

CWPP

Community Wildfire Protection Plan 2015 Update Alameda County

Prepared by
Diablo Fire Safe Council

In conjunction with the
Alameda County Fire Chiefs Association
Hills Emergency Forum
Oakland Wildfire Prevention Assessment District
Stakeholder Committee Members



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Online at www.diablofiresafe.org/ala_co_CWPP.html

The Alameda County Community Wildfire Protection Plan was developed with funding provided by a National Fire Plan grant from the Cooperative Fire Program of the U.S. Forest Service Department of Agriculture, Pacific Southwest Region, through the California Fire Safe Council.

Executive Summary

This document provides a comprehensive, scientifically based analysis of wildfire related to the hazards and risk in the wildland-urban interface (WUI) areas of Alameda County, CA. The analysis is delivered in the form of a Community Wildfire Protection Plan (CWPP) and follows the standards for CWPPs that have been established by the federal Healthy Forest Restoration Act by:

1. Identifying and prioritizing fuel reduction opportunities across the county.
See Section 2: Fire Hazard and Risk in the Wildland Urban Interface and Section 4: Prioritizing Fuel Reduction Vegetation Management Treatments
2. Addressing structural ignitability
See Section 5: Prioritized Treatment of Structural Ignitability
3. Collaborating with stakeholders
See Section 1.2: Stakeholders

Using the results of the analysis, recommendations have been generated that aid stakeholders in preventing and reducing the threat of wildfire in Alameda County.

This report complements local agreements and existing plans for wildfire protection for a coordinated effort in determining appropriate fire management actions.

The Alameda County CWPP is the result of an area-wide planning effort. The first CWPP in 2012, began with compilation of existing documents, analysis of fire behavior potential (based on fuels, topography and historical weather conditions) and collaboration with homeowners, representatives of special interest groups and agency officials. In 2014 - 2015 this Updated Plan was revised through a similar area-wide planning effort that reviewed the plan, updated relevant sections and refined priority actions.

The goal of the CWPP is to reduce hazard through increased information and education about wildfires, hazardous fuels reduction, actions to reduce structure ignitability and other recommendations to assist emergency preparedness and fire suppression efforts. Most importantly it facilitates a coordinated effort between the various stakeholders.

Recommendations

The CWPP's recommendations are organized into four broad categories of mitigation:

- Information, Education and Collaborative Planning Priorities
- Enhanced Suppression Capability and Emergency Preparedness Priorities
- Fuel Reduction Treatments around Homes and on Public Lands and Related Priorities
- Improving Survivability of Structures Priorities

Action Plan summaries are provided for a selection of priority activities. These summaries identify implementation steps, lead and partners, timeframes and funding needs.

The Alameda County CWPP is a multi-year guiding document that will facilitate the implementation of present and future mitigation efforts. It is important to note that the Alameda County CWPP is a working document and will need to be updated bi-annually and after major "events" such as wildfire, flood, insect infestation or even significant new home development. Stakeholders recommend that it also be reviewed in more detail in conjunction with the regional update of the Multi-Hazard Mitigation Plan facilitated through the Association of Bay Area Governments (ABAG) and General Plan Safety Element updates by local jurisdictions.

Introduction

Fire records for Alameda County document an active, damaging and costly fire history. There is little question that the area's unique ecology – particularly the topography, climate and vegetation – provides the setting for catastrophic fire to strike. While large-scale fires do not occur every year, fire incidents driven by extreme wind conditions have repeatedly been difficult to contain. Contemporary population growth leading to residential development in the wildland urban interface (WUI) along with the introduction and proliferation of exotic plant species exacerbates this problem by putting more people, property, critical infrastructure and natural resources in harm's way. In order to reduce the risk of loss of life and property due to wildfire, the Diablo Fire Safe Council and project partners worked during 2011-2012 with residents, representatives of federal, regional, state and local agencies along with community organizations to prepare the Community Wildfire Protection Plan. In 2014-2015 they reconvene and invited additional stakeholders to develop this 2015 Update Plan.

Although the format of this CWPP is guided by the Healthy Forest Restoration Act's (HFRA) call for such plans, the principles behind it are not new. The National and State Fire Plans, the Federal Emergency Management Agency Disaster Mitigation Act of 2000 and several locally developed documents all mandate community based planning efforts, coordination, project identification, prioritization, funding review and multi-agency cooperation. Unique benefits of the CWPP include:

- The opportunity to establish a locally appropriate definition and boundary for the WUI.
- The requirement for federal agencies, when planning fuel reduction projects, to give priority to projects that provide for the protection of at-risk communities or watersheds, or that implement recommendations in a CWPP.
- Expedited National Environmental Policy Act (NEPA) procedures for federal agencies implementing fuel reduction projects identified in a CWPP.

Since within Alameda County there are few federally owned lands the stakeholder group brainstormed what the Alameda County CWPP should address and why is the plan is of value to us. The ideas can be grouped around several themes including future fires and the impact of climate change, fire suppression, access and traffic management especially during fires, neighborhood issues, awareness, outreach and education, fuel reductions and structure ignitability.¹

New reasons the CWPP is valuable have been identified since the 2012 plan was adopted. During the 2014 fire season, fire crews throughout Northern California were able to incorporate pre-fire work (e.g. areas that had received fuel reduction treatment) into their fire suppression strategies. Perhaps the greatest value of the plan within Alameda County has been its ability to coordinate the activities of various agencies, special interest groups and individual stakeholders to create more fire safe communities. It has helped communities understand the issues, identify resources available, develop community specific goals and begin to implement their own action plans.

¹ See www.diablofiresafe.org/pdf/Summary_CWPP_Mtg2.pdf for detailed Summary of Working Session #2 March 22, 2011.

Scope

The scope of this Plan is Countywide and encompasses the following:

1. Describes the fire environment of Alameda County.
2. Identifies values at risk as defined by the stakeholders.
3. Provides maps that show high fire hazard areas, as defined by Federal, State and local authorities.
4. Establishes the rationale for prioritization of fuel management projects and treatment methods, as well as outlines principles for selection of projects when funding is available.
5. Describes measures communities and homeowners can take to reduce the ignitability of structures.
6. Identifies sources for Best Management Practices for fuel reduction treatments included in the plan.
7. Identifies federal, state and local resources (fire, wildlife, regulatory agencies, landscape groups, etc.)
8. Provides a progress update of activities throughout Alameda County.

Purpose

The Purpose of this CWPP is to protect human life and reduce loss of property, critical infrastructure and natural resources due to wildfire. The document is intended to help agencies, communities and local homeowners define, plan and prioritize types of actions that will limit the damage associated with the inevitable wildland fire event. This plan can be used to reduce the risk of conflagration by the following actions:

1. Increased collaborative planning and cooperative actions that will build useful relationships between communities and agencies.
2. Reduction of hazardous fuels in the WUI.
3. Creation and maintenance for defensible space for structures and properties.
4. Reduction of structural ignitability hazards.
5. Planning of evacuation protocols and drills.

The stakeholders in this effort believe that the work outlined above requires a collaborative approach that combines the following elements:

- Development and implementation of strategic, cost effective, sustainable and environmentally sensitive fuel management plans;
- Educational programs that explain fire risk, promote voluntary citizen involvement and emphasize long-term strategies for creating and maintaining fire resistant communities.
- Application of resources to areas and projects where efficacy is most probable.

To that end, stakeholder participation and regular review are central to maintaining the ideas and priorities of the CWPP in the future. The dynamic nature of the CWPP will reflect changes in practices, technology and information available to prevent and minimize loss from wildfire.

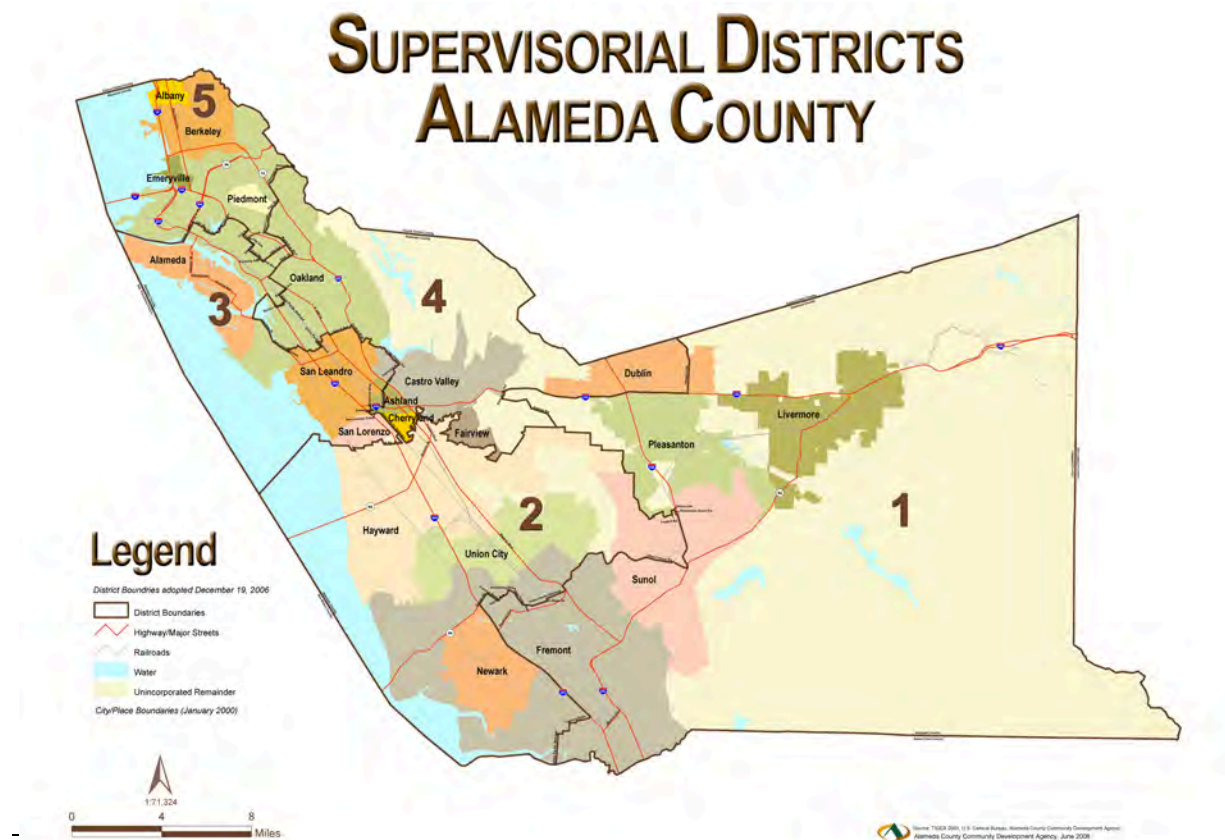
Alameda County Information

1.1 County Overview

Alameda County was incorporated in 1853, carved out of previously established neighboring Contra Costa and Santa Clara Counties. As of the 2010 census its population is 1,510,261, making it the 6th most populous county in the state.¹ The census also lists the county with a total area of 739.02 square miles for a total of 2,043 people per square mile.² Most of the population resides in the 14 incorporated cities and six unincorporated communities.

By 2030, Alameda County is anticipated to have nearly 1.9 million residents.³ The cities in northern Alameda County are projected to have 40% of this population growth, with the largest share in Oakland. East County is expected to have the highest percentage change in population, with the Dublin area increasing in population by 172% by 2030.

The most heavily urbanized areas are in the cities of Berkeley and Oakland, with a continuous pattern of suburban development expanding southward to Fremont. The eastern Livermore-Amador Valley, although still agriculturally productive is experiencing considerable suburban development from the cities of Dublin, Livermore and Pleasanton.



¹ Data from: <http://www.alameda.courts.ca.gov/pages.aspx/about-alameda-county> accessed 12/9/14.

² Data from: <http://quickfacts.census.gov/qfd/states/06/06001.html> accessed 12/9/14.

³ Data from: <http://www.bayareavision.org/initiatives/> accessed 12/9/14.

Development Centers

Development in Alameda County originally centered on established cities such as Oakland, Berkeley and Alameda, with additional town centers in places such as Hayward, Pleasanton and Livermore. These original communities were relatively compact with grid street patterns. However, development eventually spread southward to communities such as Castro Valley, Union City, and Fremont and east across the hills to Dublin and outlying portions of Pleasanton and Livermore. Development intensities vary greatly across the county. Emeryville now has the highest average residential density- more than 20 units per acre. In contrast the average residential densities in the Livermore-Amador Valley cities of Dublin, Livermore and Pleasanton range from 5 to 6 units per acre.⁴

West County

Incorporated Cities

Alameda

Albany

Berkeley

Emeryville

Fremont

Hayward

Newark

Oakland

Piedmont

San Leandro

Union City

Unincorporated Areas

Ashland

Castro Valley

Cherryland

Fairview

Five Canyons

San Lorenzo

East County

(Tri Valley)

Incorporated Cities

Dublin

Livermore

Pleasanton

Unincorporated Areas

Altamont

Brightside

Brookshire

Castlewoods

Kilkare Woods

Komandorski Village

Mendenhall Springs

Scotts Corner

Sunol

Transportation

Alameda County is home to some of the most heavily traveled freeways and arterials in the San Francisco Bay Area.⁵ Loss of function of any of these routes can have direct regional impacts that could be felt nationwide. The County is connected with major interstate highways and regional transportation systems. These include north-south freeways of I-80, I-680 I-880, I-980, and east-west freeways of I-238, I-580, I-680. These major interstates are supplemented by state freeways SR-13, SR-24, SR-61, SR-84, SR- 92, SR 123, SR 185, SR 238, SR 262. This network provides access to three of the key bridges that cross the San Francisco Bay (Bay Bridge, San Mateo and Dumbarton Bridges) interconnecting the nine county San Francisco Bay area.

Mass Transit includes both buses that use these highway corridors and commuter rail. Commuter rail lines connect to Contra Costa County and San Francisco (Bay Area Rapid Transit, BART), San Joaquin and Santa Clara Counties (Altmont Commuter Express Train, ACE), San Jose and Sacramento (AMTRAK Capitol Corridor). Ferries provide another commuter route, connecting across San Francisco Bay from Alameda, Oakland and Harbor

⁴ Data from: <http://www.bayareavision.org/initiatives/> accessed 12/9/14

⁵ From Alameda County Transportation Commission. County Transportation Plan/ Transportation Expenditure Plan Briefing Book March 3, 2011. Pg. 4-2

Bay Island. With the third busiest container shipping port on the West coast, Oakland international airport (a world-class international cargo transportation and distribution hub) and numerous rail and trucking resources, Alameda County is a critical hub for goods movement nationwide.

Geographic Features

Two major complexes of mountains, ridges and hills that run northeast to southwest define the physical and hydrological landscape.

The western part of the county consists of a 32-mile plain sloping toward the San Francisco Bay from the East Bay Hills (including San Leandro Hills and Walpert Ridge).

The eastern part of the county is considered the Tri-Valley area. This triangular shape region, located south of Mount Diablo, includes the Livermore Valley, Amador Valley and the San Ramon Valley (in Contra Costa County).

Elevations begin at sea level and reach 3,840 feet along the Valpe Ridge in the northern Diablo Range (in the southeastern portions of the County). These geographic features shape where people live and work, and results in numerous people inhabiting areas that are remote or very difficult to access under emergency conditions.

