Community Wildfire Protection Implementation Plan
ECHO HILLS AREA
INCLUDING:
Echo Hills, Bergen Park Estates
Castlewood West, Ewi,
Imes, Timber Place

Updated Final-3-31-2014
CWPIP Certification

The Echo Hills Area Community Wildfire Protection Implementation Plan (CWPIP) was developed in accordance with the guidelines set forth by the Healthy Forests Restoration Act (2003) and the Colorado State Forest Service’s Minimum Standards for Community Wildfire Protection Plans (CWPP) (Revised 2010).

This Plan is under the umbrella of the Evergreen Fire Protection District CWPP. As such it provides local analysis and implementation recommendations for the Echo Hills area. The plan:

- Was collaboratively developed – residents, interested parties local government and stakeholders. State and federal agencies managing land in the region of Empire were consulted;
- Identifies and prioritizes areas for hazardous fuels reduction treatments and recommends the types and methods of treatment to reduce the wildfire threat to values at risk in the area;
- Presents measures to reduce the ignitability of structures throughout the plan area.

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

Susan Musgrove (For the Team)  3/10/14  Date

Evergreen Fire Protection District  3/10/2014  Date

Clear Creek Office of Emergency Management  3/10/14  Date
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Section 1: COMMUNITY WILDFIRE PROTECTION PLANNING

The Echo Hills Area Community Wildfire Protection Implementation Plan (CWPIP) provides an assessment of neighborhood wildfire risks and hazards and outlines specific mitigation treatment recommendations designed to make the community a safer place to live, work and play. It will enable the community to live with fire as a natural part of the landscape ecosystem. Specifically, it is a strategic plan which informs and encourages home owners to create defensible space and achieve fire resistant structural integrity, and makes recommendations for the US Forest Service, Colorado Parks & Wildlife, Denver Mountain Parks, and Clear Creek County concerning mitigation actions. The recommendations identify road corridor mitigation treatments and fuels treatment projects in order to achieve risk reduction.

As is the case in any CWPIP much of the community land involved is private land. It is extremely important for land owners to take action to create Defensible Space on their land. A section of the plan demonstrates what can be done while still leaving property attractive. A land owner does not have to clear cut their property to achieve defensible space against wildfire. But without collaborative, neighborhood action the damage to homes or other buildings can be significant.

There are many values at risk for this area. Some of those include life, property, watershed values, power lines, wildlife, and recreation.

Once the CWPIP is finalized and adopted, it is the responsibility of the community to move forward and implement the action items. This may require further planning at the project level, acquisition of funds and assistance through grants or other means, or simply motivating individual homeowners. It should be emphasized that the CWPIP is a living document to be revisited on a regular basis and revised as needed… THIS IS A PROCESS, NOT A SHELF DOCUMENT!!

The Team – Local residents and agencies involved in developing this plan:
- Residents of the Echo Hills Area
  - Susan Musgrove-Team lead; Gary Brozek; Mary Pat DeWald, Mark & Kate Engelhard; Jenny Good; Jim Jensen; John Lamas; Kim Marquart, Mary Millard, Terry Peart, Diane Pederson; Ken & Mariana Sons; John & Kate Timmins; Tom Wellbrock; Art Whyte.
- John Chapman; Team Facilitator
- Clear Creek Office of Emergency Management: Kathleen Krebs
- Contacts and Input:
  - US Forest Service input: Natalie Angell, Kevin Zimlinghaus (Arapaho/Roosevelt National Forest
  - Evergreen Fire Protection District: Mike Weege (Chief); Doug Saba (Fire & Life Safety Educator)
  - Denver Mountain Parks: Dick Gannon, Andy Perri
  - Colorado Division of Parks and Wildlife: Will Spence
There is no legal requirement to implement the recommendations in this CWPIP. This is also the case for CWPPs. As stated in the Clear Creek County CWPP, treatments on private land may require compliance with county land use codes, building codes, and local covenants. Treatments on public lands are carried out by appropriate agencies and may be subject to federal, state, and county policies and procedures such as adherence to the Healthy Forests Restoration Act (HFRA) and National Environmental Policy Act (NEPA).

The Challenge
Decades of aggressive fire suppression in fire-dependent ecosystems, coupled with persistent drought, disease and insect infestation, have all converged to create a threat that is increasingly commanding both national attention and substantial resources. Following a particularly bad fire season in 2000, Congress put forth The National Fire Plan and the Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment 10-Year Comprehensive Strategy. The intent of these programs was to enable effective response to severe wildland fires and to better address their impact on communities.

In the Healthy Forest Restoration Act (HFRA) of 2003, Congress directed communities in the Wildland/Urban Interface (WUI) to prepare a Community Wildfire Protection Plan (CWPP). Once completed, a CWPP provides statutory incentives for the US Forest Service (USFS) and the Bureau of Land Management (BLM) to give consideration to the priorities of local communities as they develop and implement forest management and hazardous fuel reduction projects. It also provides the impetus for local communities to engage in wildfire management planning and defensible space actions.

The HFRA provides communities with a flexible set of assessment procedures and guidelines that facilitate a collaborative standardized approach to identify wildfire risks and prioritize mitigation actions. A CWPP addresses such factors as:

- Stakeholder collaboration;
- Public agency and local interested party engagement;
- Mapping;
- Risk assessment – fuels, historical ignitions, infrastructure, structural ignitability, local resources, and firefighting capability;
- Hazard reduction recommendations; and
- Strategic action plans.

Echo Hills is located within Evergreen Fire Protection District. The Community Wildfire Protection Implementation Plan (CWPIP) for Echo Hills is under the umbrella guidance of the Evergreen Fire Protection District (EFPD) CWPP. This CWPIP references data in that plan as appropriate. The Evergreen plan contains detailed information on the area, wildfire history, characteristics and hazards, and evaluations of areas with recommended actions. Readers should become familiar with the EFPD plan as well as this CWPIP. The Echo Hills CWPIP focuses on hazard analysis and mitigation recommendations for this area. These recommendations will enable the community to seek grant and resource assistance, and deal directly with residents in education, information and project work. It is noted that inclusion of the Echo Hills area in the EFPD CWPP enables residents to qualify for the CO state tax advantage for defensible space work on their individual properties. But the CWPIP for Echo
Hills provides priority selection and definition of broader scope mitigation projects necessary for community effort into the future.

This CWPIP provides wildfire hazard and risk assessments and mitigation recommendations for the Echo Hills community situated between 9,300 and 9,600 feet elevation along both sides of Sinton Road as it runs west to east off of Squaw Pass Road 5.9 miles west of Evergreen Parkway.
Section 2: THE ECHO HILLS AREA & COMMUNITY RISK ANALYSIS

2.1 The Plan Area: Topography and Vegetation

The CWPIP area (See following map) encompasses the Echo Hills Area as identified in the CCC CWPP and the EFPD CWPP. The area is along Sinton Road south of the Squaw Pass Road, west of Evergreen. It occupies an ecosystem niche in the montane system. The plan area includes a buffer zone surrounding the immediate neighborhoods which was considered in plan recommendations. The neighborhood areas of private properties are surrounded by lands under management of the US National Forest Service (Arapaho and Roosevelt National Forest), Colorado Division of Parks and Wildlife, and Denver Mountain Parks. The life zones involved are described in: “Colorado Life Zones: Seasons, Plants, & Animals.”

“The Montane Ecosystem occurs at elevations between approximately 8,600 and 10,000 feet. Dry, south-facing slopes of the Montane often have open stands of large ponderosa pines. Spacing of ponderosa pines is somewhat related to available soil moisture. Grasses and shrubs may grow between the widely spaced trees on dry slopes. North aspects of the Montane retain more soil moisture and support denser stands of conifer that are less drought resistant. The trees may be a mixture of Douglas fir, lodge pole pine, ponderosa pine and an occasional Engelmann spruce. Shade-tolerant plants may grow on the forest floor. Montane soils with high moisture content may support groves of quaking aspen. Along streams or the shores of lakes may be found: willows, mountain alder, and water birch. In a few places, blue spruce may grow near streams and sometimes hybridize with Engelmann spruce. Trees common to Clear Creek County’s Montane Ecosystem include ponderosa pine, Douglas fir, lodge pole pine, and quaking aspen. Common shrubs include antelope bitterbrush, kinnikinnick, common juniper, holly grape, wax currant, big sage, and rocky mountain juniper.”
Figure 1: Echo Hills’ CWPIP area boundary
Figure 2: Echo Hills’ CWPIP area vegetation
2.2 Neighborhoods and Hazard Assessments

Community Risk Analysis
Following are the physical descriptions and fire hazard assessments for the Echo Hills Area CWPIP (including Echo Hills, Bergen Park Estates, Castlewood West, Ewi, Imes, and Timber Place). These descriptions are from the Community Assessment Surveys in the Clear Creek County CWPP and the Evergreen FPD CWPP. Those plans should be referred to for overall area hazard analysis and fire history. The Echo Hills Area neighborhoods are rated as extreme risk.

Areas shown in green are units recommended for mitigation treatment. They were mapped and evaluated and selected treatments recommended. These appear in Section 4 as priority recommendations for implementation.

Values at Risk
The team considered values at risk and, in order, selected: life and property; transportation and power line corridors; water supply infrastructure, area setting (wildlife and vegetation).

- **Life & Property**: Protection of life is first in consideration by residents and by emergency services. Protection of property, both personal and business, is the second most important concern to maintain the integrity and stability of the community.

- **Critical Power Infrastructure**: Improve and maintain existing utility right-of-way fuelbreaks. Ensure right-of-way around power lines is free of trees or limbs that may cause damage. Wholesale clear-cutting has been rejected as not prudent for both environmental and cost considerations. The most desirable method of treatment is to cut a swath in a mosaic pattern around the power poles and under the lines. This will minimize the visual effect of clear cutting a straight swath across the land. In accessible areas a Hydro-axe or similar implement can be used to complete this work.

- **Water Supply Infrastructure**: The area is adjacent to and part of the Castlewood Creek drainage which is considered an important part of the overall area watershed in the CO-WRAP summary for the area.

- **Roadways and Transportation**: Echo Hills is accessed via Sinton Road, a 1 mile one-way-in, one-way-out road off of the Squaw Pass Road. It is vital to local transportation for residents as well as for emergency evacuation and access by emergency units. The roadways within the area itself are not all are maintained by the county. The county has stated:

  - It has jurisdiction...“Only on the roads that are platted in a subdivision plat. There are a few that came in afterward that are private such as Nokomis Trail, Bear Rock Road, and Bear Claw Lane.”
  - Regarding maintenance, the county has stated: “The roads the County Does not Maintain are: Hill Circle, Lodgepole Circle, Martin Drive, Nokomis Trail, Castlewood Drive (north of Nokomis Trail), Aspenwood Lane, Bear Rock Road, Tract E, Juniper Court, Bear Claw Lane, Tract D, and Sinton Road (east of Juniper Court). The only loop that is not completely maintained is Castlewood/Aspenwood.”
• **Wildlife:** The area has important mountain wildlife species needing adequate habitat and protection, and is immediately adjacent to the Bergen Peak State Wildlife Area to the south and Denver Mountain Parks’ Pence Mountain area to the north.

