

Ridgewood Community Wildfire Plan

Update 2022

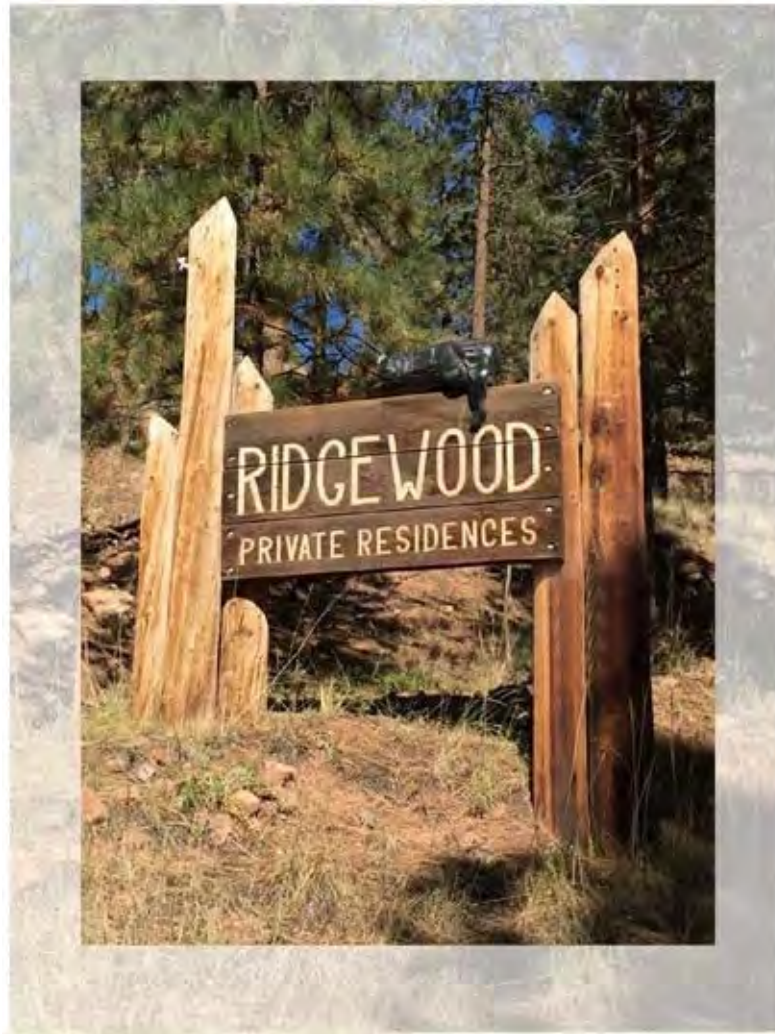


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Update to Ridgewood Community Wildfire Protection Plan

January 2022 – 2027

This document was prepared in good faith by the Ridgewood CWPP committee for the benefit of the property owners and residents in Ridgewood. The CWPP committee members assume no liability in the preparation of this document. This document is intended only as a tool for the Ridgewood residents to continue to reduce fire hazard and improve forest conditions for the next 5 years (2022 – 2027). This information has been obtained from local forest professionals, homeowners participating in this project and from past knowledge about and history of projects in the community.

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Ridgewood Community Wildfire Protection Plan (CWPP)

Executive Summary

The Community Wildfire Protection Plan (CWPP) is a living document written by the Ridgewood CWPP Committee for the residents of Ridgewood. Wildland fuels treatments, home hardening and defensible space are all necessary to lessen the chances of property loss during wildfires. The 2022 Ridgewood CWPP is designed to assist residents to analyze risk, to increase awareness of implementation options, and to prioritize lifesaving actions.

Humans can alter fire behavior. Residents can use this document to mitigate wildfire risk to their home and to plan evacuation activities. Property owners can review mitigation recommendations to determine which actions will make a meaningful difference to their property and the community.

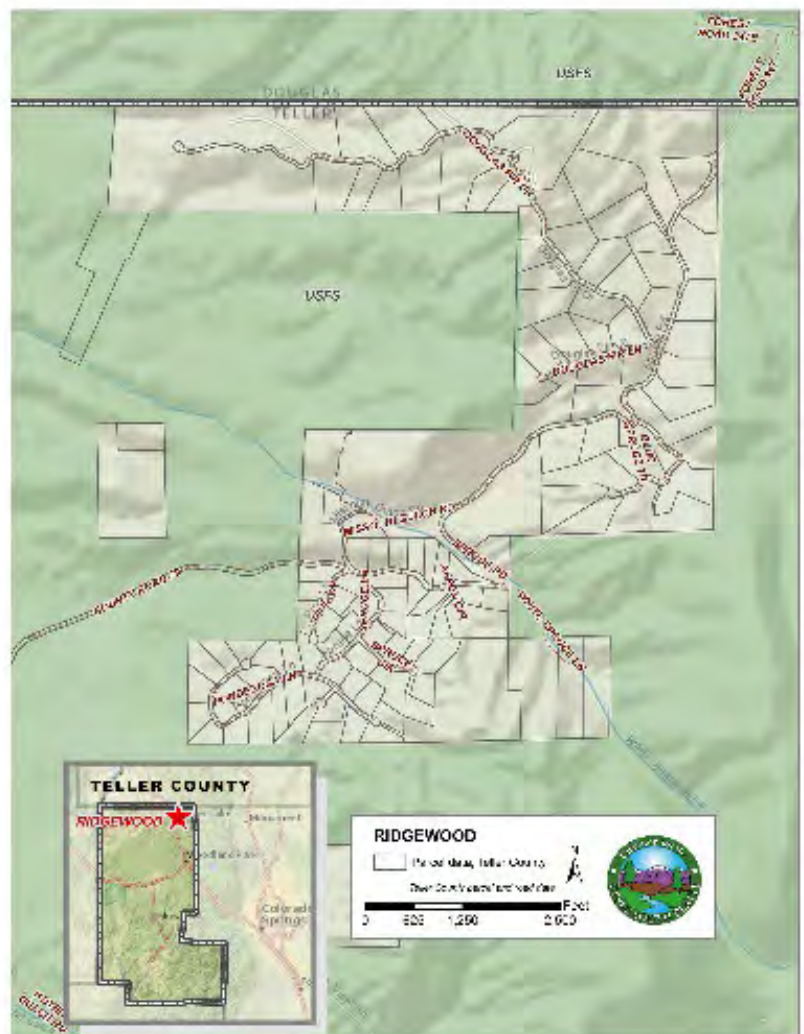
Introduction

The Ridgewood sub-division is composed of primary residences, second homes, vacation rentals, outbuildings, and vacant land. The residents live in an area where wildfires are a real risk.

The original CWPP was approved in 2008 and updated in 2011 and 2016. As stated in the 2016 CWPP, residents are now more aware of the need to manage the area surrounding their home to reduce the risk of high intensity wildland fire and to improve and maintain the health of the forest. Residents have learned that wildfire mitigation is not a once and done project, but an ongoing activity.

Ridgewood has also been recognized as a Firewise® site since 2010.

The 2022 CWPP is an update of the 2016 Ridgewood CWPP to reflect the current knowledge regarding fire science. Much has been learned about fire science from the



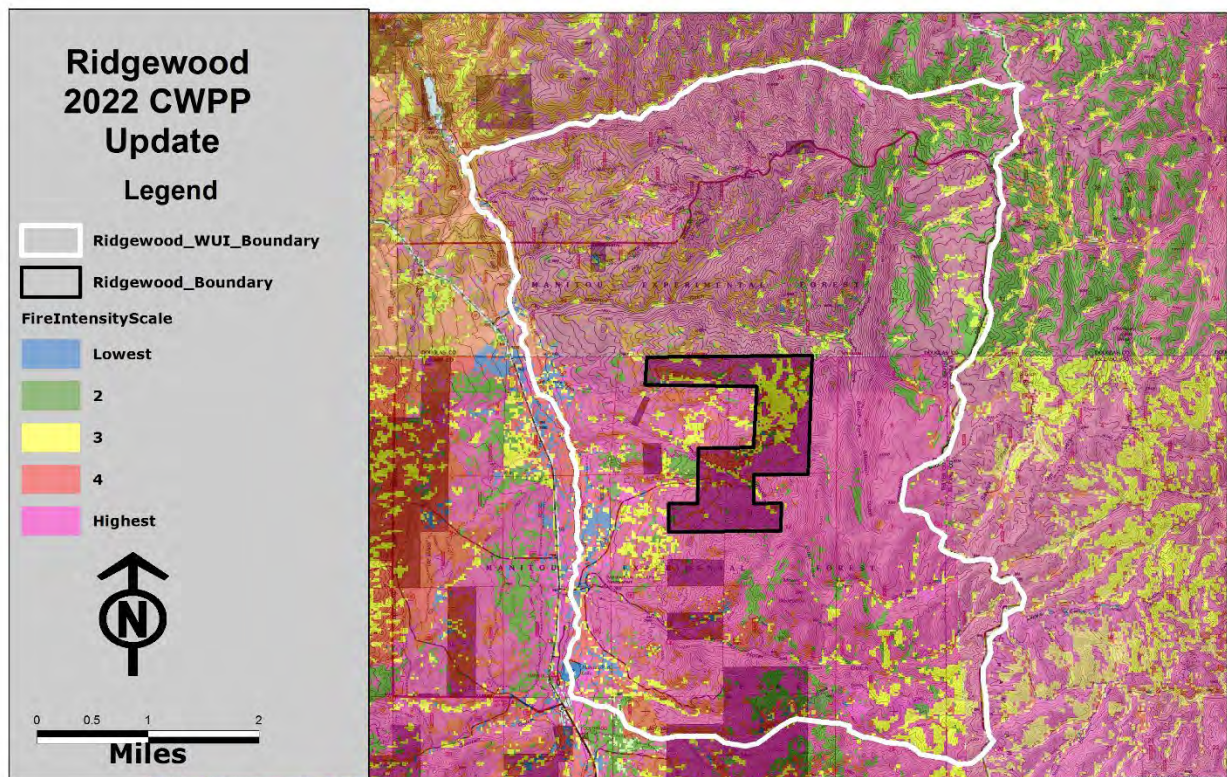
experiences of fire behavior in California. The construction of the Ridgewood CWPP is based on learning from this and other recent wildfires.

Wildland-Urban Interface (WUI)

The Wildland-Urban Interface (WUI) is the **area where houses meet or intermingle with undeveloped wildland vegetation**. This makes the WUI a focal area for human-environmental conflicts such as wildland fires, habitat fragmentation, invasive species, and biodiversity decline.

All homes in the Ridgewood community are within the WUI. The Ridgewood sub-division covers 825 acres and is located 12 miles north of the City of Woodland Park in Teller County. The terrain varies from slight to steep slopes. The surrounding area is a mixed conifer forest and includes land areas managed by the US Forest Service, the Colorado State Forest Service, and the Manitou Experimental Station (a historic site). The area within Ridgewood is populated with Douglas Fir and Ponderosa Pine trees. There are also aspen, juniper and other low growing scrubs and grasses. Therefore, Ridgewood has the potential for extreme fire behavior. Refer to Appendix A: Ridgewood Wildfire Risk Map.

The type and quantity of vegetation, topography, and proximity to wildlands influence how a wildfire will affect an area. Other critical structures include the power lines and propane tanks that are located above ground.



Ridgewood WUI Boundary

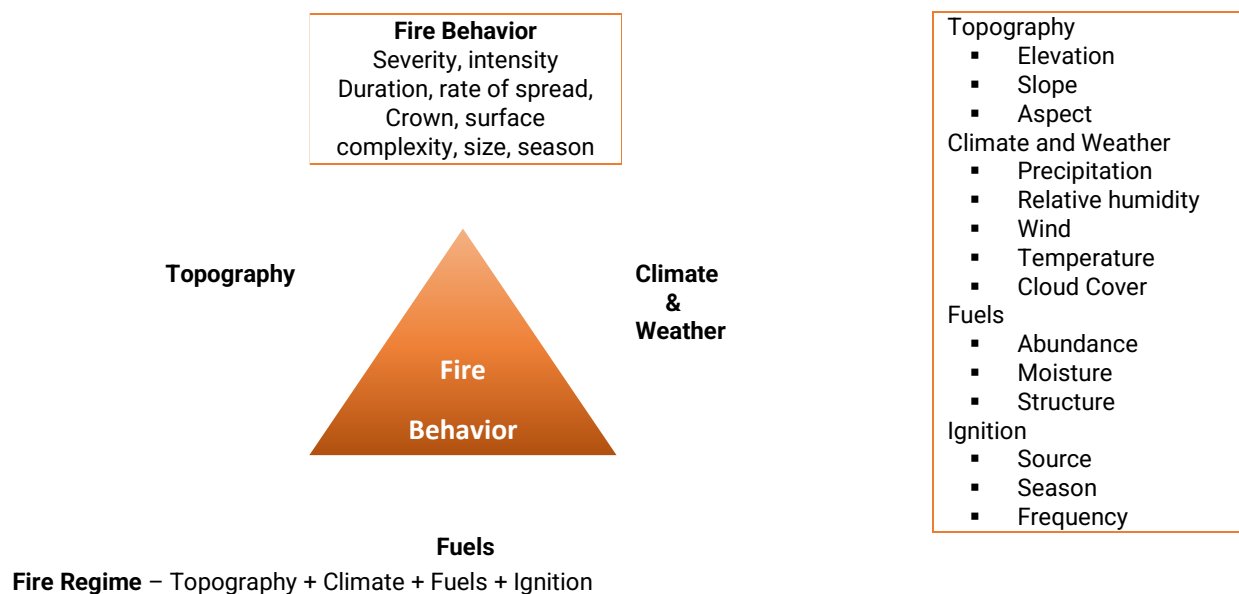
Wildfire Risk

Wildfire risk is the product of the likelihood of a fire occurring, the associated fire behavior when a fire occurs (intensity), and the effects of the fire (susceptibility) on highly valued resources and assets ([Calkin et al. 2010](#), [Finney 2005](#), [Scott 2006](#), [Scott et al. 2013](#)). Wildfire risk mitigation is achieved when any of the three aspects are reduced.



Wildfire risk triangle. Figure 1 from [Scott et al. 2013](#).

Other factors that influence fire behavior include weather, topography, and ample fuel. These factors define the fire hazard. These conditions allow wildfire to spread rapidly and build in intensity.



Temperature, humidity, precipitation, and wind are all important weather variables.

Steep slopes carry fire uphill at an increased rate of spread. Slope orientation plays a role as well. Slopes that face south or southwest have greater exposure to afternoon sun, resulting in lower humidity and higher temperatures.

Potential fuels are living and dead vegetation, homes, and outbuildings. Flammability depends on size, density, moisture content and chemical properties (some plants ignite faster and burn more readily than others).

Of the three fire behavior factors, fuel is where residents can affect the greatest change.

Fire does not engulf everything in its path, it only advances to locations that meet the requirements of combustion (the process of burning something). Oxygen, heat, and fuel are required for combustion.

Wildfire Risk to Homes

Homes in the WUI are vulnerable to three potential types of ignition sources: crown fires, surface fires, and embers. Crown fires generate embers that can travel more than a mile and create spot fires beyond the main fire. Surface fires burn through live or dead grass, ground debris, and small trees and shrubs. Embers are burning pieces of airborne wood and/or vegetation that can be carried more than a mile through the wind. They can ignite homes, penetrate, and smolder in woodpiles, patio/deck items, vents, roofs, and debris filled gutters. Research has shown that changing the flammability of the Home Ignition Zone (HIZ) can really make a difference in the effects of a wildfire.

Actions residents take play an important role in the home surviving a wildfire. Embers are responsible for more than 50% of structure ignitions in the WUI fires. Modifying the Home Ignition Zone (HIZ) can affect the intensity, exposure, and susceptibility to a structure. The two (2) primary determinants of the home igniting: (1) structural ignitability (home hardening) and (2) defensible space (D-space). Prior to and since the Marshall Fire, "hardening" of the home has received renewed attention. Home hardening includes five feet vegetation-free buffers around the home, reducing the ignitability of the roof and of decks, keeping embers out, and landscaping with fire-resistant vegetation.

Preparing Your Home – *adapted from ReadyForWildfire.org. Wildfire Preparation by the University of California Agricultural and Natural Resources*

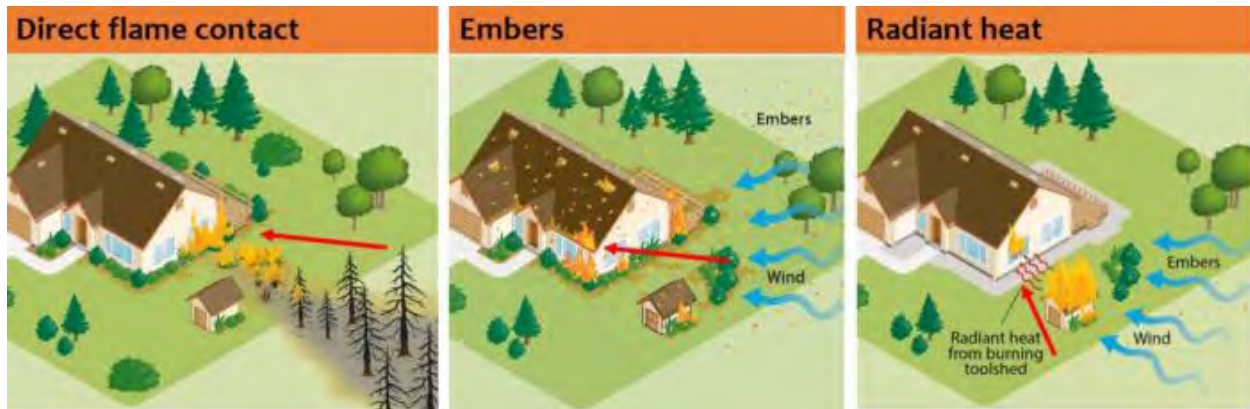
After a wildfire passes through a community, people wonder why one home survived and another did not. Whether you are a homeowner, contractor, or renter, there is good news - research indicates that wise decisions regarding material choices, design and installation options, and maintenance considerations can improve the odds that your home will survive a future wildfire. Hardening a building to withstand wildland fire exposure does not have to be costly, but it does require an understanding of the exposures your home will experience when threatened by a wildfire.

How fires spread

Wildland fires are spread by a moving flame front and the wind distribution of embers. Embers are small pieces of plants, trees, or buildings that are light enough to be blown through the air and can result in the rapid spread of wildfire where embers are blown ahead of the main fire, starting new fires.

How homes burn

Home and building loss during wildfires occur because some part of the building ignites from one or more of the three basic wildfire exposures: **1) direct flame contact, 2) embers, 3) radiant heat.**



Embers cause the majority of wildfire home ignition by directly igniting your home or igniting vegetation or materials on or near your home that results in flames touching your house or a high heat (radiant heat) exposure that may break glass in a window. Should embers land on or near your house, they accumulate (like hail or snow) and can easily ignite the plants and mulch near your home, dry leaves, or lawn furniture. They also land on the roof, deck, or porch and, depending on the condition of each, they may find a gap to enter the house or catch accumulated dry leaves on fire. Embers can also enter the home or attic through a vent or open window. When embers enter the home or attic, they can easily ignite the contents of the house, and the home will burn seemingly from the inside out. When embers enter the house directly, there is often little damage to the surrounding vegetation.



Structure fire with minimal direct damage to surrounding vegetation

What you can do

Homes survive wildfire through a combination of:

- 1) careful landscape selection, placement, and maintenance**
- 2) awareness and management of combustible materials on the property (e.g., leaf litter or lawn furniture) during the fire season**
- 3) incorporation of fire and ember resistant construction materials, installation details and maintenance.**

Use the suggestions below to learn how to harden your home by reducing its vulnerability. Keep in mind that developing wildfire resilience is more than having a metal roof or stucco siding.

Ember-resistant construction relies on awareness of seemingly minute details that can make your home vulnerable to embers, in addition to building with appropriate materials, and regular home and property maintenance.

The following table summarizes the vulnerabilities of your home and recommends actions. Each of the components of the home are prioritized to offer some general guidance; however, each situation is unique.

Priority	Function and Wildfire Vulnerability	Recommendations
#1 Roof	<p>Because your roof is a large horizontal surface, it is arguably the most vulnerable component of your home. The job of the roof is to protect the house from sun, rain, and during fire, from embers. Complex roofs, where the roof meets vertical walls and/or includes dormers present additional vulnerabilities.</p> <p>Wind eddies will deposit embers in the same place that eddies deposit combustible debris.</p>	<p>Use materials with a Class A fire rating. Carefully follow the manufacturer's installation instructions because some roof coverings need additional protection to meet the Class A requirements. Common Class A fire-rated materials include asphalt composition shingles, tile, and steel. Cover chimney and stovepipe outlets with a noncombustible corrosion resistant metal mesh screen (spark arrestor), with 3/8-inch to 1/2-inch openings. Install with a metal drip edge at the roof edge. Clean out and maintain gutters. Plug gaps between the roof covering and sheathing. Maintain your roof and replace when necessary.</p>
#1 Vents	<p>Vents provide two important functions. Vents allow for air circulation to reduce the heat in your attic and allow moisture to escape that can lead to moisture degradation issues over time. Embers can easily slip through foundation, roof,</p>	<p>Move combustible items away from vents both inside and outside the house.</p>

	<p>or attic vents. Once inside, embers can ignite debris and items stored inside the house.</p>	<p>Replace 1/4" mesh vents with 1/8" mesh. Regularly check vents and remove materials that may plug vent openings.</p> <p>Prepare temporary plywood vent covers to install prior to the approach of a wildfire, if you have sufficient preparation time. Or consider using metal tape to temporarily seal up vents from the inside of the house.</p>
#2 Decks	<p>Decks are vulnerable to fires from embers igniting vegetation or stored materials igniting below the deck or ignition of the top of the deck. Leaves and needles can build up in gaps between deck boards, creating targets for embers to ignite. On top of decks embers can also land on wood furniture, door mats, brooms, umbrellas, or plants that are easily ignitable. If the deck ignites, it will provide a flame exposure to either the exterior wall or under-eave area.</p>	<p>Clean and maintain the deck by removing debris that can accumulate on the deck and in between the deck board gaps. Do not store firewood, lumber, or other combustible materials under the deck.</p> <p>Before evacuating bring combustible door mats, brooms, and furniture cushions inside. Move deck furniture off the deck. Move bar-b-que propane tanks away from the house.</p> <p>For new deck installation:</p> <ul style="list-style-type: none"> • Increase the gap between deck boards from 1/8 inch to 1/4 inch. • Increasing joist spacing from 16 inches to 24 inches. • Applying a foil-faced self-adhering adhesive flashing tape (foil-faced bitumen tape) on the top of each joist. Foil tape should extend down each side of the joist 2-3 inches.
#3 Windows	<p>As a fire approaches, close all windows and skylights to prevent ember entry.</p> <p>The glass is the most vulnerable part of the window. Multi-pane tempered glass is best because it distributes the heat load and provides a second layer of protection if the first pane fails. Larger</p>	<p>Install or upgrade to multi-pane tempered glass windows.</p> <p>Remove vegetation immediately outside of the windows.</p> <p>When a neighboring home or building is within 30 feet of your home; consider</p>

	windows are more vulnerable than smaller windows. For vinyl windows confirm there is a vertical or horizontal reinforcement bar.	installing noncombustible shutters to close upon evacuation or cover your windows with temporary plywood covers prior to evacuating.
#4 Eaves	The eave overhang protects your home from rain and sun. Depending on design, it also can trap heat and allow embers to enter through under-eave attic vents. With open-eave construction, gaps between the rafter tails and the blocking can be vulnerable to ember entry. Soffited eaves (boxed-in) are more robust to embers.	With open-eave construction inspect eaves for gaps around rafter roof tails and blocking. Plug or caulk gaps. If possible, create a Soffited eave where an open-eave design exists. Vents should be upgraded to 1/8" metal mesh screening. Remove vegetation and combustible materials below eaves.
#5 Siding	<p>Siding is vulnerable if exposed to flames or radiant heat for extended periods. A carefully developed and maintained home ignition zone will minimize the potential for this exposure.</p> <p>Gaps and joints in siding can create places where flame penetration can occur. Poorly maintained or degraded siding is also vulnerable to flame penetration. Many homes with stucco, cinder block, or fiber cement siding are lost to wildfire because other design & maintenance considerations have not been followed or have been overlooked, allowing embers to either ignite external materials or penetrate the building. In general, combustible panels and horizontal siding with more complicated lap joints (e.g., shiplap and tongue-and-groove) are more resistant to flame penetration into the stud cavity.</p>	<p>Along with the 5' noncombustible horizontal zone, maintain a 6" noncombustible vertical zone between the ground (and other horizontal surfaces) and the start of the siding.</p> <p>Inspect all siding and plug or caulk gaps and joints.</p> <p>If a neighbor's house or an outbuilding is close to the house, a fire-retardant gypsum board can be installed under the siding to increase the fire-resistance of the wall should the siding ignite.</p> <p>Gel coatings are difficult to install and are limited in the number of hours that they provide protection; therefore, they are not recommended.</p>

CALFire funded and published a [Wildfire Home Retrofit Guide](#) that offers "specific recommendations for how to retrofit existing components of a home to withstand wildfire". To view this guide online: <https://naes.agnt.unr.edu/PMS/Pubs/2020-3810.pdf> or read the Guide in [Appendix B](#).

Also, read [Appendix C: Low-Cost Retrofit List](#).

For a publication about Firewise Plant Materials go to the following site or [Appendix D](#): <https://extension.colostate.edu/topic-areas/natural-resources/firewise-plant-materials-6-305/>

In 2021, **Ridgewood** residents spent 175 hours completing home hardening activities.