Natural Resources

The county contains an abundance of vegetative, water, air, biotic and agricultural resources. The western areas are highly industrialized, while the eastern sections contain suburban residential and commercial areas, interspersed with agricultural and livestock grazing lands along with parklands, watershed and other undeveloped areas. The southeastern portions of the county include rugged terrain and sparsely populated areas. The cities in the east portion of the county have adopted Urban Growth Boundaries and policies reflecting a strong commitment to protecting the natural and agricultural resources within and surrounding their respective jurisdictions.⁶

Watersheds

Alameda County has over 100 watersheds ranging in size from just a few acres to some that overlap into other Counties.⁷ The EPA recognizes that Alameda County crosses 6 major watersheds.⁸ All the creeks feed ultimately into the San Francisco Bay. Those in the eastern parts feed into the San Joaquin Delta, Panoche-San Luis Reservoir or flow north toward the Suisun Bay or San Pablo Bay. Those watersheds in the south flow through the Coyote watershed. The Alameda Creek watershed is the largest in the county encompassing almost 700 square miles (draining roughly the southern two-thirds of the east bay including parts of Contra Costa and Santa Clara Counties).⁹

The county also contains watersheds that form a crucial part of the Bay area's domestic water with several large reservoirs serving both major East Bay and San Francisco population centers (EBMUD serves approximately 1.3 million people and the San Francisco PUC serves approximately 2.6 million people). A total of 17 water purveyors provide

⁶ Source: East Alameda County Conservation Strategy <http://eastalco-conservation.org/documents.html>

⁷ Source: http://www.cleanwaterprogram.org/index.php?option=com_zoo&view=item&Itemid=264

⁸ Source: http://cfpub.epa.gov/surf/county.cfm?fips_code=06001

⁹ Source: <http://www.alamedacreek.org/learn-more/overview-watershed.php>

domestic water to residents in the County. Some draw water from the State aqueduct, while other manage watershed lands.

Vegetation and Wildlife Habitat

The vegetation and wildlife habitats of Alameda County consist of many ecological communities including:

- Shrub dominated communities: wet north coastal scrub (northeast facing scrub or north coastal Franciscan scrub); dry north coastal scrub (southwest facing scrub or coyote brush-sagebrush scrub; manzanita-chinquapin chaparral; emergent coyote brush scrub.
- Grass dominated communities: serpentine grassland; predominantly native grasslands; emergent coyote brush grassland.
- Forest or woodland communities: live oak-bay woodland; redwood forest; willow riparian forest.
- Rare plant associations: *Prunus emarginata* woodlands; woodland and brushland habitats containing *Dirca occidentalis*
- Non-native communities: eucalyptus forest; Monterey/ bishop pine forests; predominantly non-native grasslands; broom.
- Other landscape features: springs and seeps; landslides; ecotones; disturbed areas; landscape areas.

Numerous plants and animals that are designated as rare, threatened or endangered species or are candidates for such designation occur here. These include both federally and state-listed species. Information about vegetation and habitat is included in the *Best Management Practices Guidebook for Fuel Management Treatments in Contra Costa County* (developed for in 2009 as part of the Contra Costa County CWPP), the *Vegetation Management Almanac for the East Bay Hills* and other resource documents referenced in the Appendix.

Alameda County also contains critical habitat for nine species:

- Alameda whipsnake (*Masticophis lateralis euryxanthus*),
- California tiger salamander (*Ambystoma californiense*),
- longhorn fairy shrimp (*Branchinecta longiantenna*),
- red-legged frog (*Rana draytonii*),
- vernal pool fairy shrimp (*Branchinecta lynchii*),
- vernal pool tadpole shrimp (*Lepidurus packardi*)
- Delta smelt (*Hypomesus transpacificus*),
- steelhead (*Oncorhynchus mykiss*),
- Contra Costa goldfields (*Lasthenia conjugens*)

Public Lands Management

There are several agencies that manage large areas of public lands in the county:

California Department of Parks and Recreation owns and manages approximately 9,660 acres in the eastern part of the county with three recreation areas (Bethany Reservoir, Carnegie State Vehicular area and Lake Del Valle).

East Bay Regional Park Districts (EBRPD) offers developed and dispersed recreation opportunities in over 110,000 acres in Alameda and Contra Costa Counties. In Alameda County they manage large regional parks, wilderness and preserves, in addition to smaller recreation areas, preserves, regional shorelines and trails, including: Anthony

Chabot Regional Park (5,065 acres), Brushy Peak Regional Preserve (406 acres) Del Valle Regional Park (5,005 acres), Dublin Hills Regional Park (520 acres), Garin/ Dry Creek Pioneer (5,750 acres), Leona Canyon Regional Open Space Preserve (290 acres), Mission Peak Regional Preserve (406), Ohlone Regional Wilderness (8,714 acres), Pleasanton Ridge Regional Park (3,387 acres), Redwood Regional Park (1,829 acres, a portion is in Contra Costa County), Sunol Regional Wilderness (6,881 acres) and Vargas Plateau Regional Park (1,043 acres).

East Bay Municipal Utility District (EBMUD) owns and manages land and water areas and is responsible for management surrounding two reservoirs located in Alameda County: 8,117 acres Upper San Leandro Watershed and 794 acre reservoir, as well as the 340 acre Chabot Reservoir (3,920 acres of the surrounding watershed land is leased to EBRPD) and 7.5 acre Chabot Park leased to the City of San Leandro.

Hayward Area Recreation District (HARD) is an independent special use district providing park and recreation services for over 250,000 residents living with a 64 square miles area including City of Hayward, Castro Valley, and unincorporated Ashland, Cherryland and Fairview Districts. Park lands in the WUI areas include: Five Canyons Park (12 acres), Rowell Ranch (43 acres), East Avenue Park (27 acres) and Greenbelt Trails (109 acres).

Livermore Area Recreation and Parks District (LARPD) owns and operates approximately 1,360 acres of natural open space parks, preserves and trail facilities including: Garaventa Wetlands Preserve (24 acres), Holdener Park (55 acres), Sycamore Grove Park/ Veterans Park (774 acres).

City of Oakland owns and manages approximately 2,500 acres of open space including 100 parks. Park lands in the WUI areas include Beaconsfield Canyon (5 acres), Caldecott Field/ North Oakland Regional Sport Center, Diamond Park/ Diamond Canyon (41 acres), Dunsmuir Hellman Historic Estate, Firestorm Memorial Garden, Garber Park (13 acres), Joaquin Miller Park (280 acres), Knowland Park and Oakland Zoo (500 acres), King Estates Open Space (75 acres), Lake Chabot Golf Course (182 acres), Leona Height Park (50 acres), Pinto Park, Shepherd Canyon Park (25 acres).

San Francisco Public Utilities Commission (SFPUC) owns, leases and manages watersheds in Alameda County. The Alameda Watershed is split between Santa Clara and Alameda Counties and includes 36,000 acres (23,000 are in Alameda County and include two major reservoirs, San Antonio and Calaveras). The watershed and reservoir are a part of a complex series of reservoirs, tunnels, pipelines and treatments systems making the SFPUC the third largest municipal utility in California serving 2.6 million residential, commercial and industrial customers in the Bay Area. They provide not only to retail customers in San Francisco, but two-thirds of their water is as wholesale deliveries to 26 suburban agencies in Alameda, Santa Clara and San Mateo counties.¹⁰

University of California, Berkeley owns and manages approximately 850 acres of wildlands in the Oakland hills. Limited development within this area includes several campus facilities, trails, roadways, infrastructure. Approximately 202 acres are leased to the Lawrence Berkeley National Laboratory (LBNL).

Tri-Valley Conservancy oversees conservation easements and manages lands in eastern Alameda County, including north and south Livermore, south Pleasanton, west Altamont Hills and future Chain of Lakes Recreation Area.

¹⁰ San Francisco Public Utilities Commission website www.sfwater.org/index.aspx?page=355 accessed 12/9/14.

Federal Lands

US Fish and Wildlife Service (USFWS) The US Fish and Wildlife Service owns and manages the Don Edwards San Francisco Bay National Wildlife Refuge, the first urban National Wildlife Refuge established in the United States. The Don Edwards San Francisco Bay National Wildlife Refuge is part of a complex made up of six other wildlife refuges in the San Francisco Bay Area. As of 2004 the Refuge spans 30,000 acres of open bay, salt pond, salt marsh, mudflat, upland and vernal pool habitats. The creeks from the hills above Hayward, Union City and Fremont drain into the refuge; tying the health of the upper watersheds to this nationally significant wildlife resource.

Alameda County stakeholders have also worked closely with the USFWS regional and zone fire management programs, the Recovery Program on critical habitat for the Alameda Whipsnake, and in Section 7 consultations for Biological Opinions related to fuel modification projects. USFWS funded the Diablo Fire Safe Council's development of the Best Management Practices Guidebook for Hazardous Fuel Treatments in Contra Costa County, California in 2009 by a grant through the California Fire Safe Council.

Camp Parks Combat Support Training Area, Department of the Army. Camp Parks is a U.S. Army facility located in the City of Dublin and occupies approximately 2,498 acres. It includes numerous buildings and facilities including ranges and training facilities.

Department of Energy. There are three National Laboratories in Alameda County that are supported by the Department of Energy through its Office of Science.

Lawrence Berkeley National Laboratory (LBNL) is managed by the University of California for the Department of Energy. Its 202 acre site is located in the hills above the University of California Berkeley campus and the City of Berkeley.

Lawrence Livermore National Laboratory (LLNL) owns and operates the urban "Livermore site" of approximately 820 acres on the eastern edge of the city of Livermore. It also owns a rural experimental test site "Site 300," approximately 7,000 acres that straddles the Alameda and San Joaquin County lines.

Sandia California National Laboratory is a science and engineering laboratory located on 110 acres in Livermore across from LLNL's urban "Livermore site"¹¹.

National Park Service (NPS). While there are no National Park Service public lands in Alameda County, portions of the Juan Bautista de Anza National Historic Trail run through Alameda County. The Pacific West Regional Office is located in San Francisco and oversees NPS owned and managed lands throughout the San Francisco Bay region and western United States. The Fire Management Office regularly exchanges information with other Alameda County stakeholders on best management practices for wildfire management.

Bureau of Land Management (BLM). While there are no Bureau of Land Management lands in Alameda County local stakeholders have worked closely with BLM staff from the Hollister Office in conjunction with federal grants for public education and fuel reduction projects. The BLM often takes the lead on environmental compliance review for grant projects funded by Federal agencies through the California Fire Safe Council.

¹¹ Sandia National Laboratories, California. http://www.sandia.gov/locations/livermore_california/ accessed 12/9/2014.

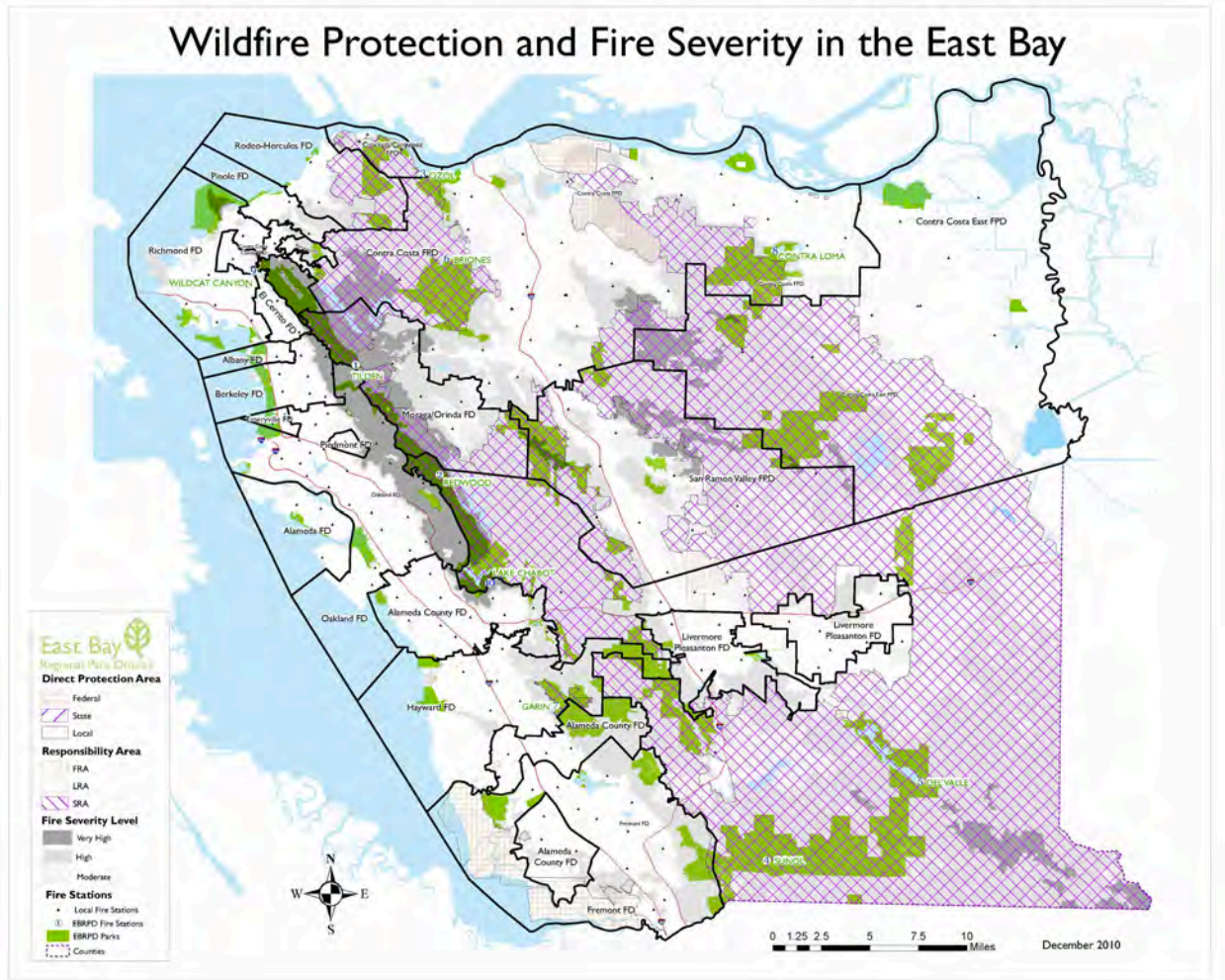
Fire Protection Agencies

Alameda County has twelve different entities that have direct fire protection responsibility. A detailed list of fire agency contacts can be found in the Appendix on-line.

Alameda County Fire Protection Agencies

Alameda County Fire Protection Agency
Alameda Fire Department
Albany Fire Department
Berkeley Fire Department
California Department of Forestry and Fire Protection (CAL FIRE)
Department of the Army Camp Parks Combat Support Training
Area Fire & Emergency Services
East Bay Regional Parks District Fire Department
Fairview Fire Protection District (service by Hayward Fire Department)
Fremont Fire Department
Hayward Fire Department
Livermore- Pleasanton Fire Department
Oakland Fire Department
Piedmont Fire Department

Wildfire Protection and Fire Severity in the East Bay



1.2 The Planning Process & Stakeholders

Development and update of the Alameda County CWPP was made possible through two National Fire Plan grants from the Cooperative Fire Program of the US Forest Service Department of Agriculture, Pacific Southwest Region, through the California Fire Safe Council to the Diablo Fire Safe Council (DFSC). The two grants could not have been possible without matching in kind services of the Alameda County Association of Fire Chiefs, Diablo Fire Safe Council Board of Directors, members of the Hills Emergency Forum and the Oakland Wildfire Prevention Assessment District Advisory Committee.


The initial eighteen-month planning process followed an eight-step process that included 6 stakeholder meetings, 3 workshops, outreach during the 20 year anniversary of the 1991 Oakland-Berkeley Hills fire and presentations to community groups. A similar shortened process was followed for the 2014-2015 Update. Materials were regularly posted on the Diablo Fire Safe Council web site at www.diablofiresafe.org/ala_co_CWPP.html. A community survey was also available on <http://app.fluidsurveys.com/surveys/dfsc/cwpp-homeowner-survey/>.