The following pages contain the neighborhood hazard ratings and recommendations developed in the Clear Creek County Community and Evergreen FPD CWPPs.
Appendix D – Community Wildfire
Hazard and Risk Assessments

Echo Hills - EFPD

Community Hazard Assessment

Community Design
110 observed homes. Single paved access from Co 103 climbs 600 vertical feet through a topographic chimney to subdivision. Secondary roads groomed and unpaved. All roads are 1½ to 2 lanes with the exception of a group of steep narrow roads in the upper Castlewood Gulch area. 1 out of 14 dead ends has a turnaround. Housing density is moderate with a predominance of 1 acre lots with majority on slopes exceeding 20%. Majority of home sites have <30 feet defensible space. Construction and roofing materials primarily combustible. One cistern was observed at the east end of the subdivision.

Fuels
Predominant north aspect and high elevation favors the growth of dense stands of Lodgepole pine. In Echo Hills, many stands are over-mature With large amounts of timber litter on the ground in addition to short needle conifer litter. FBFM 2, 8, 10.

Mitigation Recommendations
Improve defensible space where needed and reduce structural ignitability through phased building improvements or new construction. Shaded fuelbreaks along forested primary and secondary access roads including designated emergency access routes. Fuel reduction in identified treatment zones. Develop and maintain emergency access to Old Squaw Pass Road through Castlewood Gulch. Emergency water source development at subdivision entrance. Safety zone development and access improvement in meadow south of Sinton Road. Street signage, home addressing, and turnaround improvements. Community training for “shelter-in-place.”
### Evergreen Fire Protection District CWPP – P.B-11

#### Wildfire Fire Risk and Hazard Severity Form NFPA 1144

**Echo Hills, Oldsmoad Area**

<table>
<thead>
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<th>Means of Access</th>
<th>WUI Hazard Rating</th>
<th>R Value</th>
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</table>

**WUI Hazard Rating**

- **R Value**: 2

**Wildfire Risk and Hazard Severity**

- **Description**: 780 acres; 110 observed homes; elevation 9,000 to 9,800 ft; subdivision is located on the north aspect of the ridge that runs between Bergen Peak and the Mount Pace/Snyder Mountains saddle; single access from CO 103 climbs 600 vertical feet through a topographic chimney to subdivision; entrance is paved then groomed improved roads throughout; all are 1½ to 2 lanes with the exception of a group of steep narrow roads in the upper Castlewood Gulch area; 1 out of 14 dead ends has a turnaround; standard street signage was observed for 50% of the roads; home addressing inconsistent; housing density is moderate with a predominance of 1 acre lots with majority on slopes exceeding 20%; defensible space – 69% < 30°, 31% 30° to 70°; roofing – 82% asphalt, 8% wood shake, 19% non-combustible; construction – 98% combustible siding; utilities are above ground; one fire was observed at the east end of the subdivision.

**Vegitation**

- 45% medium, 55% heavy; predominant north aspect and high elevation favors the growth of dense stands of Lodgepole pine; in the Echo Hills WUI many of these stands are over-mature with a large amount of timber litter on the ground in addition to short needle conferifer litter.

**Recommendations**:

- Defensible space improvements including fuel reduction, seasonal mowing, and slash disposal; reduce structural ignitability.
- Shaded fuel breaks along forested primary and secondary access roads including designated emergency access roads.
- Fuel reduction in identified treatment zones.
- Develop and maintain emergency access to Old Squaw Pass Road through Castlewood Gulch.
- Emergency water source development at subdivision entrance.
- Safety zone development and access improvement in meadow south of Sinton Road.
- Street signage, home addressing, and turnaround improvements.
- Community training for “shelter-in-place.”
Section 3: WILDLAND FIRE RESPONSE: INFRASTRUCTURE AND CAPABILITIES

A Community Wildfire Protection Implementation Plan addresses existing protection capabilities and resources on hand for wildfire suppression and protection of life and property. As this plan is being implemented under the Evergreen FPD CWPP those wishing to read detailed information on capabilities should refer to the CWPP for Evergreen Fire Protection District and to the fire protection district’s website.

Evergreen Fire Protection District:
By agreement, wildland firefighting operations on Echo Hills’ private lands within CCC are the responsibility of the Evergreen FPD. The EFPD is responsible for initial attack on any wildland fire within its response jurisdiction. The EFPD is comprised of 80 volunteer firefighters, and 30 full time and 11 part time paid staff.

EFPD maintains eight stations. It has over 40 apparatus units.

This response capability, combined with good quality equipment and apparatus, provides a strong foundation for building a wildland fire suppression organization.
Section 4: IMPLEMENTATION ACTIONS AND RECOMMENDATIONS

An important and required part of a Community Wildfire Protection Implementation Plan is the recommendation of mitigation projects detailing actions that should be undertaken by the community, landowners, and adjacent land management agencies (county, state and/or federal). Public land projects, when combined with home owner defensible space and structural protection, collaborate to provide area wide protection.

Wildfire mitigation is defined as the reduction of the probability and negative impacts of wildfire. Mitigation can be accomplished through wildland fuels management, non-fuels mitigation measures, and public outreach. Results are often most effective when these three approaches are pursued by governmental entities, citizen groups, and individuals working together. To quote the Clear Creek County CWPP:

“Mitigation objectives ultimately support the overarching goal of enhancing the safety and welfare of the county’s residents and emergency responders. This is achieved by reducing the threat of catastrophic wildfire through strategic fuels reduction, reducing structural ignitability, and making infrastructure improvements that facilitate access and enhance suppression capabilities. Sustaining community outreach through education and public relations efforts are equally important factors. Effective mitigation needs the support of the residents.”

In the coming pages are sections detailing priority mitigation projects selected for the Echo Hills Area Implementation Plan. As projects are completed or conditions change additional projects will be added in ongoing action by the CWPIP team.

Following analysis of the data collected during development of the CWPIP (including the CCC and Evergreen CWPPs) the team is recommending a number of projects for initial action. The following pages contain a description of various defensible space and forest fuel mitigation actions, and maps and descriptions of the recommended mitigation projects.

They are collaborative in nature as to priority projects and areas in which to carry out work. Quoting the Evergreen CWPP:

“Effective wildfire mitigation can be accomplished through a variety of methods including reducing hazardous fuels, managing vegetation, creating defensible space around individual homes and subdivisions, utilizing fire-resistant building materials, enhancing emergency preparedness and response capabilities, upgrading current infrastructure, and developing programs that foster community awareness and neighborhood activism. Once implemented, these actions will significantly reduce the risk of loss due to wildfire to an individual home, and on a larger implementation scale, to an entire community.”

As much as possible, projects were established to include areas with common features. Among the features considered were forest types, fuel loads, ingress and egress routes, and values. Consideration was given to a number of factors. These are:
1. **Values at risk:** Life and property are always the first values. Other values as mentioned earlier are: transportation and utility corridors and the natural values of vegetation and wildlife.

2. **Current level of activity:** Experience has shown that wildfire mitigation efforts are most effective when the community is involved. One of the first efforts is to educate land owners to increase awareness of the hazards of wildfire and the positive actions they can take on their properties.

3. **The important actions that residents should take:** A major component of a Community Wildfire Protection Implementation Plan is the actions private land owners can and should take to provide protection to life and property.

4. **Proximity to public lands priority zone:** The Healthy Forest Restoration Act builds on efforts to restore healthy forest conditions near communities and essential community infrastructure. The Act emphasizes the need for federal agencies to work collaboratively with communities in prioritizing and developing hazardous fuel reduction projects. In the Empire area the US Forest Service manages the surrounding landscape.
4.1 Mitigation Techniques to be applied

As stated in the CCC CWPP, "Mitigation works. It is entirely possible to create a cleaner, healthier, natural environment where forest fuels cannot support a crown fire. Reducing surface fuels and limbing low tree branches inhibits the initiation of crown fire. Forest thinning reduces crown fire propagation by breaking canopy continuity and forcing the flaming front to the ground. This reduces fireline intensity, significantly lowers the risk of structure loss, and creates a safer situation in which to deploy suppression resources."

4.1a Structure Defensible Space – The Land owner

Defensible space is an area around a structure where fuels and vegetation are treated, cleared or reduced to slow the spread of wildfire towards the structure. It also reduces the chance of a structure fire moving from the building to the surrounding forest. Defensible space provides room for firefighters to do their jobs. Your house is more likely to survive a wildfire if grasses, brush, trees and other common forest fuels are managed to reduce a fire’s intensity.

You, as residents of the Echo Hills area, are the most important component of this plan! Homeowners are often discouraged from completing defensible space because they believe their lot sizes are too small for effective fuel mitigation. But your actions are truly meaningful in protecting life, property, and the beauty of the area. Wildfire is a natural part of an ecosystem. The actions you take will determine how fire affects your property.

To quote the Colorado State Forest Service, "Fire is capricious. It can find the weak link in your home’s fire protection scheme and gain the upper hand because of a small, overlooked or seemingly inconsequential factor" (Natural Resources Series #6.302, Creating Wildfire Defensible Space Zones).

You do not have to clear cut your property! Defensible space can be created in an esthetically pleasing manner that maintains privacy and the natural character of the community, and restores forest health.

It is recommended that defensible space be developed around all structures in the planning area. The CWPIP cannot mandate a property owner take any action. It is hoped residents in the area will see how defensible space can be attractively created and realize when everyone takes action the broader neighborhood landscape is protected. The advantage of the CWPIP is that it provides a framework for individuals and neighbors to work together to reduce fire hazard and restore forest health. Communities with a CWPP are eligible for cost share programs. Defensible space will be created following CSFS guidelines, Creating Wildfire Defensible Zones, Bulletin No. 6.302 (Dennis 2003).

Research indicates homes with fire resistant roofs and defensible space have an 85 percent chance of surviving a wildfire while homes with neither of these characteristics...
**have a 15 percent survival rate.** An effective defensible space consists of flame resistant vegetation (aspen or large diameter trees without lower limbs), low flammability landscaping plants, mowed grass, lack of firewood stacks, and absence of fuel tanks immediately adjacent to structures. Structural ignitability is the fire resistance of materials used in the buildings themselves, and the design of the structure.

![Image of defensible space zones](image)

**Figure 3: CSFS Defensible Space Standards (Dennis 2003)**

The installation of a defensible space consists of three zones that can be adapted to specific building lot situations (See above).