Fuels Mitigation - adapted from ReadyForWildfire.org. Wildfire Preparation by the University of California Agricultural and Natural Resources.

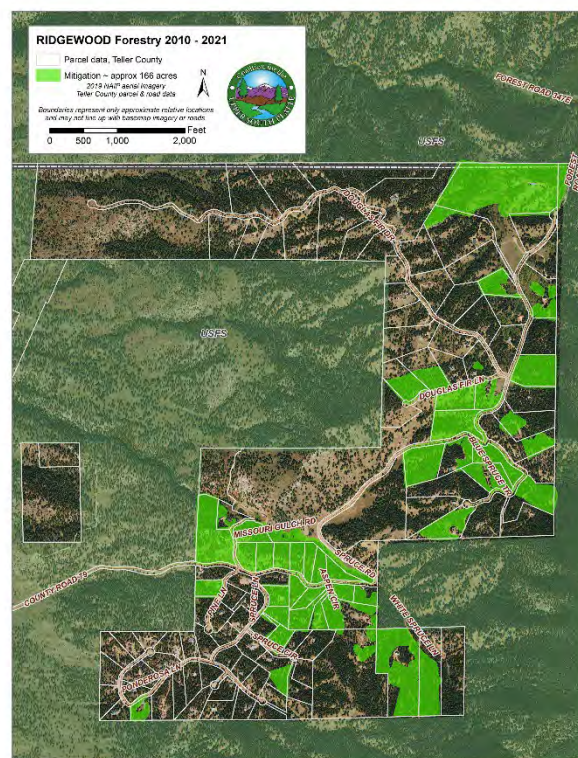
The goal is to create defensible space (D-space) around the house/structure by modifying fuels to reduce fire behavior/intensity.

<p>#1 Vegetation</p>	<p>All plants can burn during a wildfire. Placement of landscaping vegetation and combustible mulch immediately around your home, and under windows, eaves, and vents can provide a way for fire to enter the home. Embers can easily be blown across a green lawn and ignite vegetation adjacent to the house. Leaf litter and needles can accumulate in or on rooves, gutters, decks, porches, and next to the house.</p> <p>The same challenges apply to outbuildings, sheds, and detached garages. In addition to your home, vegetation management treatments should also be given to these structures using the same zone approach.</p>	<p>Home Ignition Zones:</p>  <p>Three home ignition zones</p> <p>Zone 1. 0-5 feet. This is highest priority zone. Start with the house and work outwards by creating a 5-foot wide noncombustible zone around the entire house (and under the deck) to reduce the potential for an ignition by wind-blown embers. If ignited, these materials will result in a direct flame contact to the house. Use hardscape (pavers or crushed rock) around a house. Cut tree branches that overhang the house.</p> <p>Zone 2. 5-30 feet. Lean and green zone. The goal is to reduce the intensity of the fire and potential for ember generation from the landscape. Trees and taller vegetation should be well-maintained separated from the house and each other. Remove vegetation under trees to prevent fire from climbing to the top of the trees. Prune mature trees up to 6-10 feet from the ground. Trees less than 20 feet tall should be pruned, but always leave two-thirds of the green branches.</p>
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		<p>Landscaping in this area should include low growing, open structured, less resinous, higher moisture content plants.</p> <p>Zone 3. 30-100 feet or property line. Reduced fuel zone. The goal is to interrupt the fire and keep flames on the ground. Remove dead trees, thin out small trees and shrubs creating islands of vegetation, limb and prune mature trees up to 6-10 feet. Thin mature trees so that canopies do not touch.</p>
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The hazard fuel reductions project by the Pikes Peak Ranger District will be conducting pile burns on land near Ridgewood. Prescribed fires work to remove dead vegetation and fuels that have accumulated. The pile burns help to improve the health of the forest and help to reduce high-intensity wildfires.

Extensive fuels mitigation has been completed throughout the subdivision. The map below shows the mitigated properties in Ridgewood. Before and after pictures of property mitigated in **Ridgewood** in 2021 are printed on the next page. In 2021, 25.35 acres were mitigated by the Coalition of the Upper South Platte (CUSP). Additional acres were mitigated by private contractors. Residents spent \$273,474.75 on fuels mitigation and hardening activities.





Before



After

In addition, a dumpster was provided for **Ridgewood** residents to clear slash and other debris from their properties. The 30-yard dumpster was filled within 24 hours. Another dumpster was provided for an additional two weeks. It too was filled.



Appendix E has the “Wildfire Home Assessment and Checklist” prepared by the Insurance Institute for Business and Home Safety or download the checklist at <https://www.iafc.org/topics-and-tools/resources/resource/ibhs-wildfire-checklist>

Forest Health

With inadequate rain and snow fall, a tree’s ability to defend itself against insects and diseases decreases. Some areas in Teller County have experienced tree mortality. Beginning in 2011, residents were encouraged to seek professional advice before taking actions to address insect or disease problems on their property. A forester from the CSFS office in Woodland Park is available to assess properties.

Read Appendix E for in-depth information about the Insect and Disease Conditions that may affect trees in the area.

The **Ridgewood** sub-division has sprayed trees within the community and individual property owners have valued trees sprayed frequently.

The HOA has hired a Colorado Springs forester to evaluate the trees within the sub-division for insects and diseases. He determined that at this time the trees in the area are healthy.

NE Teller County Fire Protection District (NETCO)

NETCO has the responsibility to be the first responder to a fire, wildfire or structural, in the Ridgewood area. There are significant limits to the staffing, equipment and response time that can be anticipated in a fire emergency. The department acquired a new water tender in 2010 to deliver water to areas of the district that are non-hydrant areas. Ridgewood is one of those areas. In 2015 a type 1 structure engine was purchased and in 2021 a type 3 wildland engine was also purchased.

In 2021, the NETCO Fire Department initiated a program to help residents create defensible space on their properties by offering free chipping of tree branches. Chipper dates change every year. Contact NETCO each year for dates.

The NETCO Fire Chief is available to provide a home assessment and site-specific mitigation recommendations to a property owner. Also, residents may want to determine that their driveway is adequate for the firefighting equipment used today. The height, width and clearance for the fire equipment will be assessed by NETCO personnel.

Residents should make sure that the home's address is clearly visible from the road.



PARTICIPATING FIRE DEPARTMENTS

NETCO:

(719) 687-1866

GREEN MOUNTAIN FALLS:

(719) 684-2293

MOUNTAIN

COMMUNITIES:

(719) 687-1389

DIVIDE:

(719) 687-8773

FLORISSANT:

(719) 748-3909

FOUR-MILE:

(719) 689-3417

CRIPPLE CREEK:

(719) 689-0240

VICTOR:

(719) 689-2284

**Dial 911 for
Emergencies!**

FREE Teller County CHIPPING PROGRAM

Protect Your Home from Wildfire



Teller County and local Fire Departments are helping residents and property owners **create defensible space** by providing free chipping of tree branches. If you clear woody vegetation from around your home and stack it at the edge of the roadway, we'll chip it at no cost. Logs greater than 6 inches in diameter may be donated to local firewood programs. Cash donations accepted.

MATERIALS GUIDELINES

Accepted materials include trees, logs and branches up to 6 inches in diameter, free of nails and wire. The following restrictions apply:

- No Willows: Willows help to slow the spread of fire, because they have high moisture content. Willows are also very fibrous, so they clog our chipping equipment.
- No cottonwood. Cottonwoods are important native trees that stabilize stream banks, take up storm water and serve as riparian wildlife habitat.
- No construction or building materials, treated lumber, fence posts or signs.
- No shrubs, root wads, stumps, dirt or rocks; these items clog and damage our chipping equipment.
- No grass clippings, trash, weeds, or bags of leaves.

PILE GUIDELINES

Piles must be stacked prior to your neighborhood's designated chipping week (see reverse for schedule). Call your local fire department to get on the schedule so that our chipping crews can plan their routes for that week. Chipping will take place Saturday through Friday of your neighborhood's designated chipping weeks. Improperly stacked piles may not be identified or collected.

- Stack piles neatly (no bags), with the large cut ends of branches facing the road.
(see photos below)
- Place piles within 5 feet of the roadway, but not touching the road.
- Maximum pile size is 5'X5'X5'. There is no limit on the number of piles that you may put out.
- After crews remove your pile, clear away any remaining branches, needles and debris.
- Do not combine piles with neighbors or place piles in other neighborhoods.

PROPERLY STACKED PILE



IMPROPERLY STACKED PILE



Propane

Above ground propane tanks (used for heating and appliances) can be a major hazard to structures and firefighters if they explode during a wildfire. Propane tanks are often close to a structure and may be hidden by fencing and/or vegetation. Propane tanks should be on a noncombustible surface, a minimum of 30 feet from the home and with 10 feet of clearance from other combustibles.

There are many above ground propane tanks in the **Ridgewood** sub-division.

Water Supply

Water will be delivered via the firefighters using a water tanker. Another source that will be available to the NW Teller Fire Protection District is located at Camp Elim. There will be three ten-thousand-gallon water tanks buried on the property.

Ridgewood has a cistern located at the intersection of Spruce Road and Douglas Fir Road. The tank holds about 10,000 gallons of water. It has a leak that cannot be repaired so there is about 3,000 gallons of water in the tank. In addition, the equipment needs to be labelled so firefighters from other districts know how to connect to the system.

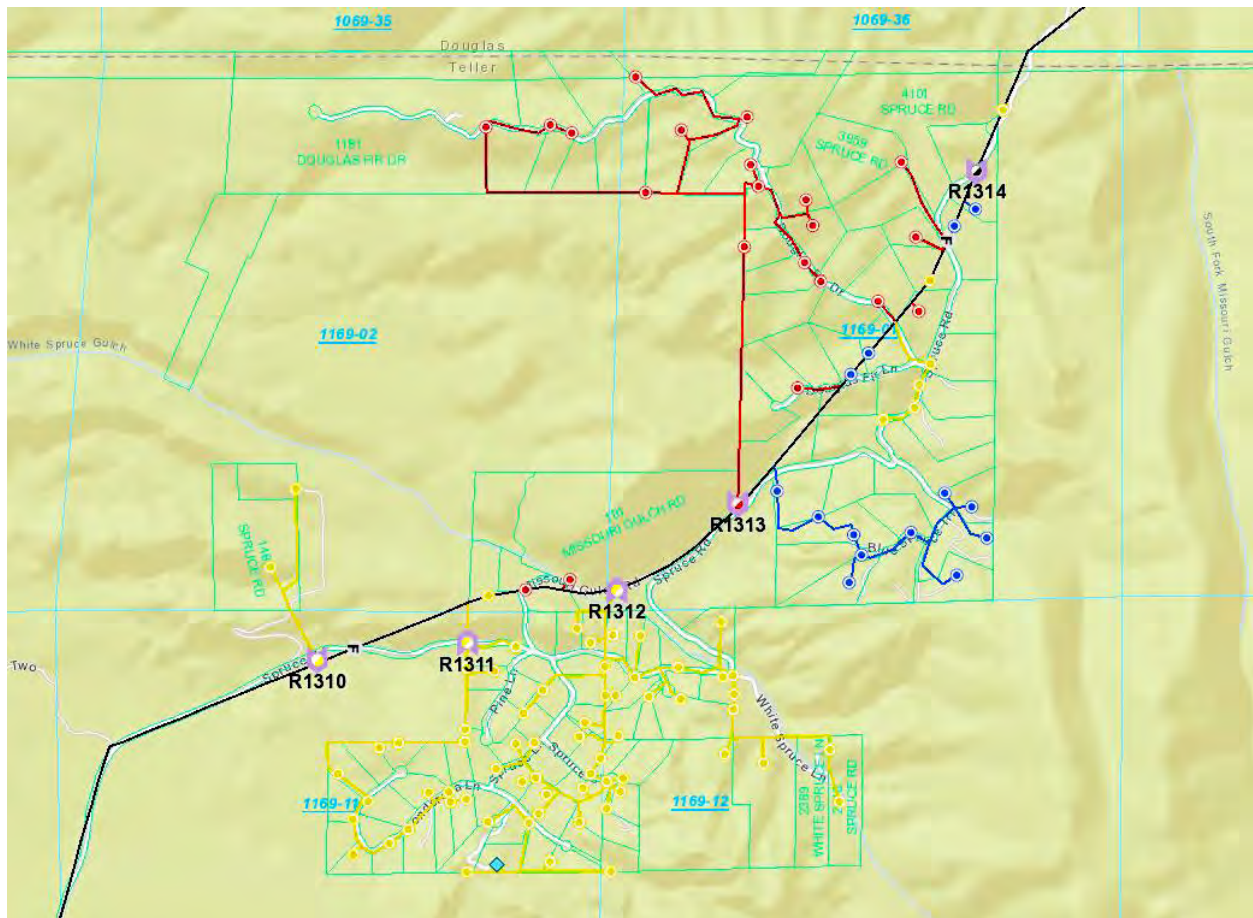
The **Ridgewood** HOA is working with the US Forest Service (Pikes Peak District) to have the dry hydrant at Manitou Lake repaired so the water in the lake would be available to fight fires (structure or wildfire)

Power Supply

Wildfires can interrupt electrical and communication systems. CORE relies on wooden poles to carry the lines that bring electricity to Ridgewood residents. Telephone cabling is also installed on the same wooden poles. CORE has a responsibility to remove or trim trees within the subdivision and County Road (79). CORE's vegetation management program is based on four-year and six-year cycles. Full scale trimming and hazard tree removal occurs every 6 years. The first year of the rotation includes all the 3-phase lines (black). The next 5 years are all single-phase lines (red, blue, and yellow on the attached map) divided out as evenly as possible. Crews trim trees to a distance that will allow for six years of regrowth before trimming is required again. Clearance needed on aspen trees is much more than what is needed on conifers. Mid-cycle inspections are done at the 4th year of maturity after a full-scale trimming to identify trees growing at faster-than-normal rates and unhealthy trees that pose a hazard if the trees were to fall toward the power lines.

CORE vegetation management program has started inspecting service lines more in the last couple years (lines that run from transformer poles into homes) to help mitigate any hazard trees that might fall on them. This is a low priority because those lines are much lower voltage and typically have protective weather coating.

Trees on a homeowner's property are ultimately their responsibility. The cleanup and disposal of hazard trees that the contractor removes are up to the homeowner (as if the tree fell on its own.)



All power/communication lines in **Ridgewood** are above ground. **Ridgewood** was last mitigated in 2017 and will be inspected and worked again in 2023. A mid-cycle inspection was done in 2021 for **Ridgewood**, but the work is just now being completed in early 2022. The main three-phase line (Black) will be inspected in 2024.

Wireless communication is limited in some areas within the community.

Life Safety

Ingress and Egress

It is essential that the community has adequate access for firefighting equipment and other heavy equipment needed to fight fires. It is also essential that the residents have an evacuation route during an emergency. The Teller County OEM has begun a project to identify evacuation zones in sub-divisions and provides funding to complete an evacuation route. Roads can also serve as fire breaks.

There is only one way in and out of **Ridgewood**. The CWPP Committee members are collaborating with the Teller County Office of Emergency Management to determine another evacuation route for the residents in the event of a wildfire.

Refer to Appendix G: Map of Ridgewood with Roads.

Firefighters may have to concentrate on evacuating people, because they cannot safely send in crews and equipment to fight a wildfire.

Red Flag Warning

Red Flag Warning is a term used by fire-weather forecasters to call attention to weather circumstances that may result in extreme burning conditions. The warning is issued when the following weather parameters are forecast:

1. a sustained wind of 15 mph or greater
2. a relative humidity less than or equal to 25%
3. a temperature of greater than 75 degrees F.

The local weather TV stations, NETCO and Teller and El Paso Counties put out the Red Flag Warning to citizens.

When Peak Alerts issues a Red Flag Warning a member of the CWPP committee displays the Red Flag at the entrance to the **Ridgewood** sub-division.

Evacuation

In planning for evacuation most of the State of Colorado uses 3 levels – Ready, Set, GO. The high variability in fire behavior due to weather/wind and topography makes it difficult to accurately predict who needs to evacuate and when they should evacuate. Refer to Appendices for more detailed information about READY ([Appendix H](#)), SET ([Appendix I](#)), GO ([Appendix J](#)) and/or bff1e0_200198f045fe4bcb849c5b226207fca5.pdf (tellercountysheriff.com).

Because of fire behavior emergency officials recommend early evacuation as the safest course of action. Some residents may evacuate, and others may choose to shelter-in-place (SIP) or self-defend (SD) to protect their property. Others may have a wait and see attitude and evacuate when they feel threatened. Remember there is an increased risk of injuries and death during late evacuations. Evacuation is the safer option.

Information is critical for an individual to make an informed decision about their choice of actions. The information must be complete and accurate. Take the initiative to stay informed and to be aware of the current situation. Residents who have registered their cell phone(s) to receive emergency notifications from Teller/El Paso 9-1-1 Authority will be given information about the current situation. A resident must sign up to receive emergency notifications. Register for alerts at PeakAlerts.org. Download the Everbridge App. Select Peak Alerts as your organization and sign into your Peak Alerts account or text your zip code to 888777 to opt in.

Individuals who plan to stay and defend their property need to be mentally prepared and physically capable of engaging in strenuous fire suppression activities. There must be a water source, firefighting equipment, and appropriate personal protective equipment. All these factors need to be implemented for SD to be a viable option.

If a home is threatened by a wildfire, law enforcement or fire officials will contact residents and advise them to evacuate. When you evacuate, leave a note on the home's door that includes your name, an emergency phone number, and destination. Take important documents, special belongings, prescription medications and special supplies for infants/children, older adults, or special needs family members with you. Load up your family, pets, and packed personal effects

and LEAVE the area. Have a plan for livestock. Parents should also have a plan for their child(ren) in the event the child(ren) is alone when a wildfire occurs.

If you would need special help to evacuate from your home, sign up to participate in the Teller County Emergency Assistance and Response Program (EARP). Doing so will allow authorities to quickly contact a person during an emergency to determine if the individual needs assistance. To obtain a copy of the EARP form, go to [Teller County](#) or [Appendix K](#).

Once you leave the evacuation zone, you will not be permitted to return to the zone until further notice.

Progress on 2016 Goals

#1 Become a Fire Adapted Community.

The Ridgewood CWPP uses The National Wildfire Coordinating Group definition of a fire adapted community. The definition was developed by the Wildland Urban Interface Mitigation Committee. A fire adapted community is "A human community consisting of informed and prepared citizens collaboratively planning and taking action to safely co-exist with wildland fire."

The Ridgewood Community will be encouraged to recognize that each resident is responsible for how they choose to manage their property and how those choices directly affect the overall safety of the community and the firefighters that protect it "Reality is that in a major wildland fire there will not be enough fire resources or firefighters to protect each home."

#2 Officially link Ridgewood CWPP Committee with the Ridgewood HOA Board.

The CWPP Committee is a standing committee on the Ridgewood HOA Board. At least one CWPP committee member attends the HOA Board meetings.

#3 Fuel Mitigation, Firewise Landscape and Forest Health.

Ridgewood residents are encouraged to remove forest fuels and create defensible space. CUSP comes to the community twice a year to slash vegetative materials residents have compiled for mitigation. Grant opportunities are emailed to residents as a grant becomes available.

#4 Firewise Construction.

The Ridgewood Architectural Committee has been provided with information to provide residents with details on Ignition resistant construction material.

#5 Education

Education is an ongoing process.

Information has been provided to residents regarding defensible space and Firewise landscaping features. This information has been provided at community meetings, in a section of the information packet given to new residents; posted on the Ridgewood website and in the Ridgewood newsletter.

Residents are encouraged to sign up with Nixle and Teller/El Paso E911 using home and cell phone numbers.

Guest speakers with knowledge of Firewise principles presented information and discussed these principles at community meetings. These speakers were able to provide accurate information about forest health in the Ridgewood community dispel misleading statements about forest insects and diseases.

The Committee was not successful in asking the Ridgewood HOA to re-establish the emergency calling tree.

#6 Research Community Fire Fighting Capabilities.

The Ridgewood HOA Board invited the Teller County Commissioners, the NETCO Fire Chief, CUSP, CSFS, Ridgewood residents and CWPP Committee members to observe the water resources in Ridgewood for fighting fire. The fire hydrants, the cistern on Upper Spruce Road, the pond on the Warren's property and the dry hydrant at Manitou Lake were visited and discussed. Grant opportunities were discussed. This information was given to the Ridgewood Water Board President and a Board member. Follow-up of issues related to water resources for those in the water district is the responsibility of the Water Board. The dry hydrant at Manitou Lake will be repaired and updated by the USFS. The funding was approved in the 2022 budget according to Oscar Martinez, Pikes Peak District Ranger. (Mr. Martinez has retired.)

#7 Leadership and Maintenance

Ridgewood has maintained its Firewise USA® designation.

#8 Emergency Evacuation Route

Identifying secondary emergency evacuation routes is an ongoing project. The CWPP committee has met with the Teller OEM and staff to explore possible routes and will follow-up with the next steps – contacting the landowner and the USFS Pikes Peak District Ranger.

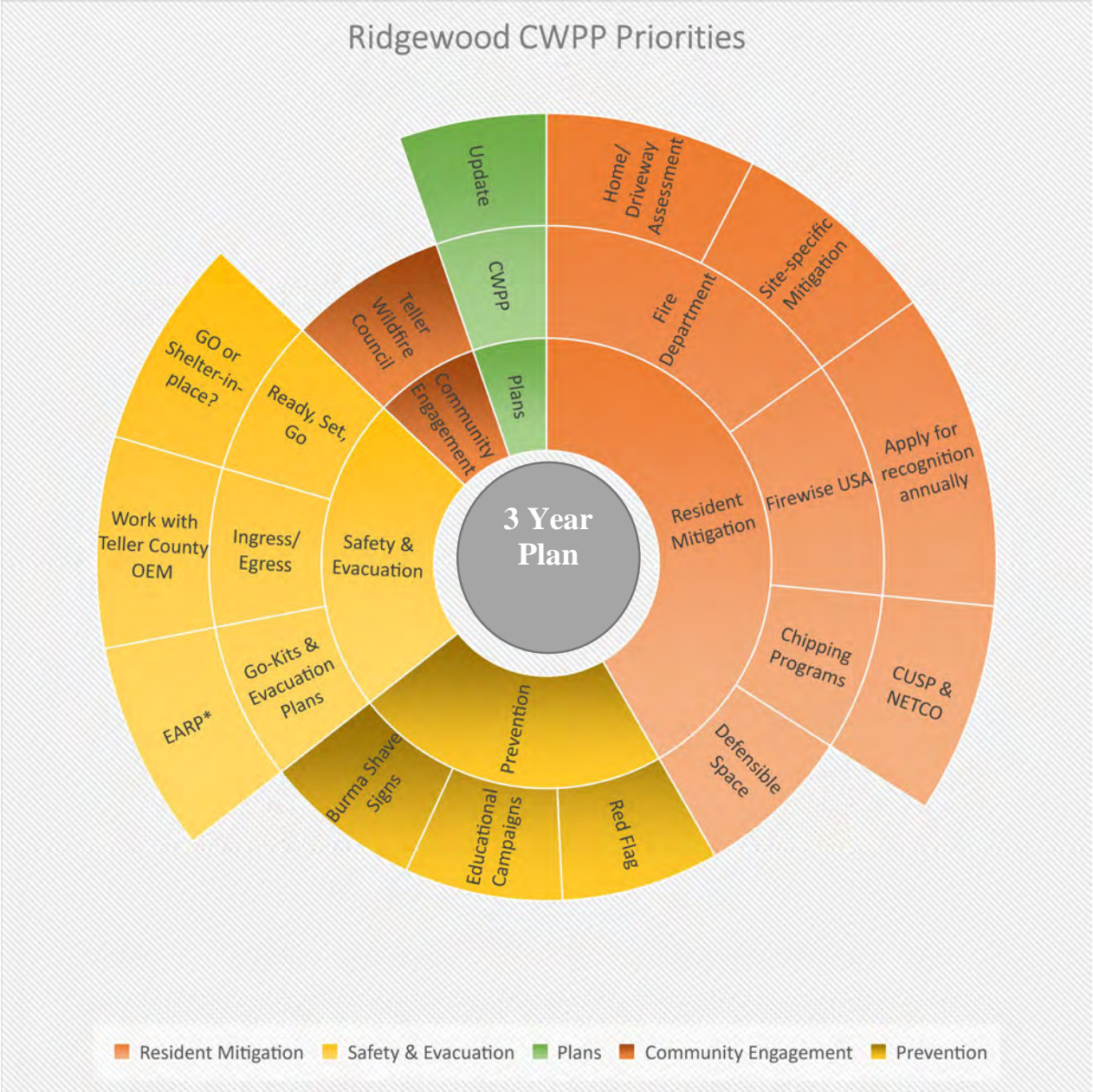
#9 Support USFS Use of Prescribed Fire

The CWPP committee has not actively pursued this priority.

#10 Seek Grant Funds for Vegetation Management, Evacuation Program and Water Supply Cistern.

The CWPP committee worked closely with the CUSP staff and CSFS staff to promote funding opportunities for vegetation management.

The Teller County OEM has financial resources for identified evacuation routes.



