protection Plan promotes a strategy of preparation “from the house out.” Many people are curious to know how homes ignite and are surprised when they learn the most common means by which houses burn down. There are three ways that an adjacent fire (whether it is a housefire or a brushfire) can transfer enough heat to your home to ignite some portion of it:

Embers

These are glowing or burning pieces of vegetation or construction *debris* that are lofted during the wildfire. Embers can move up to a mile ahead of a firestorm. These small embers or sparks may fall on the vegetation near your home; on dry leaves, needles, or twigs on your roof; on the roof and then subsequently concentrate within five feet of the house; or under your deck with subsequent ignition of vegetation or debris that could then ignite and burn down your house. If ignited from embers that come from outlying areas, a continuous sequence of vegetation can carry flames from your landscaping to your house. The concentration of embers that land on the roof and roll off of it makes the removal of all flammable material within 5 feet of the house critical.

Radiant Heat

This is the heat given off by burning materials that is transferred through the air to other materials or objects. Radiant heat from a fire near your house can heat the surface of combustible building materials to a point where combustion occurs.

Flame Impingement

This refers to the transfer of heat by direct flame exposure. Direct contact with fire flames will heat the combustible building materials of your home. Depending on the exposure (i.e., time and intensity) of the flame, materials can ignite or break. For example, in a high-intensity fire, your siding material could ignite or the glass in your windows could break. Research shows that the cause for most homes igniting is usually not the fire front or wall of flames but the presence of wind-carried embers in combination with sufficient fuel to be ignited.

The most effective strategy to limit home ignition potential is to create “*defensible space*.” According to the Los Angeles County Fire Department:

“Defensible space is the area around a structure free of flammable plants and objects that creates a zone in which firefighters can operate safely in order to help protect a home during a wildfire. This space is wide enough to prevent direct flame impingement and reduce the amount of radiant heat reaching the structure. The defensible space for each structure varies depending on the type of vegetation and topography.”

Firefighters use the terms “defendable” and “not defendable” to distinguish between those houses with defensible space versus those that do not have it. The safety of firefighters is critical in structure protection (homes and buildings). If it is too dangerous for firefighters to get in and out of an area, they are instructed not to risk their lives and equipment to attempt to save something that may not survive. However, it’s not just about “defending” your home or property; fire safety efforts are designed to ensure a home’s survivability from fire under various conditions. This is the ultimate goal for conservation-based fuel reduction and fire-safety efforts: living *with* wildfire, and always being prepared for this possibility.

CALIFORNIA WUI BUILDING CODES

The California Building Code includes specific requirements for new construction within Wildland-Urban Interface (WUI) areas. These are known as the “Chapter 7A” requirements, also called “Materials and Construction Methods for Exterior Wildfire Exposure”. These requirements are enforced statewide by the Office of the State Fire Marshall, and locally by Monrovia’s Building Department when approving plans for new construction (which may include additions, remodels, etc., depending on specifics.) The Chapter 7A requirements do not guarantee that a home will be fireproof, but they represent decades of experience with factors that have contributed to, or prevented, property loss in wildfires. If you are doing construction in the VHFHSZ, your contractor should be knowledgeable about these requirements. However, even if your project does not fall within the scope of Chapter 7A, you can benefit from the experience that went into them. Also, it is important to keep in mind that these are only minimal requirements, and it is often possible to go beyond them, for additional fire resilience.

HARDENED HOMES

Following is a summary of the parts of a home that are vulnerable to ignition due to ember entry, direct flame impingement or radiant heat. You can delve deeper to find exhaustive information about each of these elements both in print and online sources. One of the best references, “Home Survival in Wildfire-Prone Areas: Building Materials and Design Considerations” by Quarles, Valachovic, Nakamura, Nader and de Lasaux, ANR Publication 8393, ISBN-13:978-1-60107-693-9, is available free online at <http://anrcatalog.ucanr.edu/Details.aspx?itemNo=8393>.

Roofing

When considering wildfires, your roof is arguably the most vulnerable part of your home. It

represents a relatively large horizontal surface where embers can land. If your roof covering is made from combustible materials, or debris has accumulated at certain locations, the embers can ignite these materials. While your home may only be subjected to the flaming front of the wildfire for a few minutes, your roof (and the rest of your house) can be subjected to windblown burning embers for a much longer period of time, as the wildfire approaches and burns through the area where you live.

