6 MITIGATION STRATEGIES

Wildfire risk mitigation strategies, followed by the promulgation of associated codes and ordinances, along with public education on these topics, in combination with follow-up inspections and enforcement, are needed to optimize wildfire mitigation work. This CWPP will help provide a countywide overview of what elements this process should contain. It can recognize communities and cities around Santa Clara County that have an effective program and help identify locations in which such a program is deficient or absent. This chapter identifies mitigation strategies for reducing wildfire risk and hazard to Santa Clara County residents.

6.1 CURRENT PUBLIC EDUCATION AND OUTREACH PROGRAMS

6.1.1 SANTA CLARA COUNTY FIRESAFE COUNCIL

The Santa Clara County FireSafe Council (SCFSC) is a non-profit 501(c)(3) organization funded by federal grants, local funding from the county, cities, and fire agencies, contributions from many partners in the community, and donations. Its programs protect thousands of residents and homes and bring together individuals, public and private agencies and companies that share a common, vested interest in preventing and reducing losses from wildfires.

SCFSC programs and projects are focused on protecting the 14 designated communities at risk for wildfire in Santa Clara County, which are: Stanford, Palo Alto, Los Altos Hills, Cupertino, Saratoga, Monte Sereno, Los Gatos, Lexington Hills, San Jose, Morgan Hill, San Martin, Gilroy, East Foothills, and Milpitas. Homes, schools, businesses and important infrastructure such as power transmission lines, communication facilities, creeks and reservoirs are all present in these areas.

The Santa Clara County Fire Safe Council works actively in the community and offers education and outreach programs as outlined on its website (http://www.sccfiresafe.org/). Section 6.3.2 provides more education and outreach programs that are available to county residents.

6.1.2 SOUTH SKYLINE FIRESAFE COUNCIL

The South Skyline FireSafe Council boundaries are within San Mateo, Santa Cruz, and Santa Clara Counties, generally along Skyline Boulevard (California Highway 35). The primary activities of the South Skyline FireSafe Council are to encourage and assist homeowners to prepare for wildfires, reduce hazardous fuels along roads and trails, coordinate with other fire prevention agencies, and provide fundraising (http://www.southskylinefiresafe.org/). Section 6.3.3 provides more education and outreach programs that are available to Santa Clara County residents.

6.1.3 READY, SET, GO!

The Ready, Set, Go! program, which is managed by the International Association of Fire Chiefs, was launched in 2011 at the WUI Conference. The program seeks to develop and improve the dialogue between fire departments and residents, providing teaching tools for residents who live

in high risk wildfire areas—and the WUI—on how to best prepare themselves and their properties against fire threats (Ready, Set, Go! 2016).

The tenets of Ready, Set, Go! as included on the website (http://www.wildlandfirersg.org/) are:

Ready – Take personal responsibility and prepare long before the threat of a wildland fire so your home is ready in case of a fire. Create defensible space by clearing brush away from your home. Use fire-resistant landscaping and harden your home with fire-safe construction measures. Assemble emergency supplies and belongings in a safe place. Plan escape routes and make sure all those residing within the home know the plan of action.

Set – Pack your emergency items. Stay aware of the latest news and information on the fire from local media, your local fire department, and public safety.

Go – Follow your personal wildland fire action plan. Doing so will not only support your safety, but will allow firefighters to best maneuver resources to combat the fire.

DEFENSIBLE SPACE

Defensible space is perhaps the fastest, most cost-effective, and most efficacious means of reducing the risk of loss of life and property. The various fire agencies throughout the county have already laid a strong foundation for effective wildfire mitigation by working with county residents regarding wildland fire safety and prevention. Although fire agencies can be valuable in providing guidance and assistance, creating defensible space is the responsibility of the individual homeowner.

The Santa Clara County Fire Department and CAL FIRE provide defensible space recommendations on their websites at:

- http://www.sccfiresafe.org/education-outreach/100-feet-defensible-space
- http://www.fire.ca.gov/communications/communications_firesafety_100feet

A defensible space of 100 feet is required by California State law. Figure 6.1 provides a brief synopsis on the 100-foot defensible space requirement for California residents living in the WUI.

Figure 6.1. Defensible space (*source: Santa Clara County FireSafe Council 2016*).

Effective defensible space consists of an essentially fuel-free zone adjacent to the home, a treated secondary zone that is thinned and cleaned of surface fuels, and (if the parcel is large enough) a transitional third zone that is basically a managed forest area. These components work together in a proven and predictable manner. Zone 1 keeps fire from burning directly to the home; Zone 2 reduces the adjacent fire intensity and the likelihood of torching, crown fire, and ember production; and Zone 3 does the same at a broader scale, keeping the fire intensity lower by maintaining a more natural, historic condition (Figure 6.2).

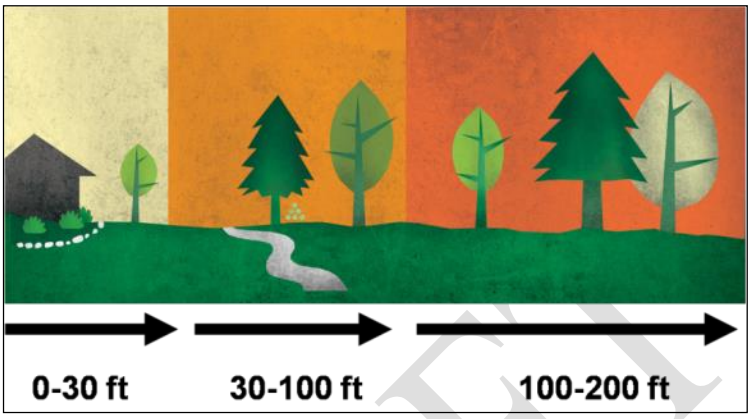

Figure 6.2. Defensible space zones.
Source: www.firewise.org

It should be emphasized that defensible space is just that—an area that allows firefighters to work effectively and with some degree of safety to defend structures. While defensible space may increase a home's chance of surviving a fire on its own, a structure's survival is not guaranteed, with or without firefighter protection. Nevertheless, when these principles are consistently applied across a neighborhood, everybody benefits.

Specific recommendations should be based on the particular hazards adjacent to a structure such as slope steepness and fuel type. Local fire authorities or CAL FIRE should be contacted if a professional assessment seems warranted. Firewise guidelines are an excellent resource, but creating defensible space does not have to be an overwhelming process. Assisting neighbors may be essential in many cases. Homeowners should consider assisting the elderly, sharing ladders for gutter cleaning, and assisting neighbors with large thinning needs. Adopting a phased approach can make the process more manageable and encourage maintenance (Table 6.1).

Table 6.1. Example of a Phased Approach to Mitigating Home Ignitability

Year	Project	Actions
1	Basic yard cleanup (annual)	Dispose of clutter in the yard and under porches. Remove dead branches from yard. Mow and rake. Clean off roofs and gutters. Remove combustible vegetation near structures. Coordinate disposal as a neighborhood or community. Post 4-inch reflective address numbers visible from road.
2	Understory thinning near structures	Repeat basic yard cleanup. Limb trees up to 6–10 feet. Trim branches back 15 feet from chimneys. Trim or cut down brush. Remove young trees that can carry fire into forest canopy. Coordinate disposal as a neighborhood or community.
3	Understory thinning on private property along roads and drainages	Limb trees up to 6–10 feet. Trim or cut down brush. Remove young trees that can carry fire into forest canopy. Coordinate disposal as a neighborhood or community.
4	Overstory treatments on private property	Evaluate the need to thin mature or diseased trees. Prioritize and coordinate tree removal within neighborhoods to increase cost effectiveness.
5	Restart defensible space Treatment cycle	Continue the annual basic yard cleanup. Evaluate need to revisit past efforts or catch those that were bypassed.

6.2 CURRENT STRUCTURAL IGNITABILITY REDUCTION PROGRAMS

6.2.1 DEFENSIBLE SPACE ENFORCEMENT

The Santa Clara County Fire Department carries out defensible space assessments of homes within their jurisdiction that fall within the designated WUI of the communities they serve. The assessments are carried out on a rotation. The department sends mailings to each identified residence prior to fire season, announcing the measures that the resident should take in implementing defensible space practices. State law requires a defensible space of 100 feet around homes and all accessory structures in the very high FHSZ and on all identified properties in the SRA. The Santa Clara County Fire Chiefs Association has developed a list of required and recommended preventative measures that are included in the mailing:

Enforced Safety Measures:

A. Create 100 feet of defensible space around home. To accomplish this, create a Green Zone by clearing flammable vegetation 30 feet around structures. Additionally create a Reduced Fuel Zone for remaining 70 feet or to your property line.