*EARP - Emergency Assistance & Response Program

Ridgewood CWPP® Goals for 2022 - 2027

Action	Description	Estimated timeline
Fuel Mitigation		
Slash chipping project		Bi-annual
Provide information to residents regarding defensible space recommendations and maintenance of projects	Have handouts available at community meetings Include information in packet for new owners Include references to other websites listed on Ridgewood website Select guest speakers with relevance to CWPP actions for community meetings Reduce structural ignitability by cleaning roofs/gutters/vents	Annually PRN On-going Annually Annually spring, summer, and fall
Sponsor a project to reduce combustible material in Ridgewood	Wildfire Community Preparedness Day	Annually
Education		
Provide forest health information regarding insects and disease	Provide CSFS contact information in newsletter and on website Select guest speakers with relevance to CWPP actions for community meetings	On-going; update prn Annually
Provide information about hardening your home	Emphasize ember ignitions and structural maintenance Burma Shave signs	Annually for the next 3 years using HOA website and meetings. Late spring through September weather permitting
Use website, newsletter and CWPP Gmail account to keep residents aware of grant opportunities and related activities throughout the subdivision		PRN
Leadership & Maintenance		
CWPP committee		Meet monthly April through October
Maintain Firewise recognition	Complete renewal application	Annually in November
Participation in community activities related to living in the WUI	Attend Teller County Wildfire Council meetings Attend symposiums	Monthly meetings As offered by the Teller County OEM office

Update current CWPP	Current plan was written in 2016	December, 2021
Life Safety & Emergency Issues		
Encourage and educate residents to have adequate driveway dimensions for emergency vehicle access Alert residents to high wind warnings in the area	Post RED Flag at subdivision entrance	2023 PRN
Egress route	Continue working with OEM to establish an egress route	ASAP
Provide residents with resources for planning an evacuation	Ready, Set, GO	2022
Provide resource for vulnerable populations needing assist to evacuate	TC Emergency Assistance and Response Program	2022



Colorado Risk Reduction Planner

<https://co-pro.coloradoforestatlas.org>

Wildfire Risk - Ridgewood

The overall composite risk occurring from a wildfire derived by combining Burn Probability and Values at Risk Rating in the vicinity of Ridgewood subdivision in Teller County, Colorado.

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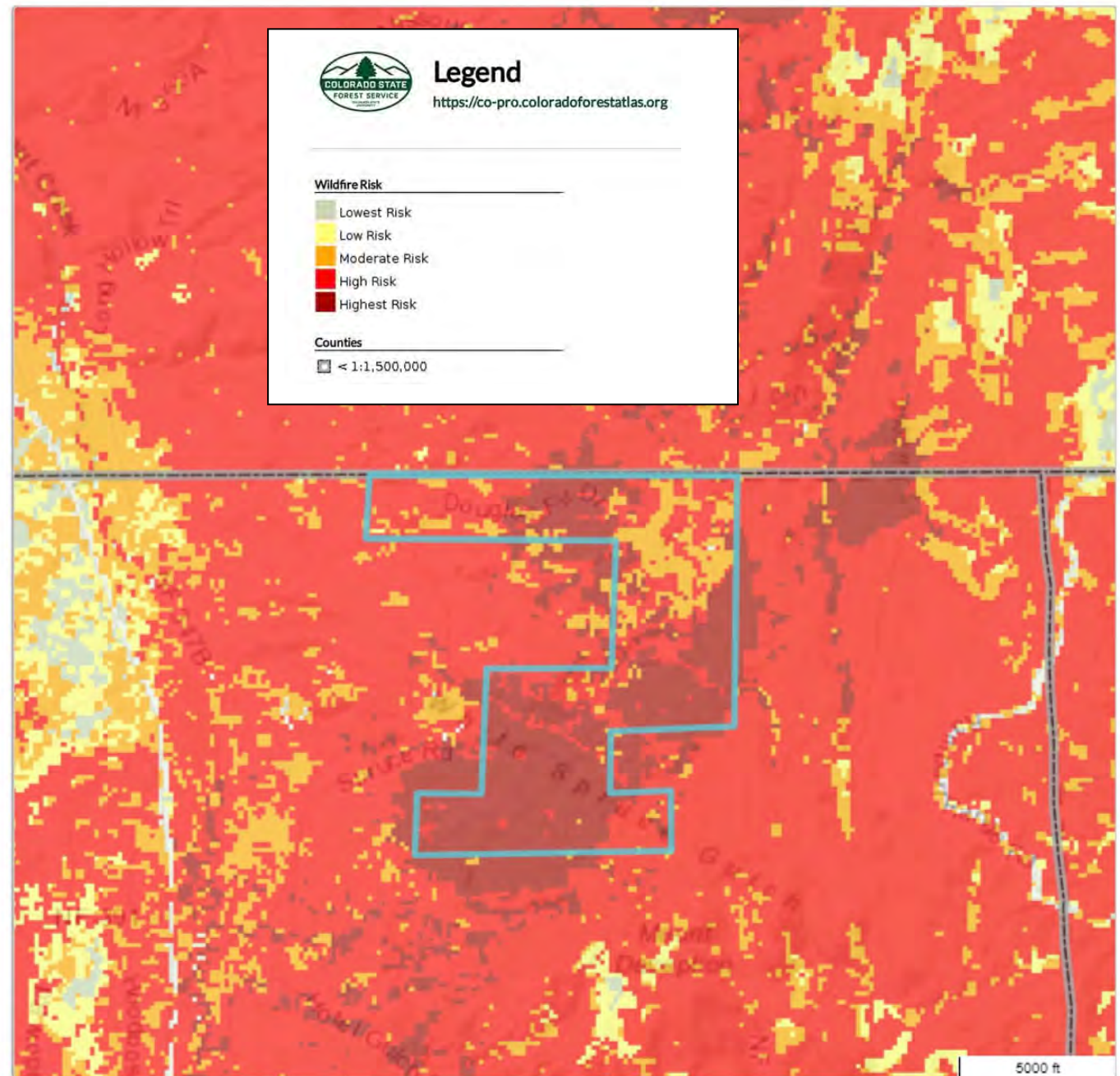
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Disclaimer

The user assumes the entire risk related to their use of the Colorado Wildfire Risk Public Viewer and either the published or derived products from these data.

The Colorado State Forest Service is providing these data "as is" and disclaims any and all warranties, whether expressed or implied, including (without limitation) any implied warranties of merchantability or fitness for a particular purpose.

In no event will Colorado State Forest Service be liable to you or to any third party for any direct, indirect, incidental, consequential, special or exemplary damages or lost profit resulting from any use or misuse of these data.



WILDFIRE HOME RETROFIT GUIDE

**How to Harden Homes
Against Wildfire**



**LIVING
WITH FIRE
TAHOE**



EXTENSION

College of Agriculture,
Biotechnology & Natural Resources

**PEER
REVIEWED**

How to Use This Guide



This Guide includes specific recommendations for how to retrofit existing components of a home to withstand wildfire. Each section contains an explanation of how the component is vulnerable to wildfire and what can be done to improve that component. The illustrations throughout the Guide are intended to show best practices for reducing the vulnerability of a home to wildfire.

Inside This Guide

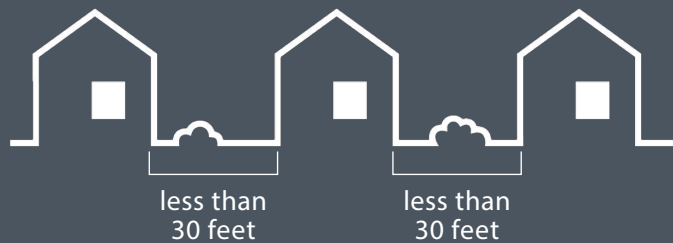
Defensible Space	p. 5	Siding	p. 10	Chimneys	p. 15
Roofs	p. 6	Skylights	p. 11	Fences	p. 16
Roof Edges	p. 7	Windows	p. 12	Glossary	p. 17
Rain Gutters	p. 8	Decks	p. 13	Online Resources	p. 18
Vents	p. 9	Garages	p. 14		

When using this Guide, think about the location and context of the home and how that influences vulnerability to wildfire:



Steep Slopes

When homes are located on steep slopes, decks commonly overhang the slope below, and this downslope area is often heavily vegetated. Prioritize defensible space actions so that flames from burning vegetation cannot reach the underside of the deck and ignite, with subsequent ignition of the home.



Dense Neighborhoods

Dense neighborhoods with homes close together have an increased risk of building to building ignition because of the radiated heat and potential flames that are generated if a neighbor's home burns. Prioritize actions to reduce the possibility of homes igniting each other. Intensify defensible space by thinning trees and shrubs between homes. Engage in neighborhood conversations to encourage all neighbors to take actions to reduce their own vulnerability to wildfire.



Large-Parcel Lots

When homes are on large parcel lots and neighboring homes are far apart, vegetation and other combustible materials on the property (e.g., wood pile, tool shed) can be a large factor in home ignition. Prioritize creating and maintaining defensible space, including the near-home noncombustible zone, and home-hardening techniques to reduce vulnerability from embers.

Living within the natural environment brings both serenity and responsibility.

Communities located in wildfire-prone areas need to take extra measures to live safely. There are many ways to prepare communities and properties for wildfire, including creating and maintaining adequate defensible space and hardening homes through altering or replacing the construction components. This guide will help residents and building professionals better understand how to prepare homes and communities for wildfire.



DURING A WILDFIRE, homes can be threatened by **1)** wind-blown embers, **2)** radiant heat, and **3)** direct flame contact.

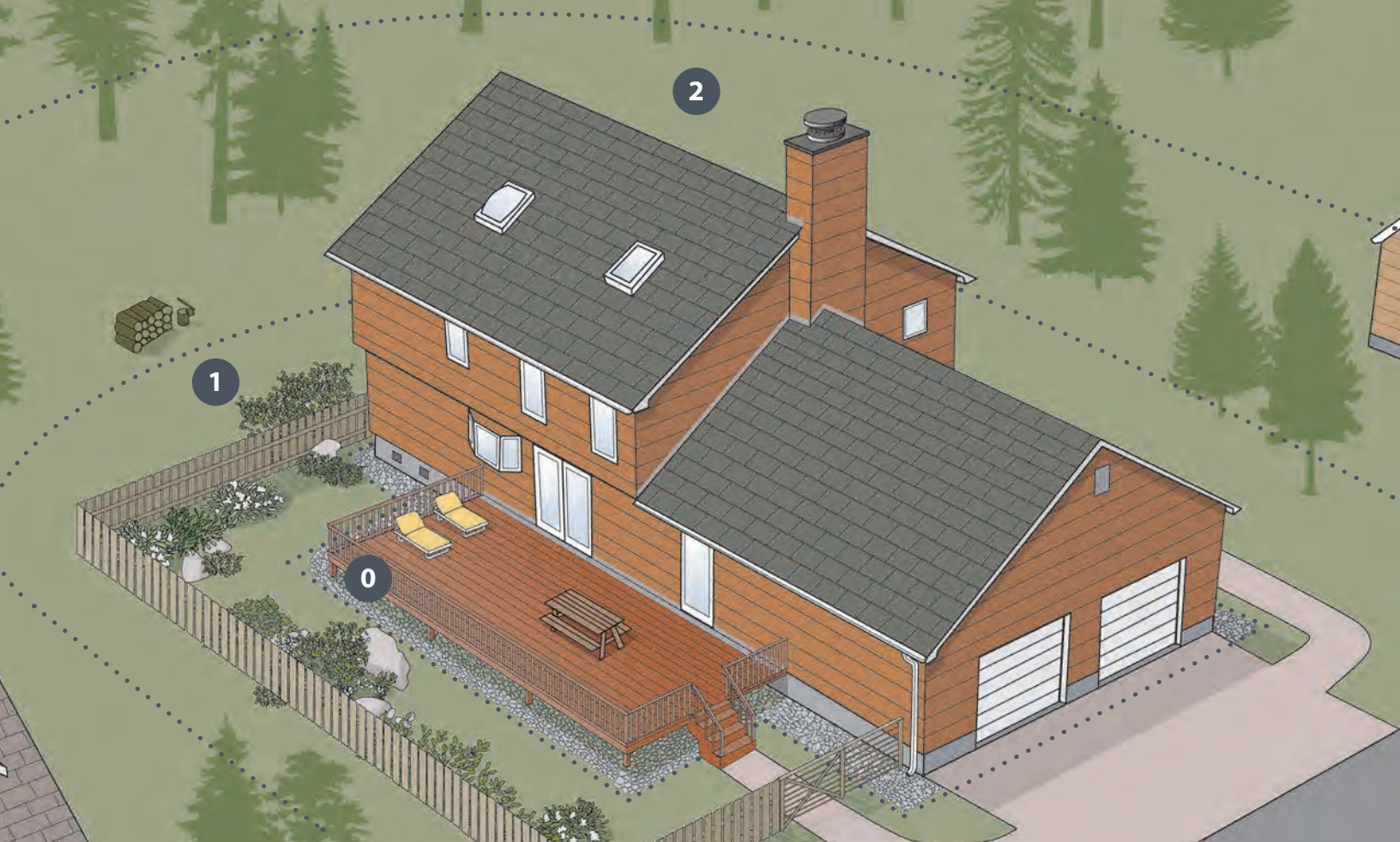
In wildfire events, 60-90% of home loss is due to embers. Embers can originate from an approaching wildfire or small parts of nearby burning vegetation and construction materials (e.g., a home, storage shed, wood pile). Embers are important because of what they can do directly (e.g., ignite materials in an attic after entering through a vent) and what they can do



indirectly (e.g., ignite a wood pile or storage shed located close to the home, resulting in radiant heat or direct flame contact to the side of the home). Reducing the vulnerability of homes to ember ignition will increase the chance of homes and neighborhoods surviving a wildfire.

The most effective way for homes to withstand wildfire is a “coupled approach” that considers the exterior

construction materials and how they are put together, as well as the surrounding vegetation and other near-home combustible materials. Selection, location and maintenance of vegetation and other combustible materials on a property can reduce the chance of a wildfire burning the home. This Guide provides information and recommendations for retrofitting an existing or newly constructed home with wildfire in mind.



↑ *Protecting a home from wildfire requires continual defensible space actions in three zones around the property.*

Contact local Extension offices for more information about defensible space recommendations specific to different regions.

Defensible Space

- 0 THE EMBER-RESISTANT ZONE (Zone 0) | 0–5 feet:** The zone within 5 feet of your home has many different names (e.g., the noncombustible zone, the immediate zone, the zero zone), but the objective is generally the same—to reduce the vulnerability of the home to embers by creating a zone of ember-resistant materials around the home. Gravel, a concrete or brick walkway, or another hardscape feature is commonly used to construct this zone. This ember-resistant zone should include the area under and around any attached deck. Be sure to keep this zone clean of any woodpiles, wood mulch, or flammable vegetation.
- 1 THE LEAN, CLEAN AND GREEN ZONE (Zone 1) | 5–30 feet:** The objective of this zone is to reduce the risk of fire spreading from surrounding vegetation to the home. Lean indicates that there is only a small amount of vegetation, if any, present. Vegetation should be grouped in discontinuous islands. Clean indicates that vegetative debris and dead materials are routinely removed. Green indicates that vegetation within this zone is kept green and well irrigated (if appropriate) during the fire season.
- 2 THE REDUCED FUEL ZONE (Zone 2) | 30–100 feet:** The objective of this zone is to reduce fire spread and restrict fire movement into the crowns of trees or shrubs. Remove dead plant material, lower tree branches and other ladder fuels (e.g., shrubs, lower branches, smaller trees). Locate outbuildings (e.g., for storage) at least 30 feet away from the home and create an ember-resistant zone around all outbuildings and propane tanks.

Roofs

Making a roof “fire-safe” is a big step in reducing the vulnerability of the home to wildfire. There are three fire ratings for roof coverings: Class A, Class B and Class C, with Class A providing the greatest fire protection. The roof rating designation provides information for the roof covering material and does not include where the roof meets other materials at the edge of the roof. A non-fire-retardant treated wood shake or shingle roof covering is unrated and is not desirable—these roof types have less than a Class C rating.

HOW TO REDUCE THE VULNERABILITY OF ROOFS

- ▶ Replace a wood shake or shingle roof with a Class A roof.
- ▶ Remove accumulated vegetative debris from the roof.
- ▶ If there is a space between the roofing materials and roof deck, make sure that the openings between the covering and the roof deck are blocked. Repair areas as needed.
- ▶ If the roof consists of Class B or C roofing materials, determine if the underlayment in the assembly provides Class A protection as indicated in manufacturer installation instructions. When viewed from the edge of the roof, these materials would either look like gypsum wallboard or overlapping 4-foot wide sections of an asphalt composition roof covering. Maintain the roof covering and replace with a Class A product when needed.

A CLASS A ROOFING

materials include asphalt fiberglass composition shingles, clay and cementitious tiles (both flat and barrel shaped), and some metal roofing materials.

B CLASS B ROOFING

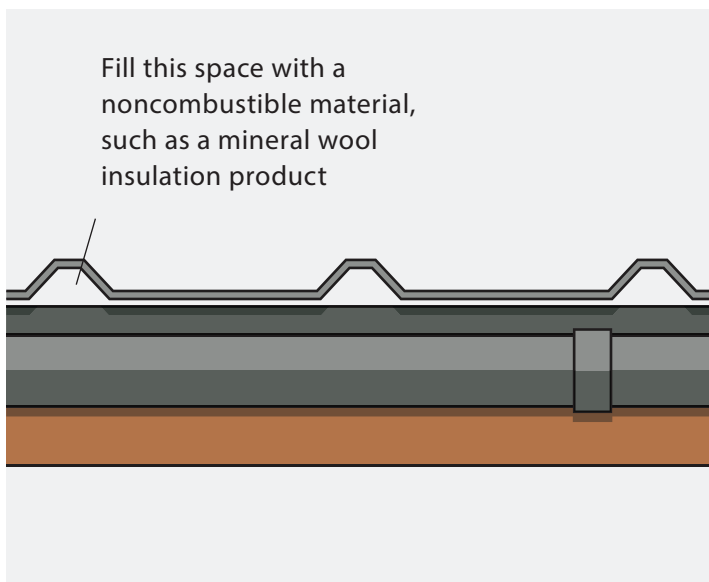
materials are most commonly exterior-rated, pressure-impregnated fire-retardant treated shake or shingle covering (not allowed for use in many jurisdictions).

C CLASS C ROOFING

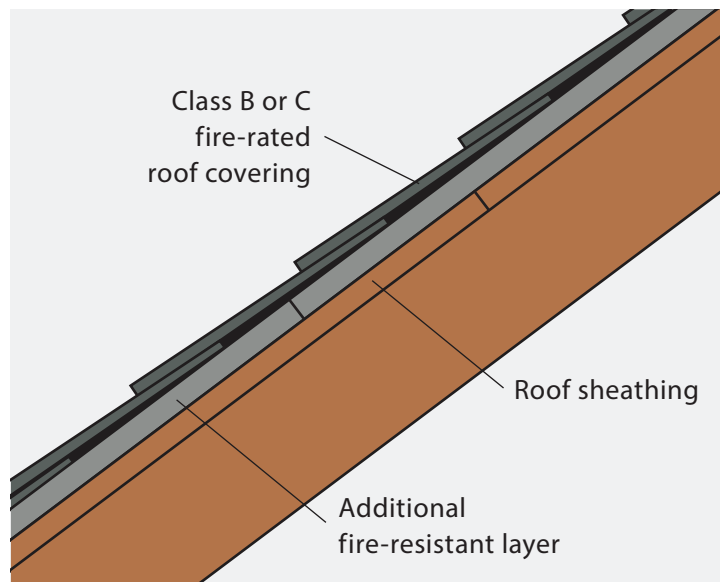
materials include recycled plastic, rubber and aluminum.

Class B and Class C roofing materials can have a Class A “by assembly” rating. In these cases, additional materials that enhance the fire resistance of the roof assembly (i.e., the roofing material plus other materials included in the roof assembly) must be installed. In these cases, be sure to follow the manufacturer’s instructions.

METAL ROOF



CLASS A “BY ASSEMBLY” FIRE-RATED ROOF COVERING

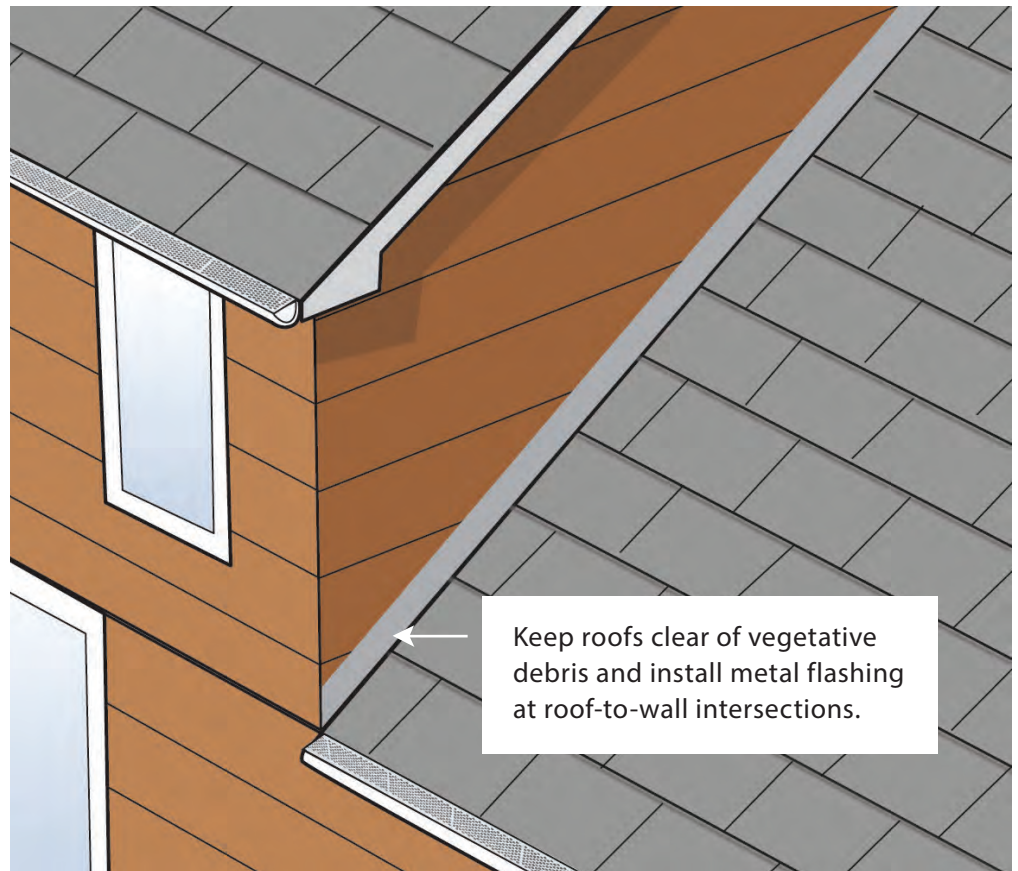


Roof Edges

There can be several areas where the roof meets another material, such as at a roof-to-wall intersection in a split-level home or a dormer on a roof. These intersections are vulnerable areas because wind-blown embers will gather at the same locations where vegetative debris has accumulated, igniting the debris. Building materials usually change at edge-of-roof locations. The adjacent materials should provide comparable protection to the roofing material.

HOW TO REDUCE THE VULNERABILITY OF ROOF EDGES

- ▶ Remove accumulated vegetative debris from roofs on a regular basis.
- ▶ Replace the combustible siding in roof-to-wall locations with a noncombustible option. Replacement of siding only in these locations will be less expensive than replacing all the home's siding. It may be possible to find a noncombustible siding pattern that is similar to the existing siding pattern.
- ▶ At a roof-to-siding location, use of metal flashing that extends up the siding at least 6-inches could also reduce the vulnerability of a combustible siding material. Install flashing so that water cannot get between flashing and siding.

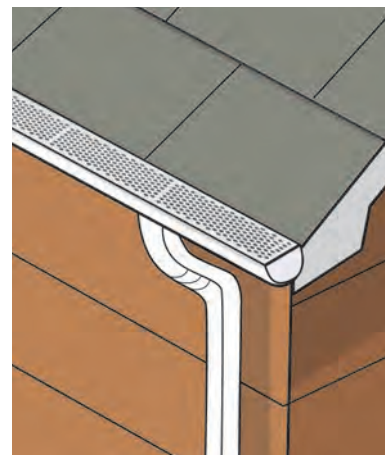


Rain Gutters

Roofs can be vulnerable at the roof edge where a gutter is attached. Debris in the gutter can ignite from embers, and flames can ignite other components at the roof edge (e.g., wood-based sheathing and fascia board).

HOW TO REDUCE THE VULNERABILITY OF RAIN GUTTERS

- ▶ Remove vegetative debris from gutters on a regular basis during fire season.
- ▶ Install a noncombustible and corrosion-resistant metal drip edge to provide protection for the combustible components (i.e., sheathing and fascia) at the edge of your roof.
- ▶ Use a noncombustible gutter cover to minimize accumulation of debris in the gutter. Some gutter covers result in accumulation of debris on the roof behind the gutter, so these will still require routine maintenance.



▲ *Install and maintain a noncombustible gutter cover (as pictured above) to help minimize debris accumulation in gutters.*

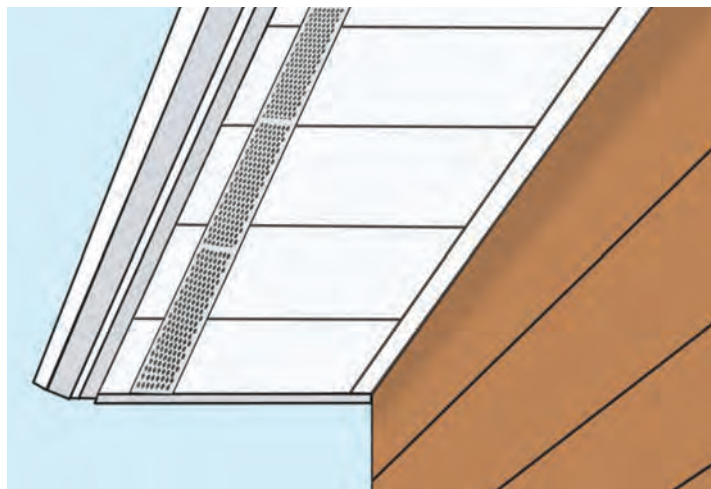
Eaves

The under-eave area provides a point of entry for flames if nearby vegetation or other materials are burning. There are two basic designs for under-eave construction: open-eave and soffited-eave (i.e., one that is boxed in). Open-eave designs are more vulnerable to flames—heat can build up in an area between the roof rafters allowing for more rapid fire spread laterally, which increases the likelihood that fire will find a location to enter the attic. Vents that are in the blocking between rafters in open-eave construction are more vulnerable to the entry of embers than vents in a soffited-eave.