**Zone 1** extends from 30 to 100 feet from a structure in which 3 to 5 feet are a non-combustible zone consisting of such things as decorative rock. In the remainder of Zone 1, fire-resistant plants are acceptable for landscaping. Trees should be avoided but if allowed they will be considered part of the structure and Zone 1 extended proportionally. The lower branches of trees will be pruned 5 to 10 feet above the ground (not to exceed one-third of the tree height). Woody and herbaceous plant debris, tall grass, and ladder fuels (low limbs, small trees, and shrubs that may carry fire into tree crowns) will be removed from this area. Leaves and overhanging branches will be removed from roofs. Leaves will be removed from under porches. Woodpiles will be removed and stored uphill in Zone 2.

**Zone 2** width (typically 30 to 110 feet from Zone 1) depends upon the steepness of the slope. Zone 2 should be considerable larger if the dwelling occurs on steep slopes than if it occurs on level ground. Treatment of ground fuels and ladder fuels will be the same as Zone 1. Trees (or small groups of trees) and shrubs will be thinned to provide 10 feet of clearance among crowns on level ground. The distance between tree crowns needs to increase as slope increases. Herbaceous plants will be mowed as they dry in late summer.

**Zone 3** occurs beyond Zone 2 and extends to the property line. Zone 3 will be managed for the appropriate land use objectives, such as aesthetics, recreation, and/or wildlife habitat.
Zones 1, 2, and 3 will be maintained annually. Two publications that provide information on appropriate plants to use for defensible space landscaping have been prepared by CSFS: Grass Seed Mixes to Reduce Wildfire Hazard, Bulletin No. 6.306 (Dennis, not dated), and FireWise Plant Materials, Bulletin 6.305 (Dennis, not dated

Mitigation of Structural Ignitability

1. Most structures DON'T ignite from direct flame contact, but from radiant heat (heat that doesn't warm the intervening air but does warm objects). As a fire burns the heat passes through air and windows to objects inside the home that warm to the point of ignition then smolder for hours. **You have an important role making the house less resistant to radiant heat.** Use non-combustible roofing material and non-combustible siding (Class C or better), and spark arresters on chimneys.

2. **Embers or fire brands also ignite house fires.** During fires the air contains embers and tosses them anywhere, including onto unburned fuels. A wildfire can create spot fires miles downwind. Embers can get stuck in "traps" on roofing, such as beside chimneys or in gutters and start new fires. Clean pine needles out of gutters and off roofing. **Screen attic and foundation vents with fine mesh screening.**

3. **Large windows are a threat** to homes because they allow radiant heat to enter the structure. Remove lacey and other decorative curtains when a fire approaches to prevent radiant heat from igniting them through the glass. Large windows, especially single-pane windows, are vulnerable to breaking from debris blowing in fire-generated winds and embers. Double and triple pane windows are more resistant to heat transfer.

Signing and Evacuation; all Properties:

1. **Homes need visible address signing which are non-flammable and reflective** at the ends of their driveways. Emergency personnel respond based on street addresses and last names.

2. **Create an evacuation plan – in advance.** Include a meeting place outside your area, and a family member or friend outside of your area who can be a point of contact. Think of the Four Ps: Pets, Pills, Papers, and Photos. You may have only a short time to evacuate.

If you do leave the house, set a ladder in the driveway and connect garden hoses to spigots so firefighters can use your equipment to help defend your home.

Ready-Set-Go

Clear Creek County endorses the Ready-Set-Go program (RSG) of wildfire action planning for residents and other property owners. This program assists firefighters to teach individuals who live in high risk wildfire areas and the wildland-urban-interface (WUI) how to best prepare themselves and their properties against fire threats.

The RSG Program stresses that when firefighters encourage residents to take personal responsibility for preparing their property and family for wildland fire, residents become an active part of the solution to the problem of increasing fire losses.
RSG works in complimentary and collaborative fashion with Firewise and other existing wildland fire public education efforts. It amplifies the messages to individuals to better achieve the common goal we all share of fire-adapted communities.

The RSG Program is a three step process that can significantly increase the safety of residents and the safety of responding firefighters. The three steps are:
1) Ready – Preparing for the Fire Threat; Be Ready, Be Firewise. Take personal responsibility and prepare long before the threat of a wildfire so your home is ready in case of a fire.
2) Set – Situational Awareness When a Fire Starts: Pack your vehicle with your emergency items.
3) Go – Leave early! Comply with any evacuation orders and follow evacuation plans early!

The RSG Program provides tools through its website, www.wildlandfireRSG.org. A more complete description of the program is in Appendix D.

4.1b Fuel Break
A fuel break is an area where the vegetation structure and/or composition are altered to reduce severe fire behavior to provide firefighters a chance for control. Vegetation treatments could include such things as reducing biomass, thinning trees and shrubs, and/or removing ladder fuels. By breaking up vertical and horizontal vegetation-fuel continuity of the forest stands, fire suppression resources are afforded better opportunities to control fire rate of spread and contain wildfires. For mitigation actions under this plan the CSFS publications, Fuelbreak Guidelines for Forested Subdivisions and Communities, (Dennis, not dated) and Lodgepole Pine Management Guidelines for Land Managers in the Wildland -Urban Interface (Dennis et al) should be followed.

Stand Densities
As noted in CSFS publications, crown separation is a more critical factor for fuel breaks than a fixed tree density level. A minimum 10-foot spacing between the edges of tree crowns is recommended on level ground. As slope increases, crown spacing should also increase. However, small, isolated groups of trees may be retained for visual diversity. Increase crown spacing around any groups of trees left for aesthetic reasons and to reduce fire intensities and torching potential.

Fuel break Width/Slope

<table>
<thead>
<tr>
<th>Percent slope %</th>
<th>Minimum uphill distance (ft.)</th>
<th>Minimum downhill distance (ft.)</th>
<th>Total distance of modified fuels (ft.)</th>
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<td>240</td>
<td>340</td>
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*As slope increases, total distance for cut-and-fill for road construction rapidly increases, improving fuelbreak effective width.
Several fuel breaks are recommended in the Echo Hills CWPIP. The Echo Hills area is in the montane zone. The area has thick and aged stands of lodgepole pine and there is the potential for wind throw if fuel break thinning creates corridors in the forest. It is recommended that thinning be accomplished by leaving stands of trees separated from adjacent stands to create the desired spacing affect. This will assist these stands to be self-supportive when wind events occur. To create the fuel break, dead, diseased, weakened, and malformed conifer trees would be removed. This would include removal of diseased trees for mitigation of mountain pine beetle infestation.

The harvesting of conifer trees would occur as necessary to achieve the desired density of approximately 10- to15-foot spacing among tree canopies (Figure 5). Conifer trees would be limbed up approximately 10 feet from the ground and limbs removed. Ladder fuels, such as small trees and shrubs, are thinned out so that fire will not easily burn from the ground into the forest canopy. Aspen trees would not be harvested or harmed during the creation of the fuel breaks. Aspen are usually fire resistant and would add to the effectiveness of the fuel breaks. Increased Aspen dominance in forests stands will improve forest health and aesthetics. Aspen saplings should regenerate from root sprouting in the openings created by harvesting the dead and diseased conifer trees.

Logs and other woody material generated from creating the fuel breaks would be disposed through salvage log sales, hauling debris off site to a designated disposal area, or burned on site following CSFS, Golden District Prescribed Pile Burning Guidelines (CSFS, not dated). Salvage logging may be possible if harvested trees are sufficient in size and wood quality for post-harvest markets. An evaluation should be made to determine marketability of logs prior to logging. Burning the woody debris will require arrangements to be made with the CCFA and/or CSFS. A CCC open burning permit will be necessary.
## Treatment Alternatives and Costs (from CCC CWPP)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Estimated Cost</th>
<th>Comments</th>
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<tbody>
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<td>Machine Mowing</td>
<td>$90 - $200 per acre</td>
<td>Appropriate for large, flat grassy areas on relatively flat topography.</td>
</tr>
<tr>
<td>Prescribed Fire</td>
<td>$75 - $300 per acre</td>
<td>• Can be very cost effective.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Ecologically beneficial.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Can be used as training opportunity for firefighters.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Cost varies with complexity.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Carries risk of escape, which may be unacceptable in some WUI areas.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Unreliable scheduling due to weather and smoke management constraints.</td>
</tr>
<tr>
<td>Brush Mastication</td>
<td>$300 - $500 per acre</td>
<td>• Brush species (Gamble oak in particular) tend to resprout vigorously after mechanical treatment.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Follow-up treatments with herbicides, fire, grazing, or further mechanical treatments are typically necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Mastication tends to be less expensive than manual treatment and eliminates disposal issues.</td>
</tr>
<tr>
<td>Timber Mastication</td>
<td>$300 - $1,200 per acre</td>
<td>• Materials up to 10 inches in diameter and slopes up to 30 percent can be treated.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Eliminates disposal issues.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Environmental impacts of residue being left onsite are still under study.</td>
</tr>
<tr>
<td>Manual Treatment with Chipping or Pile Burning</td>
<td>$300 - $1,200 per acre</td>
<td>• Allows for removal of merchantable materials or firewood in timber.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Requires chipping, hauling, and pile burning of slash.</td>
</tr>
<tr>
<td>Feller Buncher</td>
<td>$750 and up per acre</td>
<td>• Mechanical treatment on slopes over 30 percent of materials over 10 inches in diameter may require a feller buncher rather than a masticator.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Costs tend to be considerably higher than mastication.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• May allow for removal of merchantable material.</td>
</tr>
</tbody>
</table>

The above cost estimates are several years old. The community CWPIP team should consult with the CO State Forest Service for current cost estimates as they move to implement a new priority project.

### 4.1c  Fire Break

A fire break is an area where vegetation has been removed to bare ground or replaced with non-flammable surface such as asphalt. The purpose of the fire break is to hopefully stop fire progression and improve fire suppression efforts. The Squaw Pass Road and County & US Forest Service Roads should be managed as firebreaks the entire length of the planning area to reduce the chances of fire caused from roadside ignition from spreading to the planning area. Herbaceous vegetation should be mowed approximately 10 feet on each side annually to further enhance its effectiveness.
4.2 Fuels Mitigation Projects

The Evergreen and Clear Creek County CWPPs contain maps of the various neighborhoods in the Echo Hills area, depicting suggested areas for fuels mitigation treatments. The areas contain private property and are located in terrain where mechanical treatment would be possible in selected areas. The CWPIP team has reviewed these recommendations and determined priorities for initial mitigation efforts.

Following is an overall map of the area showing where the various units are located. Following that are maps of the individual areas, in priority order, with the treatment recommendations described.

4.2a Private Land

- **Community Recommendations**
  - CWPIP team works with county and fire authority to provide information and education on wildfire hazards and behavior, defensible space and reduction of structural ignitability and other actions; use materials from FireWise, State Forest Service, and other available materials.
  - Team and community continue to hold work days (chipping and land owner assistance), demonstration days, and other community events to further project accomplishment.

- **Land Owner Recommendations:**
  - Land owners will be encouraged to create defensible space and reduce structural ignitability
  - Work to make driveways and approach roads better for ingress/egress (need to meet standards allowing access by fire personnel and equipment).
  - Form community work groups or seek other forms of more advanced assistance to complete projects.
  - Become involved in community CWPP efforts.