B. Clear ornamental shrubs and trees of dead leaves and branches.

C. Remove all pine needles and leaves from roofs, eaves, and rain gutters.

D. Trim tree limbs 10 feet from chimneys or stovepipes and remove dead limbs that hang over rooftops.

E. Cover chimney outlets or flues with a ½-inch mesh spark arrestor.

F. Post a clearly visible house address, using at least 4-inch high numbers, for easy identification.

Additional Recommended Measures:

- Trees 18 feet or taller should be limbed up 6 feet from the ground.
- Stack woodpiles a minimum of 30 feet from buildings, fences, and combustible materials.
- Clear vegetation and other flammable materials from underneath decks. Enclose elevated desks with fire resistive materials.
- If you have any trees near power lines, please contact Pacific Gas and Electric Company (PG&E) at 1-800-PGE-5000 for a free inspection. State law requires vegetation clearance from electrical lines. For more information, visit www.PGE.com. In most cases, PG&E will remove the tree at no cost to you.
- The Santa Clara County FireSafe Council offers defensible space chipping Programs to assist homeowners, including special programs for qualified low-income seniors and disabled homeowners. For more information, visit www.sccfiresafe.org.

Santa Clara County fire personnel carry out the inspections beginning in the spring each year. For those properties that are non-compliant, the department will advise the property owner that work is necessary in order to be in compliance with the applicable regulations. Residents who are unable to complete the measures due to physical disabilities, etc., are asked to contact the department. The resident is welcomed to complete the necessary work him or herself or use a contractor. Follow-up inspections are completed early summer on those properties that did not meet the Enforced Safety Regulations (see above) during the first inspection. If residents do not comply with items A, B, C, and D of the Enforced Safety Regulations, the compliance work is completed by an authorized contractor of the relevant municipality, and the charges for the service are applied to the next property tax bill for the property.

6.3 RESPONSE AND EVACUATION PROGRAMS

6.3.1 WILDLAND URBAN INTERFACE PRE-PLANS AND EVACUATION GUIDES

The 2015 Santa Clara Unit Fire Plan identifies a number of pre-fire projects within the county for the period of 2015–2018 (CAL FIRE 2015: Appendix A). The Santa Clara County CWPP was identified as a project for 2016. Pre-fire projects include VMPs at Henry Coe, defensible space projects for Santa Clara County communities at risk, and defensible space and fuel break projects for the Santa Cruz Mountains. Further the pre-fire projects include a Santa Clara Unit Incident Pre Attack and Evacuation Plan.

Pre-response and evacuation planning is identified in the Santa Clara Unit Fire Plan (CAL FIRE 2015) for a number of communities and open space areas, including Pacheco Pass, Henry Coe Park, Mt. Hamilton, Lexington Basin, Saratoga, Los Altos, Stevens Canyon, and Montevina Road. Collaborative work has also been underway with the South Skyline Fire Safe Council in Santa Cruz County along Skyline Road (Highway 35) including fuel modification work to maintain an evacuation route between Santa Clara and Santa Cruz Counties.

The goal of the pre-response and evacuation plans would be to provide new personnel, CAL FIRE Emergency Command Center staff and incident management teams with the location of strategic control points and access into remote SRA land.

Many communities have already been the focus of pre-planning efforts, including the Holiday Lakes/Jackson Oaks communities where a pre-response and evacuation plan was completed in January 2016.

CAL FIRE highlights the importance of working in cooperation with the Santa Clara County FireSafe Council, local law enforcement, and other local cooperators to develop evacuation plans and fire plans for communities at risk susceptible to a major incident.

6.3.2 Collaboration with Law Enforcement

Collaboration with law enforcement is integral in fire management in the county as highlighted in the Santa Clara Unit Fire Plan (CAL FIRE 2015:44). Two members of the County Sheriff's Department are included on the Core Team to provide input on law enforcement issues, such as citations, fire investigations, evacuation, and processing criminal complaints.

6.3.3 Community Signage

Fire prevention signs can be useful media through which to share with the public the current fire danger. Signs are currently located at:

- The CAL FIRE Alma Helitack Base on Santa Cruz Highway
- Dunne Hill Fire Station
- Strategic locations in Morgan Hill
- Summit Road/Loma Prieta

6.4 Current Hazardous Fuel Mitigation Programs

6.4.1 Santa Clara County Local Hazard Mitigation Plan

The Santa Clara County LHMP was updated in 2011 (Santa Clara County 2011). This countywide CWPP was identified in Chapter 7 of the LHMP as a mitigation objective for Santa Clara County. The following information was taken and modified from the revised LHMP.

Chapter 4 of the LHMP provides information on the wildfire hazard, including fire hazard threat zones. The LHMP identifies the WUI as one of the most significant threats in Santa Clara County. The plan notes that the California Fire Alliance "Communities at Risk List" identifies the communities of Cupertino, East Foothills, Gilroy, Lexington Hills, Los Altos Hills, Los Gatos, Milpitas, Monte Sereno, Morgan Hill, Palo Alto, San Jose, San Martin, Saratoga, and Stanford at high risk of damage from wildfire. The LHMP includes annexes for each community. Wildfire hazard is identified consistently in these annexes as a primary hazard concern for each community.

Primary mitigation actions identified for WUI mitigation areas included:

- Develop the county-wide CWPP:
    - Create defensible programs on a county-wide basis.
    - Organize and mobilize the volunteer workforce for wildfire mitigation projects.
- Implement a county-wide public education campaign.
- Address the needs of individual homeowners, e.g., grants to replace roofs and free chipping services.
- Prepare tactical information database and accurate maps ready for Incident Commanders to access when necessary, e.g., evacuation planning.
- Establish a county-wide Wildfire Mitigation Task Force to study the problem and coordinate efforts.
- Establish a cohesive funding strategy.
- Consider road improvement as a potential mitigation project to be scoped for evacuation and emergency response access.
- Research and evaluate best practices.
- Address open space with a county-wide strategy. For example, address a 5- to 10-year plan for fire breaks in these areas. Integrate the LHMP with the Open Space District.

This CWPP is designed to support the General Plan and the LHMP, providing additional detailed assessment of wildfire threat and mitigation strategies.

Fuels should be modified with a strategic approach across the project area to reduce the threat that high intensity wildfires pose to lives, property, and other values. Pursuant to these objectives, the CWPP contains recommendations developed in the context of existing and planned fuels management projects. These recommendations initially focus on areas adjacent to structures (defensible space), then near community boundaries (fuel breaks, cleanup of adjacent open spaces), and finally in the wildlands beyond community boundaries (larger-scale forest health and restoration treatments). A common focus of fuels treatment is to reduce brush, diseased trees, dead fuels, and immature trees in favor of healthy, more mature trees and shrubs.

While not necessarily at odds with one another, the emphasis of each of these treatment types is different. Proximate to structures, the recommendations focus on reducing fire intensity consistent with FireSafe and code standards. Further into open space areas, treatments will tend to emphasize the restoration of historic conditions and general forest health. Cooperators in fuels management should include federal, state, and local agencies, as well as interested members of the public.

Fire management cannot be a one-size-fits-all endeavor; this plan is designed to be flexible. Treatment approaches and methods will be site-specific and should be adapted to best meet the needs of the landowner and the resources available. Moreover, each treatment recommendation should address protection of CVARs, protection of people, critical infrastructure, cultural icons, economic engines, and threatened and endangered species. It is the intent of this plan to be an evolving document that will incorporate additional areas of the CWPP planning area as they change in risk category over time.

6.4.2 FUEL BREAKS AND OPEN SPACE CLEANUP

After defensible space, the next location priority for fuels treatments should be where the community meets the wildland. This may be the outer margins of a town or an area adjacent to occluded open spaces such as a park. Fuel breaks (also known as shaded fuel breaks) are strips of land where fuel (for example living trees and brush, and dead branches, needles, or downed logs) has been modified or reduced to limit the fire's ability to spread rapidly. Fuel breaks should not be confused with fire breaks, which are areas where vegetation and organic matter is removed down to mineral soil. Shaded fuel breaks may be created to provide options for suppression resources, opportunities to introduce prescribed fire, or to create a zone where crown fire will be forced to the ground where it is more easily contained. In many cases, shaded fuel breaks may be created by thinning along roads. This provides access for mitigation resources and firefighters, as well as enhancing the safety of evacuation routes.