OPEN EAVE



SOFFITED EAVE



HOW TO REDUCE THE VULNERABILITY OF EAVES

- ▶ Inspect open-eave areas for gaps where embers could lodge or pass through into the attic. All vents should be screened and all other gaps should be filled with durable caulk.
- ▶ Enclose under-eave area to create a soffited eave.

▲ *Enclose open eaves to protect attic spaces from ember intrusion.*



↑ *Cover all vents with 1/8-inch mesh screening.*

WHAT IS THE DIFFERENCE BETWEEN VENT SCREEN SIZES?

Small screens (1/16-inch) can reduce both the size and number of embers that can pass through. Because the embers are smaller, they self-extinguish quickly after entering the attic and crawl space. While this screen size is ideal for resisting ember intrusion, it does require more maintenance because it gets easily clogged. Accumulated debris on vents can become a source of embers if not cleaned regularly. Air flow is also reduced with this size screen.

Mid-size screens (1/8-inch) allow more, larger embers to enter the attic and crawl space, but these are still better than 1/4-inch screens. This size screen is a common choice because the maintenance is lower while still being relatively effective.

Large screens (1/4-inch) allow many, larger embers to enter the attic and crawl space. It is recommended you replace or cover 1/4-inch screens with a smaller grain.

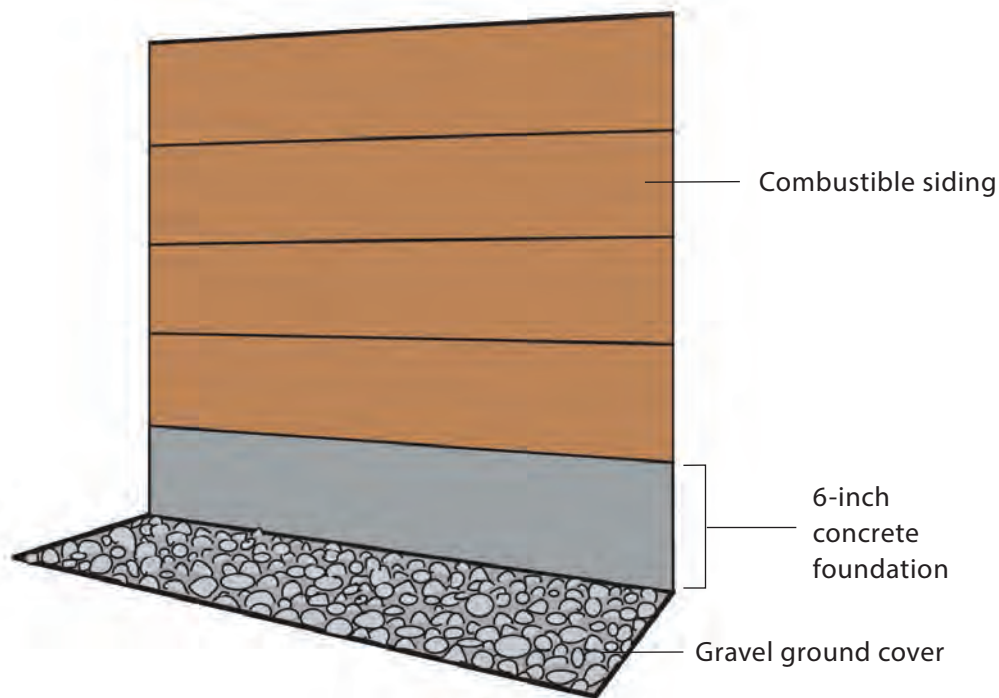
Vents

Attic and crawl space vents provide an entry point for embers. Vents should be covered by, at a minimum, 1/8-inch noncombustible corrosion-resistant metal mesh screening. Screening will not prevent the intrusion of all embers but will minimize their size. Finer mesh screening (e.g., 1/16-inch mesh) is more effective at keeping embers out of the home but requires more maintenance because it can become clogged with debris. Vents that meet the flame- and ember-resistant standard are listed on the California Office of the State Fire Marshal Building Materials Listing Program website. These types of vents are appropriate in areas where maintaining defensible space is difficult, combustible materials are closer to the home, or combustible siding is used.

HOW TO REDUCE THE VULNERABILITY OF ATTIC AND CRAWL SPACES

- ▶ Avoid storing combustible items (e.g., cardboard boxes, newspapers and magazines) near attic or crawl space vents.
- ▶ Inspect vents to make sure they are in good condition (i.e., screen is in good condition with no tears that would result in larger openings).
- ▶ If 1/4-inch mesh screening is present, replace or add, at a minimum, a 1/8-inch noncombustible corrosion resistant metal mesh screen.
- ▶ Consider replacing vents with a flame- and ember-resistant option.

Vent covers that are made ahead of time (i.e., before a wildfire is threatening) can be installed when wildfire is threatening the area. This strategy can be effective, but it does take time and should only be undertaken if ample time is given for evacuation. Preparation activities can be dangerous if evacuation is delayed.



Siding

If the siding ignites, a fire can: **1)** penetrate through the stud cavity into the home, **2)** spread up the side of the home and enter windows or other openings such as dryer vents, and **3)** spread into the attic at a gable-end vent or an under-eave area. Combustible siding can be ignited from direct-flame contact or radiant heat exposure. Ignition of siding from embers can occur, especially if embers ignite combustible materials close to the home (e.g., bark mulch or wood pile), and if siding extends all the way to the ground.

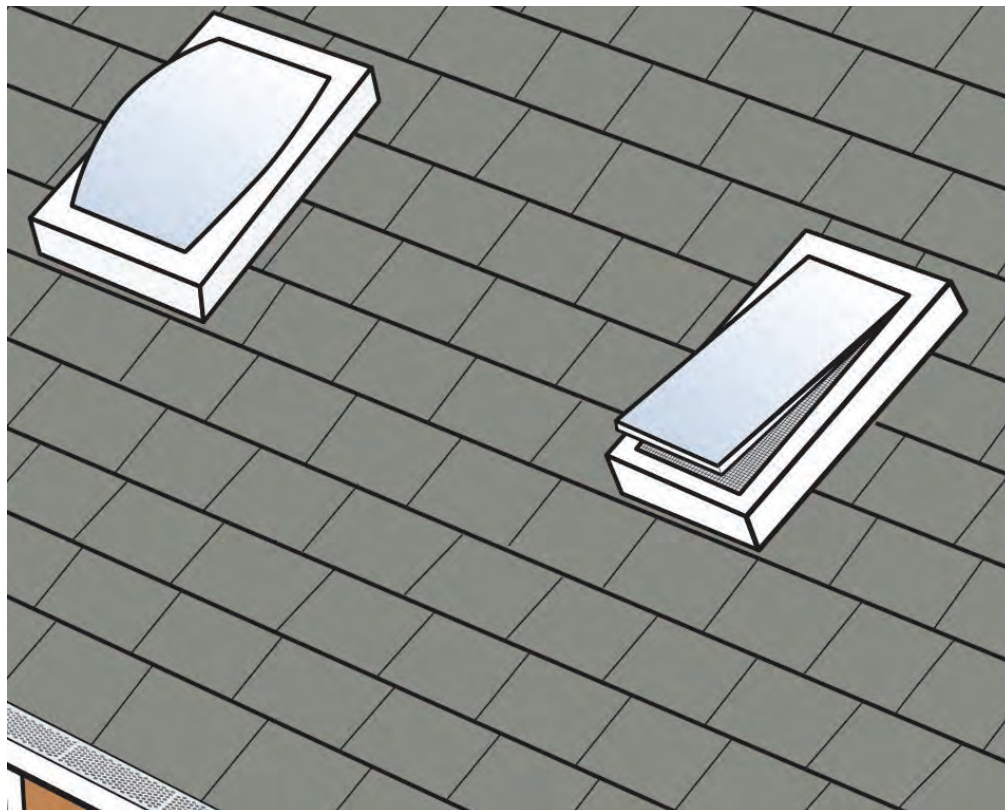
Combustible siding products are widely used, including solid wood, wood composite materials and plastic/vinyl products. Vinyl siding can deform and slough off when exposed to flames or radiant heat. Once this happens, underlying material (e.g., sheathing) becomes important for protection. More complicated lap joints in wood-based siding patterns (e.g., shiplap and tongue-and-groove) are more resistant to fire penetration at the lap joint. Plain bevel joints in wood siding are vulnerable to fire penetration. While fiber cement siding often uses a plain bevel lap joint, it is less vulnerable to fire penetration.

It is not recommended to use fire-retardant coatings, such as fire-retardant paint, to provide fire protection for combustible siding. Some state, county and local building codes do not allow these coatings. Recent research has demonstrated that their performance is degraded by exposure to the elements (e.g., snow, moisture, sun). Their effectiveness degrades more quickly than reported.

HOW TO REDUCE THE VULNERABILITY OF SIDING

- ▶ Use noncombustible siding (e.g., stucco, steel and fiber cement), especially when neighboring homes are within 30-feet of the home.
- ▶ Make sure to develop and maintain adequate defensible space, particularly within the ember-resistant zone, to minimize the chance that siding will ignite from embers at the ground level or direct-flame contact from nearby combustible materials.
- ▶ In smaller areas that are vulnerable, such as at a roof-to-wall area, replace siding with a noncombustible product.
- ▶ For new construction, use of a one-hour wall design, where an additional fire resistant layer is used in the wall assembly, can provide additional protection when a more vulnerable siding material is used.

*Clear debris around →
skylights and make sure to
close before evacuating.*



Skylights

Skylights can be a point for ember and flame entry if the cover fails, or if skylights are left open when a wildfire threatens. There are two basic kinds of skylights: domed-style made of plastic and flat-style made of glass. Flat-style, glass skylights have less risk than domed-style, plastic skylights that may melt and burn when exposed to heat from a wildfire. Typically, the glass in skylights consists of two layers, the outer being tempered glass and the inner being a safety glass, such as laminated glass.

Skylights on steeper sloped roofs can be vulnerable to radiant heat and flame contact exposures if nearby combustible materials ignite and burn. Skylights on low-slope (flatter) roofs are more prone to the accumulation of vegetative debris (especially flat-style skylights).

HOW TO REDUCE THE VULNERABILITY OF SKYLIGHTS

- ▶ Remove vegetative debris from the roof, including on and adjacent to skylights, on a regular basis.
- ▶ On sloped roofs, glass skylights are the best choice because of increased likelihood of exposure to radiant heat.
- ▶ If the skylight can open, close it when wildfire is threatening to prevent embers from entering the home. Consider adding a 1/16-inch noncombustible corrosion resistant-metal mesh screening to reduce ember intrusion into the home in case the skylight cannot be closed before evacuation.

Windows

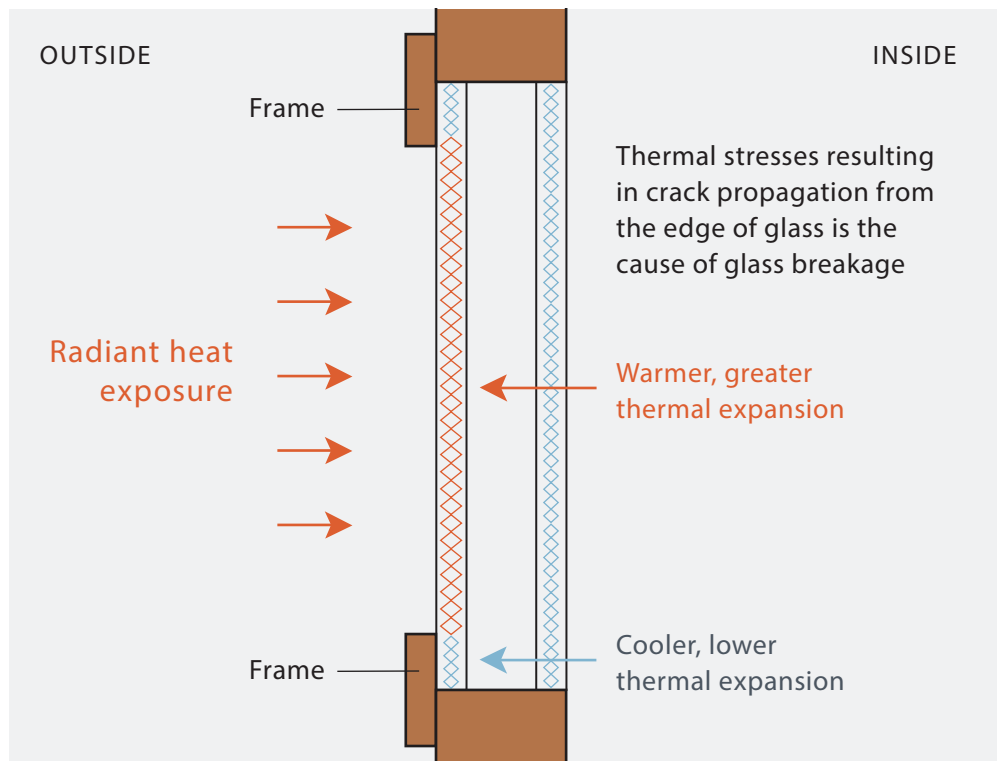
Windows can be a vulnerable component of a home if the framing material ignites or deforms, or if the glass breaks and falls out, both allowing embers or flames to enter the home. The most vulnerable part of a window is the glass. Glass breakage occurs when cracks, propagating from the outer edge inward, occur due to thermal stress that develops when a window is exposed to flames or radiant heat.

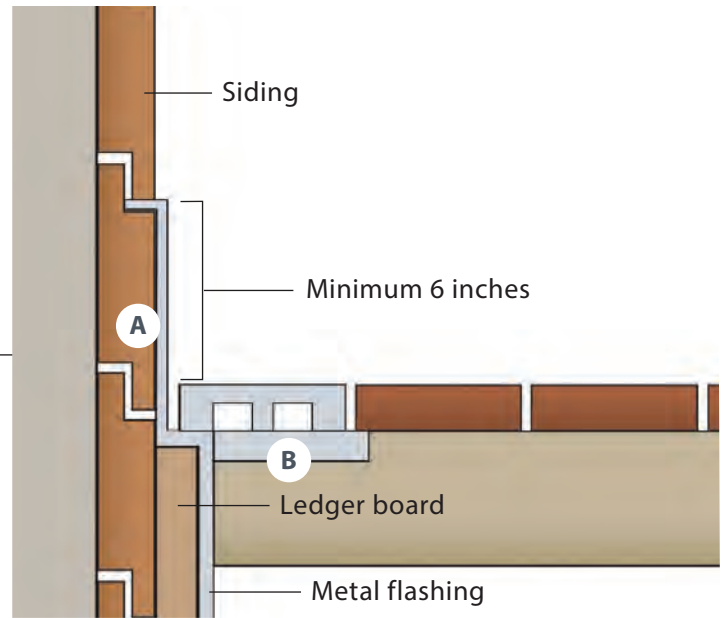
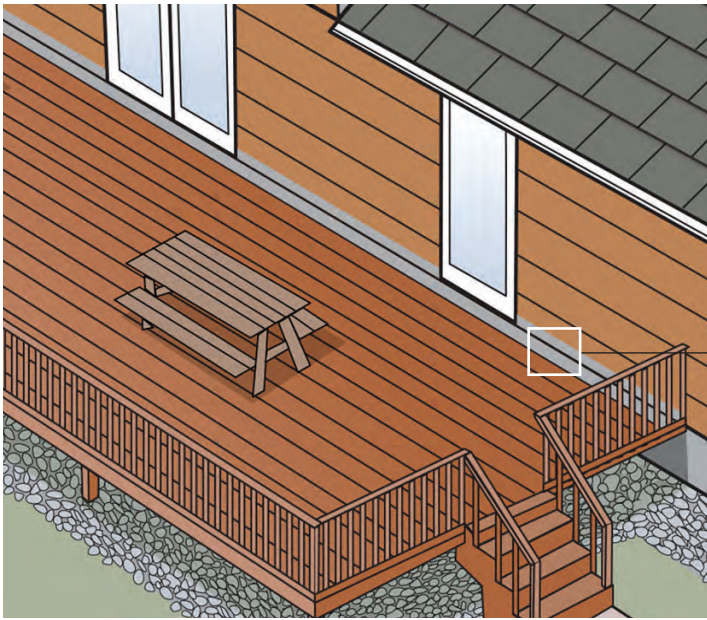
Tempered glass is three to four times more resistant to heat exposures than typical annealed glass and is therefore a better choice when selecting windows. Metal and plastic-clad fiberglass window screening will absorb radiant energy, providing additional protection against radiant heat exposure to the glass in your windows. Plastic-clad fiberglass screening will fail if flames contact it, reinforcing the need for an effective ember-resistant zone.

HOW TO REDUCE THE VULNERABILITY OF WINDOWS

- ▶ When replacing windows, choose multi-pane options containing tempered glass.
- ▶ If neighbors or outbuildings are within 30-feet of the home, consider installing deployable noncombustible shutters to provide additional protection.
- ▶ Install screens in all operable windows. Screens increase ember resistance by keeping embers out of the home and also decrease radiant heat exposure.
- ▶ Close windows when wildfire is threatening.

DUAL-PANE WINDOW





- A** *Install metal flashing between the ledger board and joists to protect the combustible siding material. The flashing should extend above and below the ledger board.*
- B** *Replace the deckboard next to the house with noncombustible material.*

Decks

If a deck attached to a home ignites, the home can be exposed to flames and/or radiant heat. What is stored underneath and on top of decks can also be an ignition source. Depending on the decking material, embers can also directly ignite deck boards. Decks that overhang a slope can be exposed to flames if trees and other vegetation downslope of the deck ignite, resulting in flames contacting the bottom of the deck.

Most commercially available deck boards are combustible. These include redwood, cedar and tropical hardwoods, such as ipe, and all plastic composite lumber decking products. Pressure impregnated fire retardant treated (FRT) wood deck boards are less vulnerable to flames and embers. Higher density hardwood decking and plastic composite decking are less vulnerable to ignition by embers compared to softwood decking (i.e., redwood and cedar). Although some metal deck boards are now available, noncombustible options are typically referred to as solid surface decks because they consist of lightweight concrete, possibly with an additional noncombustible walking surface such as flagstone. Use of noncombustible (i.e., steel) joists in conjunction with combustible deck boards will reduce the overall vulnerability of the deck.

HOW TO REDUCE THE VULNERABILITY OF DECKS

- ▶ Create an ember-resistant zone under the footprint of and around all decks. This action will reduce the likelihood of under-deck flame exposure.
- ▶ If a deck overhangs a slope, create and maintain an effective defensible space downslope of the deck to reduce the chance of flames reaching the underside of the deck.
- ▶ Apply metal flashing or foil-face bitumen tape on top of and a few inches down the side of the support joists. This is an effective strategy to minimize fire growth when a deck is ignited by embers, but would not help if the deck were ignited directly by flames under the deck. Using steel joists also reduces the vulnerability of the deck from both flames and embers.

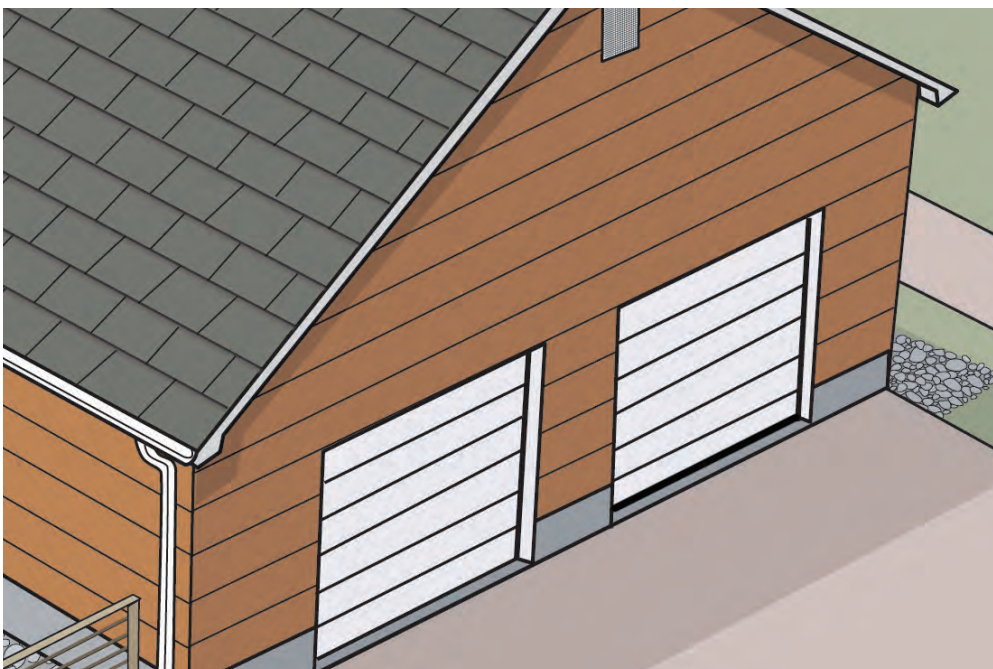
- ▶ For cedar and redwood decks, increase the size of the gap between deck boards to ¼ inch so that vegetative debris can fall through rather than accumulate on the deck. Be sure to routinely clear debris from under the deck.
- ▶ If a deck is made of combustible decking materials, replace the board closest to the home with a noncombustible material.
- ▶ In new deck construction, consider using noncombustible or higher density decking products.
- ▶ Move combustible cushions from deck furniture to inside and relocate combustible furniture (especially those with woven components that can trap embers) away from the house.

Garages

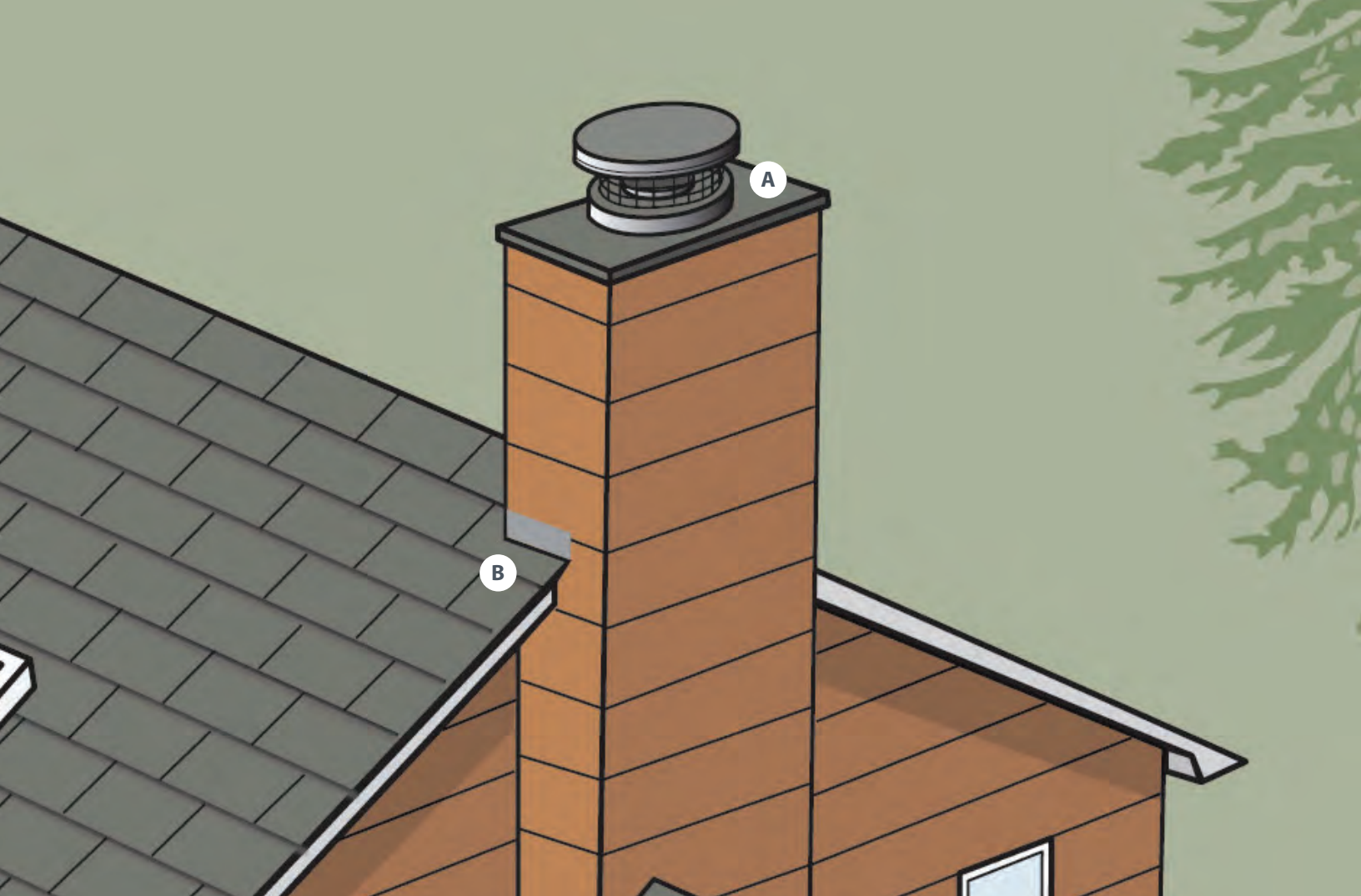
Garages, whether attached to the home or detached as a separate building, can threaten homes if the garage ignites. Since it is normal to store combustible materials in a garage, steps should be taken to reduce the ignitability of the garage because embers can easily enter under or around poorly sealed garage doors.