4.2b Community Evacuation and Project Considerations

Given the nature of the terrain the team identified action to mitigate fire effects along roadways as a critical component of implementation. Creation and maintenance of ingress/egress will enable residents to move and/or evacuate safely in the event of an emergency and also enable emergency vehicles and fire engines access to take action on wildfire to save lives, property, and the area itself. The Clear Creek County CWPP states an objective for a number of areas to, “Develop shaded fuelbreaks along all forested secondary community access routes. Anchor shaded fuelbreaks to meadows.”

General criteria to be applied: 1) steep, timbered slopes adjacent to the road; 2) close proximity of timber to the roadway itself (e.g. within 50 feet); 3) roads with only one way in and out.
The CWPIP team will collaborate with Evergreen Fire Rescue to develop a priority listing of roadways for thinning. Some are already in the priority recommendations.

**4.2c Development of Community Cistern**
Both CCC CWPP and EFPD CCWP mention the presence of, “One cistern was observed at the east end of the subdivision.” This presence is not known to the team or Evergreen Fire/Rescue. There apparently was consideration of locating a cistern in the area in the past. The only known cistern near the area is on Old Squaw Pass Road. The team will follow up to obtain data on the cistern issue to determine if a recommendation is warranted.
4.2d  Priority Mitigation Projects: Echo Hills Area

The following pages contain the priority projects and their descriptions as determined by the Echo Hills Area CWPIP team.

The priorities deal with potential reactivation of an emergency evacuation route, resident work on defensible space, thinning along the main access road by the US Forest Service, thinning along area roadways, and mitigation work in major areas along the southern border of the area.

The fuel break work along the southern perimeter was also recommended by the CCC CWPP. This hopefully will provide greater protection for wildfire approaching from the south by helping slow and lay down advancing wildfire.

The area is broken into several segments in this recommendation as lands are under differing management and each “unit” is treated separately in that regard: (see map P29).

- **Zone 1**: discussed in Priority 3;
- **Zone 2**: East from **Zone 1**; involving private lands. Described as a project in Priority 5.;
- **Zone 3**: East from **Zone 2** through the Bergen Peak Wildlife Area managed by Colorado Parks and Wildlife; described as a project in Priority 4;
- **Zone 4**: East from **Zone 3**; private lands. Described as a project in Priority 5
Figure 6: Fuel treatment zones 1-4 for the Echo Hills CWPIP area
Figure 7: Fuel treatment zones 5-6 for the Echo Hills CWPIP area
Recommended Priority 1
Maintenance of Castlewood Gulch Evacuation Route

The dynamics of this recommendation are currently under discussion between the community, Clear Creek County, Denver Mountain Parks, and Evergreen Fire Rescue. The below statement of the project will be updated as an edit to the final plan with results of discussions and future direction.

The Castlewood Gulch evacuation route (Zone 6, map P30) lies within the Denver Mountain Parks Pence Mountain area. The route as established was to be maintained for emergency evacuation purposes for the Echo Hills Area as well as a management tool for Denver Mountain Parks.

A 1986 Agreement between Clear Creek County and Denver Mountain Parks states that the route is to be constructed “for the purpose(s) of ingress and egress to improve and maintain a single lane roadway that is to be serviced through locked gates and be serviced for emergency purposes only, Said construction to include, but not limited to, the installation of drainage culverts as needed.”

The county completed initial reopening of the route, but no maintenance has been completed since that time and the road is not passable. The route has not been regularly maintained by Denver Mountain Parks due to lack of available funding. Conversation with Denver Mountain Parks has established that they understand the route could be an important emergency evacuation route if the main Echo Hills access is impassable due to wildfire. Evergreen Fire Rescue has also stated its support for maintenance of the Castlewood route for emergency evacuation purposes. The route is approximately .9 mi. in length.

A primary issue with the road is filling and overflowing of a culvert near the upper end. DMP will not authorize work by residents for liability reasons. They want Clear Creek County involved in any maintenance activity.

The route enters DMP land then leaves it for a short distance, crossing through three parcels of private property before re-entering DMP land for the remainder of the route to Squaw Pass Road. The CWPIP team has sent letters to the land owners of those parcels concerning access along the established route as it crosses their properties.

The Echo Hills team feels that maintenance of the Castlewood Gulch evacuation route is very important and is in the process of coordinating with Clear Creek County, Denver Mountain Parks, and Evergreen Fire Rescue to accomplish this task.
Figure 8: Treatment Zone 6; Castlewood Emergency Evacuation Route
Recommended Priority 2
Roadside Fuels Thinning within the Echo Hills area:
Sinton Road & Connected Roads

The CWPIP team recommends: perform thinning along Sinton Road and other residential area roads; thinning up to 50 feet on either side of selected roadways, following standard guidelines listed below. To accomplish this, the team will collaborate with Evergreen FPD and Clear Creek County to select priority routes from among roads to have mitigation work completed. Road recommendations made in the Evergreen FPD CWPP and Clear Creek County CWPP are listed at the end of this recommendation for consideration in the priorities. Selection of specific areas can enhance capability to obtain treatment crew/contract funding.

Both the Evergreen and Clear Creek County CWPPs contain maps of the Echo Hills area, depicting suggested areas for fuels mitigation treatments. The areas contain private property and are located in steep, forested terrain where, in some cases, mechanical treatment may not be possible. Both the Evergreen FPD and Clear Creek County CWPPs have the same recommendation on all pages dealing with the various portions of the area: “Shaded fuel breaks along forested primary, secondary, and designated emergency access roads.”

This deals with potential access and evacuation problems if roadways were involved in fire, and the one way in and out character of roads in the area. The steep timbered slopes could carry a wildfire in chimney like fashion. Making main roads safer for both evacuation and fire team traffic is extremely important.

The length of the main access, Sinton Road, is approximately 1.75 miles within the Echo Hills area. It is preceded by 1mi. of road through the Arapaho National Forest from Squaw Pass Road.

This will require a collaborative community effort among the private land owners. The team and EFPD will work with property owners to gain understanding and agreement for treatment as full mitigation would involve work on private land next to road rights of way. The team will also work with Clear Creek County to enhance maintenance on county roadways, including those not currently maintained by the county. Roads not maintained by the county include: “Hill Circle, Lodgepole Circle, Martin Drive, Nokomis Trail, Castlewood Drive (north of Nokomis Trail), Aspenwood Lane, Bear Rock Road, Tract E, Juniper Court, Bear Claw Lane, Tract D, and Sinton Road (east of Juniper Court). The only loop that is not completely maintained is Castlewood/Aspenwood.” Some of these routes are private and not part of the county system, such as: “Nokomis Trail, Bear Rock Road, and Bear Claw Lane.”

There would be fuel break clearing of dead standing and dead-fall coniferous growth and dead low growth with only moderate live-ground growth removal, then seeding with appropriate mixes to encourage grass cover and prevent soil erosion. The Colorado State Forest Service publication, “Fuelbreak Guidelines for Forested Subdivisions and Communities” by Frank Dennis would help guide work. This states the objective as: “The minimum recommended fuelbreak width is approximately 300 feet for level ground. Since fire activity intensifies as slope increases, the overall fuelbreak width must also increase. However, to minimize aesthetic impacts and to maximize fire crew safety, the majority of the increases should be made at the
bottom of the fuelbreak, below the road cut.” If the recommended width is accomplished the approximate acreage on each side of the road is estimated at a maximum of approximately 17 acres/mile. It may not be possible to achieve this width on all roads.

The CSFS guideline calls for a, “…system of roads and driveways with their associated fuelbreaks that break up the continuity of the forest cover and fuels. These help keep fires small, while also providing safer locations from which to mount fire suppression activities. In addition to allowing fire personnel in, they will allow residents to evacuate if necessary.”

Treatment would also utilize:

• The USFS standard for roadside mitigation/hazard tree removal: “… implement hazard tree removal activities within a distance equal to 110% of the height of the tallest hazard tree from the edge of: 1) National Forest System (NFS) roads open to motorized travel (maintenance levels two through five); 2) federal, state, county, or other permitted roads…” In this case the height of the tallest tree within the treatment zone would be used.

Treatment would be primarily hand thinning with some mechanical, and with slash pile and burning of material or some use of wood for biomass purposes. Cost would be approximately $2200/acre. The team should consult with the Evergreen FPD and Golden District of the Colorado State Forest Service and with Clear Creek County for an up-to-date cost estimate when it begins the process to accomplish this project.
Recommended Priority 3
Roadside Fuels Thinning
CO Road 470

The team recommends the US Forest Service (Arapahoe and Roosevelt National Forest) and Clear Creek County accomplish fuels mitigation along CO Road 470 (also shown as Sinton Road) to create safer emergency evacuation and firefighter ingress in the event of a wildfire. The CCC CWPP recommended such action (Zone 1 on map, P29), and the team feels this is a very important link in making the area better prepared for wildfire. The area contains 225 acres. This is the portion of the road from junction with Squaw Pass Road through National Forest Service land to the private property boundary.

An initial field visit was made to the area by the Arapahoe/Roosevelt NF Silviculturist and the Forester for the Idaho Springs District. There is general agreement that a mitigation project for roadside thinning should be undertaken. The unit as shown covers some 225 acres, but some of the areas further from the road would be a follow up consideration.

An initial project statement has been provided by the Forest Service: “The Forest Service would like to support the fuel mitigation effort in the Echo Hills subdivision. Many Community Wildfire Protection Plans (CWPP’s) have identified specific mitigation treatments on National system lands to expand or build upon planned mitigation treatments on private lands such as in Echo Hills. The Forest Service manages thousands of acres that lie adjacent to private and other agency lands. We’ve had to prioritize our projects (both the planning and implementation) across the lands that we manage to meet Forest Plan direction and the requests of communities. Projects,…have to be analyzed under the National Environmental Protection Act (NEPA) process...This process can take up to a year or more to complete depending on the complexity of the analysis. Currently we don’t have an analysis for this area, and we would have to look at some criteria to determine how it fits in our limited budget and time lines.

“For a project like this, one of the criteria we would look at is the “intent” of the community to mitigate for fire on their private lands. If the community is actively mitigating fuels on their lands and following suggestions drawn up in their respective CWPP, the Forest Service would consider conducting a fuels reduction analysis on National Forest system lands. Another criterion would be if the community is obtaining grant money to assist in fuel mitigation work on private land and if a community is actively applying for them, it shows the community is serious about doing the fuel mitigation work. We also consider the historical fire frequency and fuel type of a proposed area.”