State, local and private agencies, companies, organizations and special interest groups, as well as the residents of Alameda County, participated in the development, review and update of this CWPP. Stakeholders included:

*Alameda County Fire Department
Alameda Master Gardeners
American Red Cross
Association of Bay Area Governments
Berkeley Fire Department
CAL FIRE – Santa Clara Unit
California Department of Fish and Game,
Habitat Conservation Unit
California Native Plant Society
Claremont Canyon Conservancy
Diablo Fire Safe Council
East Bay Municipal Utility District
East Bay Regional Park District
Fremont Fire Department
Friends of Sausal Creek
Garber Park Stewards
Hayward Fire Department
Hiller Highlands homeowners (Oakland)
Hills Emergency Forum
Lawrence Berkeley National Laboratory
Merritt College/ Peralta Community College
National Park Service*

*Natural Hazard Mitigation and Recovery
Consultant
Oakland Fire Safe Council
Oakland Fire Department
Oakland Local – News and Community Voices
Oakland, Mayor’s Office
Oakland Wildfire Prevention Assessment
District Advisory Committee
Pacific Gas and Electric
Piedmont Fire Department
San Francisco Public Utilities
Commission ((Natural Resources and
Land Management Division)
Shepherd Canyon Eco-pullers
Society of Fire Protection Engineers
Sunol Firesafe Coalition
University of California, Richmond Field
Station
University of California, Berkeley
U.S. Fish and Wildlife Service Pacific
Southwest Region Fire Management*

During the 2014-2015 Update new stakeholders became involved in the plan, most notably from the communities of Sunol, Castro Valley, Sunol Fire Safe Coalition and the Oakland



Alameda County
Community Wildfire Protection Plan
Overview

Task	Anticipated Timeliness	Outcome/ Results/ Deliverables
Step #1 convene decision-makers (minimum = local government, fire agencies and Cal Fire).	Thursday Feb 24, 2011	Project meeting #1- topics, establish potential stakeholders
Step #2 Involve Federal Agencies (USFS, BLM, USEPA, NPS) to share perspectives, priorities and other information.	Tuesday March 22, 2011	Project meeting #2 – descriptive communication methods, network plan, existing information available
Step #3 Engage interested parties. Develop informational materials regarding process and stakeholder involvement. Post on web/blog. Provide links to partners.	March – May 2011	Outreach presentations (#1). Educational materials
Step #4 Establish a Community- based Plan based on existing state and local assessments (identify inhabited areas, critical infrastructure, preliminary designation of communities' wildland urban interface zone)	March – July 2011	Project Meeting #3 (May) Issue Map Preliminary community risk assessment map
Step #5 "Risk Assessment" Community Workshops (in 3 parts of county) to identify: • Fuel hazards • Risk of wildfire occurrence • Homes, businesses and critical infrastructure at risk • Other community values at risk • Local preparedness and fire fighting capabilities	April – July 2011	Community Workshops #1 – 3 Draft "Risk Assessment"
Step #6 "Recommendations & Priorities" Community Workshops. Establish "Community Hazard Reduction Priorities" and "Recommendations to Reduce Structure Ignitability."	July – November 2011	Project meeting #4 (August) Draft Priorities & Recommendations Educational materials Community Workshops #4 – 6 (November)
Step #7 Develop "Action Plan" and "Assessment Strategy." Identify roles, responsibilities. Funding needs & timeliness for highest priority projects. Establish assessment strategy for relevance and effectiveness over long term	December – February 2012	Project meeting #5 (February) Draft "Action Plan"
Step #8 Finalize the "Community Wildfire Protection Plan" and present for approval. Present adopted plan to community.	March 2012 – May 2012	Project meeting #6 (March) Administrative Draft Plan Public Hearings/Plan Presentation to adopting bodies (public meeting) Final Plan

Fire Safe Council. Two other significant changes to stakeholder status since the adoption of the Plan in 2012 included:

- The sunset of the Oakland Wildfire Prevention Assessment District (WPAD 2003-2013). The WPAD will continue to exist until all the collected funds have been expended.
- One-time drought related funding. During 2014, PG&E, in response to the exceptional drought became a funding partner for hazardous fuel reduction work by East Bay Regional Parks District, Diablo Fire Safe Council, Hayward Fire Department and other partners in the communities of Hayward, Oakland and Sunol.

Fire Hazard and Risk in the Wildland Urban Interface

2.1 Fire Environment

Wildfires are a part of Alameda County's natural ecosystem. The Mediterranean-like climate with no summer rains, the rugged, wind-conducive topography, and fire adapted native vegetation set the stage for periodic burns. The fire environment is made more dangerous by the abundant hazards and risk associated with a growing population and sprawling pattern of development. The urban side of the wildland-urban interface brings new hazards into the equation with introduced vegetation, structures constructed of flammable materials and many potential ignition sources.

Alameda County has a history of fire over the past 100 years resulting in loss of lives, property and natural resources – the 1991 "Tunnel Fire" in the Berkeley Oakland Hills being the most damaging. Historically, more frequent wildfires of lesser intensity were common. Drought and human behaviors, particularly in the arenas of land-use and fire suppression, have had a profound impact on the County's fuel complex and fire regime. This increases the possibility of catastrophic wildfire, especially as the hazards of vegetation, topography, structures and fire weather are present.

Weather

Chief among fire hazards is the area weather. Despite efforts to improve neighborhood safety and fire fighting capability, uncontrollable fire storms will occur under the extreme, but periodic conditions of "Red Flag" weather days. "Red Flag" warnings are issued by the National Weather Service when weather elements such as low relative humidity and strong winds could lead to rapid increases in wildfire activity.

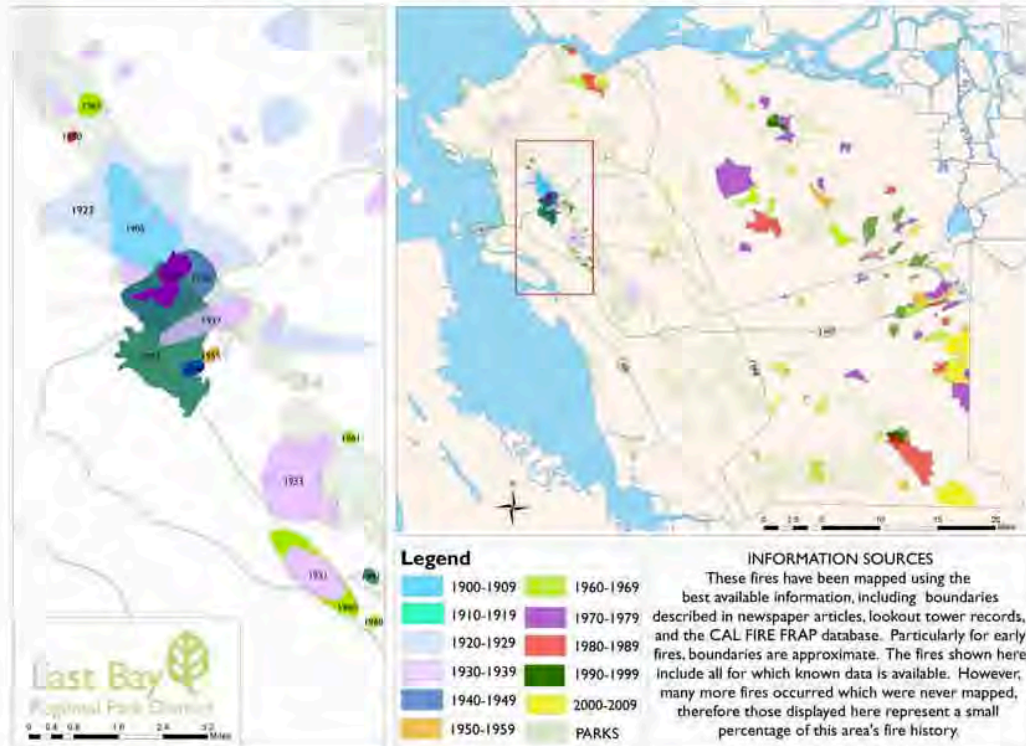
In Alameda County, "Red Flag" weather can mean the occurrence of strong, hot, dry offshore winds (technically called "foehn" winds). These winds are known locally as "Diablo Winds" since they come from the north, northeast in the direction of Mount Diablo. They carry extremely dry air at high velocity. They quickly desiccate vegetation and other flammable materials and can push a fire down or up a slope with amazing speed. These can occur at any time of year, but are especially dangerous in the driest months of summer and fall. During these times, fighting a fire becomes far more difficult.

Since the 2012 plan was adopted, California has been experiencing more extreme wildfire and drought conditions. The 2013 fire season rolled into an active 2014, with little reprieve from winter rains. On January 17, 2014 Governor Jerry Brown officially declared a "drought state of emergency." On April 22, 2014 the US Drought Monitor expanded the region of "[D4 Exceptional Drought](#)" (the highest classification) to encompass Alameda and Contra Costa Counties.

Fuel – Structures and Vegetation

Due to homes continuing to be built in high fire hazard zones and changes in the natural fire-cycle, the county has areas of highly flammable structures amongst an over-accumulation of flammable vegetation. This massive fuel load in the area's mountains and

Fire History in the East Bay



15 Major Fires In Berkeley Oakland Area

September 1923 - Berkeley / North of UC Berkeley campus. 584 homes destroyed and 130 acres. Diablo wind. Ignition: smoker.

June 1929 - Oakland/ Lake Temescal. 300 acres grassland. West wind, burned from Lake Temescal toward Skyline Boulevard and Tunnel Road. (Source Berkeley Daily Gazette June 22, 1929). Ignition: unknown.

November 1931 - Leona. 5 homes destroyed and 1800 acres burned. Diablo wind. Ignition: unknown.

November 1933 - Redwood / Joaquin Miller. 1 life, 5 homes and 1000 acres. Diablo wind. Ignition: smoker.

September 1937 - Broadway Terrace. 4 homes, 700 acres. West wind. Ignition: Backyard fire.

September 1940 - Broadway Terrace. 30 acres. West wind. Ignition: unknown.

September 1946 - Buckingham/ Norfolk. 1,000 acres. Diablo wind. Ignition: arson & rekindle.

November 1955 - Montclair. 10 acres. West wind. Ignition: unknown.

October 1960 - Leona. 2 homes, 1200 acres. Diablo wind. Ignition: unknown.

November 1961 - Tilden, Briones, Roberts & Chabot. 4 fires, 400 acres. South-west wind. Ignition: arson.

October 1968 - Oak knoll. 204 acres. West wind. Ignition: unknown.

September 1970 - Buckingham/Norfolk. 37 homes destroyed, 21 homes damaged, 204 acres. Diablo wind. Ignition: arson.

December 1980 - Berkeley/ Wildcat. 5 homes, 2 acres. Diablo wind. Ignition: power line.

October 1990 - Leona. 200 acres. West wind. Ignition: vehicle accident.

October 1991 - Buckingham/Norfolk (Tunnel Fire). 25 lives. 3354 homes 456 apartments 1600 acres, estimated \$1.5 billion damages. Diablo wind. Ignition: rekindle.

hills makes fires very difficult to contain. In addition, non-native and invasive weedy vegetation has replaced the more fire resistive and ecologically stable native species in many places, adding to the threat.

Topography

The County's steep topography, with canyons and swales, influences fire behavior and in many instances intensifies fire effects. Westward facing slopes are more arid (due to long exposure to the afternoon sun) and thus more combustible. The difficulty of building roads in the steep areas makes ingress or egress difficult and delays fire fighter response time.

2.2 Wildland Urban Interface Risk & Hazard Assessments

The wildland urban interface (WUI) is defined as an area in which wildlands and communities are sufficiently close to each other to present a credible risk of fire spreading from one to the other. Nationally, the WUI has gained increasing importance as more Americans build homes in rural settings adjacent to public lands.

The housing density and geography of Alameda County is such that most of the developed areas not only border WUI areas, but also include conditions within the "urbanized" areas that can fuel wildfires, such as experienced in the 1991 fire in the Oakland-Berkeley Hills (officially known as the Tunnel Fire). Some locations are considered "Very High" and "High" Fire Hazard Severity Zones and are at significant risk for loss of life and property if a fire were to occur on a normal or extreme weather day.

For the purposes of this plan, the California Department of Forestry and Fire Protection (CAL FIRE) Fire Hazard Severity maps were used as a starting point to determine where significant fire hazards exist both in the wildland and urban areas of the county. Many local cities and fire districts have developed specific maps characterizing the risk in their areas, further refining the CAL FIRE maps. These local maps are included in the Appendix on-line.

The California State Forester has identified communities in the WUI that are at significant risk from wildfire. In accordance with the Healthy Forest Restoration Act, stakeholders elected to extend the definition of WUI to include evacuation routes, staging areas and other important resources and infrastructure. This extended area is referred to as the "CWPP WUI" area on the Fire Hazard Severity map in the Appendix on-line.

Existing risk and hazard assessments can be grouped into three categories addressing potential for fire to occur, what to protect and protection capabilities.

2.2.1. Potential for Fire to Occur

Factor 1 – Risk of Fire Occurrence

Fire History Locations

Alameda County has a history of fire; the "Tunnel Fire" in 1991 in the Oakland and Berkeley Hills above the Caldecott Tunnel being the most damaging. The *Fire History in the East Bay* shows many fires throughout the county over the past century. Three areas show clusters of fire:

- 1) East Bay Hills – Berkeley, Oakland, San Leandro;

- 2) East part of county along 580,
- 3) Southeast in remote areas of the county.

Fire History Patterns

A look at the 15 fires in the vicinity of the Caldecott Tunnel from 1923 – 1991 shows a common pattern of ignitions during critical Diablo Wind conditions in the Fall; occurring every 10 – 20 years.

Cause of Fire

As a part of their fire management plan, East Bay Municipal Utility District (EBMUD) looked at causative agents for fires on their watershed from 1980-1997. Many ignitions were “unknown,” but known causes were primarily human and included arson, camp and picnic activities, powerlines, fireworks, fuel reduction activities, smoking, children, auto, rekindles. With only 2 out of the 174 fires analyzed caused by lighting. EBMUD used this information to help identify high fire risk areas including:

- All interface or intermix areas
- High use or recreational areas
- High travel transportation corridors with roadside grasslands

East Bay Regional Park District did a similar analysis of 1,900 fires over twelve years in Alameda and Contra Costa Counties and reached similar conclusions. Stakeholders and fire personnel familiar with Alameda County’s fire history felt that these causes and patterns could be extrapolated to other areas. Alameda County also has a unique ignition source in the equipment associated with the wind farms in the eastern hills of the county. The wind farm operators are required to submit wildfire management plans to local fire jurisdictions to address potential ignition risks.

Fire Weather

Another factor that has been assessed is fire weather or periods of “Diablo winds” from the east that bring low relative humidity and higher temperatures. Alameda and Contra Costa Counties have 11 remote automated weather stations (RAWS) that provide us localized information on the weather. Many fire departments also take local weather readings to supplement these regional data. In addition, National Oceanic and Atmospheric Association’s National Weather Service provides “red flag warnings” and “Fire Weather Watch” of periods of high fire danger. www.wrh.noaa.gov/firewx/cafww/

Communities at Risk

In association with the development of the National Fire Plan the Federal Register published a list of Communities at Risk in 2001.¹ Eleven cities in Alameda County were identified. It should be noted that there are communities that were not included on the 2001 published list, but that are identified by local government or are located in CAL FIRE’s Very High Fire Hazard Severity Zone, such as the unincorporated community of Sunol.

<p>West County <i>Incorporated Cities</i> Berkeley Fremont Hayward Oakland</p>	<p>East County (Tri Valley) <i>Incorporated Cities</i> Dublin Livermore</p>
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¹ http://osfm.fire.ca.gov/fireplan/fireplanning_communities_at_risk.php accessed 12/9/2014

San Leandro	Pleasanton
Union City	
<i>Unincorporated Areas</i>	
Fairview	
Castro Valley	

Factor 2 – Fuel Hazards

CAL FIRE Statewide Hazard Assessment Maps.