HOW TO REDUCE THE VULNERABILITY OF GARAGES

- ▶ Whether a garage is detached or attached, include it in defensible space planning and maintenance, including the ember-resistant zone.
- ▶ Make sure the space between the garage door and framing is well sealed to minimize the entry of embers into the garage.
- ▶ Garage windows, vents and other construction components should be treated the same as they would be if part of the home.
- ▶ Add a battery back-up to the garage door motor so that the garage can easily be opened or closed if power is out.
- ▶ Close garage doors when wildfire is threatening.



← Make sure garage doors are well sealed and closed before evacuating.



- A** Cover the stovepipe/ chimney with a metal screen (no smaller than $\frac{3}{8}$ -inch and no larger than $\frac{1}{2}$ -inch).
- B** Install metal flashing at the chimney-roof intersection.

Chimneys

Chimneys and stovepipes can be a vulnerable part of the home if not installed correctly and properly cleaned and maintained annually. Vegetative debris can accumulate on the roof adjacent to the chimney chase. This is another roof-to-wall connection that can be vulnerable to ignition by embers.

HOW TO REDUCE THE VULNERABILITY OF CHIMNEYS

- ▶ Use of metal step flashing at roof-to-siding intersection (flashing extending up the wall) can reduce the vulnerability to embers.
- ▶ Cover chimney and stovepipe outlets with a noncombustible screen. Use metal screen material with openings no smaller than $\frac{3}{8}$ -inch and no larger than $\frac{1}{2}$ -inch to minimize embers leaving the chimney.
- ▶ Close the fireplace flue during fire season when the chimney is not in use.

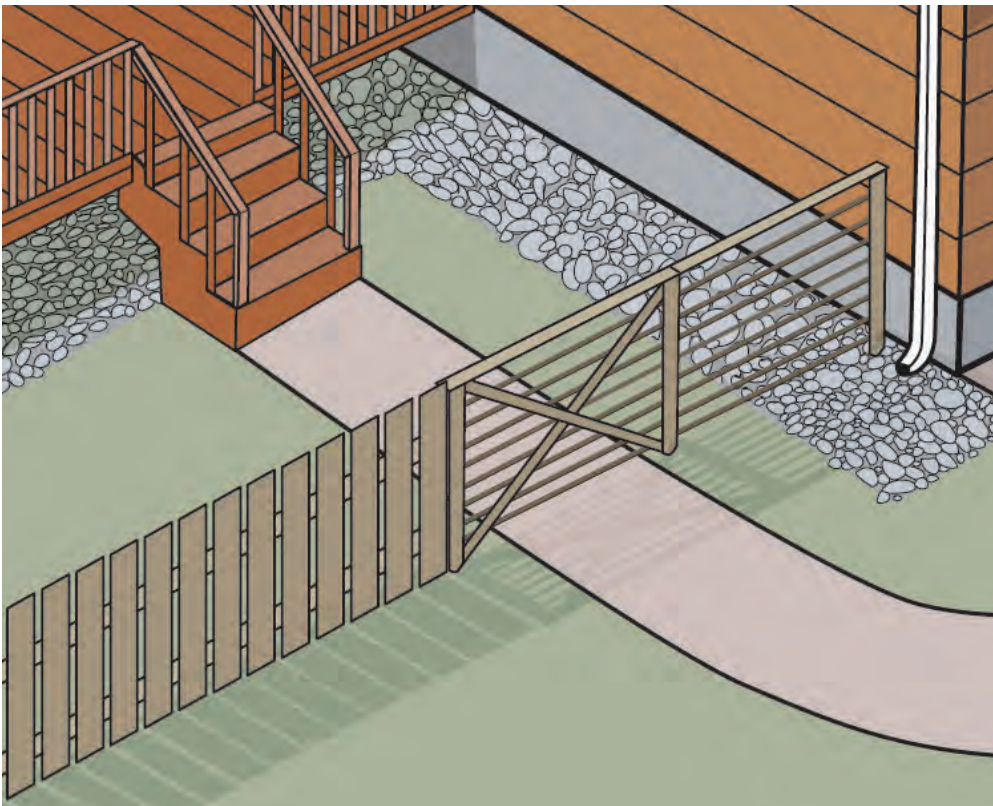
Fences

Combustible fencing can provide a direct path to a home if surrounding vegetation or embers ignite it. Best practice is to separate the fence from the house or upgrade the last 5-feet of the fence to a noncombustible material to reduce the chance of the fence from bringing fire to the home.

Privacy fences (planks all on one side of horizontal supports) are the most vulnerable to ignition because the horizontal to vertical intersection provides a ledge and backstop where embers can accumulate and ignite the fence. Good neighbor (planks alternating) and lattice are more porous, and therefore more difficult to ignite via ember exposure. Vinyl fences are not as vulnerable to embers, but can ignite through direct flame exposure if vegetative debris has accumulated at its base. As is the case with vinyl siding, vinyl fencing will be vulnerable to deformation from radiant heat exposure. All fences are more vulnerable when vegetative debris has accumulated at their base.

HOW TO REDUCE THE VULNERABILITY OF FENCES

- ▶ Replace the combustible portion of the fence near the home with a noncombustible section. The noncombustible section should be a minimum of 5-feet long.
- ▶ Remove vegetative debris that can accumulate at the base of the fence on a regular basis. Do not use fences as a trellis for plants because plants can create and trap ignitable vegetative debris.



← Rather than replacing the entire fence, replace the 5-feet closest to the home with a noncombustible option.

Glossary

BEVEL JOINT A type of lap joint, typically seen in horizontally applied siding. This lap joint, when used with a combustible siding product, is the most vulnerable to fire penetration.

CHIMNEY CHASE The area or structure around metal flue pipes. The chase is usually built with wood, metal or brick.

DORMER A part of a building that extends beyond the vertical plane of the roof. This extension also has a roof covering and typically incorporates a window on the exterior wall.

EMBER Also called firebrand. Burning (or glowing) particles of vegetation from tree branches, parts of shrubs or chaparral, or other combustible materials (e.g., construction materials) that ignite and burn during a wildfire and are carried in wind currents to locations beyond the wildfire front.

FIBER CEMENT A generic term for a siding product that is made using cement, wood fiber and other additives.

FINE-MESH SCREENING In the context of this document, 1/8-inch or finer screening that is used to cover vent openings and operable windows.

FOIL-FACE BITUMEN TAPE A flashing material whereby an aluminum foil material is part of a bitumen tape system.

GOOD-NEIGHBOR FENCE In the context of this document, this type of fence is one where the vertical planks alternate between the sides of the horizontal support members. A “good-neighbor” fence is usually compared to a “privacy” fence, where the vertical planks are all on the same side of the horizontal supports.

GYPSUM WALLBOARD A panelized product made from calcium sulfate dihydrate. These panels are commonly used for paneling on the interior of homes and buildings. A special type of gypsum wallboard can be used as a fire-resistant component in a one-hour wall assembly.

LADDER FUELS Low-lying branches and vegetation that can help carry flames from the surface into the canopy of trees or shrubs.

LAMINATED GLASS A type of safety glass that consists of two (or more) layers of annealed glass that are connected with adhesive interlayers.

LAP JOINT The type of overlap connection between boards or panels on the siding of a building.

METAL DRIP EDGE FLASHING Also called angle flashing, this material is typically used to protect the edge of the roof where the roof covering meets the exterior (vertical) framing.

MULTI-PANE WINDOW A term used to indicate multiple glass panes in a window. One pane of glass would be indicated by “single-pane.”

ONE-HOUR WALL CONSTRUCTION An assembly that provides enhanced resistance to the penetration of fire.

OPEN-EAVE A type of construction whereby roof rafters are exposed in the area where they extend beyond the exterior walls of the building. In this type of construction, wood members, typical nominal 2-inch thick lumber, are used to fill the space between roof rafters.

PLASTIC-CLAD FIBERGLASS SCREENING Commonly used window screening material. Typical screen size is 1/16-inch mesh.

PRESSURE-IMPREGNATED FIRE-RETARDANT TREATED A process whereby a fire-retardant chemical is injected into the material (e.g., wood) under a pressurized process. This process results in a deeper penetration of the chemical into the wood.

ROOF COVERING The part of the roof assembly visible from outside the building. Common roof covering materials include asphalt composition shingles, tile and metal.

SHEATHING The first covering of boards or of waterproof material on the outside wall of the house.

SHIPLAP A type of lap joint used for horizontal and vertical siding. Along with tongue-and-groove pattern, this pattern is a better choice when considering improved resistance to fire penetration.

SOFFITED-EAVE A type of construction where the area of the roof rafters that extend beyond the exterior wall of a building are enclosed, typically by attaching a panelized product that connects the edge of the roof to the exterior wall.

STUCCO A siding material usually consisting of a mixture of sand, Portland cement, lime, water and other additives.

TEMPERED GLASS A heat-treated glass that enhances resistance to heat exposures three to four times over that of regular (annealed) glass.

UNDERLAYMENT A panel or sheet material in the roof assembly, underlying the roof covering, that improves the fire rating of the covering.

VENT COVER A solid material used to temporarily cover a vent opening to prevent the entry of embers.

Online Resources

The following websites have resources and information on home-hardening, defensible space, and other tips to prepare for wildfire.

[Living With Fire Program - www.livingwithfire.com](http://www.livingwithfire.com)

[University of California Agriculture and Natural Resources - www.ucanr.edu/sites/fire](http://www.ucanr.edu/sites/fire)

[Insurance Institute for Home and Business Safety–Wildfire - www.ibhs.org](http://www.ibhs.org)

[CAL FIRE Ready for Wildfire - www.readyforwildfire.org](http://www.readyforwildfire.org)

[Sustainable Defensible Space - www.defensiblespace.org](http://www.defensiblespace.org)

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Partner Logos



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Photo Courtesy of California Tahoe Conservancy / Nick Spannagel



Low-Cost Retrofit List



Low-Cost Ways to Harden Your Home

1. When it is time to replace your roof, replace it with Class A fire rated roof material.
2. Block any spaces between your roof covering and sheathing (bird stops).
3. Install a noncombustible gutter cover on gutters to prevent the accumulation of leaves and debris in the gutter.
4. Cover your chimney and stovepipe outlets with a noncombustible corrosion resistant metal mesh screen ([spark arrestor](#)), with 3/8-inch to 1/2-inch openings.**
5. Cover all vent openings with 1/16-inch to 1/8-inch noncombustible corrosion resistant metal mesh screens.**
6. Caulk and plug gaps greater than 1/8-inch around exposed rafters and blocking to prevent ember intrusion into the attic or other enclosed spaces.
7. Inspect exterior siding for dry rot, gaps, cracks and warping. Caulk or plug gaps greater than 1/8-inch in siding and replace any damaged boards, including those with dry rot.
8. Install weather-stripping to gaps greater than 1/8-inch between garage doors and door frames to prevent ember intrusion. The weather-stripping must be compliant with UL Standard 10C.
9. When it's time to replace your windows, replace them with multi-paned windows that have at least one pane of tempered glass.
10. When it's time to replace your siding or deck, use compliant noncombustible, ignition-resistant, or other [materials approved by the Office of the State Fire Marshal](#).
11. Cover openings to operable skylights with noncombustible mesh screen with openings in the screen not to exceed 1/8-inch.
12. Install a minimum 6-inch metal flashing, applied vertically on the exterior of the wall at the deck-to-wall intersection to protect the combustible siding material.

*This list was developed as a best practices guide and to assist homeowners to ensure their home is more ignition-resistant from wildfires. Low cost can be subjective. Some of these items are based on upgrading to more stringent materials when that feature is up for replacement due to normal maintenance or lifespan, i.e. roofs.

** Do not use fiberglass or plastic mesh as they can melt or burn.

Updated 5/14/2021



Low-Cost Retrofit List



5 No Cost Ways to Create Defensible Space and Enhance the Effects of a Hardened Home

1. Regularly clean your roof, gutters, decks, and the base of walls to avoid the accumulation of fallen leaves, needles and other flammable materials (see [Defensible Space](#) for more details).
2. Ensure that all combustible materials are removed from underneath, on top of, or within five feet of a deck.
3. Remove vegetation or other combustible materials that are within five feet of windows and glass doors.
4. Replace wood mulch products within five feet of all structures with noncombustible products such as dirt, stone, or gravel.
5. Remove all dead or dying grass, plants, shrubs, trees, branches, leaves, weeds, and pine needles within 30 feet of all structures or to the property line.

*This list was developed as a best practices guide and to assist homeowners to ensure their home is more ignition-resistant from wildfires. Low cost can be subjective. Some of these items are based on upgrading to more stringent materials when that feature is up for replacement due to normal maintenance or lifespan, i.e. roofs.

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Updated 5/14/2021

FireWise Plant Materials

Fact Sheet No. 6.305

Natural Resources Series | Forestry

by F.C. Dennis*

Creating a “defensible space” around your home is one of the most important and effective steps you can take to protect you, your family and your home from catastrophic wildfire. Defensible space is the area between a structure and an oncoming wildfire where nearby vegetation has been modified to reduce a wildfire’s intensity. (See fact sheet 6.302, *Creating Wildfire-Defensible Zones*.)

Many people resist creating defensible space around their homes because they believe these areas will be unattractive and unnatural. This is far from true. With careful planning, FireWise landscaping can be aesthetically pleasing while reducing potential wildfire fuel. It can actually enhance beauty and property values, as well as personal safety.

Many native plants are highly flammable during different seasons of the year. At such times, left unmanaged, they can accelerate the spread of a wildfire through your neighborhood, threatening homes, property and lives.

All vegetation, naturally occurring and otherwise, is potential fuel for fire. Its type, amount and arrangement has a dramatic effect on fire behavior. There are no truly “fireproof” plant species, so plant choice, spacing and maintenance are critical to defensible space landscaping. In fact, **where** and **how** you plant may be more important than **what** you plant. However, given alternatives, choose plant species that tend to be more resistant to wildfire.

General concepts to keep in mind when choosing and planting FireWise species are:

- A plant’s moisture content is the single most important factor governing its volatility. (However, *resin* content and other factors in some species render them flammable even when the plant is well-watered.) Conifers tend to be flammable due to their oil and pitch content, regardless of their water content.

- Deciduous plants tend to be more fire resistant because their leaves have higher moisture content and their basic chemistry is less flammable. Also, when deciduous trees are dormant, there is less fuel to carry fire through their canopies.

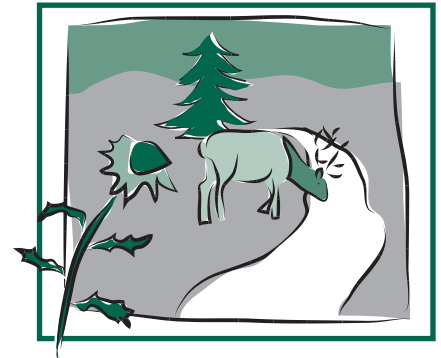
In some cases, there is a strong correlation between drought tolerance and fire resistance. For example, a plant may shed its leaves or needles during extreme drought. Other drought-tolerant species may have smaller leaves or thick, succulent leaves. These plants offer less fuel or have a higher moisture content, both of which help reduce fire hazard.

There also appears to be a correlation between a plant’s salt tolerance and natural fire resistance. Plants adapted to salty conditions, and actually growing in salty situations, may better resist burning.

Plants for a FireWise Landscape

Plants that are more resistant to wildfire have one or more of the following characteristics:

- They grow without accumulating large amounts of combustible dead branches, needles or leaves (example: aspen).
- They have open, loose branches with a low volume of total vegetation (examples: currant and mountain mahogany).
- They have low sap or resin content (examples: many deciduous species).
- They have high moisture content (examples: succulents and some herbaceous species).
- They grow slowly and need little maintenance (do not need frequent pruning).
- They are short and grow close to the ground (examples: wildflowers and groundcovers).
- They can resprout following fire, thus reducing relandscaping costs (example: aspen).



Quick Facts

- FireWise landscaping can be aesthetically pleasing while reducing potential wildfire fuel.
- Plant choice, spacing and maintenance are critical.
- Your landscape, and the plants in it, must be maintained to retain their FireWise properties.

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www.ext.colostate.edu



FireWise Plant List

The following list was prepared by Phil Hoefer (retired) Colorado State Forest Service. It was reviewed by Jim Knopf, a landscape architect in Boulder, and two landscape architects on Colorado's Western Slope. Bloom time is approximate (observed in Boulder at 5,600 feet).

Key: Water needs: VL = very low L = low M = medium H = high
 Sun/Shade: S = sun PS = part sun Sh = shade
 Elevation: Y = Yes N = No ? = Questionable or unknown

Scientific Name	Common Name	Approx.	Sun/Shade Preference	Approx.	Elevation					Approx.
		Water Needs		Mature Height	(1,000 ft.)	5	6	7	8	9
Flowers and Ground Covers										
<i>Achillea lanulosa</i> ^a	Native yarrow	L-H	S/PS	1.5 - 2'	Y	Y	Y	Y	Y	Jul
<i>Achillea tomentosa</i> ^b	Woolly yarrow	M-H	S/PS	.5'	Y	Y	N	N	N	Jul
<i>Aconitum</i> spp. ^c	Monkshood	M-H	S	2'	Y	Y	Y	Y	Y	Jun-Jul
<i>Aconitum columbianum</i> ^{ac}	Columbian monkshood	M-H	S	2'	Y	Y	Y	Y	Y	Jun-Jul
<i>Ajuga reptans</i> ^b	Bugleweed	H	Sh	< .5'	Y	Y	Y	Y	Y	Jun-Jul
<i>Alchemilla</i> sp.	Lady's mantle	M-H	PS/Sh	1'	Y	Y	Y	Y	?	Jun-Jul
<i>Allium cernuum</i> ^{ac}	Nodding onion	L-H	S/PS	1'	Y	Y	Y	Y	Y	Jun
<i>Allium geyeri</i> ^{ac}	Geyer onion	L-H	S/PS	1'	Y	Y	Y	Y	?	Jun
<i>Anaphalis margaritacea</i> ^a	Pearly everlasting	L-H	S	1.5 - 2.5'	Y	Y	Y	Y	?	Aug
<i>Anemone blanda</i>	Windflower	M-H	S/PS	1'	Y	Y	Y	Y	?	Apr-May
<i>Antennaria parvifolia</i> ^{ab}	Small-leaf pussytoes	M	S/PS	< .5'	Y	Y	Y	Y	Y	Jun
<i>Antennaria rosea</i> ^{ab}	Rosy pussytoes	M	S/PS	< .5'	Y	Y	Y	Y	Y	Jun
<i>Aquilegia</i> spp.	Columbine	M-H	S/PS	1 - 2'	Y	Y	Y	Y	Y	Jun-Jul
<i>Aquilegia coerulea</i> ^a	Colorado blue columbine	M-H	S/PS	1 - 2'	Y	Y	Y	Y	Y	Jun-Jul
<i>Aquilegia chrysantha</i> ^a	Yellow columbine	M-H	S/PS	1 - 2'	Y	Y	Y	Y	Y	Jun-Aug
<i>Arabis</i> sp. ^b	Rockcress	L-H	S	< 1'	Y	Y	Y	Y	Y	May-Jun
<i>Armeria maritima</i>	Sea thrift	L-H	S/PS	.5'	Y	Y	Y	Y	Y	Apr-Jun
<i>Artemisia caucasica</i>	Caucasian sage	L-M	S/PS	1 - 2'	Y	Y	Y	?	?	n/a
<i>Artemisia frigida</i> ^{ac}	Fringed sage	L-M	S	1 - 1.5'	Y	Y	Y	Y	Y	n/a
<i>Artemisia ludoviciana</i> ^a	Prairie sage	L-M	S	1 - 1.5'	Y	Y	Y	?	?	n/a
<i>Aster laevis</i> ^a	Smooth aster	L-H	S/PS	1 - 3'	Y	Y	Y	Y	?	Aug-Sep
<i>Aster porteri</i> ^a	Porter aster	L-M	S	1'	Y	Y	Y	?	?	Aug-Sep
<i>Aubrieta</i> sp. ^b	False rockcress	M	S	1'	Y	Y	Y	Y	Y	Apr-May
<i>Aurinia</i> sp. ^b	Basket of gold	M	S/PS	1'	Y	Y	Y	Y	Y	Apr-May
<i>Calochortus gunnisonii</i> ^a	Mariposa lily	M-H	S	.5 - 2'	Y	Y	Y	Y	?	Jul-Aug
<i>Campanula rotundifolia</i> ^a	Common harebell	M-H	S	.5 - 1'	Y	Y	Y	Y	Y	May-Oct
<i>Centranthus ruber</i>	Jupiter's beard	L-H	S/Sh	2 - 2.5'	Y	Y	Y	Y	?	May-Oct
<i>Cerastium strictum</i> ^{ab}	Mouse ear chickweed	M	S/PS	1'	Y	Y	Y	Y	?	May-Jun
<i>Cerastium tomentosum</i> ^b	Snow-in-summer	L-M	S/PS	1'	Y	Y	Y	Y	Y	May-Jun
<i>Claytonia lanceolata</i> ^a	Spring beauty	M	Sh	.5 - 1.5'	Y	Y	Y	?	?	Mar-Apr
<i>Convallaria majalis</i> ^{bc}	Lily-of-the-valley	H	Sh	< 1'	Y	Y	Y	Y	?	May-Jun
<i>Delosperma nubigenum</i> ^b	Hardy yellow iceplant	M-H	S	.5'	Y	Y	Y	?	?	Jun
<i>Delphinium</i> spp. ^c	Delphinium	M-H	S/PS	.5 - 3'+	Y	Y	Y	Y	Y	Jun-Jul
<i>Dianthus</i> spp.	Pinks	L-H	S	<.5' - 2'	Y	Y	Y	Y	Y	May-Aug
<i>Doronicum</i> sp.	Leopard's bane	H	S/PS	2 - 3'	Y	Y	Y	Y	?	Jul-Aug
<i>Echinacea purpurea</i> ^a	Purple coneflower	M	S	2 - 3'	Y	Y	Y	Y	Y	Jul-Aug
<i>Epilobium angustifolium</i>	Fireweed	H	S/PS	3'	N	Y	Y	Y	Y	Jul-Aug
<i>Erigeron flagellaris</i> ^a	Whiplash daisy, trailing fleabane	L-M	S	< 1'	Y	Y	?	?	?	Jun-Jul
<i>Eriogonum umbellatum</i> ^a	Sulphur flower	M	S/PS	<.5'	Y	Y	Y	Y	Y	Jun-Jul
<i>Erysimum asperum</i> ^a	Western wallflower	M	S/PS	1'+	Y	Y	Y	Y	?	Jun-Jul
<i>Gaillardia aristata</i> ^a	Blanket flower	L-M	S	1 - 1.5'	Y	Y	Y	Y	Y	Jul-Sep
<i>Galium boreale</i> ^{ab}	Northern bedstraw	M-H	Sh	<1'	Y	Y	Y	Y	Y	May-Jun
<i>Geranium</i> spp.	Hardy geraniums	M	Sh/PS	2'	Y	Y	Y	Y	Y	May-Oct
<i>Geranium caespitosum</i> ^a	Wild geranium	M	Sh/PS	2'	Y	Y	Y	Y	Y	May-Oct
<i>Geum triflorum</i>	Prairie smoke	M-H	S/PS	1.5'	Y	Y	Y	?	?	Jun
<i>Helianthella</i>	Aspen sunflower	M	S	1'	?	?	?	Y	Y	?
<i>quinquenervis</i> ^a										
<i>Helianthemum</i>	Rockrose	M-H	S	< 1'	Y	Y	Y	?	?	May-Jun
<i>nummularium</i>										
<i>Helianthus pumilus</i> ^a	Small sunflower	M	S	1 - 2'	Y	Y	Y	?	?	Jun-Jul
<i>Heuchera</i> spp.	Coral bells	M-H	PS/Sh	1 - 2'	Y	Y	Y	Y	Y	Jun-Aug
<i>Ipomopsis aggregata</i> ^a	Scarlet gilia	M	S/PS	1 - 2'	Y	Y	Y	Y	Y	Jun-Aug