6.4.3 LARGER-SCALE TREATMENTS

Farther away from WUI communities, the emphasis of treatments often becomes broader. While reducing the buildup of hazardous fuels remains important, other objectives are often included, such as restoration of historic conditions and forest health. Wildfires frequently burn across jurisdictional boundaries, sometimes on landscape scales. As such, these larger treatments need to be coordinated on a strategic level. This requires coordination between projects and jurisdictions, as is currently occurring throughout Santa Clara County and with adjacent counties. Land managers have carried out numerous fuels reduction projects across the planning area and region and have ongoing projects planned on public lands that are designed to reduce hazardous fuels to protect communities and resources (see Figure 6.4).

NOTE: Figure 6.4 will be added in the final document. The Public are asked to review the KMLs provided with the Draft document. Finalized treatment maps will be made from those revised KMLs following public review.

6.4.4 VEGETATION MANAGEMENT PROGRAM

CAL FIRE's VMP is a formal cost-sharing program that applies prescribed fire and various mechanical treatment methods to reduce wildland hazardous fuels and to achieve other natural resource management goals within SRAs (CAL FIRE 2015). The Santa Clara Unit has a long history of partnering under such agreements with local landowners to reduce hazardous fuels, improve range and wildlife habitat, and maintain natural ecosystems dependent upon periodic fires. Vegetation management focuses on the volume, structure, and distribution of vegetation on a landscape. Fuel treatments mainly focus on only the surface and ladder fuels.

The Santa Clara Unit currently has several VMP projects in the planning and operational stages. These projects have range, watershed, and wildlife habitat improvement as the primary goals—for example, the Isabel Ranch, Henry Coe State Park, and Grant Ranch County Park and other eastern Santa Clara County burns (CAL FIRE 2015).

The Santa Clara Unit Fire Plan identifies the following priority areas for VMP projects:

- VMP projects where property owners meet the criteria for a cost share agreement and have a signed agreement with CAL FIRE;
- areas with high hazardous fuel loading near WUI zones;
- areas with no recent fire history;
- areas with protected species requiring burning for habitat improvement; and
- areas needing improvement to range capacity or hydrologic production.

6.4.5 Methods and Selection of Fuel Reduction Treatments

Strategic timing and placement of fuels treatments is critical for effective fuels management practices and should be prescribed based on the conditions of each particular treatment area. Some examples of this would be to place fuel breaks in areas where the fuels are heavier and in the path of prevailing winds and to mow grasses just before they cure and become flammable. Also, burning during the hotter end of the prescription is important since hotter fires are typically more effective at reducing heavy fuels and shrub growth. In areas where the vegetation is sparse and not continuous, fuels treatments may not be necessary to create a defensible area where firefighters can work. In this situation, where the amount of fuel to carry a fire is minimal, it is best to leave the site in its current condition to avoid the introduction of exotic species.

Several fuel reduction treatment methods are commonly used, including manual treatments, mechanized treatments, and prescribed fire (Table 6.2). This brief synopsis of treatment options is provided for general knowledge; specific projects will require further planning. The appropriate treatment method and cost will vary depending on factors such as the following:

- Diameter of materials
- Proximity to structures
- Acreage of project
- Fuel costs
- Steepness of slope
- Area accessibility
- Density of fuels
- Project objectives

It is imperative that long-term monitoring and maintenance of all treatments is implemented. Post-treatment rehabilitation such as seeding with native plants and erosion control may be necessary.

Table 6.2. Summary of Fuels Treatment Methods

Treatment	Comments
Mechanized Treatments	
Machine mowing	Appropriate for large, flat, grassy areas on relatively flat terrain.
Brush mastication	Brush species (oak in particular) tend to re-sprout vigorously after mechanical treatment. Frequent maintenance of treatments are typically necessary. Mastication tends to be less expensive than manual (chainsaw) treatment and eliminates disposal issues.
Timber mastication	Materials up to 10 inches in diameter and slopes up to 30% can be treated. Eliminates disposal issues. Environmental impact of residue being left on site is still being studied.
Feller Buncher	Mechanical treatment on slopes more than 30% or of materials more than 10 inches in diameter may require a feller-buncher rather than a masticator. Costs tend to be considerably higher than masticator.
Manual treatment with chipping or pile burning	Utilizing hand crews cutting with chain-saws. Requires chipping, hauling, pile burning of slash in cases where lop and scatter is inappropriate. Pile burning must comply with smoke management policy.
Prescribed fire	Can be very cost effective. Ecologically beneficial. Can be used as training opportunities for firefighters. Prescribed fires help local populations get familiar with fire and foster trust and support May require manual or mechanical pretreatment. Carries risk of escape, which may be unacceptable in some WUI areas. Unreliable scheduling due to weather and smoke management constraints.
Thinning and Prescribed Fire Combined	Can be used in areas where fuel loading is too high to implement prescribed fire without pre-treatment. Ecologically beneficial. Can create fuel breaks to reduce risk of escape.

Mechanized Treatments

Mechanized treatments include mowing, mastication (ground-up timber into small pieces), and whole tree felling. These treatments allow for more precision than prescribed fire and are often more cost effective than manual treatment.

Mowing, including all-terrain vehicle (ATV) and tractor-pulled mower decks, can effectively reduce grass fuels adjacent to structures and along highway rights-of-way and fence lines. For heavier fuels, a number of different masticating machines can be used, including drum- or blade-type masticating heads mounted on machines and ranging in size from a small skid-steer to large front-end loaders. Some masticators are capable of grinding standing timber up to 10 inches in diameter. Other masticators are more effective for use in brush or surface fuels. Mowing and mastication do not actually reduce the amount of on-site biomass, but alter the fuel arrangement to a less combustible profile.

In existing fuel break areas maintenance is crucial especially in areas of encroaching shrubs or trees. In extreme risk areas more intensive fuels treatments may be necessary to keep the fire on the ground surface and reduce flame lengths. Within the fuel break, shrubs should be removed, and the branches of trees should be pruned from the ground surface to a height of 4 to 8 feet, depending on the height of the fuel below the canopy, and thinned with a spacing of at least two to three times the height of the trees to avoid movement of an active fire into the canopy.

Mechanical shears mounted on feller bunchers are used for whole tree removal. The stems are typically hauled off-site for utilization while the limbs are discarded. The discarded material may be masticated, chipped, or burned in order to reduce the wildfire hazard and to speed the recycling of nutrients.

Manual Treatments

Manual treatment refers to crew-implemented cutting with chainsaws. Although it can be more expensive than mechanized treatment, crews can access many areas that are too steep or otherwise inaccessible with machines. Treatments can often be implemented with more precision than prescribed fire or mechanized methods allow. Merchantable materials and firewood can be removed while non-merchantable materials are often lopped and scattered, chipped, or piled and burned on site. Care should be exercised to not increase the fire hazard by failing to remove or treat discarded material in a site-appropriate manner.

Prescribed Burning

Prescribed burning is also a useful tool to reduce the threat of extreme fire behavior by removing excessive standing plant material, litter, and woody debris while limiting the encroachment of shrubby vegetation. Where possible, prescribed fire could occur on public lands since fire is ecologically beneficial when applied to fire-adapted vegetation communities and wildlife habitat.

Prescribed burning should only be implemented by properly qualified personnel. All prescribed fire operations will be conducted in accordance with federal and state laws and regulations. Public safety would be the primary consideration in the design of any prescribed burn plan so as to not negatively impact the WUI. Pre-fire vegetation sampling would be carried out during planning to ensure resource protection. The areas to be burned would occur within fuel breaks or appropriate fire lines. Agency use of prescribed fire on public lands would be carried out within the confines of the agency's fire management planning documents and would require individual prescribed burn plans that are developed for specific burn units and consider smoke management concerns and sensitive receptors within the WUI.

Following any type of fuels reduction treatment, post-treatment monitoring should continue to ensure that management actions continue to be effective throughout the fire season. Vegetation can change rapidly in response to drought or moisture from year to year and during the course of the season, so fuels treatments should be adjusted accordingly.

Thinning and Prescribed Fire Combined

Combining thinning and prescribed fire can be the most effective treatment (Graham et al. 2004). In forests where fire exclusion or disease has created a buildup of hazardous fuels, prescribed fire cannot be safely applied and pre-burn thinning is required. The subsequent use of fire can further reduce residual fuels and reintroduce this ecologically imperative process.