Very High Fire Hazard Severity Zones for State Responsibility Areas (SRA) and Local Responsibility Areas (LRA) are identified on these maps based on:

- Flame length modeled based on vegetation, topography and weather.
- Crown fire potential, ember production and ember movement
- Likelihood of burning based on fire history and other factors.

See www.fire.ca.gov/fire_prevention/downloads/FHSZ_model_primer.pdf for more information on the model used to create these maps.

In Alameda County “Very High Fire Hazard” Severity Zones are clustered in three areas in State Responsibility Areas (SRA):

- East Bay Hills from Berkeley south through the Castro Valley Hills;
- Hayward Hills connecting with Union City- Fremont hills, Pleasanton Ridge including Sunol, Kilcare Woods, Palomares and Niles Canyon.
- East County including wind generating area of Altamont Hills and Mines Road drainages Del Valle recreation area.

Very High Fire Hazard Severity Zones in Local Responsibility Areas (LRA) include:

<p>West County <i>Incorporated Cities</i> Berkeley Piedmont Oakland San Leandro <i>Unincorporated Areas</i> Castro Valley</p>	<p>East County (Tri Valley) <i>Incorporated Cities</i> Pleasanton <i>Unincorporated Areas</i> Sunol Scotts Corner Kilcare Woods</p>
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Local Fire Hazard Assessments

More detailed local wildfire hazard assessments have been done in some areas of the county, such as for the “*East Bay Regional Park District’s Wildfire Hazard Reduction and Resource Management Plan.*” This plan for portions of the East Bay hills identifies vegetation and modeled potential fire behavior (using the model FLAMMAP). The plan identifies treatment areas located within 200’ of homes with flame length greater than 8 feet; high potential for torching and spotting (ember production) or strategic fire route or safety zone; or areas that are currently maintained that would have flame length greater than 8 feet if not maintained.

2.2.2. What to Protect

Factor 3 – Homes, businesses and critical infrastructure to protect

In addition to looking at fuel hazards it is also important to identify things that should be protected from the hazards. Some of the things to protect include:

- Homes and businesses.
- Schools and colleges. Alameda County includes many public and private schools, community colleges, private colleges, public colleges and universities.
- Hospitals and other health related facilities
- Watersheds. The San Francisco Water Alameda Watershed Plan (in Sunol) around Calaveras and San Antonio reservoirs identified areas of potential high fire severity on watershed. EBMUD also has identified their watersheds' potential for wildfire.
- Other things to consider. Transportation and utilities. Alameda County is seismically active with three major faults (Hayward, Calaveras and Greenville) that could impact access, reliability of water supply and result in potential ignitions from gas or fuel lines following an earthquake.

In recognition of things to protect several cities have locally designated areas that further refine CAL Fire's very high fire hazard severity zones:

- Both Berkeley and Oakland have special requirements for property owners to maintain defensible space. They also send out annual notices and inspect properties in this area.
- Fremont, Dublin and Hayward have special requirements for new construction in specific area, as well as inspections to maintain defensible space.

Factor 4 - Other values to protect

Critical wildlife habitat.

The East Alameda County Conservation Strategy identifies critical habitat in the eastern part of the county. US Fish and Wildlife Service have identified critical habitat for the Alameda Whipsnake and Red Legged Frog. Other federal listed species are identified in the "*Best Management Practices Guidebook for Hazardous Fuels Treatments in Contra Costa County – Alameda County Supplement*" (to be developed in conjunction with this CWPP) and the *Vegetation Management Almanac for the East Bay Hills*.

Local watersheds, creeks and riparian areas.

Many cities and the county have recognized the importance of their local watersheds, creeks and riparian areas and have local stream protection ordinances and regulations to protect these resources. State regulatory agencies, including California Fish and Game and the San Francisco Bay Regional Water Quality Control Board (SFRWQCB), oversee protection of riparian areas, including along seasonal or ephemeral channels and issue permits required for removal of riparian vegetation. Replanting or revegetation may be required in some areas when vegetation is removed to reduce wildfire hazards.

There are also multiple water providers in Alameda County. East Bay Municipal Utility District owns watershed lands around San Leandro Reservoir and Lake Chabot (managed by East Bay Regional Park District). San Francisco Public Utilities Commission owns watershed land around Calaveras and San Antonio reservoirs.

Significant recreation, scenic areas and areas of historical, economic or cultural value.

The wildland urban interface also contains many regional parks and city owned open spaces with significant recreation and scenic areas. It also is the location of areas with historical, economic and cultural value both as documented historical and undocumented archeological sites.

2.2.3. Protection Capabilities

Factor 5 - Local Preparedness and Fire Fighting Capabilities

Local preparedness and firefighting capabilities include community preparedness & emergency personnel response. For example, the City of Pleasanton not only identifies "Special Fire Protection" areas, but also identifies areas outside of its response zones and requires new development includes sprinklers, special construction etc. to respond to these conditions.

Many of our fire agencies are operating under on-going budget cuts and increasing demand on delivery of medical emergency response. These economic forces influence staffing levels, inspection and enforcement processes state-wide.

The efforts of local fire protection agencies are made even more effective through common training in the national incident management systems (NIMS), incident command system (ICS) and the California standardized emergency management system (SEMS) that are used to manage response to multi-agency, multi-jurisdiction emergencies. Master mutual aid plans and automatic aid agreements also bring together resources. Local preparedness and firefighting capabilities include community preparedness & emergency personnel response. During fire incidents law enforcement, including the County Sherriff and local police departments, are responsible for coordinating evacuation. Volunteer resources, such as CERT (Community Emergency Response Team), RACES (Radio Amateur Civil Emergency Service), and Alameda County Office of The Sheriff. Volunteers also play critical roles in both preparedness and during response to wildfires.

2.3 Values at Risk within the WUI

Millions of people are exposed to the destructive forces of wildfire by virtue of living, working or visiting areas in the WUI. Much of what people value most highly – their lives, family, community, property, as well as cultural, economic and ecological interests, is at risk of loss in an uncontrollable wildfire. Of particular concern are those who for what ever reason would not be able to leave during an evacuation without assistance.

Area residents and agencies list homes, businesses, parklands and protected watersheds among values at risk. Regional facilities for public transportation (BART, rail and bus) are at risk, as are power and water supply facilities and substations, and in the Altamont area wind-power generation facilities. The results of a survey about values at risks are provided to numerous residents are included in the Appendix on-line.

The County's Local Hazard Mitigation Plan² lists the following assets, with a total monetary value measured in billions of dollars, as exposed to potential loss:

- In the urban lands of Alameda County, 77,727 (43.2% of the 180,056 acres in urban land use) are located in the wildland urban interface threat areas. 21,963 of those acres of land (12.2%) are subject to high, very high or extreme wildfire threat.
- In the non-urban areas of Alameda County, 14,697 acres (5% of the 289,956 acres) are located in the wildland urban interface threat areas. Most non-urban areas are located in the more remote areas (outside of the WUI). In these remote areas there are additional areas of high or very high wildfire threat (221,826 acres of the 237,088 non-urban lands).
- 1,449 miles of roadway are subject to high, very high or extreme wildfire threat and 2,392 miles of roads are located in wildland urban interface threat areas (There are a total of 5,444 miles of roads in the County). Other critical regional transit facilities within the threat area include the Altamont Commuter Express (ACE Train), AMTRAK, Bay Area Rapid Transit (BART) and railroads.
- Other infrastructure located within the wildland urban interface threat areas includes: pipelines under roadways, power facilities, municipal wastewater facilities, municipal water supplies and communications facilities.
- 6 schools, 146 critical facilities (owned by city, county or special districts), and 71 bridges and interchanges are located in areas of high or very high threat. 82 critical health care facilities, 249 schools and 1,044 other critical facilities are located in wildland urban interface threat areas.

2.4 Strategies for Reducing Risk within the WUI

Wildfire is a natural process in the Alameda County ecosystem. The natural hazards of the fire environment – weather, climate, topography and fire adaptive vegetation all are immutable. Attention to decreasing the human impacts and risk factors can reduce the incidence of catastrophic wildfire. These strategies are organized to focus on each of the existing risk and hazard assessments:

1. **Collaborative Partners:** Recommendations related to risk of fire occurrence include working with potential collaborative partners to share ideas including volunteer groups such as Garber Park Stewards, Shepherd Canyon, Beaconsfield and Claremont Canyon Conservancy, or less obvious partners such as neighborhood crime prevention councils (NCPC). Collaborative efforts may include:
 - Information
 - Education
 - Collaborative planning on a local level with more detailed assessments and project development to reduce risk of fire occurrence.

² Association of Bay Area Governments. Multi-Jurisdictional Local Hazard Mitigation Plan. Appendix C: Natural Hazard Assessment Risk Assessment. 2010 Update. <http://resilience.abag.ca.gov/wildfires/> accessed 12/9/2014. See <http://resilience.abag.ca.gov/mitigation/landuse/> for data specifics by county and city. For Alameda County Plan, 2011 see <http://resilience.abag.ca.gov/wp-content/documents/2010LHMP/AlamedaCo-Annex-2011.pdf> accessed 12/9/2014.

Other information dissemination partners may include the media, mayors' office, local politicians, homeowner associations, organizations (California Native Plant Society, Rotary Clubs, Garden Clubs), packages for new homeowners (with local realtors), local businesses, or use of social media. Electronic distribution could allow groups to customize and distribute through existing networks.

While information is best received by trusted known sources such as neighbors and friends, it is important to have support of official resources such as fire agencies and university researchers to answer follow up questions.

2. **Recommendations to address risk of ignitions:**

- Fire Prevention Education – Smokey Bear, CERT, volunteers in prevention, fire department staff, national programs such as FIREWISE Communities and Ready, Set, Go!
- Enforcement – supporting fire investigations and working with law enforcement, defensible space inspections/ enforcement.
- Engineering – equipment safety, fuel reduction activities. During the 2014-15 Update process a new potential source of ignition was identified as oil tank cars traveling on rail lines through County.

3. **Recommendations to address fire weather:**

- Awareness of hazard conditions – red flag program flags, education, shared responsibility of agencies and residents.
- Restrictions on specific uses, certain activities, specific operations or equipment (abatement work) during periods of high fire danger weather.
- Shared responsibility – patrols, community watch type activities.

4. **Recommendations to address community at risk hazards:**

- Reducing surrounding fuels and ignitability of existing homes and structures – from the house out.
- Focus on dense vegetation directly adjacent to homes and homes themselves.
- Weed abatement defensible space inspections and enforcement.
- Home ignition zone improvements (beyond weed abatement or fire code requirements).
- Reduce structure ignitability.

5. **Recommendations to further support defensible space programs:**

- Volunteer activities in community open spaces.
- Chipping programs.
- Green waste pickup or other programs for disposal.
- Hazardous tree programs.
- "Seed" funding for community projects.
- Information such as lists of contractors and what sorts of work they can do. Use CERT and contractor training programs as a model for programs where they provide certificates to contractors for credibility.

- Information on wildfire characteristics of plant materials (native and ornamental such as juniper).
- Model local ordinance and citizen campaign to declare French broom a noxious weed and prohibit retail sale within cities and Alameda County.
- Inspection and enforcement mechanisms. Note: Not all cities and parts of Alameda County have mandated inspections or enforcement mechanisms; they vary by jurisdiction. In many areas fire department staffing limits the program to complaint response and restricts inspections to what can be viewed from the public streets. Code enforcement may be through neighborhood preservation, weed abatement or blight related ordinances.
- Removal of penalties if work is completed within a certain timeframe (for those agencies that have the enforcement mechanism to use liens and penalties to require private property owners to comply with regulations).
- Partnering with insurance companies. Insurance companies can be a big motivator – not insuring or increasing costs can motivate homeowners to take action. Insurance companies also have incentive as it is better for them to prevent fire than to have to pay for replacement. Residents more likely to pay attention to messages if they also come from insurance companies.
- Showcase successful treatments of private properties where habitat values, aesthetics and fuel reduction (defensible space) goals have been met with an on-line photo gallery and details of treatment.

6. Recommendations for Homeowner Risk Reduction Behaviors (Source: Firesafe Council of California website: www.firesafecouncil.org)

- Creating a minimum 30-foot defensible space around your home.
- Planting low-growing, fire resistant plants around your home.
- Putting a fire resistant roof on your home.
- Putting fire resistant undersides to any decks and balconies on your home.
- Removing any dead branches from your home’s roof and around the chimney.
- Making sure that home is easily identifiable and accessibly from a main road.
- Making sure that all the trees on or near your property are away from structures.
- Making sure that all the trees on or near your property are away from utility lines.
- Working with neighbors to clear common areas and prune areas of heavy vegetation.
- Stacking firewood and scrap wood piles at least 30 feet from any structure.
- Contacting your local fire department to get a personal fire safety inspection at your home and property.

7. Recommendations to support improving structure survivability:

- Local building standards for remodeling reflective of the State adopted WUI Chapter 7A or better (recognizing these are minimum standards).
- Education regarding WUI building standards and existing code requirements – Class A roofs, smoke detectors, fire extinguishers, street address numbers. Educational materials to address inside the home, external shell, ember

hardening and non-ignition zone. Use variety of outreach tools including DVD, website, flyers and presentations. Provide targeted materials for homeowners in existing homes.

- Showcase retrofit techniques and building materials for roofs, gutters, windows, siding, vents, decks, outbuildings. Especially information regarding what can be done without major remodels. Insurance Institute for Business and Home Safety has a good wildfire home assessment and checklist with relative costs. http://www.disastersafety.org/wp-content/uploads/wildfire-checklist_IBHS.pdf
- Incentive programs to finance upgrade of existing homes:
 - Community based: Malibu West FireSafe Council has a program for wholesale purchase and installation of materials such as fire safe vents.
 - State legislative including incentives for home energy efficiency (upgrade to double pane windows also increases structure survivability for wildfire).

8. Recommendations to support appropriate new development & construction both in new subdivisions and as infill in existing communities:

- Integrate fire safety into local policies.
- WUI building standard (State Chapter 7A or more stringent) – roofs, gutters, windows, siding, vents, decks, Other. Educational materials to designers, builders, plan checkers and code officials to address inside the home, external shell, ember hardening and non-ignition zone. Use variety of outreach tools including DVD, website, flyers and presentations.
- Local building requirements for fire sprinklers.
- Review of infrastructure design – roads (access for evacuation and emergency equipment), bridges, water, underground utilities, fire stations. This is especially important where infill development occurs on previously un-buildable lots where existing infrastructure may not be adequate for protection of new development.
- Mechanisms for fuel reduction in community open space (privately or jointly owned).
- Provide education and tools to planning commissions to allow them to be more selective in their approval of appropriate new construction in very high fire hazard zones.

8. Recommendations to support fuel management on public and large scale private lands:

- Integrating fire with scientifically based resource and vegetation management that protects and improves native habitat values. A lot of collaborative planning work has been done in the region that should be incorporated, such as the “Environmental Green Paper” developed by the Sierra Club, California Native Plant Society and Golden Gate Audubon Society. Balance protection of biological resources with fuel removal. (ebcnps.files.wordpress.com/2009/06/environmental-green-paper-on-ebcpd-vegetation-mgmt.pdf.)
- Share project implementation resources (contractors, equipment, specifications).
- Share best management practices (BMP) and lessons learned.
- Project & funding support.
- Facilitate a process that permits volunteers to “adopt a park” for fuel management work, including revegetation of desirable species, such as with Garber Park Stewards or Claremont Canyon Conservancy.