Scientific Name	Common Name	Approx. Water Needs	Sun/Shade Preference	Approx. Mature Height	Elevation (1,000 ft.)					Approx. Bloom Month
					5	6	7	8	9	
<i>Iris germanica</i>	Bearded iris	L-M	S	1 - 3'	Y	Y	Y	Y	Y	May-Jun
<i>Iris missouriensis</i> ^{ac}	Missouri iris	M-H	S	1 - 2'	Y	Y	Y	Y	Y	May
<i>Lamium</i> sp. ^b	Dead nettle	M-H	Sh	< 1'	Y	Y	Y	Y	?	May-Jun
<i>Lavandula</i> spp.	Lavender	L-M	S	1 - 2'	Y	Y	Y	?	?	Jun-Nov
<i>Leucocrinum montanum</i> ^a	Sand lily	L-M	S	< 1'	Y	Y	Y	?	?	May
<i>Liatris punctata</i> ^a	Dotted gayfeather	VL-L	S	1 - 2'	Y	Y	Y	Y	Y	Aug-Oct
<i>Linum lewisii</i> ^{ac}	Wild blue flax	L-H	S/PS	1 - 2'	Y	Y	Y	Y	Y	May-Sep
<i>Lupinus argenteus</i> ^{ac}	Silver lupine	M	Sh/PS	1 - 3'	Y	Y	Y	Y	Y	Jun-Jul
<i>Mertensia lanceolata</i> ^a	Narrow-leaved chiming bells	M-H	Sh/PS	1 - 2'	Y	Y	Y	Y	Y	May-Jun
<i>Mimulus guttatus</i> ^a	Yellow monkey-flower	H	Sh	1'	?	Y	Y	Y	Y	?
<i>Monarda fistulosa</i> ^a	Native beebalm	M-H	S/PS	1 - 2'	Y	Y	Y	Y	Y	Jul-Oct
<i>Oenothera caespitosa</i> ^a	White stemless evening primrose	L-M	S	1 - 2'	Y	Y	Y	Y	Y	Jun-Aug
<i>Papaver orientale</i>	Oriental poppy	H	S/Sh	2 - 3'	Y	Y	Y	Y	Y	May-Jun
<i>Penstemon caespitosus</i> ^{ab}	Mat penstemon	L-M	S	< .5'	Y	Y	Y	Y	Y	Jun
<i>Penstemon secundiflorus</i>	Sidebells	L-M	S	1 - 2'	Y	Y	Y	Y	?	May-Jun
<i>Penstemon teucrioides</i> ^a	Germander penstemon	L-M	S	.5'	Y	Y	Y	?	?	Jun-Jul
<i>Penstemon virens</i> ^{ac}	Blue mist penstemon	M	S/PS	.5'	Y	Y	Y	Y	Y	May-Jun
<i>Phlox subulata</i>	Moss phlox	M	S	< .5'	Y	Y	Y	Y	Y	May
<i>Polemonium</i> sp.	Jacob's ladder	H	S/PS	1 - 2'	Y	Y	Y	Y	Y	May-Aug
<i>Potentilla fissa</i> ^a	Leafy potentilla	M-H	PS	1'	Y	Y	Y	Y	?	?
<i>Potentilla verna</i> ^b	Spring potentilla	M-H	PS	< .5'	Y	Y	Y	Y	Y	Mar-May
<i>Pulsatilla patens</i> ^a	Pasque flower	M	S/PS	1'	Y	Y	Y	Y	Y	Mar-May
<i>Ratibida columnifera</i> ^a	Prairie coneflower	L-M	S	2'	Y	Y	Y	Y	Y	Jul-Sep
<i>Rudbeckia hirta</i> ^a	Black-eyed Susan	M-H	S	2 - 3'	Y	Y	Y	Y	Y	Jul-Sep
<i>Salvia officinalis</i>	Cooking sage	L-M	S/PS	2'	Y	Y	Y	Y	?	Jun
<i>Saxifraga hirsuta</i>	Saxifrage	H	S/PS	.5'+	Y	Y	Y	Y	Y	May-Jun
<i>Scutellaria brittonii</i> ^a	Skullcap	M	S/PS	.5 - 1'	Y	Y	Y	Y	?	Aug-Sep
<i>Sedum</i> spp. ^b	Stonecrop	M	S/PS	1 - 1.5'	Y	Y	Y	Y	Y	Jul-Aug
<i>Sedum lanceolatum</i> ^a	Yellow stonecrop	M	S/PS	.5'	Y	Y	Y	Y	Y	Jul-Aug
<i>Sempervivum</i> sp.	Hens and chicks	L-M	S/PS	.5'	Y	Y	Y	Y	Y	n/a
<i>Senecio spartioides</i> ^{ac}	Broom groundsel	VL-L	S	2 - 3'	Y	Y	?	?	?	Sep-Oct
<i>Solidago missouriensis</i> ^a	Smooth goldenrod	L-M	S	1 - 2'	Y	Y	Y	Y	?	Jul-Aug
<i>Thalictrum fendleri</i> ^a	Fendler meadowrue	H	S/PS	2 - 3'	?	?	Y	Y	Y	Jul-Aug
<i>Thermopsis divaricarpa</i> ^a	Spreading golden banner	M-H	S/PS	2'	Y	Y	Y	Y	?	May
<i>Tradescantia occidentalis</i> ^a	Western spiderwort	M	S/PS	1.5'	Y	Y	Y	Y	?	Jun-Aug
<i>Thymus</i> spp. ^b	Thyme	L-M	S	< .5'	Y	Y	Y	Y	Y	Jun-Jul
<i>Veronica pectinata</i>	Speedwell	L-M	S	< .5'	Y	Y	Y	Y	Y	Apr-Jul
<i>Vinca minor</i> ^b	Periwinkle, myrtle	H	Sh	< 1'	Y	Y	Y	Y	?	Apr-Jun
<i>Waldsteinia</i> sp. ^b	Barren strawberry	M-H	Sh/PS	< 1'	Y	Y	Y	Y	?	May-Jun

Shrubs

<i>Arctostaphylos nevadensis</i> ^{ab}	Pinemat manzanita	M	S/PS	1 - 2'	Y	Y	Y	N	N	n/a
<i>Arctostaphylos patula</i> ^a	Greenleaf manzanita	M	S/PS	3 - 4'	Y	Y	Y	N	N	n/a
<i>Arctostaphylos uva-ursi</i> ^{ab}	Kinnikinnick, bearberry	M	S/Sh	1'	Y	Y	Y	Y	Y	n/a
<i>Betula glandulosa</i> ^a	Bog birch	H	S/PS	6 - 8'	Y	Y	Y	Y	Y	n/a
<i>Calluna</i> sp.	Heather	H	S/PS	2'	Y	Y	Y	?	?	Jul-Aug
<i>Ceanothus fendleri</i> ^a	Buckbrush, mountain lilac	M	S	2'	Y	Y	Y	?	?	Jul
<i>Cercocarpus intricatus</i> ^a	Little-leaf mountain mahogany	VL-L	S	4 - 6'	Y	Y	Y	Y	?	n/a
<i>Cercocarpus montanus</i> ^{ac}	True mountain mahogany	L-M	S	4 - 6'	Y	Y	Y	Y	?	n/a
<i>Chrysothamnus</i> spp. ^a	Rabbitbrush	VL-L	S	2 - 6'	Y	Y	Y	Y	Y	Jul-Aug
<i>Cornus stolonifera</i> ^a	Redtwig dogwood	H	S/Sh	4 - 6'	Y	Y	Y	Y	Y	n/a
<i>Cotoneaster horizontalis</i>	Spreading cotoneaster	M	S/PS	2 - 3'	Y	Y	Y	Y	?	May-Jun
<i>Daphne burkwoodii</i>	Burkwood daphne	M	S/PS	2 - 3'	Y	Y	Y	?	?	Apr-Jun
<i>Erica</i> sp.	Heath	H	S/PS	1'	Y	Y	Y	?	?	Jan-Mar
<i>Euonymus alatus</i>	Burning bush euonymus	M	S/Sh	1 - 6'	Y	Y	Y	?	?	n/a

Scientific Name	Common Name	Approx. Water Needs	Sun/Shade Preference	Approx. Mature Height	Elevation (1,000 ft.)					Approx. Bloom Month
					5	6	7	8	9	
<i>Fallugia paradoxa</i> ^a	Apache plume	VL-L	S	2 - 4'	Y	Y	Y	Y	Y	Jun-Oct
<i>Holodiscus dumosus</i> ^a	Ocean spray, cliff/rock spirea	L-M	S/PS	4'	Y	Y	Y	Y	Y	Jun
<i>Jamesia americana</i> ^a	Wax flower	M-H	S/Sh	2 - 6'	Y	Y	Y	Y	Y	Jun
<i>Lonicera tatarica</i>	Tatarian honeysuckle	M	S/PS	4 - 6'	Y	Y	Y	Y	Y	May-Jun
<i>Mahonia aquifolium</i>	Oregon grape holly	M-H	S/Sh	4 - 6'	Y	Y	Y	?	?	May-Jun
<i>Mahonia repens</i> ^{ab}	Creeping grape holly	L-H	S/Sh	1 - 2'	Y	Y	Y	Y	Y	Mar-May
<i>Philadelphus microphyllus</i> ^a	Little-leaf mockorange	M	S	2 - 3'	Y	Y	Y	Y	?	Jun
<i>Physocarpus monogynus</i> ^a	Mountain ninebark	M	S/Sh	2 - 4v	Y	Y	Y	Y	Y	Jun
<i>Potentilla fruticosa</i> ^a	Shrubby cinquefoil	M	S/PS	2 - 3'	Y	Y	Y	Y	Y	May-Sep
<i>Prunus besseyi</i> ^a	Western sand cherry	L-M	S	1 - 3'	Y	Y	Y	Y	?	May
<i>Purshia tridentata</i> ^a	Antelope bitterbrush	L-M	S	1 - 2'	Y	Y	Y	?	?	Jun-Aug
<i>Ribes aureum</i> ^a	Golden currant	M	S/PS	2 - 3'	Y	Y	Y	Y	Y	Apr-May
<i>Rosa woodsii</i> ^a	Woods' or native wild rose	M	S/PS	2 - 3'	Y	Y	Y	Y	Y	Jun-Jul
<i>Shepherdia canadensis</i> ^d	Russet buffaloberry	M-H	S	5 - 6'	Y	Y	Y	Y	Y	n/a
<i>Symphoricarpos</i> spp. ^d	Snowberry, coralberry	M	S/PS	2 - 3'	Y	Y	Y	Y	Y	n/a
<i>Viburnum edule</i> ^a	Highbush cranberry	H	S	6 - 8'	Y	Y	Y	Y	Y	May-Jun
<i>Yucca baccata</i> ^a	Banana or broad-leaf yucca	VL-L	S/PS	2 - 3'	Y	Y	Y	N	N	Jun
<i>Yucca filamentosa</i>	Adam's needle	M	S/PS	2 - 3'	Y	Y	Y	N	N	Jun
<i>Yucca glauca</i> ^a	Spanish bayonet, small soapweed, Great Plains yucca	VL-L	S/PS	2 - 3'	Y	Y	Y	Y	?	Jun

Large Shrubs and Trees

<i>Acer ginnala</i>	Ginnala maple	M-H	S	6 - 10'	Y	Y	Y	Y	Y	n/a
<i>Acer glabrum</i> ^a	Rocky Mountain maple	M-H	S/Sh	6 - 10'	Y	Y	Y	Y	Y	n/a
<i>Acer grandidentatum</i> ^a	Wasatch maple	M	S/PS	10 - 20'	Y	Y	Y	Y	?	n/a
<i>Alnus tenuifolia</i> ^a	Thinleaf alder	H	S/PS	6 - 8'	Y	Y	Y	Y	Y	Apr
<i>Amelanchier alnifolia</i> ^{ac}	Saskatoon alder-leaf serviceberry	M	S/PS	6 - 8'	Y	Y	Y	Y	Y	Apr-May
<i>Amelanchier utahensis</i> ^a	Utah serviceberry	VL-M	S	4 - 6'	Y	Y	N	N	N	May
<i>Betula fontinalis</i> ^a	River birch	H	S/PS	6 - 8'	Y	Y	Y	Y	?	n/a
<i>Cercocarpus ledifolius</i> ^a	Mountain mahogany	VL-L	S	6 - 15'	Y	Y	?	N	N	n/a
<i>Corylus cornuta</i> ^a	Filbert, beaked hazelnut	H	S/Sh	5 - 6'	Y	Y	Y	?	?	n/a
<i>Crataegus</i> spp. ^a	Hawthorn (several native)	M	S	6 - 8'	Y	Y	Y	Y	?	May
<i>Fraxinus pennsylvanica</i>	Green ash	M-H	S	20 - 25'	Y	Y	Y	Y	?	n/a
<i>Gleditsia triacanthos</i>	Honeylocust	M-H	S	60 - 70'	Y	Y	N	N	N	May
<i>Malus</i> sp.	Crabapple	M	S	10 - 15'	Y	Y	Y	Y	N	Apr-May
<i>Physocarpus opulifolius</i> ^a	Tall ninebark	M	S/PS	4 - 6'	Y	Y	Y	?	N	May
<i>Populus tremuloides</i> ^a	Aspen	M	S	8 - 25'	Y	Y	Y	Y	Y	n/a
<i>Prunus americana</i> ^a	American wild plum	M	S/PS	4 - 6'	Y	Y	Y	Y	N	Apr
<i>Prunus cerasifera</i> ^c	Flowering plum	M	S/PS	8 - 10'	Y	Y	Y	?	N	Apr
<i>Prunus pensylvanica</i> ^{ac}	Pin/fire/wild/red cherry	M	S/PS	6 - 8'	Y	Y	Y	?	N	May
<i>Prunus virginiana melanocarpa</i> ^{ac}	Western chokecherry	M-H	S/PS	6 - 8'	Y	Y	Y	Y	Y	Apr-May
<i>Rubus deliciosus</i> ^a	Boulder raspberry, thimbleberry	M	S/Sh	4 - 6'	Y	Y	Y	Y	Y	Apr-May
<i>Salix amygdaloides</i> ^a	Peachleaf willow	H	S/PS	20 - 30'	Y	Y	Y	Y	?	n/a
<i>Shepherdia argentea</i> ^a	Silver buffaloberry	M	S/PS	4 - 6'	Y	Y	Y	Y	?	Apr
<i>Sorbus scopulina</i> ^a	Western mountain ash	M-H	S/Sh	6 - 8'	Y	Y	Y	Y	?	May
<i>Syringa vulgaris</i>	Common lilac	M	S	6 - 8'	Y	Y	Y	Y	Y	May

^a Native species.

^b Ground cover plant.

^c This species, or some species in this genus, may be poisonous to livestock, pets, wildlife and/or people under some conditions. Before planting, check with Colorado State University Extension, Colorado State Forest Service, or other knowledgeable personnel.

^d Several species of *symphoricarpos* are native.

Additional FireWise Guidelines

Some additional tips to follow when planning a FireWise landscape include:

- Landscape according to the recommended defensible-space zones. The plants nearest your home should be more widely spaced and smaller than those farther away.
- Plant in small, irregular clusters and islands, not in large masses.
- Break up the continuity of the vegetation (fuel) with decorative rock, gravel and stepping stone pathways. This will help modify fire behavior and slow its spread across your property.
- Plant a variety of types and species. Besides being aesthetically pleasing, this will help ensure a healthier forest by reducing insects and diseases. Healthy, vigorous, thinned forests can better resist catastrophic fires than unhealthy ones with insect and disease problems.
- In the event of drought and water rationing, prioritize the plants you wish to save. Provide supplemental water to those nearest your home, perhaps using "gray water."
- Mulch to conserve moisture and reduce weed growth. Mulch can be organic (wood chips or small bark pieces) or inorganic (gravel or rock). Avoid pine

bark, thick layers of pine needles or other materials that can easily carry fire.

Don't Forget Maintenance

A landscape is a dynamic, constantly changing system. Plants considered "fire resistant" and that have low fuel volumes can lose these characteristics over time. Your landscape, and the plants in it, must be maintained to retain their FireWise properties.

Be aware of the growth habits of the plants on your land and of the changes that occur seasonally. Keep a watchful eye for the need to reduce fuel volumes and fuel continuity.

- Remove annual, herbaceous plants after they have gone to seed or when the stems become overly dry.
- Rake up and dispose of litter as it builds up over the season.
- Mow or trim grasses to a low height within your defensible space. This is especially important as they begin to cure and dry.
- Remove plant parts damaged by snow, wind, frost or other agents.
- Timely pruning is critical. It not only reduces fuel volume but also maintains healthier plants with more succulent, vigorous growth.



FIREWISE is a multi-agency program that encourages the development of defensible space and the prevention of catastrophic wildfire.

Conifers

In Colorado, conifers make up much of our natural forest. Because of their high resin content, they are more susceptible to fire.

Even though conifers are flammable, you do not need to remove all of them from around your home. Wildfire hazards usually can be effectively reduced through proper thinning and pruning of existing trees and shrubs.

When choosing conifers for your defensible space, consider those with characteristics that make them better able to survive fire:

- thick bark,
- long needles, or
- self-pruning. (Self-pruning trees lose lower branches naturally, leaving a greater distance between ground and canopy.)

Additional FireWise Publications

Colorado State University Extension

The following publications are available from the University Resource Center, Colorado State University, 115 General Services Bldg., Fort Collins, CO 80523-4061; (970) 491-6198; ccs_resourcecenter@mail.colostate.edu. Printed copies cost \$1; they are available free on our website at www.ext.colostate.edu/pubs/pubs.html:

- 6.302, *Creating Wildfire-Defensible Zones*
- 6.303, *Fire-Resistant Landscaping*
- 6.304, *Forest Home Fire Safety*
- 7.402, *Protecting Trees During Construction*

Colorado State Forest Service

The following publication is available from the Colorado State Forest Service, Colorado State University - Foothills, 5060 Campus Delivery, Fort Collins, CO 80523-5060; (970) 491-6303:

- *Home Fire Protection in the Wildland Urban Interface*, CSFS #142-399



This fact sheet was produced in cooperation with the Colorado State Forest Service.

Colorado State University, U.S. Department of Agriculture and Colorado counties cooperating. CSU Extension programs are available to all without discrimination. No endorsement of products mentioned is intended nor is criticism implied of products not mentioned.



Wildfire

HOME ASSESSMENT &

Checklist

What to know and what you can do to prepare.



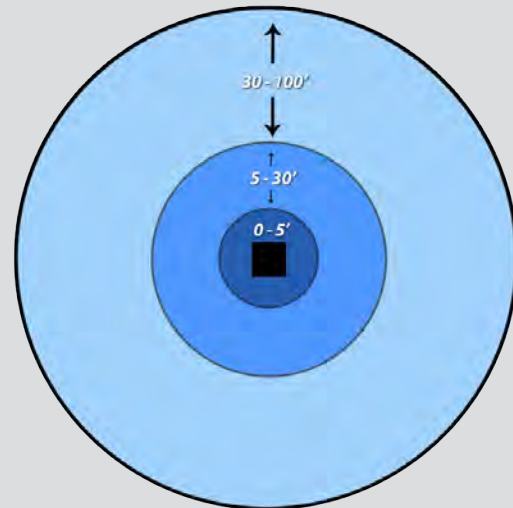
Wildfire Home and Property Checklist

Use the following checklist to help determine what parts of a home and the surrounding property may be most vulnerable during a wildfire. Reduce those risks with the guidance provided in the following pages.



PROPERTY

- ☐ Slope / Terrain
- ☐ Location of home on parcel
- ☐ Defensible space
 - ☐ 0-5'
 - ☐ 5-30'
 - ☐ 30-100'

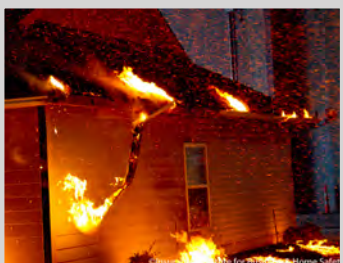


Know Your Space

Create defensible space to keep wildfire from getting too close to your property.

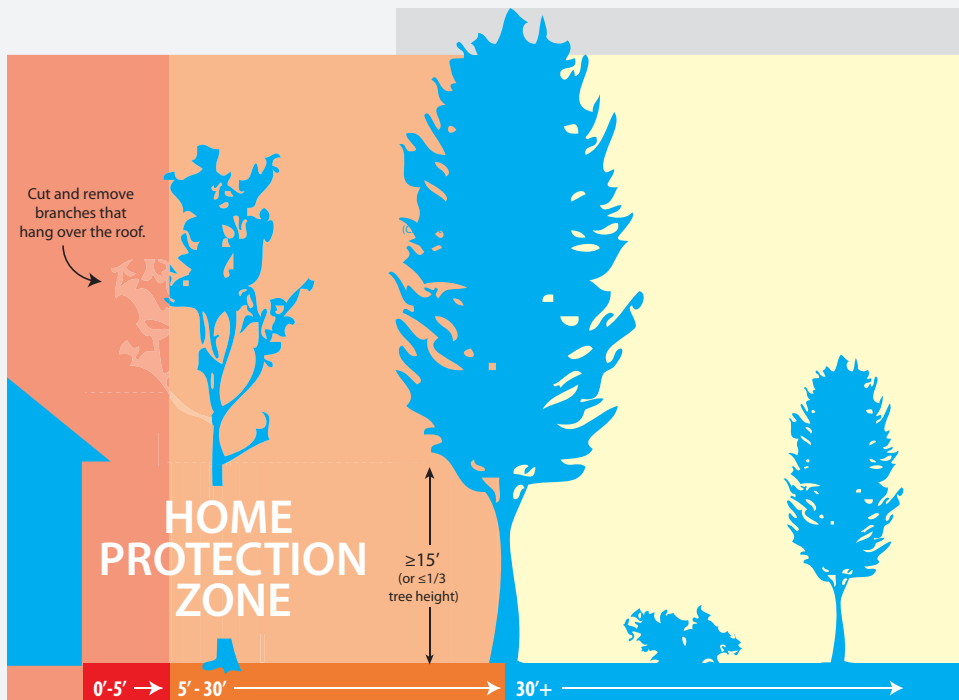
HOME

- ☐ Roof
 - ☐ Fire rating of covering
 - ☐ Shape
 - ☐ Edges
 - ☐ Skylights
- ☐ Exterior Wall
 - ☐ Type
 - ☐ Foundation type / clearance
 - ☐ Eave type
(under-eave construction)
 - ☐ Windows / Doors
- ☐ Vents and Other Openings
 - ☐ Face perpendicular to wind
 - ☐ Face parallel to wind
 - ☐ Ridge vents
 - ☐ Mesh screens
- ☐ Attachments
 - ☐ Deck
 - ☐ Enclosure
 - ☐ Garage
 - ☐ Fence



Assessment:

WHAT TO KNOW TO BETTER PROTECT YOUR HOME FROM WILDFIRE



SLOPE

The slope of the land around your home is a major consideration in assessing wildfire risk. Wildfires burn up a slope faster and more intensely than along flat ground. A steeper slope will result in a faster moving fire, with longer flame lengths.

Homes located mid- or top of a slope (without set back) are generally more vulnerable because of increased flame length and intensity of a fire moving up the slope. Depending on the location of your home, defensible space may need to be increased.

ZONE 1

0-5 ft. around the perimeter

The objective of this zone is to

reduce the chance of wind-blown embers from a nearby fire landing near the home, igniting combustible debris or materials and exposing the home to flames. This zone is closest to the house, so it requires the most careful selection and management of vegetation and other materials.

ZONE 2

5 ft.-30 ft. around the perimeter (or to the property line)

The objective of this zone is to create and maintain a landscape that, if ignited, will not readily transmit fire to the home. Trees and shrubs in this zone should be in well spaced groupings and well maintained. Ladder fuels (i.e., shorter vegetation or shrubs under taller trees) should be avoided to prevent the fire from climbing into the crown or upper portions of trees. If these groupings were to be ignited by wind-blown embers, the resulting fire should not be able to threaten the home by a radiant heat exposure or by flames being able to touch the exterior surfaces of your home.

ZONE 3

30 ft. - 100 ft. (or to the property line)

The objective of vegetation management in this zone is to reduce the energy and speed of the wildfire. Tree and brush spacing should force the fire in the tops of the tree, brush or shrub crowns to drop to the ground. Flame length should decrease.

Assessment:

WHAT TO KNOW TO BETTER PROTECT YOUR HOME FROM WILDFIRE

TREE BRANCHES OVERHANGING OR WITHIN 10 FT. OF THE ROOF

Branches overhanging your roof will result in more debris accumulation on your roof, in your gutters and near your home.

OTHER COMBUSTIBLE ITEMS/STRUCTURES

A fire in close proximity to a propane tank can result in gas releasing at the pressure relief valve, potentially resulting in a column of flame. Flames impinging on the upper surface of the tank can result in an explosion, particularly when the fuel level is low.

If ignited, other combustible items on your property, such as a tool storage shed or gazebo, could expose your home to radiant heat and flames.

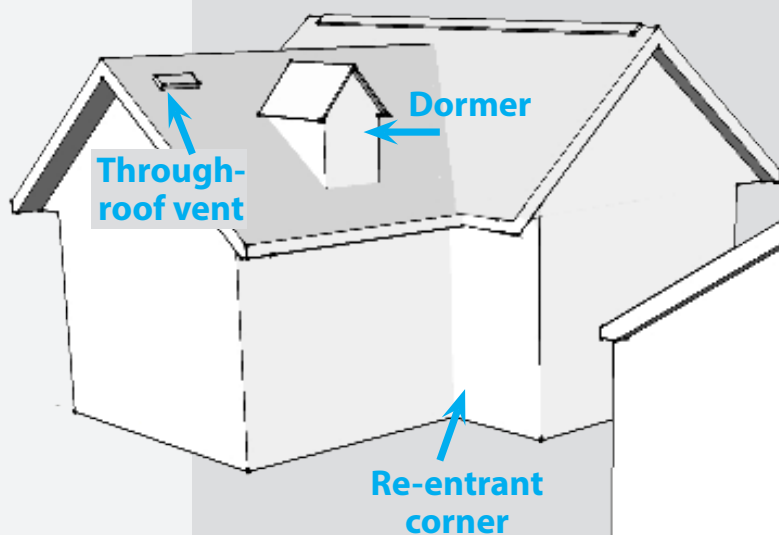
ROOF SLOPE

Roof slope is important because it will affect the amount of debris that accumulates and will also influence the radiant exposure to the roof if nearby vegetation or buildings ignite.