Management of Non-native Plants

Fuel treatment approaches should always consider the potential for introduction or proliferation of invasive non-native species as a result of management actions.

6.4.6 FUEL BREAKS

Fire behavior in the CWPP planning area has been modeled using FlamMap (Section 4.6.4). This assessment provides estimates of flame length and rate of spread; the information should be used by land managers when prescribing treatments. Land managers are cautioned, however, that fuel breaks will not always stop a fire under extreme fire behavior or strong winds; these should only be seen as a mitigating measure and not a fail-safe method for fire containment.

Within a fuel break, shrubs should be removed where they would generate high severity fire behavior. It is not possible to provide a standard treatment prescription for the entire landscape because fuel break dimensions should be based on the local fuel conditions and prevailing weather patterns. For example, in some areas, clearing an area too wide could open the landscape to strong winds that could generate more intense fire behavior and/or create wind throw.

Strategic placement of fuel breaks is critical to prevent fire from moving from wildland fuels into adjacent neighborhoods. A fuel break of 100 to 300 feet in shrubland should modify fire behavior significantly enough to allow suppression by firefighters. It is important to note, however, that shrub fuels are often replaced by grassland fuels in shrubland fuel breaks; flame lengths and rates of spread could be faster in these grassland fuels, but fireline intensity (heat produced per fireline foot per second) will be reduced, allowing more effective suppression. For effective management of most fuels, fuel breaks should be prescribed based on the conditions in each particular treatment area. Some examples of this would be to place fuel breaks in areas where fuels are heavier or in areas with easy access for fire crews. In areas where the vegetation is discontinuous, fuel treatments may not be necessary. In this situation it is best to leave the site in its current condition to avoid the introduction of more flammable, exotic species, which may respond readily following disturbance.

Sustainability Challenge

Well-managed fuels reduction projects often result in ecological benefits to wildlife and watershed health. Simultaneously, planning and resource management efforts should occur when possible while reducing fuels to ensure that the land remains viable for multiple uses in the long term.

Fuel break and fuel treatment utility is contingent upon regular maintenance, as regrowth in a treated area can quickly reduce its effectiveness. Input provided during public outreach activities identified a need for maintenance of existing fuel breaks that have become overgrown. Maintenance of existing breaks could be more cost efficient than installation of new features.

The effectiveness of any fuels reduction treatment will increase over time with a maintenance and monitoring plan. Monitoring will also ensure that objectives are being met in a cost-effective manner. For information on monitoring and sustainability for CWPP projects, please see Section 7.

6.5 PRIORITIES, RECOMMENDATIONS, AND ACTION ITEMS

This section outlines recommended projects for mitigation of fire risk at a strategic countywide level. These projects could be implemented or adopted across the county and multiple jurisdictions. They are designed to be general in nature in order to allow for them to be applied across multiple jurisdictions for agencies that may have very different goals and missions. Since many recommend large-scale actions, they should be considered long-term goals used to help direct fire management

over a period of years to possibly decades. More specific goals are provided in the individual agency annexes. Some of these agency goals may tier from these strategic level recommendations.

6.5.1 General Planning Project Recommendations

Table 6.3 describes general planning projects that could be applied countywide to assist in the mitigation of wildfire hazard and risk.

6.5.2 Recommendations for Public Education and Outreach

Needs for public education and outreach have been emphasized throughout the Santa Clara County CWPP process by all participating parties. The Core Team has consistently commented on the need for better education of the public for fire preparedness, and discussions with community members during public outreach have indicated that, although most people are aware of the danger of wildland fire in their community, many could be better informed of effective mitigation options. Many long-time residents of the county have grown up with wildfire; however, it is important to continually raise awareness of fire risk and improve fire education (Winter and Fried 2000; McCaffrey 2004).

As discussed further in Section 6.4, the Firewise Communities program and other similar fire prevention outreach programs provide extensive educational literature on fire prevention activities that homeowners and communities can engage in to reduce their wildfire risk and hazard. Other methods to improve public education could include using existing signage to indicate fire danger level (low, moderate, high, extreme); increasing awareness about fire department response and fire department resource needs; providing workshops at demonstration sites showing Firewise Communities landscaping techniques or fuels treatment projects; organizing community cleanups to remove green waste; publicizing availability of government funds for thinning; and, most importantly, improving communication between homeowners and local land management agencies to improve and build trust, particularly since the implementation of fuel treatments and better maintenance of existing treatments has been identified repeatedly by the public as a needed action to reduce risk and often the public are ill-informed of the hazard mitigation actions that land managers are applying in areas adjacent to homes. Table 6.4 provides strategic level recommendations for public education and outreach that can be applied at the county level and tiered from for agencies and communities (Annexes).

Table 6.3. General Planning Project Recommendations

ID	Project Description	Method	Timeline for Action	Priority (1,2,3)	Monitoring/Sustainability	Resources/Funding Sources Available
GP3	Ensure project sustainability.	- Have a target date for updating the datasets used in the risk assessment model and re-running the model. - Establish trigger points for updating CWPP. - Use Mello-Roos Community Facility Districts for new subdivision for sustainable hazardous fuel maintenance.	Annually	1	Establish annual oversight of the CWPP and project status. Get buy-in from Core Team members for long term commitment to CWPP review.	Refer to Appendix C
GP4	Form a task force to do parcel level inspection work to enhance model; utilize portable data collection and ARCGIS as analysis tools.	- Must have agency link to be accepted by the public. Agency responsibility would fall to the County Fire Department. - Carryout parcel level assessments to enhance risk assessment model components at a finer scale. - Add data to model and re-run as necessary.	2 years	1	Set target number of parcels to be assessed each year. Review number of parcels assessed each year at annual CWPP meeting.	Refer to Appendix C
GP5	Use a countywide standard and method for continued data gathering and risk analysis.	- Conduct funding to purchase a commercial application such as Fulcrum that provides a standard data collection platform that could be used on a smart phone.	2 years	1	Annual review of progress as part of Core Team.	Refer to Appendix C

ID	Project Description	Method	Timeline for Action	Priority (1,2,3)	Monitoring/Sustainability	Resources/Funding Sources Available
GP6	Improve partnerships across county boundaries.	- Work with adjacent counties where there are shared risks and shared resources to ensure defensible space requirements and egress routes are both implemented maintained on both sides of the county line. - Work with Santa Cruz County to establish a Santa Cruz County FireSafe Council. - Increase partnerships with Santa Cruz agencies and other adjacent county agencies, and use existing relationships with the Santa Clara County FireSafe Council. - Provide community workshops that address cross-jurisdictional boundary concerns.	Next 2 years	1	Revisit success within a year by assessing project partnerships established across county boundaries	Refer to Appendix C
GP7	Add hyperspectral and LiDAR imaging to periodic aerial photography flights.	- Work in conjunction with the County Assessor or other agency that acquires aerial photography of county and add additional sensing cameras to flights to acquire analysis data. - Hyperspectral and LiDAR can provide in depth identification and analysis of hazards and risks.	1–3 years	1	Periodic new flights to update data sets.	Grants: FEMA, Department of Homeland Security SRA, GHGR
GP8	Continue support for and possible expansion of the Early Warning Wildfire Detection Camera System.	- Review current established systems and assess public support. - Install additional systems as support increases. - Identify highest risk areas and most suitable vegetation and terrain for installation.	1–5 years	1	The technology for early warning detection cameras is continually being developed. All future plans should be adjusted as appropriate based on planned improvements to the system.	Ongoing funding is available from Verizon, CAL FIRE in Sacramento (the Loma Prieta Tower), University of California Lick/Santa Cruz, and several local homeowner associations
GP1	The CWPP serves as the wildfire component of LHMP and General Plan Safety and other element amendments.	- Work with county and city planning to identify timeline for incorporation. - Aim to have the CWPP incorporated into the Safety Element of the General Plan when the safety element is next revised. Getting it into the General Plan is equivalent to getting the CWPP adopted.	Next 5 years	2	The Core Group of stakeholders would need to ensure that the document is kept relevant in that time and position it for incorporation.	Refer to Appendix C