How well your roof performs during a wildfire will depend on a number of factors, including:

- The roofing material used and its fire rating.
- The age and condition of your roof.
- Edge-of-roof issues.
- The complexity of your roof (that is, how many levels and wall/roof intersections you have, and how much debris can collect there).
- Gutters and other edge-of-roof factors.
- Vents and other penetrations in your roof (see next section).

Research shows that homes with a non-combustible roof and clearance of at least 30 to 60 feet have an 85-95% chance of survival in a wildfire. Foote, Ethan. (August 2004). "Wildland-Urban Interface Ignition-Resistant Building Construction Recommendations." Community Wildfire Protection Plan Workshops. California Fire Alliance and the California Fire Safe Council.

Fire ratings of A, B or C are determined for roof coverings based on test methods developed by standards writing organizations. These standards evaluate several fire-related characteristics of a roof covering. Class A is the highest level, and is required by state and city regulations for new construction in the Very High Fire Hazard Severity Zone. There are two ways for a roof to have a Class A fire rating:

- From the covering alone (sometimes called a 'stand alone' Class A roof)
- From the covering and underlying materials (sometimes called Class A 'by assembly')

UCANR, Builder's Wildfire Mitigation Guide (BWMG) as accessed 1/10/14
http://firecenter.berkeley.edu/new_bwmg/roof/code.

Even with the use of non-combustible roofing materials, any gaps in the roofing provide an avenue for embers or flame. Large gaps between the roof covering and roof deck (sheathing) have to be plugged. The most common example of this kind of gap is in a clay-barrel tile roof. Plugging is often called 'bird stopping'. With non-bird stopped roofs, a bird can access the space between the roof covering and the sheathing, and build a nest. During a wildfire, embers can penetrate the roof edge and ignite the nest or other debris in that cavity. Gaps at the valleys,

ridges and other junctions must also be avoided.

Every thirty years or so, you will have the opportunity to select a new roof covering. In the meantime, one of the most important jobs you have is inspecting your home and near-home vegetation, and performing needed maintenance. The standard tests to determine fire performance are conducted on new covering materials. An older roof may not perform as well as a fire-resistant membrane. It will be up to you to make sure your roof covering is inspected and maintained, and replaced when needed.

Edge of Roof Issues

Even a Class A roof can be vulnerable at its edges. You can argue that the roof edge is no longer the roof, but regardless, it is still important to understand, and address, these vulnerabilities. Debris often accumulates in locations where the roof changes slope (for example, where the roof intersects with a wall and in the valley). During wildfires, embers will also collect at these locations, igniting the accumulated vegetative fine fuels (pine needles, leaves, etc.). If the material that your Class A roof intersects with doesn't provide the same or similar protection, then your roof is vulnerable. For this reason, it is important to be vigilant about removing debris from your roof.

Gutters and Skylights

Combustible debris such as leaves and pine needles can accumulate in gutters, especially from nearby or overhanging trees. Due to difficulty in accessing upper stories of a home, gutters two and three floors high are even more problematic, since they will be difficult to clean out on a regular basis. If ignited, combustible debris in the gutter will expose the edge of the roof covering, typically the fascia and or roof sheathing. Depending on the condition of the wood and presence (or absence) of metal flashing at the edge of the roof, debris in the gutter may make it easier for fire to enter the attic. Metal flashing at the roof edge will provide additional protection to the roof edge and therefore is a recommended detail.

For best performance, skylights should consist of two layers, with one of them consisting of tempered glass (for improved resistance to larger embers striking and breaking the glass). Likely exposure for a skylight would be from the impact of an ember or other object lofted during a wildfire.

Vent Openings

Roof and crawl space vents are required by most building codes. The function of the vents is to remove excess moisture from those spaces. Evidence from recent wildfires in the West has shown that vents are an entry point for embers and flames. Embers can 'rain' on and around homes for hours before and after the wildfire flame-front reaches and passes your house. Embers that enter your attic can ignite construction materials and other items you may have stored there. Flames can also enter if embers ignite near-home vegetation or debris that has accumulated on a deck.

You should:

- Inspect and maintain vegetation in the vicinity of under-eave vents. Remove highly

combustible vegetation.

- Clean vents on a regular basis to minimize build up of debris in the mesh.
- Remove debris that accumulates near roof vents. This includes grounds near crawlspace vents.
- Consider preparing vent covers that can be temporarily installed when a wildfire approaches your home. Vent covers can be manufactured from plywood or other solid substance that would provide short term protection from embers and flame.