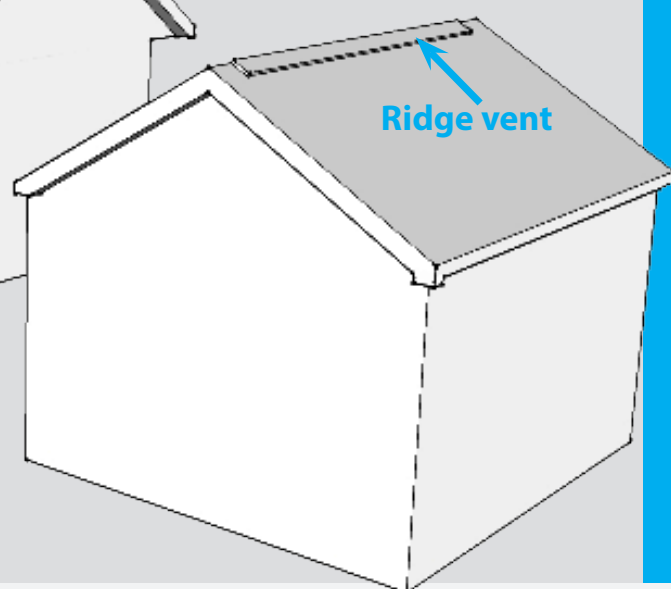
ROOF MATERIAL

Your roof is a large, relatively horizontal surface where debris from trees and other vegetation can accumulate. When a wildfire is threatening your home, wind-blown embers can also land on your roof and ignite this debris, potentially putting your home at risk. Your roof must be able to resist the burning embers from the wildfire and flames from ignited debris. Roof coverings are rated as Class A, B, or C. A Class A fire-rated roof covering offers the best protection.

COMPLEX ROOF



SIMPLE ROOF



Assessment:

WHAT TO KNOW TO BETTER PROTECT YOUR HOME FROM WILDFIRE

ROOF DESIGN

Even with a Class A roof, locations where the roof covering meets another material can be vulnerable. Debris can accumulate at these locations, and so can wind-blown embers. It is important to inspect these locations as they are potential “weak links” on your roof (for example, wood shingle siding on a dormer next to a Class A roof covering), or areas where the Class A roof can be by-passed (for example, non-bird stopped tiles at the roof edge).

SKYLIGHTS

During a wildfire, skylights could be an entry point for wind-blown embers and flames if the glass or Plexiglas opening were to fail. Operable skylights would also be vulnerable if left open when a wildfire threatens. Debris accumulation on top of and around skylights will be greater on flat or lower-sloped roofs. Dome-type skylights use an acrylic glass product and flat-type skylights use tempered or other specialized glass. Performance differences between acrylic and glass would make the flat-type skylights less vulnerable to wildfire exposures. All skylights incorporate metal flashing at the base, where it integrates with the roof.

VENTS

Most homes have enclosed spaces that are vented, including attics and crawl spaces. Other openings in an exterior wall include those for dryer vents and vents to supply make-up air for rooms where gas appliances are operating (e.g., furnace and/or water heater). Wind-blown embers that enter the attic or other enclosed spaces can ignite combustible materials that have either accumulated there or have been stored there.

Vents on vertical walls or surfaces have been shown to be vulnerable to the entry of embers. For the attic, these vents would include gable end vents, through-roof vents with a dormer face and under-eave vents used in open-eave construction. Crawl space vents (also called foundation vents), dryer vents and vents to supply make-up air would also be vulnerable to the entry of embers.

Some attic and foundation vents that have been specifically designed to resist the entry of embers and flames are commercially available. Your local fire or building department would know if any of these vents have been approved for use in your area.

Consider using closure devices. There are commercially available options or you can make your own and store in a place where they can be easily retrieved and installed when wildfire threatens. The commercial devices should be deactivated, or home-made covers removed, after the wildfire passes. Some gable end and crawl space vents have been designed to resist the entry of embers and flames - check with your local fire or building official to find out if any have been approved for use in your area.

EXTERIOR WALL - FOUNDATION

There are three basic types of foundations: concrete slab-on-grade, raised floor (i.e., one having a crawl space) and pier (or “post”) and beam (unless a perimeter skirting has been installed, this one will be open underneath). An “open underneath” foundation will be vulnerable if combustible materials or vegetation and debris has accumulated or has been stored there. Raised floor and slab-on-grade foundations can be vulnerable if the distance from

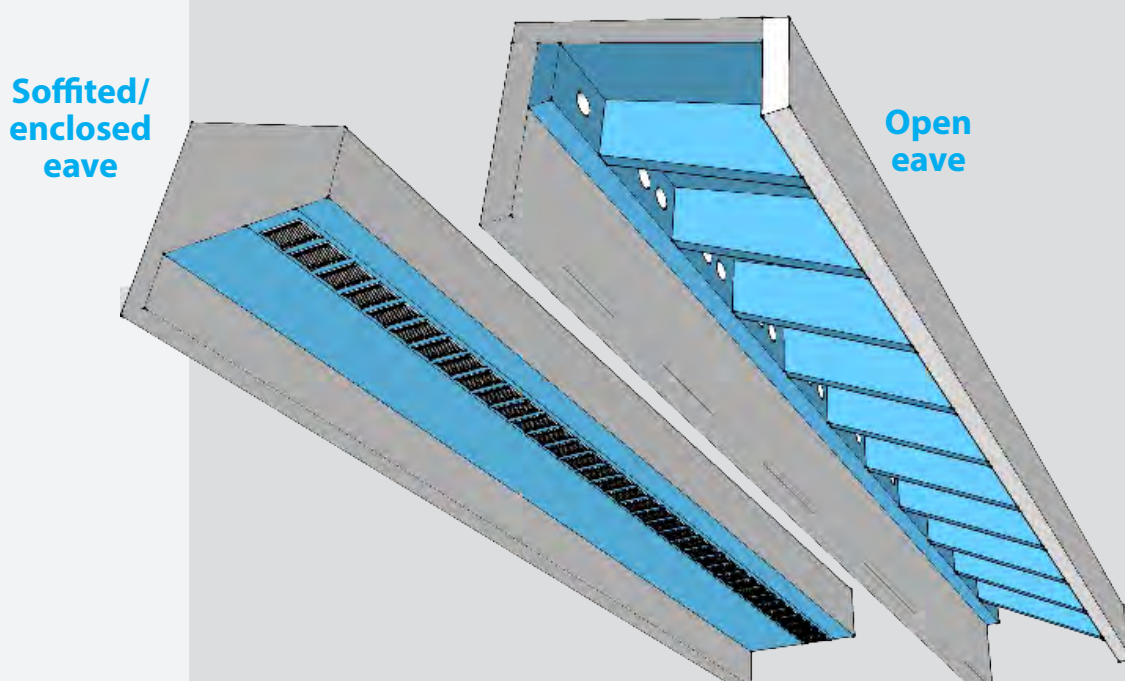
Assessment:

WHAT TO KNOW TO BETTER PROTECT YOUR HOME FROM WILDFIRE

the ground to the siding is much less than 6 in., or, in the case of a crawl space, ember entry occurs through a foundation vent. Combustible siding will be more vulnerable if the ground-to-siding clearance is less than 6-in. if embers can accumulate at the base of the wall. The use of combustible mulch and woody vegetation will make this area even more susceptible to ignition from wind-blown embers. Untreated wood shingle and vinyl siding are relatively more vulnerable to flame contact and radiant heat exposures that would result from an ember ignition of near-home debris or other combustible items.

UNDER-EAVE CONSTRUCTION

Under-eave construction consists of either “open-eave framing” or is enclosed with a “soffit” material (also called “boxing-in”). Vent openings are often found in this area. Vents in open-eave construction can be vulnerable to the entry of embers, and are more vulnerable to ember entry than vents located in a soffit eave. Open-eave construction can also trap heat if subjected to flames, resulting in more rapid ignition of combustible construction materials and lateral flame spread. Flames reaching the under-eave area would be more likely if combustible vegetation and mulch were included in the 0-5 ft. “near-home” zone and similarly, if combustible siding were used.



EXTERIOR WALL - MATERIAL

Siding is vulnerable when it ignites and flames or embers get into the cavity behind it or if the flames spread vertically, impinging on windows and the eave. With inadequate ground-to-siding clearance, accumulated embers can ignite combustible siding directly. Ignition is more likely if combustible siding is exposed to a direct flame contact or extended radiant heat exposure. The chance of direct flame contact is greater if you haven't created

WHAT TO KNOW TO BETTER PROTECT YOUR HOME FROM WILDFIRE

RE-ENTRANT (INTERIOR) CORNER

WALL VENTS AND OPENINGS

WINDOWS

GARAGE (ATTACHED OR DETACHED)

DECK



©Insurance Institute for Business & Home Safety

Checklist:

MITIGATION ACTIONS OR RETROFIT OPTIONS

\$	< \$500
\$\$	\$500 - \$1,000
\$\$\$	\$1,000 - \$5,000
\$\$\$\$	>\$5,000

SLOPE

Is your home located in the middle of a steep slope or at the top of a slope with minimal setback?

- ☐ If yes, increase vegetation management in the 5 ft. to 100 ft. zones. Consider installing a noncombustible wall within 15-20 ft. of the down slope side of your home, particularly if you have a deck overhanging the slope.

YOUR DEFENSIBLE SPACE IS COMPRISED OF THESE THREE ZONES. THE SELECTION AND MAINTENANCE OF VEGETATION AND OTHER COMBUSTIBLE ITEMS IN THESE ZONES WILL DETERMINE HOW ADEQUATE YOUR DEFENSIBLE SPACE IS.

ZONE 1

0-5 ft. around the perimeter of the home

- ☐ Install hard surfaces in this zone, such as a concrete walkway, or use noncombustible mulch products, such as rock. Keep the lawn well irrigated and use low-growing herbaceous (non-woody) plants. Shrubs and trees are not recommended in this zone. Remove dead vegetation and implement a maintenance strategy to keep the area clear of dead plant materials. **\$-\$\$**

ZONE 2

5 ft.–30 ft. around the perimeter (or to the property line)

- ☐ Create islands or groupings of vegetation to form a discontinuous path of vegetation to make it difficult for the fire to burn directly to your home. Remove dead plant material and tree branches. Remove lower tree branches and shrubs positioned under the tree line so that a surface fire cannot reach the tree crown. Trees located within this zone should be maintained with a minimum horizontal spacing of 10 ft. between crowns, with the distance increasing with slope. Prune limbs and branches to a height of up to 15 ft. For shorter trees, pruning should not exceed one-third of the

tree height. Relocate propane tanks larger than 125 gallons (water capacity) at least 30 ft. from your house. Create 10 ft. of Zone 1 defensible space around the tank. Consider surrounding three sides with a noncombustible wall to help protect it. **Free - \$\$\$**

ZONE 3

30 ft. - 100 ft. (or to the property line)

- ☐ Trees located in this zone should be maintained with a minimum horizontal spacing of 10 ft. between crowns, with this distance increasing with slope. Ladder fuels under taller trees should be eliminated. Separation between groupings of shrubs and bushes should be created and maintained. Remove dead plant material from all vegetation. Vegetation management beyond 100 ft. should be considered if the home is located on a steep slope. **Free - \$\$\$**

Does your home have a tool shed, detached garage, play set or other structures in the yard?

- ☐ Create defensible space around secondary buildings or relocate them at least 30 ft. from your home. Consider a noncombustible material for a trellis. Carefully maintain vegetation used on trellis-type structures, pruning regularly to remove dead vegetation. Combustible materials used for play sets are typically larger dimensions (and therefore more difficult to ignite). Combustible wood/bark or rubber mulch that are more commonly used as surfacing materials around play sets are easily ignited by embers. Play sets with combustible mulch surfacing materials should be relocated at least 30 ft. from your home. **Free - \$\$**

ROOF COVERING

Do you have a Class A fire-rated roof?

- ☐ If not, choose a product rated Class A when it's time to re-roof. Non-rated products include untreated wood shakes or shingles. Other roof coverings may carry a Class B or C fire rating. A Class A fire-rated roofing product offers the best protection. **\$\$\$\$**

Checklist:

MITIGATION ACTIONS OR RETROFIT OPTIONS

\$	< \$500
\$	\$500 - \$1,000
\$	\$1,000 - \$5,000
\$	> \$5,000

ROOF EDGE(S)

Are your gutters full of debris?

- ☐ If yes and you have a *SIMPLE ROOF DESIGN*, clean out gutters and install a drip edge at the roof edge to protect any exposed roof sheathing or fascia. **Free - \$**
- ☐ If yes and you have a *COMPLEX ROOF*, clean out gutters and install a drip edge at the roof edge to protect any exposed roof sheathing or fascia. Remove any debris that has accumulated at roof-to-wall intersections, for example, near a dormer or a chimney. For added protection, consider replacing combustible siding at any "intersection" location with a noncombustible or ignition resistant siding product. Metal step flashing extending up from the roof a minimum of 6 in. can be installed at the base of combustible siding in lieu of replacing it (integrate with siding to avoid moisture-related degradation problems). If necessary, consult a roofing professional to get help with this. If windows are present, replace with ones that have dual / multi-pane, tempered glass. **Free - \$\$\$**

Do gaps or openings exist between the roof covering and the roof deck? These gaps are common with clay barrel-style roofs and some types of metal and cement (flat) tile roof coverings. The gaps can occur at the roof eave or ridge.

- ☐ If yes, fill the space with either a commercially available "bird stop" material or plug with a mortar mix (the material used between layers of bricks). This material will minimize the accumulation of debris than can accumulate between the roof covering and the roof sheathing, and will also limit the intrusion of embers when a wildfire threatens your home. **\$ - \$**

VENTS ON YOUR ROOF

Are the attic vents located on your roof covered with screening that is free of debris?

- ☐ If there is no screening, install 1/8 in. metal mesh screening. **\$ - \$**
- ☐ If you have a turbine vent, enter the attic and inspect the location where the vent attaches to the roof. Attach 1/8 in. screening to the roof sheathing if none is present. **\$ - \$**

- ☐ If you have dormer-face vents, replace them with a low-profile vent. **\$ - \$**
- ☐ If you have ridge vents, they should be rated for high-wind / rain exposure, and specifically should be a Florida Building Code High Velocity Hurricane Zone approved ridge vent, regardless of where you are in the country. **\$ - \$**
- ☐ Consult your local fire or building department to find out if any vents designed to resist the entry of embers and flames have been approved for use in your area. **Free**

SKYLIGHTS

Are skylights installed on a flat or low-sloped roof?

- ☐ Remove accumulated debris next to and on the skylight. **Free**

Do you have a dome-type skylight?

- ☐ If yes, consider replacing it with a flat, tempered glass skylight. If the skylight is installed on a steep roof and if vegetation is at the same level, remove and prune vegetation, clear away debris, and trim overhanging limbs. **Free - \$**
- ☐ Keep operable skylights closed when a wildfire threatens. **Free**

FOUNDATIONS

Do you have a post-and-beam style foundation?

- ☐ If yes, enclose it with a noncombustible material—this process is sometimes called "skirting". Ventilate enclosed space according to your building code requirements. All foundation vents should have 1/8 in. corrosion-resistant metal screening that is in good condition. **\$ - \$\$\$**
- ☐ Remove combustible materials stored in the crawl space, or from under the building if you have a non-skirted post-and-beam foundation. **Free**

Checklist:

MITIGATION ACTIONS OR RETROFIT OPTIONS

\$	< \$500
\$	\$500 - \$1,000
\$	\$1,000 - \$5,000
\$	> \$5,000

VENTS ON THE EXTERIOR WALLS

Do you have foundation vents that are closeable?

- ❑ Some foundation vents are closeable - these vents should be closed when a wildfire threatens, but should be opened after the wildfire has passed. Some foundation vents have been designed to resist the entry of embers and flames - check with your local fire or building official to find out if any have been approved for use in your area. Remove combustible materials stored in the crawl space. **Free**

Do you have vent covers for foundation and/or gable end vents?

- ❑ If not, consider using closure devices. There are commercially available options or you can make your own and store in a place where they can be easily retrieved and installed when wildfire threatens. The commercial devices should be deactivated, or home-made covers removed, after the wildfire passes. Some gable end and crawl space vents have been designed to resist the entry of embers and flames—check with your local fire or building official to find out if any have been approved for use in your area. **\$**

Do you have other vent openings on the wall?

- ❑ Dryer vents and wall-mounted make-up air openings for furnaces should be screened with 1/8 in. corrosion resistant metal mesh. Consider installing a louver-type dryer vent that is closed unless the dryer is running. **\$**

SIDING

Do you have combustible siding?

- ❑ If yes, create a 0-5 ft. defensible space zone next your home. Remove any accumulated debris as necessary. If siding extends to grade, consult with contractor to determine if your foundation would allow some siding at the base of the wall to be removed to obtain the 6 in. clearance. Moisture-related degradation and insect damage may be present in some siding products that have been installed such that it extends to grade. **Free - \$**

- ❑ Examine your siding for locations where embers could accumulate or lodge. Apply caulk at trim-to-siding locations where it is missing or has failed (\$). **\$ - \$**
- ❑ If you plan to re-side your house, use a noncombustible or ignition resistant material for the siding and corner trim. If you haven't already done so, create a 0-5 ft. noncombustible zone in this area. **\$**

EAVES

Do you have open-eave framing?

- ❑ If yes, consider converting open-eave framing to a boxed-in or soffit-eave design. Venting in the soffit material (and between the soffit and attic space) must be maintained. If you haven't already done so, create a 0-5 ft. noncombustible zone next your home. **\$**

Do you have vents in the eaves?

- ❑ If yes, all vents should be covered with 1/8 in. mesh corrosion-resistant metal screening. If an open-eave construction is maintained: Closure devices for vents located in the blocking of open-eave framing are commercially available. Consider purchasing these or making them from 1/4-in. plywood or thin sheet metal. Install these devices when a wildfire threatens and remove or open them after the threat has passed. Under-eave vents have been designed to resist the entry of embers and flames—check with your local fire or building official to find out if any have been approved for use in your area. **\$ - \$**

Checklist:

MITIGATION ACTIONS OR RETROFIT OPTIONS

\$	< \$500
\$\$	\$500 - \$1,000
\$\$\$	\$1,000 - \$5,000
\$\$\$\$	> \$5,000

WINDOWS

Do you have single-pane windows?

- ☐ If yes, replace single-pane windows with dual or multi-pane windows, preferably ones with tempered glass. **\$\$\$ - \$\$\$\$**
- ☐ Install window screening to improve performance against radiant heat exposures and to minimize the size and number of embers that could enter the home. Both plastic-clad fiberglass and metal screening will reduce radiant exposure to the glass and protect against ember entry but neither will protect against flames. The fiberglass screen will fail if exposed to flames, thereby allowing embers to enter if the window glass has also failed. If you haven't already done so, create a 0-5 ft. noncombustible zone near your home. **\$-\$\$**

GARAGE (DETACHED OR ATTACHED)

Do you have a garage door?

- ☐ If yes, weather seal the perimeter of garage doors. **\$**
- ☐ If you do not have a garage door, consider installing one to help protect combustible materials stored there. **\$\$**

DECK

Do you have a deck?

- ☐ If your deck overhangs a steep slope, be sure your defensible space is sufficient to minimize flames spreading up the hill and reduce flame length to minimize the chance for a flame contact exposure to the underside of the deck. Consider building a noncombustible wall across the slope approximately 15–20 feet from the edge of the deck. **Free - \$\$\$**
- ☐ Do not store combustible materials under your deck. If you have no other option, installing a noncombustible siding product around the deck perimeter may be an option. Be sure the enclosed space is adequately ventilated to minimize the chance of water-related damage (i.e., fungal decay, fastener corrosion, etc.). **Free - \$\$\$**

- ☐ Most deck boards are combustible, including wood, plastic and wood-plastic composites. Solid surface decks, such as those made from lightweight concrete, are usually noncombustible, but are also more expensive. If you live in a wildfire-prone area anywhere in the country, when it's time to replace deck boards, choose a product that complies with the requirements of the California Building Code, as provided in the Office of the State Fire Marshal Wildland Urban Interface (WUI) Handbook (http://osfm.fire.ca.gov/strucfireengineer/strucfireengineer_bml.php). **\$\$\$**
- ☐ Regularly clean out debris from between deck board joints and other areas where debris has accumulated. Check the condition of wood deck boards and structural support members—replace or repair rotted members. **Free**
- ☐ When a wildfire threatens, move combustible deck furniture and cushions inside or move as far away from the house as possible. Treat other combustible items, such as a broom, as your furniture and move them inside or far away from the house. Any LP tank for a grill should be moved off the deck and away from the home. **Free**

FENCE

Do you have a fence?

- ☐ Replace any combustible fencing that attaches directly to your home with a noncombustible section that is at least 5 ft. long. A chain link gate or fence, a wood frame fence with metal mesh infill, or other noncombustible material can be used. If metal wire is used, do not allow climbing vegetation to grow on the fence—this would defeat the purpose of the noncombustible material. **\$-\$\$**

Insect and Disease Conditions

INSECT AND DISEASE CONDITIONS

Literally thousands of insect and diseases are present in the forests surrounding the community--or any other forested area. Fortunately, like the common cold, most do no serious or lasting damage. But when in poor health, trees, like humans, are more prone to infection from other causes; the concept of preventive medicine applies to forests, as well. Maintaining forests in good health will prevent problems in the future. For the most part, forest insect and disease issues are typical for the region.

Every summer, insect and disease specialists from the USDA Forest Service and Colorado State Forest Service (CSFS) survey Colorado's forests from the air to monitor insect and disease outbreaks. These flights are an excellent means of finding new areas of insect and disease activity and monitoring trends in existing outbreaks. Maps of the previous year's findings are published in January and can be found on the CSFS website at <https://csfs.colostate.edu/forest-management/common-forest-insects-diseases/>. This link also contains more detailed information on the insect and disease issues presented here.

The unnaturally dense forest conditions that cause the potential for hazardous fire also create the potential for cyclical insect and disease outbreaks. Trees weakened by overcrowding and severe competition for water and sunlight are susceptible to invasion by insects and disease. When planning wildfire hazard mitigation projects, it is important to address current insect or disease issues and prevent those that are likely to become a problem. Following is information on some of the common forest insect and disease problems that have been identified in the region.



Well maintained forests have a multitude of benefits. They are resistant to catastrophic fires, insect and disease, sustain wildlife populations and are pleasant places to be. Colorado State Forest Service Photo by Dave Root

WESTERN SPRUCE BUDWORM

The western spruce budworm (WSBW), a defoliating insect of Douglas-fir and spruce, is the primary threat to Douglas-fir, white fir and spruce trees in northern Teller County. Depending on the intensity of defoliation, budworm may damage or kill the host tree.

A severe outbreak of WSBW in the late 1980s damaged or killed large areas of Douglas-fir throughout the region. Trees with dead branch tips or those with forked or dead tops are legacies of the previous epidemic. Many of the dead Douglas-fir were first weakened by budworm and then killed by Douglas-fir beetles.

The grayish, mottled adult moths are active in July and August when females lay eggs on the underside of needles. Eggs hatch within days and the larvae migrate to bark scales where they overwinter. The following spring, larvae invade the new buds and feed on the emerging needles. Webbing around the new growth is an obvious sign of budworm activity and if heavy defoliation continues for three to five years, the tree will die. If shorter-term defoliation occurs, the branch tips or the entire top of the tree could die.

Natural predators or severe winter weather helps control budworm populations, which keeps them at non-threatening levels. Spraying with *Bacillus thuringiensis* may be useful to protect high value trees, but is not practical on a large scale.



WSBW larva feeding on the needles of Douglas-fir. Note the typical webbing in the bottom of the photo. Colorado State Forest Service photo by David Leatherman

DWARF MISTLETOE

Dwarf mistletoe is a parasitic plant that robs moisture and nutrients from the host tree. Over many years, it causes the tree to decline in vigor and eventually may cause death. More commonly, the tree declines to the point where bark beetles attack and kill it.

Three common species of dwarf mistletoe are found in the region, each named after its principle host: ponderosa pine, lodgepole pine and Douglas-fir. Locally, ponderosa and lodgepole varieties grow on any pine species, but Douglas-fir dwarf mistletoe is exclusive to Douglas-fir trees. Spruce, true firs and deciduous trees are immune to all three species of dwarf mistletoe.

The most obvious symptom of dwarf mistletoe infection is the dense, distorted growth of the branches, called witch's brooms because they appear to be twisted or tied in knots. The shoots of ponderosa and lodgepole dwarf mistletoe are visible on the branch as thick fingerlike growths extending out of the branch or trunk. The shoots of ponderosa and lodgepole dwarf mistletoe are long and obvious to casual observations, but Douglas-fir dwarf mistletoe shoots are shorter than the needles and are not easy to see.

Mistletoe shoots are only reproductive structures with no photosynthetic function. Removing the shoots from a branch does not control dwarf mistletoe, except to temporarily halt seed production. Structures called sinkers, (analogous to roots in plants) embedded in the wood cause the damage, and the mistletoe plant continues to absorb the host tree's water and nutrients. Shoots that are removed grow back in two or three years.

During the growing season, dwarf mistletoe shoots develop berries containing a seed. In August, the berries fill with water and explode, shooting the seed as far as 40 feet. Most seeds strike branches of the host tree and do not travel the full 40 feet, so the expansion of dwarf mistletoe pockets averages two feet per year. When the seed strikes a branch, it germinates and the sinkers penetrate the bark into the tree's conductive tissues. The growing mistletoe begins to steal the tree's food and water. The first visible symptom of infection is swelling in the branch at the site of the growing mistletoe plant, but nubs of the emerging shoots won't be visible for three years and a shoot won't bear its first seeds until seven years after. As seeds spread, all susceptible trees in the vicinity may become infected; it is extremely rare to find an isolated infected tree in the forest.

The tendency of mistletoe to infect all trees in a stand makes eradication difficult. No effective chemical treatment exists for mistletoe, and the only way to kill the parasite is to kill the host. In stands where only the susceptible species of tree exists, total eradication of the mistletoe would require a clear-cut, which is unacceptable to most landowners.