Table 6.4. Recommendations for Public Outreach and Education

ID	Project	Presented by	Target Date	Priority	Resources Needed	Serves to
EO1	Educate citizens on how to achieve contemporary WUI code compliance in retrofits/cost: benefit ratio. Provide workshops and/or demonstration site.	FireSafe Councils, County Fire, CAL FIRE	Within 2 years	1	• Workshop expenses, personnel • Workshop venues • Demonstration site • Strategize on avenues for engaging the public. Be opportunistic- engage residents following a local wildfire or at existing well- attended events- i.e. annual BBQ, Pancake Breakfasts, Open days offered by Fire Departments.	Increase compliance with County code. Reduce fire risk level for individual parcels and community as a whole.
EO2	Analyze playing with fire ignitions and focus education programs at vicinity schools.	County Fire, CAL FIRE, municipal fire departments, FireSafe Council	Within 1 year	1	• School liaison • Materials for presentations • Personnel • Video processing, could utilize You Tube platform • Could be a college student project	Adds to existing programs provided by County Fire and FireSafe Council targeted at school age children. Reduces number of ignitions.
EO3	Organize a community group made up of residents and agency personnel to develop materials and communicate relevant defensible space messages. Could coordinate with fire departments or Fire Safe Council. Possibility to coordinate actual implementation of defensible space and slash clear-up with the local Eagle Scout group or high school volunteers.	FireSafe Council, fire departments, local residents, Eagle Scouts, High School Community Volunteer Program	Within a year	1	• Funding to help cover costs of materials (green waste removal or chipper) and participation. • People trained in defensible space practices.	Engage diverse stakeholders in reaching out to community members and encourage defensible space practices. Empower homeowners to make affordable and effective changes to reduce the vulnerability of individual homes.
EO4	Media involvement. Develop a local newspaper column that provides fire safety information, promotional information for volunteer fire departments, fire announcements, and emergency planning.	Agency Public Information Officers, Emergency Manager, Commission	Within 1 year	1	• Columns, information, and articles to be provided by fire departments, city, county, state representatives.	Protect communities and infrastructure through increasing public awareness and providing a channel for information regarding emergency fire response.

ID	Project	Presented by	Target Date	Priority	Resources Needed	Serves to
EO5	Emergency preparedness meetings. Use American Red Cross volunteers and other preparedness experts. Attend community functions and hold special meetings to provide guidance for creating household emergency plans. Use Ready, Set, Go! program.	American Red Cross, city, county, state personnel, FireSafe Council	Within 1 year	1	• Written materials- could use existing literature.	Improve preparedness by facilitating the communication between family members and neighbors about what procedures to follow in the event of a wildfire.
EO6	Work with Caltrans to install or utilize existing electronic message signs on major highways to notify public of extreme fire danger.	County, Caltrans	Within 1 year	1	• Funds for new sign installing and/or maintenance of existing signs.	Inform residents, commuters and tourists of extreme fire danger in order to reduce accidental ignitions and encourage pre-planning.
EO7	Plan livestock evacuation routes and inform communities. Work with emergency management officials to plan evacuation routes for residents with livestock and then hold community meetings to disseminate to the public.	Emergency management officials, livestock agencies/ civic groups	Within 2 years	1	• GIS software or maps- coordinate with EQ Clearing House- GIS sharing.	Protect communities, livestock and infrastructure through increased awareness.
EO8	Provide webinars for homeowners to learn about Fire Safe communities and property.	County Fire, CAL FIRE, municipal fire departments, Fire Safe Councils	Within 2 years	2	• Workshop expenses • Personnel • Workshop venues • Video processing • Could be a college student project	Increase reach for public education and outreach. Provide access to information to residents who don't typically attend in-person meetings or workshops. Provide a consistent and standard message to residents. Improve individual adoption of action sot reduce structural ignitability.

ID	Project	Presented by	Target Date	Priority	Resources Needed	Serves to
EO9	Targeted wildfire info sessions. Review existing programs (Ready, Set, Go!; Firewise) for suitability of existing fire prevention materials and where necessary fund development of unique adapted materials and presentations to highlight how a fire might affect particular groups in the community.	Active local residents, Fire Safe Council	Within 2 years	2	• Funding for research, writing, and presentation of detailed information on how large-scale wildfire would affect the target audience and the measures that could be taken to reduce the threat. • Flyers could be sent out with utility bills or other community mailings. • Consider 'Simtable' use for visualizing various emergency scenarios for residents/HOA leaders and agency personnel.	Deliver a clear and consistent message that impacts of wildfire are far-reaching and that it is in the best interest of a diverse set of stakeholders to become involved in planning and preparing for fire.
EO10	Insurance Service Office informational meetings: Invite Insurance Services Office representatives to speak to groups regarding ways to improve insurance ratings in the community.	Insurance Services Office in conjunction with local volunteer fire departments	Within 2 years	2	• Resources provided by Insurance Services Office. Venue provided by fire department.	Communities can learn how to improve their insurance ratings, which will reduce insurance costs in their community by implementing wildfire prevention measures.
EO11	Increase signage/replace or augment existing signage. Use existing signage to spread fire prevention message along highways and in public open space areas (trailheads, info kiosks) to reduce human ignitions. Promote the use of existing electronic signs at firehouses and other locales to display fire prevention information, safety messages, and fire danger rating linked to safety actions.	County Fire	Within 2 years	2	• Mostly existing signs and posting sites, people to post and update signs. • Replace, or augment the existing Smokey Bear signs with electronic Fire Danger Warning Signs that are solar powered, LED displays (visible day & night), and accessible and programmable through an internet website.	Protect communities and infrastructure by raising awareness of local citizens and those traveling in the area about actions that can prevent fire.

ID	Project	Presented by	Target Date	Priority	Resources Needed	Serves to
EO12	Promote and increase the use of prescribed burning as a fuels reduction method. Gain public support for using prescribed burns to reduce fuel loads and to improve ecosystem health through a pilot burn project and demonstration site. Consider developing informational material for distribution at natural areas or via email distribution lists.	CAL FIRE/Midpeninsula/ County Open Space	Within 2 years	2	• Prescribed burn prescription, type-6 engines, hand crews, equipment. • Research and costs of producing1, printing, and distributing paper informational flyer.	Protect communities and infrastructure by reducing fuel loads.
EO13	Implement Firewise Communities programs. Work with communities to participate in Firewise Communities and prepare for fire events. Hold Firewise booths at local events for example during the October Fire Awareness Week each year.	Fire Safe Council, CAL FIRE, County Fire	Within 2 years	2	• Firewise Communities educational materials.	Protect communities and infrastructure through increased awareness and defensible space.
EO14	Fire agencies establish partnership with San Jose State University (or other colleges) for student intern programs for GIS, plans, weather, environmental reviews, etc. GIS work should be in conjunction with the EQ Clearinghouse and Exchange Core.	County Fire Department	Within 2 years	3	• Admin costs • Liaison	Provides resources for agencies to implement projects in the CWPP. Improves technical capabilities of Agencies to run fire modelling programs and train staff in modelling protocols. Engages students in real-life training opportunities.

6.5.3 Recommendations for Actions to Reduce Structural Ignitability

Table 6.5 provides a list of strategic level recommendations to reduce structural ignitability that should be implemented throughout Santa Clara County. Reduction of structural ignitability depends largely on public education that provides homeowners the information they need to take responsibility for protecting their own properties. It is important to note that no two properties are the same. Homeowners and communities are encouraged to research which treatments would have the most effect for their properties. Owners of properties on steep slopes, for example, should be aware that when constructing defensible space they have to factor in slope and topography, which would require extensions to the conventional 30-foot recommendations. A number of educational programs are now available to homeowners through programs like Ready, Set, Go! (http://www.wildlandfirersg.org) and Firewise (www.firewise.org).