Shaded fuel break treatment could be in accordance with established guidelines such as:
• The USFS standard for roadside mitigation/hazard tree removal: “… implement hazard tree removal activities within a distance equal to 110% of the height of the tallest hazard tree from the edge of: 1) National Forest System (NFS) roads open to motorized travel (maintenance levels two through five); 2) federal, state, county, or other permitted roads…” In this case the height of the tallest tree within the treatment zone would be used.
• The Colorado State Forest Service “Fuelbreak Guidelines for Forested Subdivisions and Communities” by Frank Dennis

Treatment would be primarily hand thinning with some mechanical, and with slash pile and burning of material or some use of wood for biomass purposes. If it is assumed up to 60 feet would be involved on either side of the road this means maximum acreage would be approximately 23.36 acres.
Figure 9: Enlarged approximation of mitigation area along CO Road 470 (Sinton Road) into Echo Hills
Recommended Priority 4
Fuels Mitigation in Bergen Peak State Wildlife Area

The Bergen Peak State Wildlife Area is managed by the Colorado State Department of Parks and Wildlife under an agreement with the Colorado State Land Board which actually owns the land. The project area is shown as Zone 3 on the map, P.29.

Potential wildfire mitigation efforts include two separate actions:

1. The road entering the northern portion of the area from Sinton Road goes southerly for approximately .6 mi. and contains three openings created for wildlife habitat management. These openings contain approximately 18 acres. The community has wanted to consider them as available to be used for safe zone evacuation of Echo Hills’ if evacuation out to Squaw Pass Road is not available and if deemed advisable by emergency incident command. **It is the team recommendation that this road and open spaces be evaluated by Evergreen Fire Rescue to determine if these areas meet safe zone standards.**

2. The CCC CWPP recommended a general fuels mitigation treatment south of Sinton Road, and running west to east across the northern portion of the wildlife area, including the existing open spaces (CCC CWPP Map, P.15). **This area is approximately 187 acres in size (Unit 3 on map, P29). The team recommends completion of the proposed fuel break mitigation to aid in protection of the southern flank of Echo Hills.**

The Mitigation treatments would follow treatment standards established by Division of Parks and Wildlife for work already accomplished, and could also utilize the CO State Forest Service “Fuelbreak Guidelines for Forested Subdivisions and Communities” by Frank Dennis. Fuel break treatment would be manual treatment and mechanical with chipping and pile burning. There may be some opportunity for mastication. Due to the wildlife management implications for habitat in the area the Division of Parks and Wildlife does not want lop and scatter as a treatment. They wish downed timber to be removed from the area by the forester in order to avoid buildup of ground debris. The Approximate cost is $2000/ acre. The Colorado Division of Parks and Wildlife could seek the funding for this project and/or the Echo Hills’ team could work with DPW to obtain grant funding.

Standards as issued for work that has been done would be utilized. They state, in part:

“**Sale area is under a patch cut prescription in lodgepole pine. Volumes have been estimated within the sale units...The only trees that will be marked are the boundary trees.**

“All forest products that are at least eight (8) feet long, four (4) inches in diameter inside the bark on the small end, and 50% sound shall be removed from the property by the PURCHASER. PURCHASER is encouraged to remove smaller material. Material not
meeting this standard shall be decked with other POL (Products Other than Logs) not
desired by the PURCHASER.

“Sawlog-sized material meeting the above standards shall be merchandized and/or
utilized in two-foot increments, starting at a minimum of six (6) feet in length.

Existing roads will be used whenever possible. Additional roads, skid trails, landings
and decks that are required will be located, constructed, and rehabilitated...

• Stumps will be cut as close to the ground as possible, but in no circumstances will
  stump height exceed six (6) inches as measured on the uphill side...

• Trees shall be whole-tree skidded to decks and landings, where de-limbing to at
  least a six (6) inch diameter top will occur.

• Slash will be treated as follows:
  o Limbs, tops <4-inches diameter and other debris shall be piled in dirt-free
    piles and located in open areas and/or in created openings.
  o Piles shall be at least fifty (50) feet from any residual tree...
  o Pile size will be limited to 20’ x 20’ x 12’ or less than 2,000 cubic feet.”

Initial discussion with Colorado State Parks and Wildlife provided a favorable response
from the area manager as they wish to enhance open space for wildlife.
Recommended Priority 5
Fuels Mitigation along southern boundary
Of Echo Hills Plan Area: Zones 2 & 4

Zones 2 and 4 are shown on the map, P.29.

Zone 2: This unit encompasses approximately 110 acres, and is entirely on private land with West Evergreen Syndicate listed in CCC records as the owner.

Zone 4: This unit encompasses approximately 111 acres, and is on private land in Jefferson County.

It will be necessary for the team and the Evergreen Fire Protection District to work with and perhaps provide information and education to the land owners to gain their agreement for mitigation work to be done on their properties.

Both units are recommended for the same shaded fuelbreak treatment mitigation. For mitigation actions under this plan the CSFS publications, Fuelbreak Guidelines for Forested Subdivisions and Communities, (Dennis, not dated) and Lodgepole Pine Management Guidelines for Land Managers in the Wildland -Urban Interface (Dennis et al) should be followed.

The area has dense and aged stands of lodgepole pine. There is potential for wind throw if fuelbreak thinning creates corridors in the forest. Following above guidelines it is recommended that thinning be accomplished by leaving groups of 7 to 10 trees separated from adjacent groups of trees to create the desired spacing effect. This will assist these stands to be self-supportive when wind events occur.

To create the fuel break, dead, diseased, weakened, and malformed conifer trees would be removed. The harvesting of conifer trees would occur as necessary to achieve the desired density of approximately 10- to15-foot spacing among tree canopies. Conifer trees would be limbed up approximately 10 feet from the ground. Ladder fuels, such as small trees and shrubs, are thinned out so that fire will not easily burn from the ground into the forest canopy. As recommended above, groupings of trees would be left to help prevent wind throw.

If and where aspen trees occur they would not be harvested during the creation of the fuel breaks. Aspen are usually fire resistant and would add to the effectiveness of the fuel breaks. Increased aspen dominance in forests stands will improve forest health and aesthetics. Aspen saplings should regenerate from root sprouting in the openings created by harvesting the dead and diseased conifer trees.

Treatment would be manual treatment with chipping and pile burning. There may be some opportunity for mastication. Approximate cost is $2200/acre. The community team should consult with the Golden District of the Colorado State Forest Service for an up-to-date cost estimate when it begins the process to accomplish this project.
Recommended Priority 6
Fuels Mitigation on Pence Mountain

The Clear Creek County CWPP recommended fuels mitigation in a 40 acre block of land on Pence Mountain managed by Denver Mountain Parks (Zone 5a on map). While slightly different in area, (there is a slight overlap), Denver Mountain Parks has accomplished approximately 56 acres of work (Zone 5b on map). The team approves of the work completed and recommends Denver Mountain Parks maintain follow up treatment of the area and consider additional mitigation of the land recommended in the two CWPPs.

Figure 10: Pence Mountain mitigation zones
The work done in zone 5b; in 2009, Denver Mtn. Parks (DMP) applied for and was awarded an ARRA grant in the amount of $275,000. This money was designated to help create and retain jobs and implement high-priority forest restoration and fire mitigation projects on DMP lands. Three parks were selected as high priority areas for treatment as part of this project. Those parks were: Genesee Park, Lookout Mtn. Park, and Pence Mtn. Park.

The overall goals of the project included:
• Reduce wildfire hazards on the target properties by treating forested acreage to reduce hazardous fuels. This will be achieved by modifying stand structure and tree density.
• Improve wildlife habitat by creating openings and increasing species diversity.
• Improve forest health conditions by removing unhealthy trees.
• Restore forest ecosystems to a more historical, natural regime that is more sustainable.

Project properties were chosen based on priorities identified in existing CWPPs, including the CCC and EFPD CWPPs. Project goals were accomplished by thinning trees to reduce crown density and retaining larger fire-resistant trees. Breaking up the vertical and horizontal fuel continuity in a strategic manner created better opportunities to control fire rate of spread and contain wildfires before they become catastrophic.

The treatments included a mixture of forest restoration and shaded fuelbreaks. The forest restoration treatments aimed to open forest canopy in critical areas where dense forest and closed canopies threatened nearby areas. Ladder fuels, encroaching species such as Douglas-fir, and insect-infested and diseased trees were considered for removal. The resulting stand structure is similar to that encountered prior to urban expansion and aggressive fire suppression. The resulting stands are also healthier and more resistant to catastrophic stand-destroying fires. The shaded fuelbreak treatment improved the ability of forest access roads to act as shaded fuelbreak zones where possible. Reducing the forest canopy along specific roads enhanced the effectiveness of the physical break the road provides, as well as critical safety factors along likely evacuation and emergency access routes.

The Pence Mtn. project area is located on steep north-facing slopes along Squaw Pass Road with vulnerable residences above at the south edge of the park. The treatment stand identified within the ARRA grant application as well as on-the-ground is along the middle access road. Lodgepole pine is the dominant species, but various amounts of aspen, Engelmann spruce, ponderosa pine, and Douglas-fir also occur, which are often dense with small diameter trees. Slopes in the stand are steep and essentially only accessible because of the old access roads that are present. All of the work needed to be completed was done by hand, with slash along the road being chipped and the remainder being lopped-and-scattered due to inaccessibility.

The final project acreage for Pence Mtn. was 55 acres and was completed for an average price of around $1300/acre. Much of the stand was overstocked with dense regeneration and pole-sized lodgepole pine, with heavy infestations of dwarf mistletoe. The average basal area prior to the project was around 145 ft/acre. The overall target BA of 80 ft/acre was reached/exceeded and the stand is now much more resilient to insect disease outbreaks, as well as resistant to wildfire. A map of the project area is included below, as well as some before and after treatment.
Figure 11: Denver Mountain Parks’ Pence Mountain mitigation map
Figure 12

Pence Mtn.: pre-treatment

Pence Mtn.: post-treatment
Section 5: IMPLEMENTATION AND FOLLOW UP

Creating and implementing this CWPIP has the potential to significantly reduce the effects of wildfire. This will require the efforts of a committed Echo Hills Area CWPIP team with the assistance and cooperation of adjacent agencies (County, State Federal), local interest groups, and the citizens of the area. The effectiveness of this plan will be the result of actions taken over time; completion of the plan is only the beginning.

Maintenance and administration of the Community Wildfire Protection Implementation Plan are critical. To again quote the CCC CWPP, “The most effective means to initiate local action is through community education and public outreach. An annual community meeting in the spring can spur action on the part of neighborhoods and individuals. This can be a forum for presentations by experts in the field and low for coordination of “cleanup” efforts within the community. Firewise materials and postings should be made available to the public at each fire station, post office, HOA, and elementary school on a regular basis. A disposal method for yard waste should be coordinated every spring. This may be coordinated with HOA spring cleanup activities and may include the coordination of a central disposal site, mobile chipping services, or a hauling service. An example would be the scheduling of an annual “Slash Day,” taking place every first Saturday of October for instance.”

Accomplishing property defensible space, retrofitting of structures to defensible standards, fuels mitigation projects, and completing such objectives as escape routes, additional water sources, and other goals require time, funding and resources. Ongoing community education and demonstration events are needed to demonstrate the necessity of taking personal action. Grant funding, contract crews, and volunteer projects will be spread out over a number of years.