- Work with local ranchers and public agencies who use cattle grazing as a tool for fire management to encourage them to adjust range management plans and graze closer to roads and fence lines to reduce ignition potential early in the season.
- Include botanical and biological experts in planning and oversight of projects to maximize effectiveness while minimizing negative impacts.
- Integrate wildfire safety into mitigation plantings requirements (e.g. The Caldecott Tunnel 4th bore required a quantity of replacement plantings not compatible with fire safety. Conditions of development for new developments also often require quantities of new tree plantings without thought to long term defensible space requirements.)
- Develop urban lumber from large diameter trees as a forest product to address biomass developed from fuel reduction projects and develop a small economy.

9. Recommendations protecting homes, businesses, other facilities & essential infrastructure at risk:

- Expand structure ignition reduction and defensible space activities to businesses and essential infrastructure.
- Identify fuel reduction projects to protect transportation networks and utilities, such as watershed fuel reduction, roadside clearances, and power-line clearance. Power lines that do not follow roads may be a special concern, as it is difficult to get fire suppression equipment into the area if there is an ignition.

10. Recommendations to support Local Preparedness and Firefighting Capability:

- Develop local evacuation plans and educate residents on preparedness. Alameda County Fire Department is working on evacuation plans for local areas.
- Identify actions to maintain existing access/ egress during Red Flag days by reducing restrictions of road right of ways on narrow roads throughout the hills.
- Participate in and enhance existing CERT/ Neighborhood Watch programs
- Continue to support fire department response improvements: mutual aid, wildland fire training, equipment etc.

Recommended Action Plan

3.1 Selection of Recommended Priorities

The Alameda County Community Wildfire Protection Plan (CWPP) was developed through collaboration of stakeholders and residents that attended work sessions, public presentations or commented on draft versions of this plan and its update. Participants were invited to submit project ideas that provide protection and reduce risk. The following recommended priorities are based on this collaboration, as well as the analysis and the recommended strategies for reducing the risk with the WUI detailed in Chapters 1 and 2.

Each of the following topics outlines specific recommendations and associated actions. It is anticipated that additional opportunities for actions will be identified as the CWPP is implemented. Projects, workshops, demonstrations and education efforts will be recommended for implementation and funding based on the following attributes:

- Protects life, property and infrastructure in areas of the County where risk of catastrophic wildfire is most severe.
- Reduces risk of fire spreading from private lands to regional parklands, state or federal lands or areas where significant natural or cultural resources are at risk.
- Seeks to create a detailed implementation plan for fire prevention or mitigation at the local level in an area identified as "at risk".
- Involves stakeholders at all levels, which is to say there is strong community support, as well as support from applicable agencies and landowners. Intensity of local support will be a significant factor when choosing projects.
- Demonstrates the capacity to continue to manage and maintain the project effectively, and/or supports ongoing, previously planned efforts.
- Projects covered in an agency adopted environmental document. (Note: Some stakeholders felt that grants should not be processed for work that is not covered by required environmental document(s) or for projects where required permits are not obtainable. However, it also should be noted that some grants cover the environmental planning and permitting process which can be quite costly and difficult to fund.)
- Projects that will improve firefighting response, wildfire control capabilities and residential evacuation plans and operational programs.
- Removal of invasive plants of known high flammability listed in a recognized source such as Cal-IPC California Invasive Plant Inventory (publication 2006 with updates).

Many of the recommended actions will take long-term commitment over multiple years to address the complex hazards. Some actions have current funding, but additional funding and efforts are needed to continue to address the issue.

The 2014-15 plan update process confirmed continued use of these selection criteria.

3.2 Information, Education and Collaborative Planning Priorities

A key recommendation related to information, education and collaborative planning is working with potential partners to find common ground, share ideas and develop joint implementation of local projects. These partners may expand beyond the traditional agency partners to include volunteer groups such as the Garber Park Stewards, Shepherd Canyon, Beaconsfield, Fire Safe Sunol Coalition and Claremont Canyon Conservancy who have interest in neighborhood or nearby open spaces. They may also include organizations, such as the California Native Plant Society or Alameda County Master Gardeners, offices of the mayor or elected officials, homeowner associations or local businesses.

During the Update process, the focus was refined to forming coalitions around specific issues. Recommendations for topic areas included:

- Managing French broom and other invasive plants with partners such as: Alameda County Resource Conservation District, Cattlemen’s Association, Friends of Creeks groups, CAL Invasive Pest Council, County Agricultural Commissioner.
- Wildfire safety related to planning and new residential development with partners such as: local fire departments, planning departments, land developers, agricultural land preservation groups.
- Connectivity of communities and agencies: Both for preparedness (proactive prevention) and during emergencies to include partners such as planning commissions, municipal advisory councils (MACs) for unincorporated communities, fire departments, fire safe councils, Red Cross, CERT organizations, Alameda County Ops Area Council.

The 2014-2015 review of the 2012 priority actions recommended refinement to the action related to communication and confirmed the continued need for regionally specific educational materials. Discussions regarding effective public awareness campaigns looked at those such as “Spare the Air” and the “One Less Spark campaign” for models.

Priority Action: Create an Effective Awareness Campaign

Recommendation: Create an effective awareness campaign for residents (e.g. fire weather, ignition prevention, evacuations, CORE/CERT classes, fireworks reminders and other information). Note: This recommendation could address many activities listed under the Information, Education and Collaborative Planning category.

Implementation Actions:

- Use existing communication campaigns and systems as models. Spare the air. One less Spark. Existing communication systems (e.g. Oakland Police Department utilizes the Nixle messaging system to send out information via email or to cell phones).
- Look into partnering with California Highway Patrol to use Amber Alert for periods of red flag weather.
- Promote service via listserves and other methods to get information to residents through trusted channels..
- Link information to city twitter and government system accounts.
- Seek funding for resources for an effective public awareness campaign.

Lead and Partners: No lead identified.

Time frame: Short timeframe to get up and running; ongoing campaign for continued awareness.

Estimated Funding Need: \$\$ use existing channels with new campaign.

Priority Action: **Regionally Specific Educational Materials for Homeowner**

Recommendation: Develop simple homeowner education materials that are specific to the development patterns and conditions in Alameda County. These should identify inexpensive things a homeowner can do. Materials should be available in an increasing level of complexity from simple to more detailed and issue specific. There should be an “index” to be able to look up specific information.

Implementation Actions:

- Focus on existing structures and how a homeowner can improve their home’s ignition resistance. Information should include non-ignition zone and how simple actions of cleaning leaves and not storing flammable materials below decks can reduce the potential of ignition from embers.
- Ask if Sunset Magazine could develop guidelines on “bad plants” and how they should not be planted near windows.
- Develop defensible space guidelines that look like the East Bay Hills and other places in Alameda County.
- Develop guidelines for environmentally sensitive fuel reduction.
- Develop guideline for vegetation management where erosion is an issue.
- Develop plants specific information (e.g. juniper, Monterey pine, rosemary or succulents). May include plant tags (e.g. PG&E program with Home Depot for planting under powerlines).
- Promote existing guidelines such as the *Vegetation Almanac for East Bay Hills* published by the Hills Emergency Forum.
- Other subjects could include how to prepare your home for an evacuation.
- Develop materials related to exceptional drought, dead and dying trees.
- Develop school age appropriate materials.

Lead and Partners: North Hills Community Association is a prototype for an effective channel for distributing this information.

Time frame: On-going

Estimated Funding Need: \$ for development and distribution of materials.

Since the 2012 Plan, several new regionally specific education materials have been developed, including:

- *Homeowners Guide to Wildfire Safety*, Robert Sieben (Bay Tree Publisher). <http://www.baytreepublish.com/the-homeowners-guide-to-wildfire-prevention/>
- *Stereo Photo Series for Quantifying Natural Fuels Volume XIII: Grasslands, Shrublands, Oak-Bay Woodlands and Eucalyptus Forest in the East Bay of California*. <http://depts.washington.edu/nwfire/dps/>
- New websites and ignition prevention campaign: <http://www.preventwildfireca.org>, <http://www.readyforwildfire.org> and the “one less spark, one less wildfire” campaign.

Future planned activities include:

- Diablo Fire Safe Council has requested grant funds for Fire Safe Homes 1-2-3, an educational program on retrofit of existing homes for ignition resistance aim at homeowners and their contractors.

3.3 Enhanced Suppression Capability and Emergency Preparedness Priorities

Each year wildfires reinforce the importance of local emergency preparedness and evacuation plans. The emergency service agencies (County Office of Emergency Services, County Sheriff, and local police and fire departments) of the cities and Alameda County are interconnected through mutual aid agreements and common training of the Incident Command System and National Incident Management System. To expand this preparedness to a local and neighborhood level, many jurisdictions offer Citizen Emergency Response Training (CERT) programs.

Since these programs focus on multiple hazards and cover the entire county few offer wildfire preparedness or local evacuation in the event of wildfire. One priority recommendation focuses on assisting in the development of local evacuation plans. Another opportunity is to collaborate with updates to local hazard mitigation plan or general plan safety elements.

Another area of concern raised during the 2011-2012 development of the plan related to the suppression difficulty of ignitions from powerlines when those utilities do not follow roads. On July 25, 2006 a fire ignited from a downed power line in Tilden Park (near the ignition point of the historic 1923 Berkeley fire). While the firefighters were able to see the fire they had difficulty designating the area that had to be reached after a one-third mile hike through brush.¹ Had a service road been along the power lines the ignition would likely to have been easily located.



© 2009-2011 CERF+ (Craft Emergency Relief Fund + Artists' Emergency Resources).

Priority Action: Evacuation Planning

Recommendation: Collaborate with other organizations (e.g. Red Cross, CERT, CORE, Neighborhood Watch) to assist community groups develop neighborhood evacuation plans.

Implementation Actions:

- Focus on community groups and block level.
- Identify essential supplies to maintain (Go Pack).
- Identify special populations or needs at the block level.
- Identify primary and secondary evacuation routes.
- Coordinate with CORE/ CERT members.
- Pre-designate suitable evacuation shelters
- Physical improvements to the routes as needed (shoulders, parking restrictions, vegetation clearance, signage etc.)
- Tie to general education of wildland urban interface issues, red flag warnings
- Explore notification methods from other types of emergencies (e.g. hurricanes), models such as from Woodside and San Luis Obispo County.
- Develop pre-attack plans that can be use as templates for other areas.

Lead and Partners: CAL FIRE and Diablo Fire Safe Council. Coordinate with other groups that address evacuation training such as CORE/ CERT and Red Cross, as well as outreach to home owner associations, fire departments, police departments.

Time frame: Short to identify, medium to long term to implement improvements.

Estimated Funding Need: \$ for maps and brochures; \$\$\$\$ for physical improvements.

¹ Brenneman, Richard. "Fire Department Log." The Daily Planet. Weekend Edition, July 28-31, 2006.

Since the 2012 plan, there has been little change in evacuation planning within Alameda County. Alameda County is in the process of updating their emergency evacuation plan. Evacuation Planning continues to be a priority action with two key components:

- Physical access/ obstructions: Parking along narrow roads could still restrict emergency vehicle access or could slow mass evacuations in many neighborhoods. Models for local ordinances to keep road rights of ways clear need to be developed. Support from citizens and local policy makers are key. Overhead powerlines continue to represent a potential obstruction during a wildfire. (It was noted that Rule 20A funds while available for undergrounding are very competitive and require community support).
- Community preparedness for evacuation: Ready-Set-Go programs have been adopted in parts of Contra Costa County and could serve as a model for Alameda County communities. During the 2014 fire season, fire crews throughout Northern California witnessed the effectiveness of pre-fire work (e.g. areas that had received fuel reduction treatment) in buying time for safe evacuations. Liability issues continue related to pre-planning for wildfire evacuation and flexibility to support situation awareness is key. Coordination is required between law enforcement and fire agencies.

Prioritizing Fuel Reduction Treatments

4.1 Fuel Management

Fuel management, ideally a subset of sound vegetation and ecosystem management, is the practice of removing or modifying vegetation in order to reduce wildfire ignitions, rate of spread and intensity. Fuel management requirements depend on the vegetation type, location, condition and configuration. Given the dynamic nature of these fuels, a single treatment type or prescription is not effective. Follow up is often needed to avoid encroachment by weedy, non-native invasive species. Rigorous oversight, active management and an adaptive approach are required to achieve fuel management goals with a positive by-product of ecosystem improvement.

Generally five fuel management methods are available and used within the WUI:

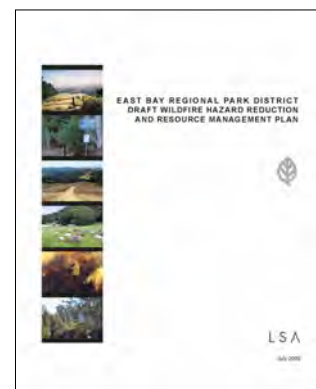
- Manual (hand labor such as pulling or cutting)
- Mechanical treatment (equipment used for mowing, selective cutting of trees, masticating or crushing)
- Prescribed herbivory (targeted grazing by sheep, goats or cattle)
- Chemical treatment
- Prescribed fire

Specific fuel management treatment goals and methods are addressed more fully in the *Best Management Practices Guidebook for Hazardous Fuel Treatments in Contra Costa County* and the *Vegetation Almanac for the East Bay Hills*. Diablo Fire Safe Council will seek funding to prepare a *Best Management Practices for Fuel Treatments Alameda County Supplement*. These best management practice guidebooks for both Contra Costa and Alameda Counties will continue to be refined based on environmental compliance documents, adaptive management practices and other lessons learned by the various stakeholders.

4.2 Fuel Reduction Treatments – Geographically Base Projects

Throughout Alameda County public and private agencies, fire departments and fire districts establish fuel reduction treatment priorities on a regular basis as a part of their long-range planning or annual budgeting procedures. Many of the public land managers have detailed plans that incorporate fuel reduction treatments. These plans have not only identified geographically based projects, but also have developed best management practices and mitigation measures that should be incorporated into projects to reduce the impact of fuel reduction treatments on the environment. (see on-line Appendix for further resources and references):

- East Bay Hills Wildfire Hazard Reduction and Resource Management Plan and EIR. East Bay Regional Park District
- East Bay Watershed Management Plan. East Bay Municipal



Utility District

- Alameda Watershed Management Plan. San Francisco Public Utilities Commission
- Albany Hill Creekside Master Plan. City of Albany
- Long Range Development Plan and EIR. Lawrence Berkeley National Laboratory
- Long Range Development Plan and EIR. University of California, Berkeley

Typically, fuel treatment is done around structures, by roadways and in areas of extreme fire behavior. Treatments addressed in the *Best Management Practices Guidebook for Hazardous Fuel Treatments in Contra Costa County* are organized by zone as follows:

- "From the Home: 0-30', 30-100'
- "Critical Infrastructure: 0-300'
- "Emergency Access Roads: 0-30'; 30-100'
- "Community Protection: 100-300'
- "Community Wildland Interface: 1.5 miles area around a community unless otherwise designated." (page 7.)



Stakeholders in Alameda County have further refined this list with the following areas as appropriate for fuel management:

- Areas within 200 feet of homes in the wildland urban interface (WUI) with excessively flammable vegetation that would produce greater than 8 foot flame lengths.
- Areas within 200 feet of high-value or irreplaceable public facilities in the WUI with excessively flammable vegetation that would produce greater than 8 foot flame lengths.
- Areas within 30 foot to 100 foot of private residences in the WUI with excessively flammable vegetation that would exceed state or local defensible space codes.
- Areas with excessively flammable vegetation due to extreme amounts of litter or ground fuel levels. These may be areas where ground fuels exceed six-inches deep with occasional jackpots of fine material up to three-inch diameter. It may be with greater than two to six tons per acre with ribbon bark and understory fuel ladders in identified high risk forest like eucalyptus or Monterey pine that are subject to torching and crown fires with potential high ember flight rates into residential areas.
- Areas critical to strategic fire fighting operations in the event of a wildfire with excessively flammable vegetation.
- Areas with excessively flammable vegetation within 30 feet of wildfire evacuation and fire fighting access along paved roads and strategic fire trails.
- Areas of invasive plants that will increase the flammability of adjacent natural plant communities or displace more fire safe and fire adapted native species.