Table 6.5. Recommendations for Reducing Structural Ignitability

ID	Project	Presented by	Programs Available	Description	Priority (1-3)	Timeline
SI1	Retrofit/Eliminate flammable roofs	County Planning in conjunction with County Fire and municipalities	FEMA grants	Require elimination of all flammable roofs through attrition or time deadline	1	By 2030
SI2	Identify all WUI areas (including FHSZ VH, H, and M in LRA and SRA); standardize regulations/standards/codes in all WUI areas	County Fire and municipalities		Make all WUI building codes, defensible space and other prevention regulations standard across all jurisdictions. Data Should be shared via the EQ Clearinghouse and Exchange Core	1	2020
SI3	Encourage/require retrofit to achieve contemporary WUI codes when remodeling beyond 50 %	County Planning (through General Plan and Fire Safety Elements) in conjunction with County Fire and municipalities.		Require or encourage gradual updating of existing structures to the standards identified in the most contemporary WUI codes though remodels or owner interest Acknowledge that some codes cannot be met on existing parcels.	2	Adopt ordinances by 2020
SI4	Adopt common defensible space standards throughout the county	County Fire, CAL FIRE, Municipal FDs		Make all WUI building codes, defensible space and other prevention regulations standard across all jurisdictions	1	Next 3 years
SI5	Adopt landscape guidelines for recommended plant landscape materials	FireSafe Councils to lead	Research Firewise plants suitable for the region. Develop plant list, poster materials and research demonstration site. Firewise Communities USA: www.firewise.org	Educate property owners, landscape firms and landscape architects in appropriate ornamental plantings, mulches, and landscape design/ maintenance in WUI areas.	3	Next 2 years

ID	Project	Presented by	Programs Available	Description	Priority (1-3)	Timeline
SI6	Develop landscape contractor maintenance program for "Right Plant--Right Place" and maintenance Consider consulting with the California Native Plant Society and wildlife biologists to create an area that is sensitive-plant and animal friendly. These practices include no heavy pesticide use, limiting soil erosion, and a focus on using native plants.	FireSafe Councils to lead	Firewise Communities USA: www.firewise.org	Educate property owners, landscape firms and landscape architects in appropriate ornamental plantings, mulches, and landscape design/ maintenance in WUI areas.	2	Next 2 years
SI7	Promote Firewise Community recognition program countywide; consider SCL amendments to Fire wise; partner with CERT and Neighborhood Watch. NOTE: Linked to EO 13	FireSafe Councils to lead in conjunction with Santa Clara County Fire Department , Municipal FDs	Firewise Communities USA: www.firewise.org	Educate and outreach to bring communities into Firewise recognition programs	2	Next 3 years
SI8	Interactive tool for citizens to use on line, ID their property and what hazard/risks exist and mitigations they can apply to improve their survivability	Santa Clara County Fire Department with revised Interra contract	Interra	Pursue funding to increase contract provisions with Interra to provide public facing tool. Simplify tool and provide easy to follow instructions. Could develop You Tube informational video	1	Next 3 years
SI9	Create a countywide defensible space ordinance for parcels below certain size acreage (parcel size: i.e. 2 acres?) to address unmaintained vacant lot concerns. Could be tied to County weed abatement program	Santa Clara County Fire Department , Municipal FDs, CAL FIRE		To assure defensible space in WUI will be maintained; require property clear or agencies will clear and assess property owner Link to enforcement of weed abatement	1	Next 2 years

ID	Project	Presented by	Programs Available	Description	Priority (1-3)	Timeline
SI10	Public education program for embers and problems associated with embers, property hygiene, defensible space	County Fire, Municipal FDs, CAL FIRE, FireSafe Councils	Ready, Set, Go! Program: www.wildlandfirersg.org. Institute for Business and Home Safety NFPA: www.nfpa.org, Fire Adapted Communities	Educate property owners on best methods to reduce ember intrusion Could utilize you tube informational video of college student project.	1	Next 2 years
SI11	Implement spring community yard clean-up days. In combination with FireSafe Council chipper program.	County Fire, Municipal FDs, CAL FIRE, FireSafe Councils	FireSafe Council chipping program Ready, Set, Go CAL FIRE	A community led day of yard clean-up with fire mitigation in mind would encourage large numbers within the community to carry-out mitigation measures and implementation of defensible space.	2	Next 2 years
SI12	Assess and improve accessibility to property Weekend program to inform homeowners about emergency response access	Fire departments, Fire Marshal		Inform homeowners about the importance of keeping driveways accessible to fire trucks and emergency responders.	1	Within 1 year
SI13	Consider and explore potential for development of a certificate of compliance program for home owners that implement and maintain Defensible Space. Work with Insurance companies to determine if such a program could be viable.	County Fire, Insurance industry	No known existing program.	Insurance companies carry out assessments of policy holder properties to ensure defensible space parameters have been met. There may be a possibility to combine the assessments carried out by County Fire and CALFIRE with insurance standards in order to incentivize defensible space practices in the WUI.	3	Next 5 years

Below is a list of action items that could be implemented by all Santa Clara County residents. The list is broken into items based on cost/effort.

6.5.4 Action Items for Homeowners to Reduce Structural Ignitability

Low or No Cost Investment (<$50)

- Regularly check fire extinguishers and have a 100-foot hose available to wet perimeter.
- Maintain defensible space for 30 feet around home. Work with neighbors to provide adequate fuels mitigation in the event of overlapping property boundaries.
- Make every effort to keep lawn mowed and green during fire season.
- Screen vents with non-combustible meshing with mesh opening not to exceed nominal ¼-inch size.
- Ensure that house numbers are easily viewed from the street.
- Keep wooden fence perimeters free of dry leaves and combustible materials. If possible, non-combustible material should link the house and the fence (Figure 6.3).
- Keep gutters free of vegetative litter. Gutters can act as collecting points for fire brands and ashes.
- Store combustible materials (firewood, propane tanks, grills) away from the house; in shed, if available.
- Clear out materials from under decks and/or stacked against the structure. Stack firewood at least 30 feet from the home, if possible.
- Reduce your workload by considering local weather patterns. Determine the prevailing wind direction in your area and work from that edge of your property first before working around to cover the entire area.
- Seal up any gaps in roofing material and enclose gaps that could allow fire brands to enter under the roof tiles or shingles.
- Remove flammable materials from around propane tanks.

Figure 6.3. Home in WUI on steep slope with wooden fence attached to property.

Minimal Investment (<$250)

- When landscaping in the Home Ignition Zone (HIZ) (approximately 30 feet around the property), select non-combustible plants, lawn furniture, and landscaping material. Combustible plant material like junipers and ornamental conifers should be pruned and kept away from siding. If possible, trees should be planted in islands and no closer than 10 feet to the house. Tree crowns should have a spacing of at least 18 feet when within the HIZ. Vegetation at the greatest distance from the structure and closest to wildland fuels should be carefully trimmed and pruned to reduce ladder fuels, and density should be reduced with approximately 6-foot spacing between trees crowns (Figure 6.2).
- Box in eaves, attic ventilation, and crawl spaces with non-combustible material.
- Work on mitigating hazards on adjoining structures. Sheds, garages, barns, etc., can act as ignition points to your home.
- Enclose open space underneath permanently located manufactured homes using non-combustible skirting.
- Clear and thin vegetation along driveways and access roads so they can act as a safe evacuation route and allow emergency responders to access the home.
- Purchase or use a National Oceanic and Atmospheric Administration weather alert radio to hear fire weather announcements.

Moderate to High Investment (>$250)

- Construct a non-combustible wall or barrier between your property and wildland fuels. This could be particularly effective at mitigating the effect of radiant heat and fire spread where 30 feet of defensible space is not available around the structure.

- Construct or retrofit overhanging projections with heavy timber that is less combustible.
- Replace exterior windows and skylights with tempered glass or multilayered glazed panels.
- Invest in updating your roof to non-combustible construction. Look for materials that have been treated and given a fire-resistant roof classification of Class A. Wood materials are highly combustible unless they have gone through a pressure-impregnation fire-retardant process.
- Construct a gravel turnaround in your driveway to improve access and mobilization of fire responders.
- Treat construction materials with fire-retardant chemicals.
- Install a roof irrigation system.
- Replace wood or vinyl siding with nonflammable materials.
- Relocate propane tanks underground.

6.5.5 Recommendations for Community/Firefighter Preparedness

Educating the public to reduce its dependence on fire departments for fire protection is essential because these resources are often stretched thin during fire season and many residences are located at some distance from emergency response. Table 6.6 provides strategic level recommendations for improving firefighting capabilities. Many of these recommendations are general in nature because they are applicable across departments. Departments should work together in implementing these actions and provide feedback to other fire chiefs on funding and grant successes, this way each department benefits from a lessons learned approach.