Maintenance of the Plan
The CWPIP is meant to be a “living document” which is updated annually to pursue priority concerns in wildfire hazard mitigation throughout the Echo Hills Area. The overall goal of maintaining the CWPIP is accomplished through:
1) Ongoing monitoring of plan accomplishments and effectiveness;
2) Adjusting the plan to account for changes in wildfire hazard conditions, response capabilities, technologies and other circumstances;
3) Setting goals and selecting projects for the coming year;
4) Seeking funding and other project assistance; and
5) Facilitating community project days and other events.

The CWPIP team should be an ongoing team as long as the community and planning efforts have need of such direction.
The team should operate in collaboration with Evergreen Fire Rescue. The CWPIP team should sustain itself through recruitment of new members as needed, and selection of a team chair person from among its members. If direction or assistance is needed to maintain operations the team chair should consult with the Evergreen Fire Rescue Chief, and the Clear Creek County Office of Emergency Management to assist with evaluation of the continuing need and assistance in reconstituting a CWPIP management team.
**The Echo Hills area CWPIP committee should establish guidelines for representation and ongoing operation at its first meeting following county and state acceptance of this plan. Following are some guidelines to be considered by the team:**

The composition of the CWPIP team should retain professional representation from the included areas around Echo Hills, Clear Creek and Jefferson counties, the Evergreen Fire Protection District, Colorado State Forest Service, and the US Forest Service. While these professional groups may not be available for every meeting they should be invited and consulted on a regular basis. Representation from the area neighborhoods is very important and the team should strive for membership of at least two of the three neighborhoods at any one time. This representation should be on a rotating basis to involve different areas and reduce the impact on participants.

Team meetings should be held at least quarterly (it may be desirable to meet more often as summer approaches each year) to review plan goals, actions and public response. Each year the CWPIP team will conduct a performance review to evaluate accomplishments and problems over the past year. The team should also consider any proposed changes to the CWPIP for the upcoming year and select new or reselect ongoing project goals. The team should consult with the State Forest Service, USFS, the county and Evergreen Fire Rescue, and reach out to neighborhood stakeholders during plan review and project development. Timing should be guided by grant submission dates.

The overall CWPIP evaluation, recommended changes, and upcoming project goals should be presented to the residents through community meetings; local informational outreach methods, and Community Wildfire days and forums.

The CWPIP team contact list should be made available to residents so they can make contact for information or to offer suggestions for the team to consider.

The CWPIP team, in conjunction with the fire authority, the county and/or other groups, should organize or take part in an annual community open house each spring to keep the public continuously aware of healthy forest restoration and wildfire mitigation needs and opportunities.

The team should develop or participate in demonstration days, chipping days, and other opportunities in area neighborhoods to showcase projects, techniques, and new ideas. Such events contribute greatly to public education and encourage people to become involved.

The CWPIP team should follow up on completed projects, using a monitoring and evaluation format which addresses the following issues:

1) **Implementation**: Track the CWPIP project(s) as laid-out for the year and assess the success level of execution;

2) **Execution of project**: What issues occurred that either aided or impeded the project?

3) **Maintenance Needs and Monitoring**: Evaluates, determines and prioritizes areas that have been treated in the past, but are in need of maintenance treatments to maintain effectiveness as originally intended. Lessons learned from monitoring and data collection will be useful for modifying project plans to better meet CWPP goals and objectives.
The CWPIP should be available to residents on various websites, such as an HOA site or the Evergreen Fire Protection District site.
Section 6: APPENDICES

APPENDIX A: Publications and Websites

APPENDIX B: Appendix from the Clear Creek County CWPP which shows each community in the county and how they rated when evaluated for wildfire risk and hazard.

APPENDIX C: Tips on insurance coverage from a United Policyholders handout.

APPENDIX D: Wildfire Action Planning - The Ready, Set, Go! Program (RSG)
APPENDIX A

Publications and websites

Following is a listing of publications available from the Colorado State Forest Service which provide guidance on a range of mitigation activities which will aid communities in lessening the impact of wildfire. Also listed are several websites which contain information useful in mitigation efforts. *Floyd Hill area residents are encouraged to view these sites which contain a great amount of useful information and action items which can assist in protecting properties from the effects of wildfire.*

Publications

The following publications can be viewed on the State Forest Service website (or linked directly from below). You may also be able obtain some hard copies from the Golden District office of the State Forest Service. Also listed are several websites which contain information useful in mitigation efforts. *Echo Hills Area residents are encouraged to view these sites which contain a great amount of useful information and action items which can assist in protecting properties from the effects of wildfire.*

**General Resources**

- [Wildfire Policy in Transition: Where There's Smoke, There's... Mirrors](#)
- Presentation on Wildfire Policy in Transition

**Resources for Homeowners & Landowners**

- Clear Creek County CWPP and Evergreen Fire Rescue CWPP: [http://csfs.colostate.edu/pages/CommunityWildfireProtectionPlans.html](http://csfs.colostate.edu/pages/CommunityWildfireProtectionPlans.html) (go down list by county to the plan)
- [Creating Wildfire-Defensible Zones](#)
- [Fire-Resistant Landscaping](#)
- [Forest Home Fire Safety](#)
- [FireWise Plant Materials](#)
- [Grass Seed Mixes to Reduce Wildfire Hazard](#)
- [Are You FireWise? Notebook](#)
- [Home Fire Protection](#)
- [Living with Fire](#)
- [Wildfire & Insurance](#)

**FireWise Construction**

- [Firewise Construction: Design and Materials by Peter Slack](#)
- Decks
- [Roofing Materials](#)
Siding
Windows and Glass

Resources for Communities
Fuelbreak Guidelines for Forested Subdivisions & Communities
Preparing a Community Wildfire Protection Plan - Handbook
Community Guide to Preparing & Implementing a CWPP — 2008
Community Wildfire Protection Plan Evaluation Guide
CWPP Minimum Standards REVISED 2009

Post-Fire
Vegetative Recovery after Wildfire
Soil Erosion Control after Wildfire
Insects and Diseases Associated with Forest Fires
"After the Fire" Safety Tips Factsheet

Websites

Clear Creek County CWPP and Evergreen Fire Rescue CWPP: (go down the list by county to the respective plan)
http://csfs.colostate.edu/pages/CommunityWildfireProtectionPlans.html
Colorado State Forest Service: http://csfs.colostate.edu/
Clear Creek Fire Authority: http://www.clearcreekfire.com
Clear Creek County: http://www.co.clear-creek.co.us/
Evergreen Fire Rescue: http://www.evergreenfire rescue.com

Grant Opportunities:
Rocky Mountain Wildland Fire Information:
http://www.rockymountainwildlandfire.info/grants.htm

CO State Forest Service Land Owner & Assistance Programs:
http://www.csfs.colostate.edu/pdfs/Landowner-Assistance-Programs-rev112610.pdf

Firewise: http://www.firewise.org/
Healthy Forest Restoration Act –background and information:
http://en.wikipedia.org/wiki/Healthy_Forests_Initiative
Healthy Forest Restoration Act – official website: http://www.forestsandrangelands.gov/
Below is the Appendix from the Clear Creek County CWPP which shows each community in the county and how they rated when evaluated for wildfire hazard.

You will note that thirteen of the 48 communities were rated “Extreme” in the hazard assessment, including all three of the Echo Hills Area CWPI communities.

### Community Survey Summaries and Hazard Ratings

<table>
<thead>
<tr>
<th>Clear Creek County WUI</th>
<th>House of Assess.</th>
<th>Vegetation</th>
<th>Topography</th>
<th>Other Factor</th>
<th>Construction</th>
<th>Fire Protection</th>
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</table>

*Note: The table continues with data for each community, including their respective hazard ratings.*
APPENDIX C

The following insurance tips are from a *United Policyholders* handout and are good tips for home and business owners in the wildland-urban interface. Insurance companies are well aware of the CWPP and Firewise efforts and are taking more in depth looks at how home owners are protecting and mitigating their properties.

**Preparedness Tips from the Trenches**

**What do disaster victims wish they’d known about insurance before they had a loss?**

• How can I avoid the most common gaps in coverage?
• What helps fire fighters save homes during wildfires and after earthquakes?

Insurance money – not charitable or government aid makes the biggest difference in people’s ability to rebuild and recover after a disaster.

Having the right kind and amount of insurance on your property is so important.

• What do disaster victims wish they’d known about insurance before they had a loss?
• How can I avoid the most common gaps in coverage?
• What helps fire fighters save homes during wildfires and after earthquakes?

FEMA money is needs-based and the maximum allocation is $39k. SBA loans take time and have to be repaid. Charitable aid generally covers basic needs – not the cost of rebuilding a home.

Ask your insurer if you’re covered for flooding, earthquakes, and a total loss from wildfire. **After a 2007 wildfire in San Diego County, 75% of the victims found themselves underinsured by an average of more than $100,000.**

**Don’t blindly trust that your insurance company has got you fully covered.**
The goal of an insurance sales rep is to sell you a policy at a price you’re willing to pay. In most cases, the true replacement value of your property gets underestimated at the point of sale and as years go by. Read UP’s Home Insurance Buying Tips at www.uphelp.org to avoid this problem. Confirm and keep records of insurance sales promises.

**Complete as much of the UP Home Inventory as you can, then store the records off site in a safe place.**

**If you don’t have insurance coverage for flooding and earthquakes, consider buying it.**
Hopefully you’ll never need it, but if you do, you’ll be glad you did and that you created an inventory.

Do it now! Earth movement, earthquakes and landslides are not covered by most homeowner policies. You have to buy this coverage separately. It’s worth finding out how much it would cost to add these items to your protection package.
Take advantage of insurance discounts for making your home safer.

Avoid letting your insurance lapse.

Get help if your insurer drops you and you can’t find replacement coverage.

Clear brush from around your home and keep it clear.

Have an evacuation plan that includes “grab and go” or off-site access to important documents.

Shop around to find which company offers the best discounts for “mitigation” and/or “retrofitting”. If you install a seismic shut-off valve on your gas line, a premium discount will cover most of the cost. Strapping your water heater and installing plywood shear panels won’t cost a fortune but will make your home safer and more insurable.

If money’s tight, raise your deductible to keep premium costs down.
Read “Dropped by your insurer?” at www.uphelp.org/pdfs/Wheretogoforhelp.pdf
Ask your local Fire Department if they’ll inspect and certify for an insurance company that you’ve cleared brush adequately.
The #1 thing that helps fire fighters save homes is brush clearance. Clean out gutters and roof drains regularly. Install screens on all your roof vents to keep embers from flying in. Install spark arrestors in chimneys and get the chimney professionally cleaned periodically.

Keep a copy of your policy in a safe place away from your home and better yet, scan the complete document onto your computer or onto a UP Roadmap to Preparedness Flash Drive.