The list of current geographically based priority projects follow this discussion. An intended outcome of the CWPP process is for this list to be updated annually to ensure that efforts are coordinated whenever possible.

The 2014-2015 review of the 2012 proposed projects showed progress, continued commitment and new projects:

- Public agencies initiated fire hazard reduction projects as well as continued their annual vegetation management and fuel reduction maintenance efforts.

- Pacific Gas and Electric provided one-time funding to respond to the exceptional drought to the Diablo Fire Safe Council, East Bay Regional Park District, City of Hayward. Funds were used for fuel reduction projects led by homeowners in the communities of Oakland and Sunol, as well as, fuel reduction projects and a community-chipping program in the high fire areas of Hayward and Fairview. PG&E continues to recognize the importance of fuel clearance along their transmission and powerlines and the value of partnerships with the communities it serves.
- New projects and funding for projects in Sunol is being sought by Diablo Fire Safe Council and Sunol Fire Safe Coalition (with support from many other partners).

A new issue was brought to light during the Update process regarding the lack of tools for enforcement of defensible space requirements with homeowner associations and on public lands that are located within 100 feet of homes. Current state and most local codes focus on properties with structures and often do not require clearance if no structure is located on the parcel. If hazardous fuel conditions exist within 100 feet of a structure on an adjacent parcel that homeowner has no legal recourse.

The 2014-2015 Update process also confirmed that when funding is available, fuel reduction treatment projects with the following attributes should be given the highest priority:

- Project reduces hazardous fuels that, if left untreated, would generate high intensity burning adjacent to structures or communities at risk, or produce large quantities of airborne burning embers that would carry into communities or other important resources.
- Project reduces hazards along strategic emergency access and evacuation routes, or other critical infrastructure.
- Project includes vegetation modification treatments that will reduce the threat of unacceptable impacts of high intensity fire to high value ecosystems, sensitive watersheds and high concentration recreation areas, including regional parklands and state or federal lands. Projects to include strategies and funding for on-going maintenance, especially follow-up management of non-native invasive species that could create hazardous fire conditions.

4.3 Fuel Reduction Treatments Balanced with Resource Management

A number of the Alameda County CWPP stakeholders recommend vegetation management actions balance three factors: wildfire risk reduction, resource management and cost-effectiveness of projects over the lifetime of their implementation. Successful long-term wildfire risk reduction and resource management of the above zones must balance economic factors with the effectiveness of selected treatment methods; it is critical that selected cost-effective treatments be sustainable over the long-term.

A key premise of several organizations' support of the Alameda County Community Wildfire Protection Plan is that ecologically stable habitats are ultimately more economically sustainable. In effect, managing vegetation to achieve plant and animal communities and habitats with high levels of bio-diversity but inherently low fire hazards is more effective over the long term than the occasional treatment and/or ongoing maintenance of high fire hazard vegetation. A number of the stakeholders feel strongly, that fuel reduction

treatments should promote the recovery, restoration, and enhancement of native habitat (See March 2009 Environmental Green Paper on "Managing the East Bay Hills Wildland/Urban Interface to Preserve Native Habitat and Reduce the Risk of Catastrophic Fire" by Sierra Club, California Native Plant Society and Golden Gate Audubon Society ebcnps.files.wordpress.com/2009/06/environmental-green-paper-on-ebbrpd-vegetation-mgmt.pdf)

Other members, such as Fire Departments or Fire Agencies, that participated in the development of this CWPP have jurisdiction over urban areas and do not have resource management or restoration goals beyond those required by local, state and federal laws. Several of these agencies support the desire for cost effectiveness of projects over the lifetime of implementation for wildfire risk reduction. So there is common ground that can be found within the multiple individual agency guiding missions.

4.4 Environmental Review and Permitting

Some stakeholders have requested that an Environmental Impact Report (EIR) be prepared for the Alameda County Community Wildfire Protection Plan. Many of the land managing agencies have already completed their California Environmental Quality Act (CEQA) compliance (as listed in section 4.2) and a FEMA led National Environmental Policy Act (NEPA) review for multiple FEMA grants in the region continues as this Update Plan was being finalized in the Fall of 2014.

The Alameda County Community Protection Plan is an advisory document that was prepared by the Diablo Fire Safe Council in collaboration with public agencies and other interested stakeholders pursuant to the Healthy Forests Restoration Act. The committee was comprised of stakeholders (or their representatives) living in at-risk communities, and the contents of this CWPP are opinions of these stakeholders following the procedures outlined in The Wildland Fire Leadership Council's handbook, *"Preparing a Community Wildfire Protection Plan, A Handbook for Wildland Urban Interface Communities."* More specifically, landscape and fire science discussions, WUI designation, priority of at-risk communities, regulatory interpretation and other discussions set forth in this CWPP are findings and recommendations by these stakeholders to help protect their communities from wildfires. Because this CWPP is an advisory document, the CWPP does not legally commit any public agency to a specific course of action or conduct and thus, is not a project subject to CEQA or NEPA. At least twelve counties in California have signed CWPPs without considering the CWPP as a project subject to CEQA.

However, if and once funding is received from local, state or federal agencies and prior to work performed, or prior to issuance of discretionary permits or other entitlements by any public agencies to which CEQA or NEPA may apply, the lead agency must consider whether the proposed activity is a project under CEQA or NEPA. If the lead agency makes a determination that the proposed activity is a project subject to CEQA or NEPA, the lead agency must perform environmental review.

In addition to NEPA or CEQA it is recognized there are a number of permits that may need to be obtained prior to fuel reduction work including:

- US Army Corps of Engineers: Clean Water Act Section 404 or Rivers and Harbors Act Section 10 Nationwide Permit or Individual Permit
- US Fish and Wildlife Service or National Marine Fisheries Service: Section 7 or Section 10 Consultation
- Regional Water Quality Control Board: Clean Water Act Section 401 or Porter Cologne Act 401 Certification or Water Discharge Requirement

- California Department of Fish and Game: Section 1600 Streambed Alteration Agreement; Fish and Game Code and California Endangered Species Act Streambed Alteration Agreement, CESA 2081 or CESA 2080.1 Permit

Other activities may not require specific agency permits, but may require additional review or specific mitigation measures to comply with:

- Migratory Bird Treaty Act
- National Historic Preservation Act (Advisory Council on Historic Preservation Section 106 review; State Historic Preservation Office)
- Bay Area Air Quality Management District Regulation 5. Open Burning.
- County Agricultural Commission, CAL EPA and Federal EPA on use of herbicides
- Local tree preservation ordinances
- Local stream protection regulations
- Local noise ordinances
- City or county road encroachment

2015-2017 Geographically Based Fuels Reduction Projects and Prevention Strategies

Agency or Group	Project or Strategy	Status
Alameda County Fire Department (ACFD)	Annual weed abatement code enforcement.	Ongoing Funded
	Coordination of fuel management project work in ACFD Communities	
	Improve distribution of defensible space information to ACFD communities through Fire Department's website, social media and at public events	
Albany Fire Department & City of Albany	Annual weed abatement code enforcement, and abatement in high hazard area	Ongoing Funded
	Albany Hill and Creekside Park Vegetation Management Plan	Plan adopted March 2012
Berkeley Fire Department & City of Berkeley	Annual weed abatement code enforcement, and abatement in high hazard area	Ongoing Funded
CAL FIRE Santa Clara Ranger Unit	Technical support and personnel to allied agencies who are conducting projects in the SRA and LRA of Alameda County. See Unit Plan Santa Clara County.	Ongoing Funded
	Coordination of Fire Crews for project work.	Ongoing Funded (limited availability)
	Pre-attack plan prototype (community of Sunol)	Funding being sought
Claremont Canyon Conservancy	Claremont Canyon Advocate Plan implementation	volunteers + capital campaign for funding
East Bay Regional Park District	FEMA EIS for Grant Funding for projects in Claremont Canyon, Tilden, Huckleberry, Sibley, Redwood, Chabot Regional Parks	Ongoing Funded
	Project implementation on 3,000 acres in 12 parks in East Bay Hills. See Wildfire Hazard Reduction and Resource Management Plan.	Ongoing Funded
	High fire danger information - use restrictions	Ongoing
East Bay Municipal Utility District	Grizzly Peak ridgetop fuel management	Ongoing Funded
	Livestock grazing for fuel reduction	Ongoing Funded
	Plowed control lines at strategic locations	Ongoing Funded
	Trail closures during periods of extreme fire hazard	Ongoing Funded
	Annual watershed fire road maintenance	Ongoing Funded
Diablo Fire Safe Council	Defensible Space Program - seed fund for community projects	Limited 2015 funds additional funding being sought
	Contractor/ Landscape Designer Training Workshops	2016 funding
	Fire Safe Homes 1-2-3	Funding being sought
	Evacuation Planning (as a part of pre-attack plan prototype community of Sunol)	Funding being sought

Agency or Group	Project or Strategy	Status
Fremont Fire Department & City of Fremont	1. Annual weed abatement code enforcement, and abatement in high hazard area	Ongoing Funded
Garber Park Stewards	Garber Park Oakland vegetation management	volunteers unfunded
Hayward Fire Department	1. Annual weed abatement code enforcement, and abatement in high hazard area	Ongoing Funded
	2. Community fuel reduction projects & chipping program in high fire area of Hayward Hills	Funded thru 2/2015
Lawrence Berkeley National Laboratory	Annual fuel reduction maintenance.	Ongoing Funded
Livermore Area Parks and Recreation District & Livermore-Pleasanton Fire Department	Use of prescribed fire for fuel reduction and resource enhancement	Ongoing
Oakland Fire Department and Oakland Wildfire Prevention District	1. Annual defensible space code enforcement and abatement of private property in wildfire prevention district	Ongoing Funded thru 2014
	2. City-owned property defensible space abatement in wildfire prevention district	Ongoing Funded thru 2014
	3. FEMA EIS for Grant Funding for projects in Claremont Canyon	Ongoing Funded
North Oakland Hills Association	Aging trees that could fall across powerlines along major roads (Snake, Skyline)	unfunded
	CalTrans propoerties along Highway 24 - Caldecott Tunnel corridor including: 4th Bore Mitigation Project, South of Tunnel-Broadway and East of north athletic field; Hillside southwest of Hiller Drive, south and east of Kaiser School; North of Tunnel Road from exhibition eenter west to stoplight; North of Highway 24 - Caldecott Lane and Tunnel Road west of overpass; South edge of Highway 24, Tunnel Road & Broadway both sides of overpass; Landscaping of above areas	unfunded
	Vacant lots in Vicente Creek Canyon (near Strathmoor, Grandview & Gravatz)	unfunded
	Swainland Reservoir fuel reduction South of Highway 24 below to Fairlane Dr	unfunded
	Roadside clearance Claremont Av	Funded thru 2014
	Roadside clearance Castle Drive and Skyline Drive	Funded thru 2014
	Roadside clearance Skyline Drive	Funded thru 2014
	Open space west of N. Oakland Sports Field south of upper Broadway	unfunded
	Eucalyptus grove above N. Oakland Sports Field service road	unfunded
	Eucalyptus trees north end of Highway 13	unfunded
	Open space east of Lake Temescal west of power station	unfunded
	Hillside Montclair Park	volunteers unfunded
	Montclair hills aging pine, cypress and eucalyptus	unfunded
	Joaquin Miller Park	unfunded

Agency or Group	Project or Strategy	Status
Pacific Gas and Electric	High voltage distribution lines	Ongoing Funded
San Francisco PUC	1. Alameda Watershed Management Plan implementation - San Antonio and Calaveras Reservoirs	Additional funds needed
Sunol Fire Safe Coalition	1. Collaboration with appropriate agencies for detailed plan for fuel management plan and community wildfire safety. Develop CWPP Appendix.	Funding being sought
	2. Large tree removal and defensible space fuel management, special needs assistance	Pilot project funding for 2015 through DFSC; additional funding being sought
	3. Continue community awareness, education and outreach	Funding being sought
University of California Berkeley	1. FEMA EIS for Grant Funding for projects in Claremont Canyon & Strawberry Canyon	Ongoing Funded

4.3 Fuel Reduction Treatments – Related Priorities

During the Update process, review of the three priority actions related to fuel reduction treatments continued to support their importance. New funding sources in the form of CAL FIRE Grant programs may provide funding source for future progress in these areas.

On April 22, 2014 the US Drought Monitor expanded the region of “[D4 Exceptional Drought](#)” (the highest classification) to encompass Alameda and Contra Costa Counties. The drought has increased the effects of disease and pests, as well as speeding mortality of many of our aged fuels. Removal of large dead and dying trees continues as an ongoing concern due the cost of cutting, skills and equipment needed and finally the removal of the biomass.

Priority Action: Monitoring Forest Health

Recommendation: Climate change, increase in pathogen and disease from urbanization (many are introduced by nursery plants), as well natural cycles are resulting in decline of forest health, especially in the East Bay Hills where many trees were planted in the early part of the 20th century. Monitoring for forest health includes monitoring for diseases (sudden oak death, pine pitch canker, bark beetles), drought stress, and the general decline due to aging.

Implementation Actions:

- Develop mapping program of disease outbreak and mortality with new mapping every 3 years to track changes.
- Use remote sensing technologies to develop aerial photo imagery (perhaps LIDAR).
- Collaborate with UC Berkeley to store data for a continuous database (similar to Sudden Oak Death project).
- Provide for on the ground reports from agencies, homeowners, volunteers etc.
- Sampling and measuring fuel loads such as in Eucalyptus groves would be helpful additional information.
- Make products available to fire departments to pinpoint locations of higher risk.

Lead and Partners: No lead identified. Collaborate with other monitoring programs such as Sudden Oak Death volunteer monitoring program. www.oakmapper.org/. Other potential partners California Re-leaf and restoration groups.

Time frame: On-going.

Estimated Funding Need: Funds needed for initial mapping, as well as updates.

Since the 2012 plan, there has been little change in monitoring forest health within Alameda County. However, the 2014-2015 review confirmed this action continues to be important given the age of many of the planted Monterey pine and eucalyptus stands in Alameda County, and due to the effects from the extreme drought (increase in tree mortality, disease and pests). There continues to be no lead identified for this action.

Priority Action: Volunteer Projects on Public Lands

Recommendation: Volunteer program to work on fuel treatments on public lands to reduce fuels (examples such as adopt a spot or right of entry agreements).

Implementation Actions:

- Use existing programs as prototypes to broaden and link resources – Adopt a spot (Oakland), right of entry agreements (East Bay Regional Park with Diablo Fire Safe Council, Berkeley Park Hills, Kensington neighbors and Claremont Canyon Conservancy), “Friends of “groups (e.g. Friends of Sausal Creek, Friends of Beaconsfield Canyon, Friends of Garber Park, Friends of 5-Creeks), other volunteer groups
- Existing non-profit organizations have an easier time getting agreements
- Benefits include collaboration, education, increased awareness of fuel work completed. Fuel management to provide a place for firefighter to fight fire.
- Risks include potential injury to volunteers, potential damage to environment if proper oversight is not provided (knowledge of what and how to manage vegetation).
- Address challenge of how to scale project to accept large and small groups of volunteers
- Identify methods of communicating opportunities to volunteers.

Lead and Partners: Community organizations, neighborhood groups and land management agencies/ cities. (resources include San Mateo County, Volunteer Center of East Bay, Volunteers for Outdoor California, corporate programs such as Cliff Bar and Chevron, Civicorps etc..)

Time frame: On-going

Estimated Funding Need: \$ No specific cost to agencies, but support of neighbor/ volunteer work force with incentives or grants is helpful.