Table 6.6. Recommendations for Improving Firefighting Capabilities

ID	Project Description	Fire Department/Agency	Benefits of the Project to the community	Timeline	Priority (1-3)	Resources/funding sources available
FC1	Review minimum requirement of 5,000 gallon of water storage at single parcel developments where no community water system exists. Incorporate map component and utilize EQ Clearing House GIS Exchange Core.	County Fire/CAL FIRE/FireSafe Councils/Municipal FDs	Alleviates public and agency concern for limited water supply in remote areas. Improve fire-fighting capability. Enhances firefighter safety. Enhances protection of life and property.	2 years	2	Requires local fire code and land development amendments
FC2	Define Safe Refuge Areas and establish maintenance program in WUI areas where fire behavior and evacuation timing is problematic. Incorporate map component and utilize EQ Clearing House GIS Exchange Core.	County Fire/CAL FIRE/FireSafe Councils/Municipal FDs, MERC and other groups that maintain evacuation centers.	Provides safety measure for residents of rural areas in event that evacuation is limited. Provides for firefighter safety by creating escape route.	2 year	1	Grants: SRA, FEMA, CA FSC, DHS
FC3	Identify carless population/evacuation assistance needed locations. Establish registry in cooperation with Emergency Management agencies. Incorporate map component and utilize EQ Clearing House GIS Exchange Core.	County Fire/CAL FIRE/FireSafe Councils/Municipal FDs Emergency Management Agencies	Aids in safe evacuation of residents, those with evacuation assistance needs	2 year	1	FEMA, DHS

ID	Project Description	Fire Department/Agency	Benefits of the Project to the community	Timeline	Priority (1-3)	Resources/funding sources available
FC4	Require evacuation time modeling for all WUI areas Establish benchmark s time standard for evacuation Requires amendment to planning conditions and/or Land Use Ordinances	County Fire/CAL FIRE/FireSafe Councils/Municipal FDs	Existing road networks are set and would be extremely costly to mitigate. Modelling evacuation would help fire response agencies pre-plan for evacuations. Helps identify areas where additional mitigation measures are needed to facilitate safe evacuation.	1 year	1	Developers fund studies for new developments. County Fire seek funding to fund studies of existing communities.
FC5	Develop WUI preplans and accompanying Evac plans for all WUI areas in Santa Clara County using standardized format	County Fire/CAL FIRE/FireSafe Councils/Municipal FDs	Helps fire response agencies pre-plan for evacuations. Helps identify areas where mitigation measures are needed to facilitate safe evacuation. Helps establish consistent model across all agencies.	1 year	1	Grants: SRA, FEMA, CA FSC, DHS
FC6	Create secondary accesses in communities that have single access and poor road systems Require major coordination with planning agencies and governing bodies for land use changes or retrofit requirements	County Fire/CAL FIRE/FireSafe Councils/Municipal FDs Land Use Planning agencies Governing bodies	Alleviates evacuation concerns of residents living in areas with poor ingress/egress. Provides for improved response capabilities and reduces risk that responding emergency vehicles will conflict with evacuation of residents.	2 years	1	Homeowner Associations, Road Associations, County Service Areas
FC7	Obtain additional helicopters / air resources for suppression	County Fire/CAL FIRE/FireSafe Councils/Municipal FDs	Provides back-up to on-the-ground resources. Improves suppression capabilities in inaccessible areas where use of ground resources would threaten firefighter safety. Improves response time to aid in protection of life and property.	5 years	2	Refer to Appendix C

ID	Project Description	Fire Department/Agency	Benefits of the Project to the community	Timeline	Priority (1-3)	Resources/funding sources available
FC8	Where road systems are antiquated and do not provide for proper evacuation or two way flow, require removal of obstructions or upgrade to minimum 2 lanes road system over time	County Planning	Alleviates evacuation concerns of residents living in areas with poor ingress/egress. Provides for improved response capabilities and reduces risk that responding emergency vehicles will conflict with evacuation of residents.	2 years	1	Homeowner Associations, Road Associations, County Service Areas
FC9	Where possible encourage setting up water sources with multiple uses (e.g. fire suppression and wildlife water, cattle water, etc)	FireSafe Councils working with communities.	Provides for use of livestock and wildlife water tanks that could be utilized for fire protection.	1 year	3	Refer to Appendix C
FC10	Investigate potential for use of drones to assess and monitor wildfire	County Fire	Drones could be a useful tool for the monitoring of wildfire in areas with limited access but future research is needed to fully assess their utility and application. The fire departments could launch a pilot study to determine effectiveness of the tool.	Within 3 years	3	Refer to Appendix C
FC11	Investigate and potentially install Fire Detection Robots to alert departments of a fire start in remote areas.	County Fire	Uses technology for single-tree wildfire detection solution that help forestry agencies and fire protection professionals manage the risks of fire damage cost-effectively.	Within 2 years	1	Private companies provide robotic technology i.e.: Insight Robotics http://www.insightrobotics.com/solutions/wildfire-detection Wildland Detection Systems http://www.wildlandsystems.com/ Fire Alert MK1 http://vigilys.com/technology/firealert/

ID	Project Description	Fire Department/Agency	Benefits of the Project to the community	Timeline	Priority (1-3)	Resources/funding sources available
FC12	Implement County wide program to replace existing house number markers with reflective markers that meet consistent standard.	County Fire	Improves fire response times and assists out-of-town responders who are not familiar with the local area, especially at night. Would need funding to implement program. Could consider private contributions.	Within 1 year	1	SCCFSC
FC13	Develop a coordinated approach between fire jurisdictions and water supply agencies to identify needed improvements to the water distribution system, initially focusing on areas of highest wildfire hazard.	County Fire, CAL FIRE, FireSafe Council, San Jose Water and other local water purveyors	Improve fire-fighting response if water is more readily available or closest locations could be identified on a GIS map on a tablet/computer.	Within 2 years	1	County Fire
FC14	Where possible encourage sharing of water sources in areas where residential water supplies may be low or non-existent during periods of drought or when wells/springs have run dry	fire agencies, local community organizations, local water purveyors	Encouragement and assistance from FireSafe Council can provide a catalyst for action. Example: Loma Prieta Fire Department is providing small grants to home owners to purchase and install additional water tanks on private residential lots where a reliable supply of water exists. These tanks then provide water for adjacent properties where a well or spring may be seasonal or dry	1-5 years	1	County Fire
FC15	Where Open Space and Park Agencies establish trail head parking areas, operating facilities such as horse stables and camping areas that will increase public access add large capacity water tanks and hydrants for wildfire protection	County Fire	Alleviates public and agency concern for limited water supply in remote areas.	Within 5 years	3	County Fire This could eventually be amended into the building code for Santa Clara County.

6.5.6 RECOMMENDATION FOR FUELS REDUCTION PROJECTS

The purpose of any fuels reduction treatment is to protect life and property by reducing the potential for catastrophic wildfire, as well as to restore landscapes to a sustainable and healthy condition. Fuels should be modified with a strategic approach across the planning area to reduce the threat that high intensity wildfires pose to lives, property, and other values. Pursuant to these objectives, recommendations have been developed in the context of existing and planned fuels management projects.

Table 6.7 summarizes the types of treatments recommended throughout the planning area. The majority of the treatments are focused on high or extreme risk areas, as defined by the Composite Risk/Hazard Assessment, Core Team collaboration, and public input. Many of these treatment recommendations are general across the communities because similar conditions and concerns were raised for all communities that border wildland areas. Table 6.7 addresses the requirement for an action plan and assessment strategy by providing monitoring guidelines and a timeline for implementation. This timeline is obviously dependent on available funding and resources, as well as environmental compliance parameters for treatments on public lands.

The treatment list is by no means exhaustive and should be considered purely a sample of required projects for the future management of the planning area. Many projects may be eligible for grant funds available from federal and/or state sources. For a list of funding sources please refer to Appendix C.

Fire management cannot be a one-size-fits-all endeavor; this plan is designed to be flexible. Treatment approaches and methods will be site-specific and should be adapted to best meet the needs of the landowner and the resources available. Moreover each treatment recommendation should address protection of CVARs, particularly the protection of threatened and endangered species. It is the intent of this plan to be an evolving document that will incorporate additional areas of the CWPP planning area as they change in risk category over time.