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Information presented in this publication is for general informational purposes, and should not be taken as legal advice. If you have a specific legal issue or problem, United Policyholders recommends that you consult with an attorney. Guidance on hiring professional help can be found in the “Find Help” section of http://www.uphelp.org. United Policyholders does not sell insurance or certify, endorse or warrant any of the insurance products, vendors or professionals identified at our website. United Policyholders respects and protects the privacy of all individuals who communicate with us. We do not sell or share our membership or mailing lists.
APPENDIX D
Wildfire Action Planning

Code Red
Smart 911
The Ready, Set, Go! Program (RSG): www.wildlandfireRSG.org

CodeRed:

CodeRED: Why the county would be Calling You in an Emergency
The Clear Creek County Sheriff's Office Communications Center has contracted for
"CodeRed™" high-speed telephone emergency notification services sometimes referred to as
"reverse 911 ® ". The CodeRed system allows emergency dispatchers the ability to deliver
public safety messages to targeted areas or the entire county at a rate of up to 60,000 calls per
hour. This service includes those residents and businesses in the municipalities of Idaho Springs,
Empire, Georgetown and Silver Plume as well as the unincorporated area of the county.

These calls warn citizens of danger. Multiple phones within a designated area can be called
simultaneously to warn residents of flood, fire, tornadoes, chemical spills, or dangerous suspects.

If you receive a CodeRED call, the voice on the line will let you know it's a message from the
Sheriff's Office. Also, your caller ID should display the agency's name and a call-back number.
The e911 system works with all phones that have a TDD line (for the hearing impaired). If you
have a telephone zapper used to block out telemarketers, or if your phone is blocked to unknown
callers, you will not receive e911 calls.

Opt In to CodeRED
The CodeRED system calls numbers from two databases. One is the county’s 911 database, with
all listed and unlisted land lines. If you have a land line, it is automatically included in this
database.

The second is a new database of mobile phone and VoIP numbers — established in 2009 —
whose owners have opted in to receive the calls. If you don’t have a traditional land line phone,
or would like to receive a cell phone call in addition to the call on your land line phone, consider
registering for this free service. To register go to:

Smart 911:

Smart911 is a free service that allows citizens across the U.S. to create a Safety Profile for their
household that includes any information they want 9-1-1 to have in the event of an emergency.
Then, when anyone in that household dials 9-1-1 from a phone associated with their Safety
Profile, their profile is immediately displayed to the 9-1-1 call taker providing additional
information that can be used to facilitate the proper response to the proper location. At a time
when seconds count, being about to provide 9-1-1 with all details that could impact response the
second an emergency call is placed could be the difference between life and death. It is on the
internet at:  https://www.smart911.com/. This program assists firefighters to teach individuals who live in high risk wildfire areas and the wildland-urban-interface (WUI) how to best prepare themselves and their properties against fire threats.

The RSG Program stresses that when firefighters encourage residents to take personal responsibility for preparing their property and family for wildland fire, residents become an active part of the solution to the problem of increasing fire losses.

**Ready-Set-Go!**
The RSG Program is a three step process that can significantly increase the safety of residents and the safety of responding firefighters. The RSG Program provides the implementation guidance; background knowledge; and presentation tools to assist fire departments in delivering the program message.

It is easy to remember and is easy to implement:

- **Ready** – Preparing for the Fire Threat: Be Ready, Be Firewise. Take personal responsibility and prepare long before the threat of a wildfire 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 spot. Make sure all residents residing within the home are on the same page, plan escape routes. For more information about how to be Ready for wildland fires, go to Firewise.org.

- **Set** – Situational Awareness When a Fire Starts: Pack your vehicle with your emergency items. Stay aware of the latest news from local media and your local fire department for updated information on the fire.

- **Go** – Leave early! Comply with any evacuation orders and follow evacuation plans early! Your Action Plan makes you prepared and firefighters are now able to maneuver and ensure you and your family’s safety.

The RSG Program provides tools through its website, www.wildlandfireRSG.org for fire departments that join the program to better understand preparedness techniques; help in identifying local partners and audiences; useful outreach models and presentation tools; and general background on wildland fire activity.

**Following is a Ready, Set, Go brochure designed specifically for this area by Einer Jensen, formerly with CCC Fire Authority and now with South Metro. It provides very good information for home owners**
The fire season is now a reality throughout the year in Colorado, which means that both firefighters and residents have to be on heightened alert for the threat of wildfire at all times.

Colorado’s firefighters take every precaution to help protect you and your property from a wildfire. Residents need to do the same. Successfully preparing for a wildfire requires you to take personal responsibility for protecting yourself, your family and your property. During a major wildfire, there simply will not be enough fire engines or firefighters to defend every home, so residents must become part of the solution.

If your home borders or sits with a mile or two of a natural area, what firefighters call the Wildland Urban Interface, you are at risk from a wildfire. And, if you live within one mile of a natural area, you live in the Ember Zone. Homes in the Ember Zone are at risk from wind-driven embers from a wildfire. Recent fires across the nation have resulted in entire neighborhoods being destroyed by fires started by embers, not the wildfire itself.

This publication will help guide you through the process of making your home resistant to wildfires and your family ready to leave early and safely. We call this process, “Ready, Set, Go!”

You will learn about the Ember Zone and how to retrofit your home with ignition resistant features. We’ll show you the importance of having defensible space around your home and the preparations you need to make so you can leave early, evacuating well ahead of the fire.

Fire is, and always has been, a natural part of the beautiful area where we’ve chosen to live. Wildfires, fueled by a build-up of dry vegetation and driven by hot, dry winds, are extremely dangerous and almost impossible to control. Many residents have built their homes and landscaped without fully understanding the impact a fire could have on them. This publication will help you prepare your home so you can leave early, confident that you’ve done everything you reasonably can to protect your home.

It’s not a question of if, but when, the next wildfire will occur. That’s why the most important person protecting your life and property is you. With advance planning and preparation, you can dramatically increase your safety and the survivability of your property.

Now, Get Ready, Get Set, Go!

This publication was prepared by the Fire & Life Safety Educators of Colorado, Fire Marshals Association of Colorado and Colorado State Fire Chiefs Association so that Colorado’s fire departments and life safety professionals could have a common resource for educating their citizens about wildfire prevention, mitigation and reaction. Many agencies will supplement this information with programming geared specifically for their communities.

Colorado: Ready, Set, Go!
also is supported by:

Pikes Peak Wildfire Prevention Partners
West Regional Wildfire Council
Living in the Wildland Urban Interface and the Ember Zone

Ready, Set, Go! begins with a house that firefighters can defend.

Defensible space works!

If you live next to a natural area, the Wildland Urban Interface, you must provide firefighters with the defensible space they need to protect your home. The buffer zone you create by removing weeds, brush and other vegetation helps to keep the fire away from your home and reduces the risks from flying embers.

A home within one mile of a natural area is in the Ember Zone. Wind-driven embers can attack your home. You and your home must be prepared well before a fire occurs. Ember fires can destroy homes or neighborhoods far from the actual flame front of the wildfire.
What is Defensible Space?

Defensible space is the space between a structure and the wildland area that, under normal conditions, creates a sufficient buffer to slow or halt the spread of a wildfire to the structure. It protects the home from igniting from direct flame, radiant heat and embers. Defensible space is essential for structure survivability during wildfires.

Zone 1

This zone, which consists of an area of 15 feet around the structure, features the most intense modification and treatment. This 15 feet is measured from the outside edge of the home’s eaves and any attached structures, such as decks. Limit vegetation within this zone to species on Colorado’s FireWise list. Do not plant directly beneath windows or next to foundation vents. Frequently prune and maintain plants in this zone to ensure vigorous growth and a low growth habit. Remove dead branches, stems and leaves.

Do not store firewood or other combustible materials in this area. Enclose or screen decks with metal screening. Extend gravel coverage under the decks. Do not use areas under decks for storage.

If ponderosas, aspens or blue spruces are growing in this zone, consider them part of the structure and extend the distance of the entire defensible space accordingly. Isolate the tree from any other surrounding trees. Prune low-lying branches (ladder fuels that would allow a surface fire to climb into the tree) and any branches that interfere with the roof or are within 10 feet of the chimney. In all other areas, prune all branches of shrubs or trees up to a height of 10 feet above ground (or 1/2 the height, whichever is the least).

Zone 2

This zone features fuel reduction efforts and serves as a transitional area between Zones 1 and 3. The size of Zone 2 depends on the slope of the ground where the structure is built. Typically, the defensible space should extend at least 75 to 125 feet from the structure. Remove stressed, diseased, dead or dying trees and shrubs. Thin and prune the remaining larger trees and shrubs. Be sure to extend thinning along either side of your driveway all the way to your main access road. These actions help eliminate the continuous fuel surrounding a structure while enhancing homesite safety and the aesthetics of the property.

Zone 3

This area of traditional forest management extends from the edge of your defensible space to your property boundaries. The healthiest forest is one that has multiple ages, sizes, and species of trees where adequate growing room is maintained over time. Remember to consider the hazards of ladder fuels. A greater number of wildlife trees can remain in Zone 3. Make sure that dead trees pose no threat to power lines or fire access roads.
What is a Hardened Home?

Construction materials and the quality of the defensible space surrounding it are what gives a home the best chance to survive a wildfire. Embers from a wildfire will find the weak link(s) in your home’s fire protection scheme: a small, overlooked or seemingly inconsequential factor with enormous potential consequences. However, there are measures you can take to safeguard your home from wildfire. While you may not be able to accomplish all the measures listed below, each will increase your home’s, and possibly your family’s, safety and survivability during a wildfire.

ROOFING

Roofs are the most vulnerable surface where embers land because they provide nooks for embers to lodge and ignite a fire. Roof valleys, open ends of barrel tiles and rain gutters are all vulnerable to ember accumulation.

EAVES

Embers can gather under open eaves and ignite exposed wood or other combustible material.

VENTS

Embers can enter the attic or other concealed spaces and ignite combustible materials through vents. Vents in eaves and cornices are particularly vulnerable, as are any unscreened vents.

WALLS

Combustible siding or overlapping materials provide surfaces and crevices for embers to nestle and ignite walls.

WINDOWS and DOORS

Embers can enter a home through gaps in doors, including garage doors. Plants or combustible storage near windows can be ignited from embers and generate enough heat to break windows and/or melt combustible frames.

BALCONIES and DECKS

Embers that collect in or on combustible surfaces or the undersides of decks and balconies can ignite that material and enter the home through walls or windows.

MORE

To harden your home further, consider protecting it with a residential fire sprinkler system. In addition to extinguishing or at least containing a fire started by an ember that enters your home, it also protects you and your family throughout the year from any fire that may ignite inside.
Tour a Wildfire Ready Home

Garage: Have a fire extinguisher and tools such as a shovel, rake, bucket and hoe available for fire emergencies.
Install a solid door with self-closing hinges between the garage and living area. Install weather stripping around and under doors to prevent ember intrusion.
Store all combustibles and flammable liquids away from ignition sources.