Since the 2012 Plan community groups have continued to sponsor hazardous fuel reduction projects working on public lands. The lead and partners vary depending upon the location but include:

- Claremont Canyon Conservancy (East Bay Regional Park District – Gwinn Canyon)
- Friends of Beaconsfield Canyon (Oakland)
- Friends of Garber Park (Oakland)
- Friends of Montclair Railroad Trail (Oakland)
- Friends of Sausal Creek (Oakland)
- Kensington Fuel Reduction Group (East Bay Regional Park District – Wildcat Canyon)
- Hiller Highlands groups (Oakland)
- Park Hills Neighborhood Group, Berkeley (East Bay Regional Park District – Tilden)

Priority Action: Balancing Fuel Load Management with Biological Resource Protection

Recommendation: Increase awareness of environmental sensitivities and permitting requirements throughout fuel management activities.

Implementation Actions:

- Identify what resources need to be protected. Riparian areas, native species, protected species.
- Provide more information regarding environmental sensitivities. This should include botanical expertise on projects, recruitment studies of native plants following fuel reduction treatments; habitat preservation; invasive species; managing, permitting and replanting.
- Provide information on permits from California Department of Fish and Game, and possibly Regional Water Quality Control Board, when fuel management is desired within riparian vegetation along seasonal or ephemeral creeks. Include information on potential environmental impacts, such as erosion, siltation, invasive species, that could result from fuel management activities in these sensitive environments.
- Widely disseminate information on appropriate timing of fuels treatment for best success relative to reducing the reproductive viability and survivability of invasive, non-native species, while doing least harm to / improving native habitat values (see Vegetation Management Timing charts in Vegetation Almanac for the East Bay Hills for example)
- Disseminate information from Green Paper prepared by Sierra Club, Native Plant Society and Audubon Society in 2009 and other documents.
- The Beaconsfield model was offered as a prototype to look at.
- Create a data base and photo gallery of Alameda County fuels/ vegetation management projects (successes and failures) with initial treatment + follow-up maintenance
- Vegetation mapping database for urban side of wildland-urban interface

Lead and Partners: None identified

Time frame: On-going

Estimated Funding Need: Not identified.

Since the 2012 Plan balancing fuel load with biological resource protection has continued as a critical issue. The Final FEMA Environmental Impact Statement was issued on December 5, 2014. It is anticipated additional protocols for dealing with endangered species and other sensitive resources will be part of the final record of decision (expected early 2015). In addition to agency sponsored projects, several community led activities included:

- A community project lead by Muir Heritage Land Trust for a property with a conservation easement located on Miner Road, Orinda. Cost share funding by Diablo Fire Safe Council with funds from Pacific Gas and Electric Company.
- Claremont Canyon Conservancy sponsored study by UC Berkeley students of eucalyptus in Claremont Canyon.
- A community project in Tilden Regional Park lead by Park Hills Home Owner Association with volunteers from the UC Berkeley Department of Integrative Biology. (Right of entry sponsored by Diablo Fire Safe Council with East Bay Regional Park District).

Treatment of Structural Ignitability

5.1 Structural Ignitability Factors

The presence of structures within the WUI exposes both the natural and developed environment to increased risk of destruction by wildfire. In areas where the accumulation of flammable vegetation coexists with residential development, an ignition can lead to catastrophic fire. Mitigation of hazards that contribute to ignitability can reduce the potential of fire loss.

The keys to ignition resistance are the design of the structure, the materials used in its construction and the presence of defensible space. Recent studies point to basic factors that affect the risk of a structure burning in a wildfire. A weakness in any of these areas can lead to a similar result – a destroyed or severely damaged home or building. The following information is adapted from several sources including the Insurance Institute for Building and Home Safety. Additional information can be found at their website <https://www.disastersafety.org/wildfire/>.

Flammability of the Roof

Research shows that homes with a non-combustible roof and defensible space at least 30 to 60 feet around the structure have an 85-95% chance of survival in a wildfire.¹ At a minimum, a home structure should have a Class A-rated, fire-resistant roof cover or assembly, and preferably one that is self-extinguishing once a falling ember burns out. Self-extinguishing means that the firebrand will not burn through to the roof deck and flames will not spread to other parts of the roof. Without a fire-resistant roof, other approaches toward mitigation will fall short of protecting the home.

Roof shape also plays an important role. If the roof has a lot of ridges and valleys or roof segments that intersect with vertical walls your house is more vulnerable to wildfire. Even a Class-A roof is more vulnerable because vegetative debris and wind-blown embers readily accumulate at these intersections and can expose combustible siding, vents or windows as well as the roof to fire.

Wind-blown debris and overhanging trees can lead to gutters full of leaves and needles on your roof and gutter. Research has shown that a home with a gutter full of leaves has enough fuel to ignite a roof, especially if there is a path for the fire to reach any exposed flammable surfaces such as the edges of roof structure or through vents. Keeping gutters clean of debris is especially important if you have a multi-story building or dormer windows where exterior siding would be exposed to flames from debris in gutters.

Structure Openings – Vents, Doors and Windows

Many post-fire surveys of damaged buildings have shown that the attic/roof and foundation vents are key entry points for embers and flames. Areas where there are direct pathways to

¹ Foote, Ethan. "Wildland-Urban Interface Ignition Resistant Building Construction Recommendations." Community Wildfire Protection Plan Workshops, California Fire Alliance and California Fire Safe Council. August 2004.

the attic, house or crawl space provide an easy entry point. This can include vents, soffits or windows prone to breaking when exposed to wildfire conditions (usually unprotected, single pane windows). Window fans, pet doors, and fireplaces chimneys can allow firebrands to enter if left open or unscreened.

Recent fires have shown that screened vents alone may fail to keep embers out of attics or other spaces. Pre-cut fire resistive covers are one solution. New technology combines several features that increase the effectiveness of preventing embers from entering these flammable spaces; however, maintenance issues need to be evaluated when these products are considered.

Testing has shown that single pane windows are highly vulnerable to breaking when exposed to wildfire conditions. Larger windows are more vulnerable to breaking than smaller windows. Some glass will break after only 1 to 3 minutes exposure to intense heat allowing flames and embers to get inside and further ignite furnishings. Double pane windows with tempered glass for the outside pane can effectively increase the ability to survive a wildfire as well as a long-term solution for energy conservation within the home.

Siding

Siding can be vulnerable for several reasons. If ignited, combustible siding can provide a path for flames to reach other vulnerable components such as windows or eaves. Second, a horizontal or vertical joint in the siding (or at the top or bottom of the material) can provide access for embers or flames into the house. Some materials such as vinyl siding will deform and fall off the wall at relative low heat or flame exposure. If this happens protection of the structure will depend on the underlying sheathing in the wall assembly.

Walls need to resist heat and flames as well, as embers. Non-combustible materials like three-coat stucco, fiber cement, brick and tile resist flames, but don't always resist heat and embers. Therefore, incorporating sheet-rock or other non-combustible sheathing material into the wall assembly underneath the exterior material will improve performance. Regardless of wall material choice, all gaps at the top or bottom edges, or at lap joints must be sealed or caulked to reduce the potential for ember intrusion. Embers can also accumulate at the foundation if the lower edges of the siding material is left unsealed. The more complicated the lap joint, such as tongue-and-groove or shiplap, the better the resistance from flame or embers. Attention to construction detail, such as use of metal flashing where fences or decks attached to walls can prevent accumulation of debris and slow ignition.

Overhanging Structures

Eaves, alcoves, entry ways, patio covers, decks, porches, and exterior stairways all have the potential to "trap" heat under them or create areas where burning embers can accumulate. Openings or gaps in blocking also result in areas where wind-blown embers can become lodged and ignite debris or wood in these areas.

Decking

Decks, patios and porches can become a pathway for fire into a home. Most are attached to a home and adjacent to doors, windows, sliding glass doors or other openings and combustible siding. Materials used to build the deck, the furniture or other items on top of the deck as well as the items stored beneath them. Decks and porches can be particularly vulnerable when the home is sited on a slope or when surrounded by vegetation where flame lengths can reach more than 30 feet exposing even elevated decks.

The combustibility of wood deck boards is common knowledge; however, the performance of plastic composite decking products are less well known. Some manufacturers are

incorporating fire retardant chemicals into these products. Information can be found at the California State Fire Marshal Wildfire Protection Building Construction website <http://osfm.fire.ca.gov/codedevelopment/wildfireprotectionbuildingconstruction.php>. In general large structural members will resist ignition better than small wood boards.

Fuel Hazards

Any fuel source that will bring flames close the structure can be a hazard. Examples of fuel hazards include:

- flammable plants close to a wall,
- dead foliage that builds up underneath succulents or other normally fire-resistant plants,
- certain types of mulch (for combustibility of landscape mulches see <https://www.unce.unr.edu/publications/files/nr/2011/sp1104.pdf>) or
- a combustible fence located close enough to allow flames to contact the overhanging roof above.

Fuel sources within the “defensible space” area that support a high intensity spot fire are especially problematic. These include any trees that can quickly become a fire torch such as an untrimmed palm tree, a wooden trellis made of small lumber sizes, playground equipment made with wood pieces or a pile of firewood on the ground or in a wheelbarrow.

Access to the property

If firefighters and their equipment cannot gain access to the property and a water source, there is little chance they can protect the home. Access also affects the ability of the homeowner to evacuate the site should the need arise. In many areas of Alameda County the road patterns were established when there were fewer homes in the hills and fewer cars per residence. Today these narrow roads can become constricted with on-street parking, temporary lane closures, encroachment into the road right of way by construction or by overgrown roadside vegetation.

Surrounding topography and location of structures

Adjacent steep slopes and topographic features, such as natural chimneys or chutes, can intensify fire behavior. Structures located mid-slope or at the top of a steep slope are more likely to be damaged. A steeper slope will result in a faster moving fire, with longer flame lengths. A home with little setback from the slope will need to be more aggressive with vegetation treatment and maintenance.

Weather and “Red Flag” Conditions

Strong winds blowing a fire toward your house will have the same effect as being located on a slope. The fire will move faster and burn more intensely with taller flame lengths, blowing embers in front of the fire during periods of high winds. In Alameda County these high winds are often accompanied with a increase in temperature and decrease in relative humidity creating “Red Flag” conditions that further dry vegetation and wood building materials.

5.2 Improving the Survivability of Structures within the WUI

Protecting structure exposed to wildfires is not a simple matter. Structures can ignite due to direct exposure to flames, from radiated heat or from embers. All three sources must be

addressed in order to improve the survivability of structures within the WUI. It is recommended that the following measures be taken:

1. Reduce the amount of heat the structure will be exposed to through managing vegetation, creating defensible space and construction design.
2. Limit the time the structure is exposed to heat through vegetation management. Establishing a low fuel "home ignition zone" immediately adjacent to structures and creating "defensible space" in the first 30 - 100 feet from the house is critical.
3. Use fire resistant building materials and construction methods.
4. Remove combustible materials stored near structures.

Creating an effective defensible space around the structure and maintaining a fire safe landscape are critical to minimizing the threat of ignition. Most homes in Alameda County are subject to their local fire jurisdiction's safety regulations that require compliance with defensible space and weed abatement standards.

The selection of a building's site and materials has direct relationship to its survivability. New structures need to be located to reduce their exposure to the most intense part of a wildfire that might sweep across the site. There also are many noncombustible and fire resistive materials and treatments available to better protect structures and inhibit fire spread.

Adoption and enforcement of fire and building codes is an essential part of managing the risk in the WUI. The California State Fire Marshal's Office developed state of the art building standards known as "Chapter 7A" effective January 1, 2008 for use on new building construction within Very High Hazard Severity Zones. More detail about this code can be found at www.fire.ca.gov/fire_prevention/fire_prevention_wildland.php. Many local cities have also adopted the code for use within their jurisdictions, or have adopted codes that exceed these minimum State standards. It is also important to incorporate fire safety in the general plan safety elements in each city and for the county. The State Fire Marshal's Office has issued wildfire code compliance policies and a list of accepted products (see <http://osfm.fire.ca.gov/codedevelopment/wildfireprotectionbuildingconstruction.php>). Some of these policies and products may be applicable to retrofit of existing structures.

No fire department can be expected to prevent all home losses in a WUI setting. The potential for a wildfire to outpace suppression efforts means that all homeowners in WUI areas must accept a high degree of risk, as well as responsibility.

5.3 Retrofitting an Existing Structure for Survivability

Many of Alameda County's communities-at-risk from wildfire are largely built out. In these communities new construction will occur as infill between existing homes, so the new building codes offer few opportunities to increase structure survivability. In these communities identifying opportunities to retrofit existing homes and businesses is key to reducing losses due to wildfire. Funding for retrofit of existing structures has been non-existent in the past. In 2011, FEMA provided two grants to provide cost share assistance with wood shake roof replacement (Lake Tahoe Basin FEMA shake roof program <http://www.lakevalleyfire.org/fire-prevention/wood-roof-replacement> and San Bernardino Mountains FEMA wood shake roof replacement assistance <http://thisisin.org/shake/>).

Since the 2012 plan, there has been little change in education and training on structure retrofit or in access and egress improvements by reducing road restrictions. The 2014 Update process recommended they continue to be priority actions.

Future activities include:

- Diablo Fire Safe Council has requested grant funds for Fire Safe Homes 1-2-3, an educational program on retrofit of existing homes for ignition resistance aim at homeowners and their contractors.

Priority Action: **Education and Training on Structure Retrofit**

Recommendation: Education and training related to retrofit of existing homes and structures to improve their survivability. Identify what can be done without major remodel. Evaluate new technologies, materials and products that are available for retrofit and the pros and cons.

Implementation Actions:

- Find funding for education and training program
- Educational booklet of simple things homeowners can do

Lead and Partners: No lead identified. Institute for Building and Home Safety has information and research. State Fire Marshal's Office has materials and product information related to Code 7A.

Time frame: On-going

Estimated Funding Need: \$\$ for training and materials.

Priority Action: **Access and Egress Improvements by Reducing Road Restrictions**

Recommendation: Address road restrictions that could restrict emergency access and public egress during evacuation from wildfire.

Implementation Actions:

- Identify types of road restrictions such as on-street parking, temporary closures, construction, roadside vegetation.
- Explore potential concepts that could address the issue. These could include: property inspections, public education, homeowner association education, roadside vegetation management, restriction of parking, construction permits or right-of-way encroachment on high fire days.
- Several jurisdictions have attempted to restrict parking with significant negative reaction. Successful posting of no parking during high fire days has occurred on Grizzly Peak Blvd near the UC Berkeley Campus due to a joint effort by UC Berkeley and City of Oakland.

Lead and Partners: No lead identified.

Time frame: On-going

Estimated Funding Need: \$ for public information and materials.

The Insurance Institute for Building and Home Safety (IBHS) continues to sponsor building safety research that leads to real-world solutions. They have identified key areas at risk and offer retrofit ideas. The following table has been adapted from IBHS, see <https://www.disastersafety.org/wildfire/> for additional detailed information.