In some new construction, under-eave vents have been eliminated. In those cases, the inlet vent function is being performed by using through-roof vents located in the lower region of the roof (i.e., near the roof edge). In California, some vents have been accepted for use in the under-eave area. See information about these vents on the Office of the State Fire Marshal website.

Provided that adequate defensible space is maintained, screening of vent openings with 1/16” to 1/8” mesh corrosion-resistant steel screens will minimize the entry of embers (during the ember blizzard that comes with a wildfire) into attics (most important) and crawl spaces. New homes that incorporate unvented attic spaces into the design are currently available, and are being built in some locations.

Eaves

The under-eave area is vulnerable if embers enter the attic area through any gaps that may exist in this area, or if flames from ignited vegetation, siding, or other near-home combustible materials reach the area. Attic vents are commonly found in the under-eave area, and embers can also enter the attic through these openings (see above).

In an open-eave design, the roof rafters or joists and roof sheathing are visible. With a soffited-eave design, the roof rafters and sheathing are hidden through the use of a panel or boards that extend horizontally from the edge of the roof (typically being attached to the bottom of the fascia) back to the exterior wall. “Boxing-in” the eave when sheathing or boards are attached to the bottom side of the roof rafters in the exterior portion of the eave. Many wildfire retrofit guides suggest replacing open-eave framing with either a soffited or boxed-in eave design. The open-eave design tends to trap heat in the under-eave area. If ignition occurs, the fire spreads laterally more quickly than when a soffited-eave construction is used.

Windows

If the glass in a window breaks during a wildfire, embers and flame can easily enter your home. Similarly, if your window frame ignites, it is possible that the resulting fire would burn through the frame material and ignite other material inside your home (for example, a curtain). Both of these scenarios could easily result in the loss of your home. Therefore, windows must be able to resist the following wildfire exposures:

A radiant exposure severe enough to break the glass in your window or ignite the exterior siding directly below it. Burning vegetation could also ignite combustible siding.

A flame contact exposure that could result from embers igniting vegetation and/or exterior cladding that burns up to your window.

Because of the importance of glass in the performance of a window in a wildfire, the most important thing you can do is install dual-pane windows. With dual pane windows, the outer pane often serves as a thermal shield and protects the inner pane. The inner pane is allowed to heat up more slowly, and uniformly, and therefore may not fail even if the outer pane does. Tempered glass is stronger than annealed glass, and will provide additional protection during a wildfire. Tempered glass is more expensive. Building Codes already require tempered glass in some locations, so some of your newer windows will already have tempered glass. A small white etching is often present in the corner of a piece of glass in a window if it is tempered.

Research has shown that metal insect screens improved the performance of glass under radiant exposures. However, research at UC has shown that screens do not provide added protection from a flame contact exposure. For additional protection homeowners could consider taking additional precautions to protect your windows. These precautions include fabricating covers (for example, 1/2-inch plywood covers), cut to size and marked so that it can easily be installed over a window prior to evacuation. Shutters or other roll-down devices could also be installed. In this case, you will have to make these items part of your routine inspection and maintenance program to make sure they operate properly. All of these have the disadvantage of requiring an action to implement.

Siding

Siding (cladding) is an important aesthetic attribute for houses, but it also has a key role as part of a protective enclosure to help shed rain, while permitting excessive vapor to move through and out of the house.

If ignited, vertical flame spread on combustible siding will threaten other vulnerable components of a house, such as windows or the under-eave area. A common way for combustible siding to ignite by flame contact from burning vegetation, combustible mulch, or other combustible materials (firewood, lumber, etc.) stored near the home. All of these adjacent combustible materials very likely would have been ignited by embers.

A potential contributing problem with wood and wood-based siding products is fungal decay, particularly when present along the bottom edge. When dry, decayed wood is more easily ignited.

Vinyl siding deforms when exposed to heat from the wildfire, or other heat sources such as nearby burning vegetation or a burning building. Deformed vinyl siding will expose the underlying sheathing or wall cavity. At this point, a house will be relying on these materials for protection.