Vents: Vents on homes are particularly vulnerable to flying embers. All vent openings should be covered with 1/8-inch or smaller mesh. Do not use fiberglass or plastic mesh because those materials can melt and burn.
Atc vents in eaves or cornices should be baffed or otherwise protected to prevent ember intrusion (mesh is not enough).

Deck/Patio: Use heavy timber or non-flammable construction material for decks.
Enclose the underside of balconies and decks with fire-resistant materials to prevent embers from blowing underneath.
Remove combustible items such as baskets, dried flower arrangements and other debris as well as furniture from the deck if a wildfire approaches.

Driveways and Access Roads: Driveways should be designed to allow fire and other emergency vehicles and equipment to reach your home.
Access Roads should have a minimum 10-foot clearance on either side of the traveled section of the roadway and should allow for two-way traffic.
Ensure that all gates open inward and are wide enough to accommodate emergency equipment. Looked gates should be equipped with a Knox Box or similar entry system that can be accessed by emergency responders quickly and safely.
Trim trees and shrubs overhanging the road to a minimum of 15 feet to allow emergency vehicles to pass.

Home Site and Yard: Ensure you have at least a 100-foot radius of defensible space (treated vegetation) around your home. Note that even more treatment may be needed for homes in severe hazard areas. Look beyond what you own to determine the impact a common slope or neighboring yard will have on your property during a wildfire.
Cut dry weeds and grass before noon when temperatures are cooler to reduce the chance of sparking a fire.
Landscape with fire-resistant plants that have a high moisture content and are low-growing.
Keep woodpiles, propane tanks and combustible materials away from your home and other structures such as garages, barns and sheds.
Ensure that trees are far away from power lines.

Address: Post your address with 4" reflective numbers that can be seen from the road in all weather conditions.

Roof: Your roof is the most vulnerable part of your home because it can easily catch fire from windblown embers. Homes with wood-shake or wood shingle roofs are at high risk of being destroyed during a wildfire.
Build your roof or re-roof with fire-resistant materials such as composition, metal or tile. Block any spaces between roof decking and covering to prevent ember intrusion.
Clear pine needles, leaves and other debris from your roof and gutters.
Cut any tree branches within 10 feet of your roof.
Chimney: Cover your chimney and stove-pipe outlets with a non-flammable screen or 1/4-inch wire mesh or smaller to prevent embers from escaping and igniting a fire. Make sure that your chimney is at least 10 feet away from any tree branches.

Gutters: Screen or enclose rain gutters to prevent an accumulation of plant debris and ember intrusion.

Non-Combustible Fencing: Make sure to use non-combustible fencing to protect your home and other structures during a wildfire.

Non-Combustible Boxed-in Eaves: Box in eaves with non-combustible materials to prevent an accumulation of embers.

Windows: Heat from a wildfire can cause windows to break before the home ignites. Broken windows allow burning embers to enter and start fires inside the home. Single-paned and large windows are particularly vulnerable. Install dual-paned windows with the exterior pane of tempered glass to reduce the chance of breakage during a fire. Limit the size and number of windows in your home that face large areas of vegetation because windows also allow radiant heat to pass into the home to ignite combustible materials such as curtains and upholstery.

Walls: Wood products, such as boards, panels or shingles, are common siding materials. However, they are combustible and not good choices for fire-prone areas. Build or remodel with fire-resistant building materials such as brick, cement, masonry or stucco. Be sure to extend those materials from foundation to roof.

Water Supply: Have multiple garden hoses that are long enough to reach any area of your home and other structures on your property. If you have a pool or well, consider installing a pump.

Inside: Keep working fire extinguishers on hand in accessible locations. Install smoke alarms on each level of your home and near bedrooms. Test them monthly and change the batteries each year. When remodeling, install residential sprinklers in your home and maintain the system as suggested by the installer.
Now that you've done everything you can to protect your house, it's time to prepare your family. Your Wildfire Action Plan must be prepared with all members of your household well in advance of a fire.

Use these checklists to help you prepare your Wildfire Action Plan. Each family’s plan will be different, depending on their situation.

Once you finish your plan, rehearse it regularly with your family and keep it in a safe and accessible place for quick implementation.

GET READY | Prepare Your Family

☐ Create a Family Disaster Plan that includes meeting locations and communication plans and rehearse it regularly. Include in your plan the evacuation of large animals such as horses.

☐ Have fire extinguishers on hand and train your family how to use them.

☐ Ensure that your family knows where your gas, electric and water main shut-off controls are and how to use them.

☐ Plan several different evacuation routes.

☐ Designate an emergency meeting location outside the fire hazard area.

☐ Assemble an emergency supply kit as recommended by the American Red Cross.

☐ Appoint an out-of-town friend or relative as a point of contact so you can communicate with family members who have relocated.

☐ Maintain a list of emergency contact numbers posted near your phone and in your emergency supply kit.

☐ Keep an extra emergency supply kit in your car in case you can't get to your home because of fire.

☐ Have a portable radio or scanner so you can stay updated on the fire.
GET SET

As the Fire Approaches

OUTSIDE CHECKLIST

☐ Gather up flammable items from the exterior of the house and bring them inside (e.g., patio furniture, children’s toys, door mats, etc.) or place them in your pool.

☐ Turn off propane tanks.

☐ Don’t leave sprinklers on or water running; they can waste valuable water pressure.

☐ Leave exterior lights on.

☐ Back your car into the driveway. Shut doors and roll up windows.

☐ Have a ladder available.

☐ Patrol your property and extinguish all small fires until you leave.

☐ Seal attic and ground vents with pre-cut plywood or commercial seals if time permits.

IF YOU ARE TRAPPED: SURVIVAL TIPS

☐ Shatter away from outside walls.

☐ Bring garden hoses inside house so embers don’t destroy them.

☐ Patrol inside your home for spot fires and extinguish them.

☐ Wear long sleeves and long pant made of natural fibers such as cotton.

☐ Stay hydrated.

☐ Ensure you can exit the home if it catches fire (remember it is not inside the house, it is four to five times hotter outside).

☐ Fill sinks and tubs for an emergency water supply.

☐ Place wet towels under doors to keep smoke and embers out.

☐ After the fire has passed, check your roof and extinguish any fires, sparks or embers.

☐ Check inside the attic for hidden embers.

☐ Patrol your property and extinguish small fires.

☐ If there are trees that you cannot extinguish with a small amount of water or in a short period of time, call 9-1-1.
Go! Early!

By leaving early, you give your family the best chance of surviving a wildfire. You also help firefighters by keeping roads clear of congestion, enabling them to move more freely and do their job.

WHEN TO LEAVE

Leave early enough to avoid being caught in fire, smoke or road congestion. Don’t wait to be told by authorities to leave. In an intense wildfire, they may not have time to knock on every door. If you are advised to leave, don’t hesitate!

WHERE TO GO

Leave to a predetermined location (it should be a low-risk area, such as a well-prepared neighbor or relative’s house, a Red Cross shelter or evacuation center, motel, etc.)

HOW TO GET THERE

Have several travel routes in case one route is blocked by the fire or by emergency vehicles and equipment. Choose an escape route away from the fire.

WHAT TO TAKE

Take your emergency supply kit containing your family and pet’s necessary items.

EMERGENCY SUPPLIES

The American Red Cross recommends every family have an emergency supply kit assembled long before a wildfire or other emergency occurs. Use the checklist below to help assemble yours. For more information on emergency supplies, visit the American Red Cross Web site at www.redcross.org.

☐ Three-day supply of water (one gallon per person per day).

☐ Non perishable food for all family members and pets (three-day supply).

☐ First aid kit.

☐ Flashlight, battery-powered radio, and extra batteries.

☐ An extra set of car keys, credit cards, cash, or traveler’s checks.

☐ Sanitation supplies.

☐ Extra eyeglasses or contact lenses.

☐ Important family documents and contact numbers.

☐ Maps marked with evacuation routes.

☐ Prescriptions or special medications.

☐ Family photos and other irreplaceable items.

☐ Family carried valuables.

☐ Personal computers (information on hard drives and disks).

☐ Chargers for cell phones, laptops, etc.

Note: Keep a pair of old shoes and a flashlight handy in case of a sudden evacuation at night.
Write up your Wildfire Action Plan and post it in a location where every member of your family can see it. Rehearse it with your family.

My Personal Wildfire Action Plan

During High Fire Danger days in your area, monitor your local media for information on brush fires and be ready to implement your plan. Hot, dry and windy conditions create the perfect environment for a wildfire.

Important Phone Numbers:

Out-of-State Contact: ___________________________ Phone: ___________________________

Work: ___________________________ Phone: ___________________________

School: ___________________________ Phone: ___________________________

Other: ___________________________ Phone: ___________________________

Evacuation Routes:

____________________________________________________________

____________________________________________________________

Where to go:

____________________________________________________________

____________________________________________________________

Location of Emergency Supply Kit:

____________________________________________________________

Notes:

____________________________________________________________

____________________________________________________________

Colorado's Partners in Wildfire Prevention & Safety

If you have an emergency, Call 911
This program was extended through 2024 by the State Legislature in its 2013 session.

Tax credit available for mitigation work

As authorized by §39-22-104(4)(n), C.R.S., for income tax years 2009 through 2013 individuals, estates and trusts may subtract from federal taxable income 50% of the costs incurred in performing wildfire mitigation measures that meet the following qualifications and limitations:

- The taxpayer must own the property upon which the wildfire mitigation measures are performed.
- The property upon which the wildfire mitigation measures are performed must be located in Colorado.
- The property upon which the wildfire mitigation measures are performed must be located in a wild land-urban interface area.
- The wildfire mitigation measures must be authorized by a community wildfire protection plan adopted by a local government within the interface area.
- The total amount of the subtraction may not exceed $2,500.

An approved community wildfire protection plan identifies and prioritizes areas for hazardous fuel reduction treatments and recommends the types and methods of treatments. It also must recommend measures to reduce structural ignitability.

Additional information regarding community wildfire protection plans can be found online at www.csfs.colostate.edu.

Costs

Costs include any actual out-of-pocket expense incurred and paid by the landowner and documented by receipt for performing wildfire mitigation measures. The following expenses are specifically excluded within statute and do not qualify for this subtraction:

- Inspection or certification fees;
- In-kind contributions;
- Donations;
- Incentives;
- Cost sharing;

Wildfire mitigation measures include the following activities to the extent that they meet or exceed any Colorado State Forest Service standards or any other applicable state rules:

- Creating and maintaining a defensible space around structures;
- Establishing fuel breaks;
- Thinning of woody vegetation for the primary purpose of reducing risk to structures from wildland fire;
- Secondary treatment of woody fuels by lopping and scattering, piling, chipping, removing from the site or prescribed burning.

For information regarding these and other wildfire mitigation measures, visit www.csfs.colostate.edu; for information about the tax credit, check www.taxcolorado.com.