Retrofitting Existing Structures to Increase Wildfire Survivability		
<i>Survivability Threat</i>	<i>Retrofit</i>	<i>Relative Cost/ Ease</i>
Roof – the most vulnerable part of your home		
Combustible roof.	Professional roof inspection to determine if covering and assembly are not “Class A.” Need to remove old roofs.	\$\$\$\$ Contractor
Gaps at edges or ridges or other openings in tile (clay) or metal roof	Install bird stops in gaps at edges or ridges. Plug any roof openings that are not functioning as vents	\$\$-\$ Contractor or Experienced DIY
Combustible siding where lower level roof (first floor) meets upper wall or upper level roof (second floor)	Replace siding with more fire resistant material and underlayment	\$\$-\$\$\$\$ Contractor or Experienced DIY
Vegetative debris accumulated on roof	Routinely remove from roof. For complex steep, roofs may consider hiring professional.	Free - \$ Agile homeowner
Vents – vulnerable to wind-blown embers and flames		
Unscreened or unprotected vents	Attach screens or prepare solid covers to install when a wildfire is approaching. Use caution when installing or removing covers on upper story vents.	\$ Agile homeowner
Planning to replace vents	Several types of new vent covers on market designed to reduce risk of wind-blown embers. http://osfm.fire.ca.gov/codevelopment/wildfireprotectionbuildingconstruction.php	\$\$ Experienced DiY
Gutters – fuel for falling embers could lead to fire in attic		
Vegetative debris accumulated in gutters	Clean gutters on regular gutters. For complex steep, roofs may consider hiring professional.	Free - \$ Agile homeowner
Tired of cleaning gutters	Gutter covers help manage debris build up. Can result in accumulation of debris on roof behind gutter – so some maintenance may still be required.	\$\$
Open Eaves or Projections – vulnerable to flame or embers could lead to fire in attic		
Open eave construction or visible gaps between blocking and rafter tails.	Plug openings with durable caulk or install non-combustible covering over blocking to eliminate openings. Alternatively box in eaves. This method may require vents to remove excess moisture.	\$\$-\$\$\$ Contractor or Experienced DIY
Combustible soffit material or materials used to box in eaves (such as wood boards, untreated plywood).	Replace with non-combustible material such as fiber cement product or exterior fire retardant treated plywood. Vinyl soffit material not recommended as it will deform and sag causing gaps.	\$\$-\$\$\$ Contractor or Experienced DIY

Retrofitting Existing Structures to Increase Wildfire Survivability

<i>Survivability Threat</i>	<i>Retrofit</i>	<i>Relative Cost/ Ease</i>
Windows – open windows are most vulnerable. The vulnerable part of a closed window is the glass.		
Single pane windows	Install dual pane windows. Preferred are dual pane, insulated glass with added benefit of greater energy conservation Tempered glass is 4 times more resistant to breaking in wildfire. Consider dual-pane tempered glass. Cost increases are relative to the opening size.	\$\$\$ - \$\$\$\$ Contractor
No window coverings to protect from glass breakage	Shutters or pre-made covers will protect window from embers, debris and radiant heat exposure. These would be installed prior to evacuation. Least expensive alternative is ½ plywood but need to clear area of combustible material that could ignite plywood.	\$-\$\$ Contractor or Experienced DIY
Siding – fire from ignited siding can spread into stud cavity and up wall into eave, soffit or attic as well as expose window to flames.		
Combustible siding	Residing is expensive but can be worthwhile if building is 15 feet or closer to adjacent properties or if inadequate defensible space. Replace with non-combustible siding so vertical flame spread will not be a problem unless you have other combustible materials of highly flammable plants adjacent to wall. Siding products and assemblies that are better able to resist penetration of flames into stub cavity can be found at http://osfm.fire.ca.gov/codedevelopment/wildfireprotectionbuildingconstruction.php	\$\$\$\$ Contractor
Gaps in joints of siding panels or simple laps joint or plain bevel joint	Panel products have fewer lap joints and can be considered less vulnerable. Wood siding shingles and plain bevel lap joints are most vulnerable.	\$\$\$\$ Contractor
Decks – decks can lead a wildfire directly into you home.		
Deck boards of combustible material	Replace deck boards with fire or ignition resistant material. Learn more about choosing wildfire-resistant decking at http://osfm.fire.ca.gov/codedevelopment/wildfireprotectionbuildingconstruction.php	\$\$\$-\$\$\$\$ Contractor or Experienced DIY
Combustible materials stored under or on top of deck	Move material to an enclosed area away from structure. If you choose to enclose underside of deck be sure to address moisture management issues through drainage and ventilation	Free-\$\$ Experienced DIY
Enclose area below deck to reduce accumulation of wind blown debris or embers	Use solid non-flammable material (fiber cement product or exterior fire retardant treated plywood; not lattice to enclose area below decks. Be sure to address moisture management issues through drainage and ventilation	\$-\$\$ Experienced DIY

Sustaining the Plan

6.1 Updates of Action Plan

To ensure long-term success the CWPP needs to include a method for changing, updating and revising the plan. As partners learn from success and challenges they may identify new actions or propose a shift in how decisions are made or actions accomplished.

It is important to recognize that many communities may lack resources to engage in a complex planning, monitoring and adaptive management process. The collaborative planning effort for the development of this Alameda County Community Wildfire Protection Plan was funded through a generous grant; however, similar funding is unlikely to be available for update efforts. Regardless, streamlined communications can leverage the initial planning effort to maintain a functioning collaboration and provide updates.

Project partners have agreed to the following roles in sustaining the Plan:

- Diablo Fire Safe Council: Communicate electronically with stakeholders and other partner agencies collecting information for an annual status of the plan. Annual information will include at a minimum an update of the status of geographically based fuel reduction projects and prevention strategies listed in Section 4 Prioritizing Fuel Reduction Treatments and of the priority action projects identified in Sections 3, 4 and 5. Updated information will be posted on the DFSC website and sent electronically to CWPP planning participants and other interested stakeholders.
- Hills Emergency Forum: Provide updated information on projects and activities through their Annual Report prepared each October to coincide with the anniversary of the 1991 Tunnel Fire.
- Alameda County Association of Fire Chiefs: The Alameda County Association of Fire Chiefs provides a forum for interagency information sharing across the many fire jurisdictions. They are in the unique position to continue to foster inter-jurisdictional cooperation on WUI issues and emergency response.
- East Bay Regional Park District: At a public meeting each Spring, review the next year's proposed program of work for fuels management on park district lands. As part of the annual budget development process, during a Spring meeting of the EBRPD Board of Director's Executive Committee, report the prior year's fuels management accomplishments and present the proposed program of work for the next year. Work with cooperators to plan and conduct work in a way that improves fire protection and program efficiencies for both EBRPD and the cooperator.
- Oakland Wildfire Prevention Assessment District (WPAD): The Oakland WPAD Citizen Advisory Committee will continue to meet monthly and works with home and property owners to reduce the risk of urban wildfires in the Oakland hills until their funds are expended.
- CAL FIRE: The Santa Clara Unit Strategic Plan updates provide opportunity to view wildfire protection for Alameda County in context with neighboring Contra Costa, Santa Clara and San Joaquin Counties. Alameda County is Battalion 4 of seven geographically based battalions in CAL FIRE's Santa Clara Unit. The most

recent plan was completed in 2013 with an update due May 2015. The Santa Clara Unit collects information from the various stakeholders to develop their unit plan each June. The final unit plan will be shared with DFSC, who will incorporate the information into the CWPP annual updates.

- Association of Bay Area Governments (ABAG): ABAG has provided leadership in the development and updates of FEMA Multi-Jurisdictional Hazard Mitigation Plan; completed once every 5 years. The next update is scheduled for 2015. ABAG welcomes any jurisdiction or special district in Alameda County to participate in this process and will incorporate information from CWPP updates into the plan.
- North Hills Community Association Fire Prevention Committee: The North Hills Community Association (NHCA) is a non-profit group in the Berkeley-Oakland Hills whose purpose is to develop and sustain an environmentally healthy community that is safe, secure, beautiful and a welcoming place in which to live. Cognizant of the dangers of fire they have committed to providing information both to and from residents in their group. They are especially interested in developing simple education materials targeted to homeowners that provide information relevant to the conditions in their neighborhoods. Hiller Highlands Phase V has over 15 years of steadily improving vegetation management on 14 acres of steep hillsides.
- Other Partners: **Note: This section to be further developed as the plan is implemented.**

6.2 Monitoring, Evaluating and Adapting Strategies

The following framework offers strategies to monitor, evaluate and adapt the elements of the CWPP¹. Strategies might include:

- Only monitor what matters. Partners should identify key goals and objectives and make decisions to monitor what is most important to the long-term sustainability of their CWPP.
- Tracking accomplishments and identifying the extent to which CWPP goals have been met. This might include development of "success stories." (Examples can be found at www.diablofiresafe.org/current.html and at Hiller Highlands Phase V where the 14 acres have been under management for the past 15 years.)
- Examining collaborative relationships and their contributions to CWPP implementation, including existing participants and potential new partners.
- Identifying actions and priority fuels reduction projects that have not been implemented and determining why.
- Setting a course for future actions and updating the plan.
- Evaluating the resources necessary for successful CWPP implementation. Identifying needed community and homeowner outreach and education programs.

¹ Evaluation framework adapted from: Community Wildfire Protection Plan Evaluation Guide. Prepared by Resource Innovations, Institute for a Sustainable Environment. August 2008. University of Oregon. csfs.colostate.edu/pdfs/eval_9-8-08_web.pdf Accessed 3/5/2012.

In conducting an evaluation it is important to think critically about the kind of information that is accessible, what is most important to evaluate and how it might influence future priority activities. For example, the number of homes in a community with an evacuation plan provides insight into the level of preparedness among the general public, but may be difficult to obtain. Each community within Alameda County should adapt the evaluation process, how information and results are documented with an eye toward refinements of the CWPP to meet their own needs. The following ideas for monitoring and evaluation are provided as suggestions.

6.2.1 Evaluating Information, Education and Collaborative Planning

Understanding the extent to which information, education and collaborative planning have been maintained, grown or diminished through implementation of the CWPP will help identify strategies to strengthen future efforts. During the 2014-15 Update process it was determined that the highest priority for monitoring and evaluation would focus on:

Programs: What kind of information, education and public involvement has the CWPP or its implementation fostered? Public meetings, trainings, field trips, demonstration projects, household visits, youth engagement, community events, clean up days.

Activities: What kinds of activities have citizens taken to reduce wildfire risks as a result of the plan? Defensible space, fuel reduction, household emergency plans, woody debris disposal.

New information: Are there new or updated data sources that might change the risk assessment and influence priorities? Changes to process used to identify fuels treatments priorities? New wildfire related policies or ordinances? Index to access specific information?

Involvement: Who has been involved with CWPP development and implementation? How have relationships changed or grown? What expertise or resources did partners bring? Numbers and types of partners (local, state, federal)? Accomplishments or challenges?

Additional monitoring and evaluation might include:

Public Awareness: What kind of change in public awareness about wildfire has resulted from the plan or implementation actions? Knowledge of fire policies and regulations; change in number and type of human caused wildfires; awareness of local efforts to increase emergency preparedness; outreach efforts or techniques.

Implementation Capacity: How has the collaborative process assisted in implementing the CWPP and building capacity for the community to reduce wildfire risk? More partnerships, increased financial resources, increases in programs or activities.

Engagement: Have the partners involved in the planning process remained engaged in the implementation? Have new partners become involved?

6.2.2 Evaluating Suppression Capability and Emergency Preparedness

Comprehensive emergency management plays a key role in reducing a community's risk from wildfire and other hazards. Integrating federal requirements for multi-hazard mitigation within the CWPP efforts can help access federal funds through FEMA and Department of Homeland Security. During the 2014-15 Update process it was determined that the highest priority for monitoring and evaluation would focus on both:

Alignment: Is the CWPP aligned with emergency operations plans and other hazard mitigation plans? Addressing National Incident Management System (NIMS), State Emergency Management Plan (SEMS) and Incident Command Training (ICS).

Evacuation Planning: Does the CWPP include an evacuation plan? Has the plan been tested? Are there local neighborhood evacuation plans, animal and livestock preparedness, communication systems, resources list?

6.2.3 Evaluating Fuel Reduction

Monitoring hazardous fuels reduction projects on private and public lands will assist stakeholders in understanding the extent to which risk reduction goals and native habitat preservation goals are being accomplished. Monitoring these projects allows stakeholders to better understand the extent of resources need to accomplish and maintain goals, as well as to help in identifying future priorities.

During the 2014-15 Update process it was determined that the highest priority for monitoring and evaluation would focus on:

Fuel Reduction on Public Lands: How many acres have been treated on public land that had been identified as high priority projects? Total number of acres treated; number and percentage in WUI, number and percentage within CWPP priority area; treatment types.

Fuel Reduction on Private Lands: How many acres have been treated on private land that had been identified as high priority projects? Total number of acres treated; treatment types; number of homes with defensible space; number and percentage treated in low-income communities/ vulnerable populations.

Compliance: How many homes are in compliance with local fuel reduction around homes requirements. Weed abatement requirements. Defensible space inspections.

Joint Projects: How many projects have spanned ownership boundaries including public and private lands?

Additional monitoring and evaluation might include:

Jobs: Economic development and local jobs resulting from fuels reduction or restoration activities. Number of green tons/ volume of woody fuel utilized. Number of part-time/ full time jobs. Percentage of local labor.

Environmental Protection: Ecological monitoring to assess environmental outcomes and maintenance requirements. Community surveys using photo points. Vegetation/ invasive weed surveys.

6.2.4 Evaluating Reducing Structure Ignitability

Monitoring structure survivability of existing structures and new developments span a wide range of actions including retrofit, codes, public knowledge and emergency response capability. Since there had been no progress in this area no adjustment was made to the potential monitoring and evaluation which includes:

Fire Statistics: Wildfire loss in year reporting on. Number of fire starts within high hazard areas. Number of human caused fires. Number of homes damaged/ lost to wildfire.

Codes and Regulations: Current codes and regulations for wildfire hazards. Building codes (Chapter 7A or better). How is new development increasing in high hazard areas. Requirements for new developments. Mechanism for long term open space fuel management. Infill requirements. Infrastructure design requirements (roads, sprinklers, utilities = NFPA standards).

Public Education: Public knowledge and understanding about structure ignitability. Homeowner education on how to reduce ignitability. How many homes have been retrofitted. Number and percentage of homes in high hazard area included in fire district.

Response Capabilities: Changes of local fire agency response capability. Increase in certified fire fighters/ wildfire training. Upgraded or new fire suppression equipment. Changes in response time, infrastructure, access routes.

Signature Page

Alameda County Community Wildfire Protection Plan Mutual Agreement

This Community Wildfire Protection Plan developed for Alameda County:

- Was collaboratively developed. Interested parties and agencies managing land in Alameda County have been consulted.
- This plan identifies and prioritizes areas for hazardous fuels reduction treatments and recommends types and methods of treatments that will protect community members and values at risk.
- This plan recommends measures to reduce ignitability of structures throughout the area addressed by the plan.

The following letters are from the entities who mutually agree with the contents of this Community Wildfire Protection Plan.

Approved by Resolution
Alameda County Board of Supervisors
Tuesday June 5, 2012

Update Approved by Resolution
Alameda County Board of Supervisors
March 10, 2015



Alameda County Fire Department

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DAVID A. ROCHA
Fire Chief

December 4, 2014

SERVING:

City of Dublin

City of Emeryville

City of Newark

City of San Leandro

City of Union City

Lawrence Berkeley
National Laboratory

Lawrence Livermore
National Laboratory

Unincorporated Areas
of Alameda County

Alameda County
Regional Emergency
Communications Center
"Accredited Center
of Excellence"

Board of Directors
Diablo Fire Safe Council
P.O. Box 18616
Oakland, CA 94619

Dear Directors:

We are pleased to support the Alameda County Community Wildfire Protection Plan to fulfill the standards established by the Federal Healthy Forest Restoration Act (HFRA). The plan will act as a multi-year guiding document that will facilitate implementation of present and future fire hazard mitigation measures.

The Community Wildfire Protection Plan developed for Alameda County:

- Was collaboratively developed. Interested parties and agencies managing land in Alameda County have been consulted.
- This plan identifies and prioritizes areas for hazardous fuels reduction treatments and recommends types and methods of treatments that will protect community members and values at risk.
- This plan recommends measures to reduce ignitability of structures throughout the area addressed by the plan.

We mutually agree with the contents of this Community Wildfire Protection Plan.

Sincerely,

David A. Rocha
Fire Chief