Decks

Decks include all types of horizontal walkways, including landings, porches, and patios that are directly connected or very close to a house or building. Decks are described by the surface that you walk on (called the deck covering). There are two basic kinds of decks – those that use deck

boards as the deck covering, and those that have a solid surface deck covering. The deck boards are almost always made from combustible materials (wood or one of the wood-fiber plastic composite or 100% plastic deck board products). Solid surface deck coverings are usually made from noncombustible materials, and include light-weight concrete, stone or tile. Solid surface decks are often built over an occupied (living) space. Occasionally an open frame deck will be installed over a water-proof membrane, again built over an occupied space. As with normal decks that use combustible boards, this open-frame deck will also be vulnerable to accumulation of debris, and ignition by embers.

Decks are an important consideration because their proximity to homes and buildings. They are a source of fuel and if ignited, will provide a radiant heat and likely a direct flame contact exposure to siding and windows and doors, including glass sliders. The heat from the fire can cause the glass to break and permit the fire to enter the house.

For wood deck boards, the thicker, the better. Deck board gaps (which are there for drainage and ventilation) can permit embers to lodge and potentially cause ignitions. The accumulation of wind-blown debris in these gaps makes ignition from embers easier; therefore you should clean between-board gaps. Debris should also be removed from the areas where the deck connects to the wall. Elevated decks are even more vulnerable if you use the space underneath to store combustible materials. Raised decks are open to flames or embers, especially those on slopes. Decks that are just above ground level can be screened to prevent the accumulation of combustible debris in the under-deck area.

Provided that adequate defensible space is maintained, most solid wood decking is fire-resistant enough to withstand short-term heat load. The next greatest threat from decks is firefighter safety. Many new materials (synthetics) ignite more easily than wood and have a rapid structural collapse when subjected to high heat loads, creating a situation where firefighters could fall through. Further information on this available through the California State Fire Marshal's Building Materials Listing, osfm.fire.ca.gov/bmlisting.html.

Fences

Fences — like vegetation — are a much greater hazard close to a house. Fences and gates can also be an access problem for fire crews trying to enter your yard, so it is advisable to get an inspection from the Fire Department.

There are several reasons for fences to be of concern. For one, a combustible fence or gate attached to a structure is an obvious threat if it catches on fire. The fire can arise in a number of ways. One is that debris (leaves, trash, etc) often collect at the bottom.

Another problem is that wooden fence boards in contact with soil will eventually decay in that area.

Combined with combustible debris, fences can be an excellent fuel source. Also, fence boards usually have small vertical openings where brands can lodge and even cause the fence boards to ignite directly. In all cases, the thinner the fence boards, the greater the risk!

Do not store combustible materials (such as firewood) against fences.

Outbuildings

Outbuildings (e.g. garages storage, wood, and tool sheds) with less than thirty feet of separation from main structures place homes at a high risk of loss, because if they catch fire, they can more easily catch the house on fire.

When houses are surveyed for wildfire vulnerabilities, quite often the garage is not considered even though it could be the most hazardous aspect of the house.

Garages are typically not well sealed since they are generally not heated or cooled. Gaps at the top, bottom and edges of doors can let glowing embers enter, and we all know that garages are full of flammable materials. Garages usually have vents at various locations, especially if they contain gas furnaces or hot water heaters. These vents are easy entry points for embers.

Small embers can easily enter through the door gaps. Sliding doors (that are hung at the top edge) have a special problem in that one side is offset, leaving a large gap at the top edge. In addition, many garage doors have glass in the top sections plus personnel entry doors that have single pane glass that (although it is tempered in newer construction) can easily be broken from heat or flying debris.

An even greater concern is attached carports or any type of garage that does not have doors. These types of garages would typically have an extreme number of combustibles and many nooks and crannies for embers to lodge.

Wood Piles

Wood piles with less than thirty feet of separation from structures often place homes at a high risk for loss.

Propane Tanks

Tanks with less than ten feet of clearance around them and thirty feet of separation from houses may place homes at a risk of loss.

- 6. MITIGATION ACTION PLAN**
 - 6.1 COMMUNITY AWARENESS**
 - 6.1.1 Emergency Preparedness Programs and Education**
 - 6.2 FUELS MITIGATION STRATEGY**
 - 6.3 EVACUATION**
 - 6.4 RESILIENCE**

7. MONITORING THE CWPP

8. UPDATING THE CWPP

No plan is ever permanent. This CWPP is intended to be a living document. It was written in 2015 based on current conditions and best available information. The field of fire safety is rapidly changing. It is likely that new developments will occur in the coming years. Therefore, it will be important to review this CWPP at least every five years and update it as needed.