Table 6.7. Fuel Reduction Treatment Recommendations

ID	Project Description	Location and Responsible Party	Method	Serves to:	Timeline for Action	Priority (1,2,3)	Monitoring	Resources/funding sources available
FR1	Incorporate single track trails into fire defense system where practical	Santa Clara County and other SF Bay area counties. MROSD; County Parks, County Open Space, CA State Parks, Palo Alto Parks, San Jose Parks, and other municipal park agencies.	Strategic plan to incorporate fire defense improvements on open space properties. Detailed analysis would be needed in development of treatment location to ensure protection of natural resources. Should incorporate a map component and use the Earthquake Clearinghouse exchange core to facilitate project development.	Provide access when fires occur to reduce spread Enhance Community fire defense	Ongoing-LONG RANGE	1	Regular monitoring to determine project success in reducing fuel loading and enhanced access.	Grants: SRA, CA FSC; CFIP; NRCS, FEMA, GHGRF Fund sustainability efforts through the property owner/manager, or local/state agency that is the responsible party.
FR2	Work with Park and Open space to have some road width trails for better access	County Open Space Authority, MROSD, , State Parks, County Parks, Palo Alto Parks, San Jose Parks, and other municipal parks that bound up to the WUI.	Maintain road width trails for fire and park patrol vehicles where possible to facilitate access Use trails as fuel breaks Should incorporate a map component and use the Earthquake Clearinghouse exchange core to facilitate project development.	Protect life and property by improving access for emergency vehicles to open space areas and WUI areas adjacent to open space.	Within 2 years	1	Regular maintenance schedule should be implemented to ensure clearance levels are maintained.	Refer to Appendix C

ID	Project Description	Location and Responsible Party	Method	Serves to:	Timeline for Action	Priority (1,2,3)	Monitoring	Resources/funding sources available
FR3	Encourage continued grazing in parks and open space for grass/light fuel maintenance	County Parks, MROSD, County Open Space, State Parks, water company/district properties	Utilize browsing as fuel reduction and maintenance technique, especially adjacent to WUI areas	Reduce fuel loading of fine fuels that could increase wildfire spread to WUI areas.	Ongoing	2	Regular monitoring needed to ensure against environmental damage and invasive species.	Grants: SRA, CA FSC; CFIP; NRCS, FEMA, GHGRF
FR4	Encourage use of prescribed fires where ecologically sound and feasible	All jurisdictions where appropriate	Utilize prescribed burn planning that follows agency and regulator protocols. Closely follow plan prescriptions	Reduce fuel loading of fine fuels and understory species to mitigate potential for intense fire behavior in the event of an unplanned ignition.	Ongoing	1	Regular monitoring needed to ensure against environmental damage and invasive species into burned areas. Monitoring to determine project success in reducing fuel loading.	Grants: CAL FIRE VMP program, SRA, CA FSC, CFIP, NRCS
FR5	Land management agencies partner for clarity of prescribed fire use that is complementary to Greenhouse Gas Reduction plan of CA Air Resources Board	MROSD; County Parks, County Open Space, CA State Parks, Palo Alto Parks, San Jose Parks, and other municipal park agencies; private rangeland owners	Establish prescribed burning program in partnership with Bay Area Air Quality Management District Develop prescribed burning community of interest/council	Open dialogue with APCD Educate public Encourage landowners Provide expertise	ongoing	3	Regular monitoring to determine project success in reducing fuel loading through prescribed burning.	Grants: CAL FIRE VMP program, SRA, CA FSC, CFIP, NRCS

ID	Project Description	Location and Responsible Party	Method	Serves to:	Timeline for Action	Priority (1,2,3)	Monitoring	Resources/funding sources available
FR6	Adopt common powerline clearance standards for WUI in LRA and SRA	County in conjunction with utility companies.	Compare powerline clearance ordinances in all local WUI jurisdictions Coordinate with power utility providers to understand impacts and legal pathways Where necessary adopt local ordinances consistent with intent of CA Public Resources Code sections Utilize EQ Clearing House exchange core to facilitate project development.	Reduce fuel loading around critical utility infrastructure. Reduce potential for fire starts from downed lines and line strikes.	Within 2 years	1	Regular maintenance schedule should be implemented to ensure clearance levels are maintained.	CA Public Resources Code and Office of Administrative Law for guidance. Funding needs to be determined after impact assessment
FR7	Develop roadside fuel treatment program, including suite of methods available and sustainability mechanism	All jurisdictions where appropriate. CAL TRANS, County and city road agencies; private road associations, PG&E, Cable and Phone companies.	Determine suite of treatment methods allowed and restriction for roadside hazard reduction including mowing, mastication, chemical, plantings, mulching, etc. Develop treatment plan and rotation schedule for roadside treatments, focusing of primary evacuation or access/egress corridors.	Reduce fuel loading around roads and highways to ensure safe passage of vehicles in event of evacuation and reduce unplanned ignitions from vehicles and highway users.	Within 2 years	1	Regular maintenance schedule should be implemented to ensure clearance levels are maintained. Develop standards for road crews.	Grants: SRA, CA FSC; CFIP; NRCS, FEMA, GHGRF

ID	Project Description	Location and Responsible Party	Method	Serves to:	Timeline for Action	Priority (1,2,3)	Monitoring	Resources/funding sources available
FR7			Develop map that highlights critical routes. Track with the Earthquake Clearinghouse exchange core					
FR8	Develop list of fuel treatment methodologies with cost per acre/day/ (other metric) that can be used for hazardous fuel treatment	FireSafe Council	Educational tool for land /property owners re: various methods, techniques, and cost for various fuel treatments. Cost estimator for project management and grant applications Pros/cons/restrictions on use of various techniques	Provide residents with a usable list that helps them to prioritize treatments and plan their defensible space projects.	Within 1 year	1	Monitor effectiveness of different treatment approaches and implement adaptive approach for updating the list depending on uptake of various methods.	NPS, U.S. Forest Service, CAL FIRE, PG&E resources of techniques in use and cost/benefit
FR9	Establish assistance program for hazardous fuel reduction for physically or fiscally challenged parcels	Throughout all jurisdictions in the County	Identify barriers to achieving parcel level defensible space and establish assistance program of resources: education, consulting, guidance, people, funding Establish subsidy or other assistance programs	Ensure that individual properties with poor property hygiene do not put adjoining properties at risk in event of wildfire. For residents who are not capable of implementing good property hygiene.	Within 2 years	2	Establish levels of participation by assistance type	Grants: SRA, CA FSC; CFIP; NRCS, FEMA, GHGRF

ID	Project Description	Location and Responsible Party	Method	Serves to:	Timeline for Action	Priority (1,2,3)	Monitoring	Resources/funding sources available
FR10	Develop agency partnership to establish creation of hand crew for fire hazard reduction- need not be a fire crew	County Fire, CAL FIRE, County Sheriff, CCC,	Establish a local based crew for use in fire defense improvement work throughout the county Can be through private resources, contract with CCC, or Sheriff	Primary purpose is to carry out CWPP objectives	Within 3 years	2	Monitor cost effectiveness through benefit cost ratio approach	Grants: SRA, CA FSC; CFIP; NRCS, FEMA, GHGRF
FR11	Create Sustainable programs for creating Defensible Space at the parcel Level.	Home Owner, FireSafe Councils, Home Owner Associations, Local fire Departments, Administrators for SRA fee distributions, etc	Example projects - Curbside green waste pickup programs, community chipping piles, drive-up chipping, on site chipping.	Ensure that defensible space actions are sustained in all communities	Within 1 year	1	Regular maintenance schedule should be implemented to ensure clearance levels are maintained.	Grants: SRA, CA FSC; CFIP; NRCS, FEMA, GHGRF
FR12	Integrate LHMP with the Open Space District	County Planning	Outlined in LHMP as a primary WUI mitigation action. Refer to LHMP. Chapter 7, page 7-10.	Address open space areas with a countywide strategy in order to protect life safety.	Within 5 years	2	Annual review of status	County funding

Figure 6.4 illustrates past, present, and future fuels treatments on private and public lands in the planning area. Note that future potential treatments included in this document are conceptual and have not been field verified for viability and in some cases would have to undergo the environmental compliance process to assess their impacts on natural and cultural resources. The best type of fuels treatment for each area would be determined during this process, which incorporates thorough public scoping.

Note: Although fuel treatments are designed to help to mitigate high intensity fire behavior and allow firefighters access for suppression efforts, no fuel treatments suggested here can be 100% guaranteed to protect life and property, particularly when environmental conditions are primed to create catastrophic fire behavior.

NOTE: The following figures headings are placeholders for maps that will be added to the final document. The Public are asked to review the KMLs provided with the Draft document and provide comment. Following review the KMLs will be mapped and incorporated into the document.

Figure 6.4. Fuel treatment map (existing and proposed)

Figure 6.5. Fuel treatment map (existing and proposed)

Figure 6.6. Fuel treatment map (existing and proposed)

Figure 6.7. Fuel treatment map (existing and proposed)