A ponderosa pine with advanced dwarf mistletoe infection. Note the heavy contorted "witch's brooms" in the lower branches. After long periods of infection, the needles at the top of the tree become sparse and shorter. Colorado State Forest Service photo by Dave Root.

Fortunately, mistletoe kills trees slowly, so it is not necessary to eradicate the parasite. The disease can be controlled by a program of thinning to increase tree vigor. Pruning the more heavily infected branches also helps, even if not all the mistletoe is eliminated. The final step in the process is to replant with non-susceptible species so that new trees will grow before the mistletoe kills the remaining trees.

The spread of mistletoe can be halted by a minimum 40-foot buffer zone between infected and non-infected trees. In this situation, cut 20 feet into non-infected trees to remove any mistletoe that is not yet visible; cut the remaining 20 feet into the infected stand. Non-infected trees outside the buffer should be checked each spring for mistletoe and any infected branches should be immediately pruned before seeds develop.

In forest stands with mixed tree species, it may be possible to eliminate all mistletoe by retaining only non-susceptible trees if they are in good health.

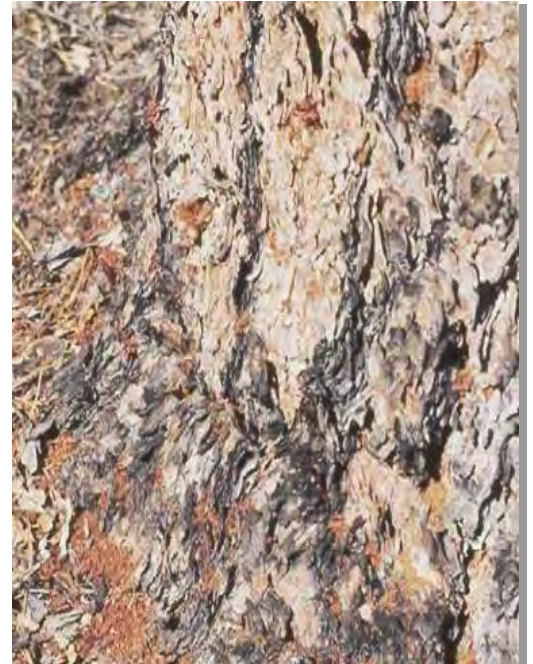
Dwarf mistletoe treatment is a complicated process that depends on the site conditions and the landowner's tolerance for cutting trees. In most cases, a combination of treatment methods will best suit the landowner's objectives. Consultation with a qualified forester is recommended to develop an effective and acceptable treatment plan.

MOUNTAIN PINE BEETLE

Due to the massive mountain pine beetle (MPB) epidemic in the western United States and Canada, MPB is the most feared insect in the forest. Unlike the Western Slope, mountain pine beetle is at normal levels in the area. The beetles have crossed the Continental Divide in northern Park County and northern Larimer County, and activity currently is confined mostly to higher altitude lodgepole pine. It presently is not known if or when the beetles will reach into the lower-elevation ponderosa forests, but where they have reached ponderosa, heavy mortality has occurred.

Adult beetles fly from midsummer through the first frost, although the vast majority fly between mid-July through the middle of September. Females seek a large, weak tree in which to mate and lay eggs. Vigorous trees generate enough pitch to prevent the female from burrowing through the bark, and this attempt by the tree to prevent entry creates the pitch tubes symptomatic of beetle attack. Pitch tubes are not a particularly reliable indicator of a successful attack. If pitch tubes are seen, check for reddish boring dust (fine sawdust) at the base of the tree and in the bark crevices. Boring dust is a more reliable indicator of successful attack.

Once a female penetrates the bark, she hollows out a circular mating chamber between the bark and the wood, releasing a pheromone (scent) to attract a mate. The pheromone also attracts additional females to the tree and the tree is attacked en masse. and the wood, releasing a pheromone (scent) to attract a mate.



Boring dust on a ponderosa pine after bark beetle attack. The reddish brown sawdust at the base of the tree and in the bark crevasses is a strong indication of successful beetle attack. Colorado State Forest Service photo by David Leatherman.

After mating, the female burrows up the trunk between the bark and wood laying eggs. She inoculates the tree with spores of bluestain fungus, which provides food for the larvae. The fungus clogs the tissues that conduct water throughout the tree, leading to death within a few weeks.

Eggs hatch within a few days. The developing larvae feed horizontally from the maternal gallery over winter. The vertical maternal gallery and horizontal larval galleries are characteristic of the mountain pine beetle. The feeding larvae spread the bluestain fungus horizontally through the tree, and it becomes visible in the wood around February. The presence of bluestain is absolute confirmation that beetles have successfully attacked a tree.

Woodpeckers feed on the larvae through the fall and winter. The holes made by the woodpeckers are a visual clue to an infested tree. Untrained observers often are confused by the holes' woodpeckers make when they feed on beetle larvae and sapsuckers feed on the sap. Woodpecker feeding is characterized by random holes about one-half inch in diameter that make it appear as though the tree was peppered with a shotgun. Sapsuckers, on the other hand, make a small hole about one-eighth inch in diameter, and the holes are in straight lines or a grid pattern. Sapsuckers do not indicate the presence of beetles in the tree.

Although the tree is dead within a few weeks of successful attack, needles remain green until the following spring. Within the space of a few weeks, in late May or early June the tree will turn straw-yellow and then reddish-brown. Once beetles invade a tree, nothing can be done to save it; the tree must be cut and disposed of in a way that will kill the beetles. No insecticide is available to kill beetles under the bark; thus, some sort of mechanical treatment is necessary. Any wood greater than four inches in diameter may harbor beetles and must be treated.

Following are treatment options for beetle-infested trees:

- Move all wood to a landfill or bury it under at least eight inches of dirt.
- Completely debark any wood that is larger than four inches in diameter.
- Chip the tree. Many tree services have chippers capable of chipping large diameter trees. The beetles are killed when the wood is chipped.
- Cover wood with at least six-mill clear plastic. This method, known as solar treatment, warms the wood to lethal temperatures and increases moisture, encouraging mold growth in the logs, which kills the beetles. Treat the wood properly for successful control. Cut into firewood lengths and stack no more than two logs high. Be sure there are no exposed stubs or sharp edges that might tear the plastic. Trench around the pile and, if possible, wet down the pile to encourage mold growth. Cover the pile with plastic, push the edges of the plastic into the trenches, and seal the edges with dirt. Check periodically to be sure the plastic has not torn. If torn, it can be repaired with duct tape.



Mountain pine beetle galleries under the bark. The maternal beetle burrowed straight up the tree, creating the darker central gallery. Larval beetles feed horizontally, creating the smaller galleries. A larva is in the upper right and pupae in the lower left. Note the bluestain in the wood. Colorado State Forest Service photo by David Leatherman.

Solar treatment of bark beetle infested wood must begin before April first to be effective.

It is best to check for infested trees in October of each year – remember that infested trees, although dead, are still green at this time. Pitch tubes and boring dust will be the most obvious clues. If infested trees are located early, there is adequate time to treat them.

While no insecticide effectively treats infested trees, spraying with insecticides such as carbaryl or permethrin prevents attack. Preventive sprays will not kill beetles under the bark. Spray trees between May 1st and July 1st each year for maximum effectiveness. It is not practical to spray every tree on a large tract of land, so choosing which trees to spray depends on the landowner's budget and the value of individual trees to the landowner. It is advisable to solicit bids from several different spray companies, as prices can vary widely. It also is wise to request and check references.

Thinning forests for increased health and vigor by far is the best preventive measure for mountain pine beetle. Because trees require several years to respond to thinning, it is best done before beetles reach epidemic levels. Follow thinning guidelines for wildfire mitigation to reduce susceptibility to MPB.

DOUGLAS-FIR BEETLE

Some similarities exist between Douglas-fir beetle and MPB, but there are important differences that require different treatment strategies for infested trees.

Both species burrow under the bark to lay eggs and both carry blue stain fungus that kills the tree within a few weeks of infestation. Each beetle prefers dense stands with large diameter, low vigor trees; thus, thinning Douglas-fir for wildfire mitigation also reduces susceptibility to beetles,

Adult Douglas-fir beetles emerge in mid-June, and a few adults may overwinter in trees and emerge as early as April. There are no insecticides available for treatment of beetle infested trees. Infested trees should be treated prior to April of each year to prevent emergence of overwintering adults. Effective treatments are whole tree chipping, debarking of all wood greater than four inches in diameter, transportation to a safe site or landfill, and burying under eight inches of dirt. Solar treatments should begin in the fall, preferably early fall.

Preventative spraying is an option for high value trees. Permethrin or carbaryl are effective as Douglas-fir beetle preventatives, but, because of the earlier emergence of overwintering adults, spraying should be done in April. Preventative sprays are not an effective treatment for infested wood.

Unlike MPB-infested trees, Douglas-fir trees do not form pitch tubes when attacked, so there may not be an obvious visual indication of infestation. Some Douglas-fir bleed sap when attacked, resulting in rivulets of sap on the trunk; however, this does not occur in all infested trees. Trees should be checked carefully for boring dust in early October. Later in the year, woodpecker holes may provide a visual clue that trees are infested.



Pitch streamers on the bark of a beetle-infested Douglas-fir. Not all infested trees will exhibit pitch. Trees should be checked for boring dust in the early fall. Colorado State Forest Service photo by Dave Root.

Trees partially defoliated by western spruce budworm are particularly susceptible to attack by Douglas-fir beetles. Injury, overcrowding or any conditions that adversely affect the vigor of the tree will make it more susceptible. Managing the forest for open, vigorous stands of Douglas-fir is the best prevention.

IPS (ENGRAVER) BEETLES

There are several species of these small bark beetles that may infest ponderosa pine piñon pine or spruce. They are always present in the forest, but are not currently at epidemic levels. Ips beetles usually attack trees less than four inches in diameter and, in such circumstances, may be useful in thinning dense stands of young trees. Thus, it usually is not considered as threatening as its larger cousin. Ips will attack larger trees if they are severely weakened by disease (most often dwarf mistletoe), or are damaged by construction, lightning strikes or in horse corrals where soil compaction injures the roots. Like the mountain pine beetle, ips burrow beneath the bark and inoculate the tree with bluestain fungus, often following mountain pine beetles into larger trees.

The differences between mountain pine beetle and ips are significant to anyone implementing a forest management program. In contrast to MPB, which produce one generation per year, ips may produce up to four. Ips become active in spring when the weather exceeds 50 degrees F, developing from egg to adult within eight weeks. They continue to attack trees until the first fall frosts. For this reason, preventive spraying should be done with permethrin or carbaryl in April and repeated in July. When spraying preventively for ips, it is important to spray the branches, as well as the trunk.

Ips attack causes no pitch tubes to form on live trees, so the only visual clue is boring dust or woodpecker holes in the trunk. Smaller trees quickly turn reddish-brown, but when they attack larger trees, ips often infest only the upper portion of the tree. The first symptom is browning of the top, but subsequent generations emerge and continue down the tree.

Ips will infest green slash and downed logs from forest management projects. If slash is not promptly treated, ips will emerge to attack living trees; treat slash within four to six weeks after cutting. If weather conditions permit, thinning trees in winter when ips are dormant will prevent problems with beetles in slash. However, slash cut after March 1 may still be green enough to attract ips when the weather warms.

Ips beetles infest untreated slash from forest management projects. Treat slash within four to six weeks.



The reddish-brown sawdust on this freshly cut ponderosa pine slash indicates it has been invaded by ips beetles. Adult beetles will emerge in eight weeks if the slash is not properly treated. Colorado State Forest Service photo by Dave Root.

Chipping slash will kill ips beetles. Lopping and scattering slash into lengths less than 24 inches promotes rapid drying and prevents infestation. Slash cut late in fall that is subsequently infested can be treated or piled and burned over the winter, but untreated slash left over the winter will produce live broods the following April. Due to their short lifecycle, solar treatment of ips-infested logs is ineffective. Bucking larger diameter logs and promptly splitting them into firewood accelerates the drying process and usually is effective in preventing ips infestations.

Many high value trees have been lost as a result of the common, and ultimately costly, practice of stacking firewood against green trees. Ips beetles will burrow out of infested firewood directly into standing trees.

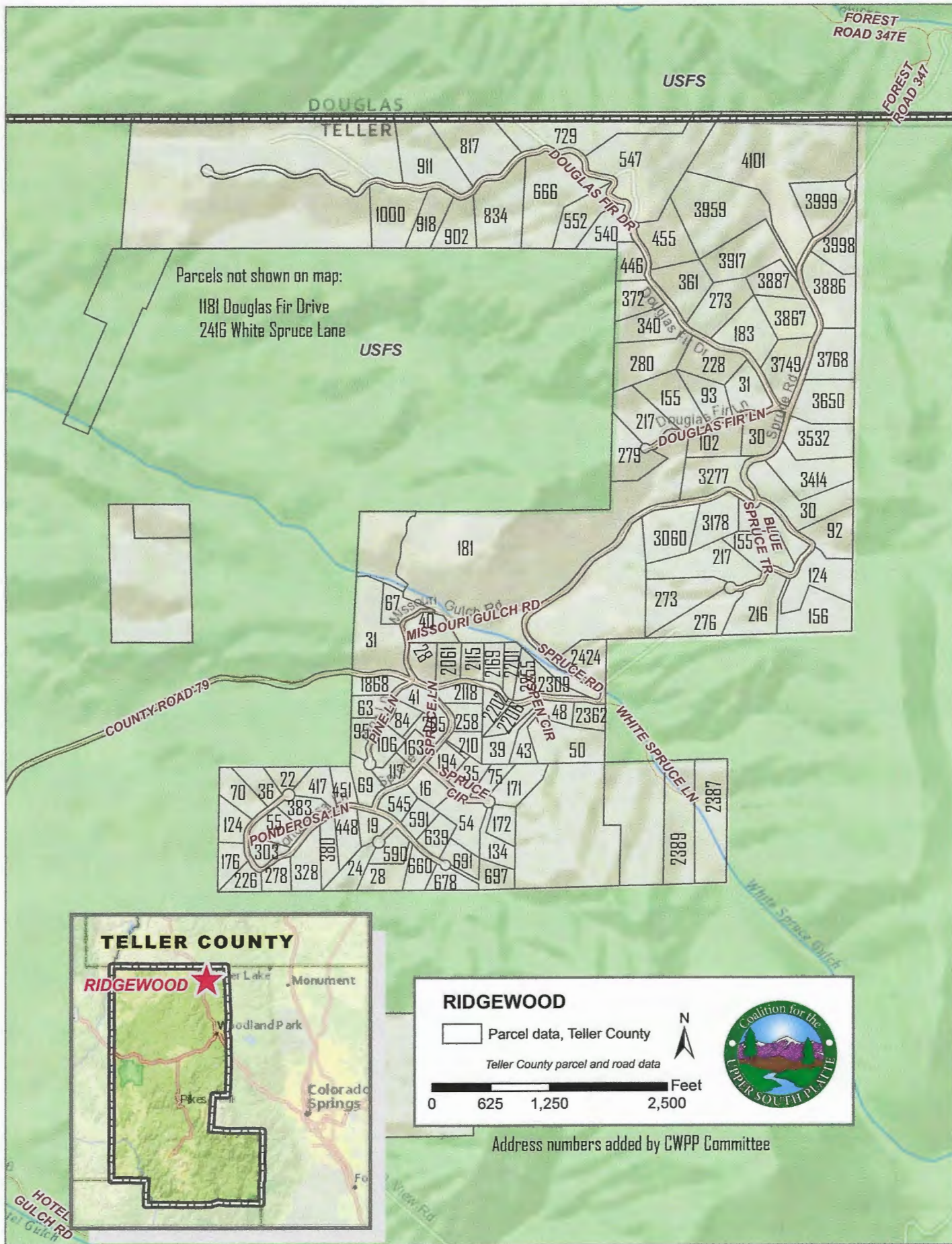
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PLANT AND TREE SPACING

The spacing between grass, shrubs, and trees is crucial to reduce the spread of wildfire. The spacing needed is determined by the type and size of the shrubs and trees, as well as the slope of the land. For example, a property on a steep slope with larger plant life will require greater spacing between trees and shrubs than a level property that has small, sparse vegetation.

VERTICAL SPACING

Remove all tree branches at least 6 feet from the ground.

If shrubs are under trees, additional vertical space is needed. Lack of vertical space can allow a fire to move from the ground to the shrubs to the treetops like a ladder.



FIRE-SAFE LANDSCAPING

Fire-safe landscaping isn't necessarily the same thing as a well-maintained yard. Fire-safe landscaping uses fire-resistant plants that are strategically planted to resist the spread of fire to your home.

The good news is that you don't need to spend a lot of money to make your landscape fire-safe. And fire-safe landscaping can increase your property value and conserve water while beautifying your home. For more information on fire-safe landscaping, visit: ReadyForWildfire.org/landscaping.

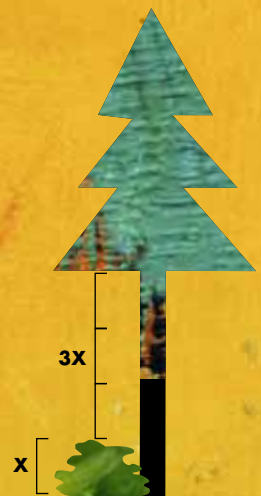
MINIMUM VERTICAL SPACING BETWEEN TREES AND SHRUBS

To determine the proper vertical space between shrubs and the lowest branches of trees, use the formula below.

Example:

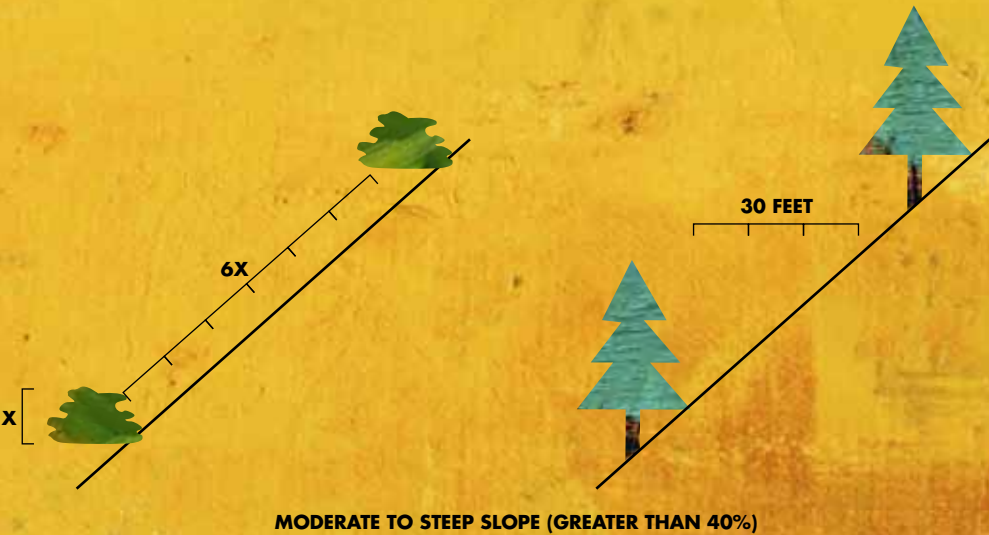
A five-foot shrub is growing near a tree.

$3 \times 5 = 15$ feet of clearance needed between the top of the shrub and the lowest tree branches.



MINIMUM HORIZONTAL SPACING FOR TREES AND SHRUBS

Horizontal spacing depends on the slope of the land and the height of the shrubs or trees. Check the diagrams below to determine spacing distance.



DEFENSIBLE SPACE

Creating and maintaining defensible space is essential for increasing your home's chance of surviving a wildfire. It's the buffer that homeowners are required to create on their property between a structure and the plants, brush and trees or other items surrounding the structure that could catch fire. This space is needed to slow the spread of wildfire and improves the safety of firefighters defending your home.

Two zones make up the required 100 feet of defensible space:

ZONE 1—Extends 30 feet out from buildings, decks, and other structures

- 1 Remove all dead plants, grass and weeds.
- 2 Remove dead or dry leaves and pine needles from your yard, roof and rain gutters.
- 3 Trim trees regularly to keep branches a minimum of 10 feet from other trees.
- 4 Remove dead branches that hang over your roof. And keep branches 10 feet away from your chimney.
- 5 Relocate exposed woodpiles outside of Zone 1 unless they are completely covered in a fire resistant material.
- 6 Remove or prune flammable plants and shrubs near windows.
- 7 Remove vegetation and items that could catch fire from around and under decks.
- 8 Create a separation between trees, shrubs and items that could catch fire, such as patio furniture, swing sets, etc.

ZONE 2—Extends 30 to 100 feet from buildings and other structures

- 9 Cut or mow annual grass down to a maximum height of 4 inches.
- 10 Create horizontal spacing between shrubs and trees. (See diagram)
- 11 Create vertical spacing between grass, shrubs and trees. (See diagram)
- 12 Remove fallen leaves, needles, twigs, bark, cones, and small branches. However, they may be permitted to a depth of 4 inches if erosion control is an issue.

BOTH ZONES—0 to 100 feet from buildings and other structures

- 13 Mow before 10 a.m., but never when it's windy or excessively dry.
- 14 Protect water quality. Do not clear vegetation near waterways to bare soil. Vegetation removal can cause soil erosion—especially on steep slopes.

ARE YOU DOING THE RIGHT THING—THE WRONG WAY?

Each year, CAL FIRE responds to hundreds of fires started by Californians using equipment the wrong way. If you live in a wildland area, all equipment must be used with extreme caution.

Lawn mowers, metal-bladed trimmers, chain saws, grinders, welders, and tractors can all start a wildland fire if not used properly. Do your part to keep your community fire-safe.

HERE'S HOW TO DO IT THE RIGHT WAY:

Mowing

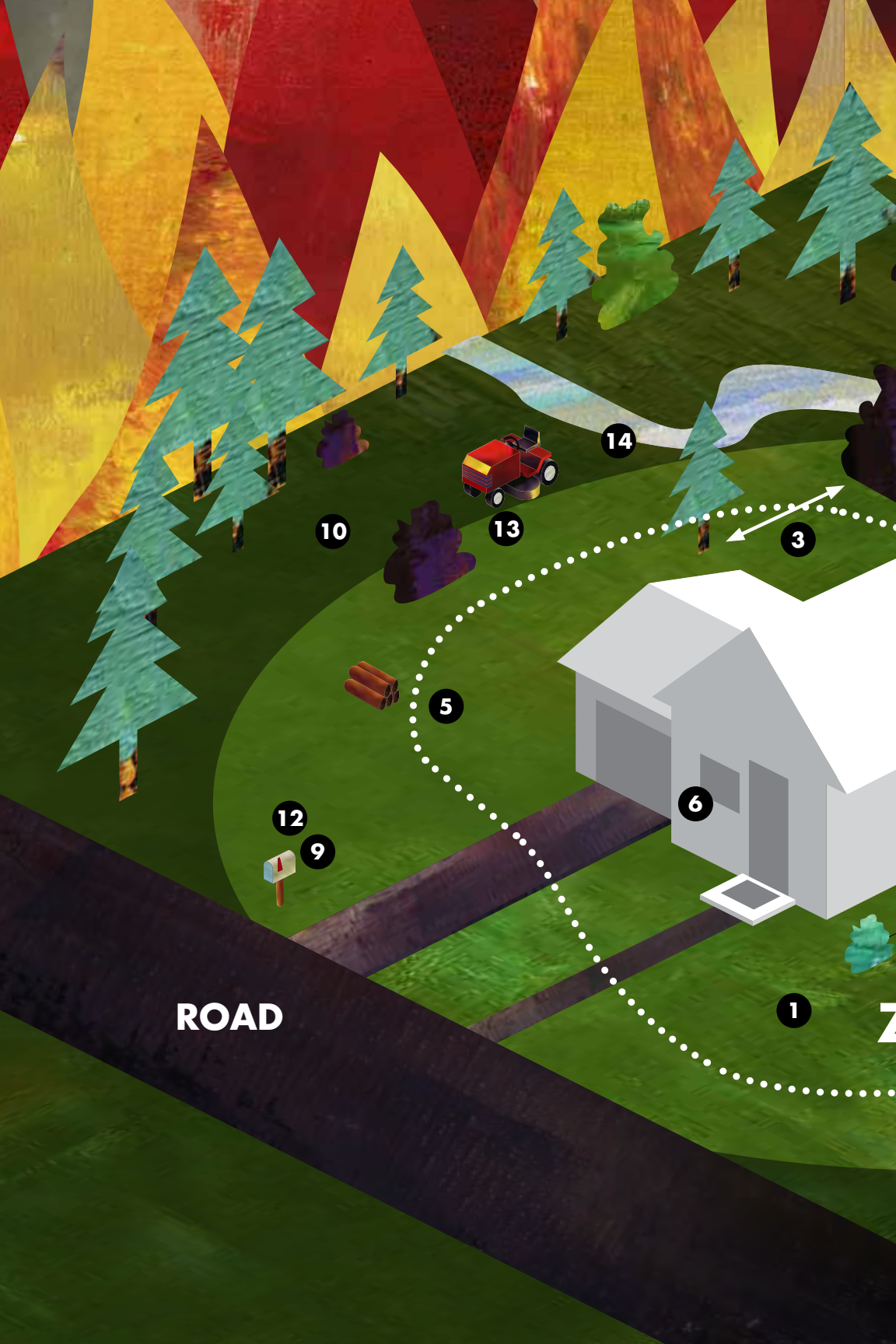
Metal blades striking rocks can create sparks and start fires in dry grass. Use caution.

Spark Arresters

In wildland areas, spark arresters are required on all

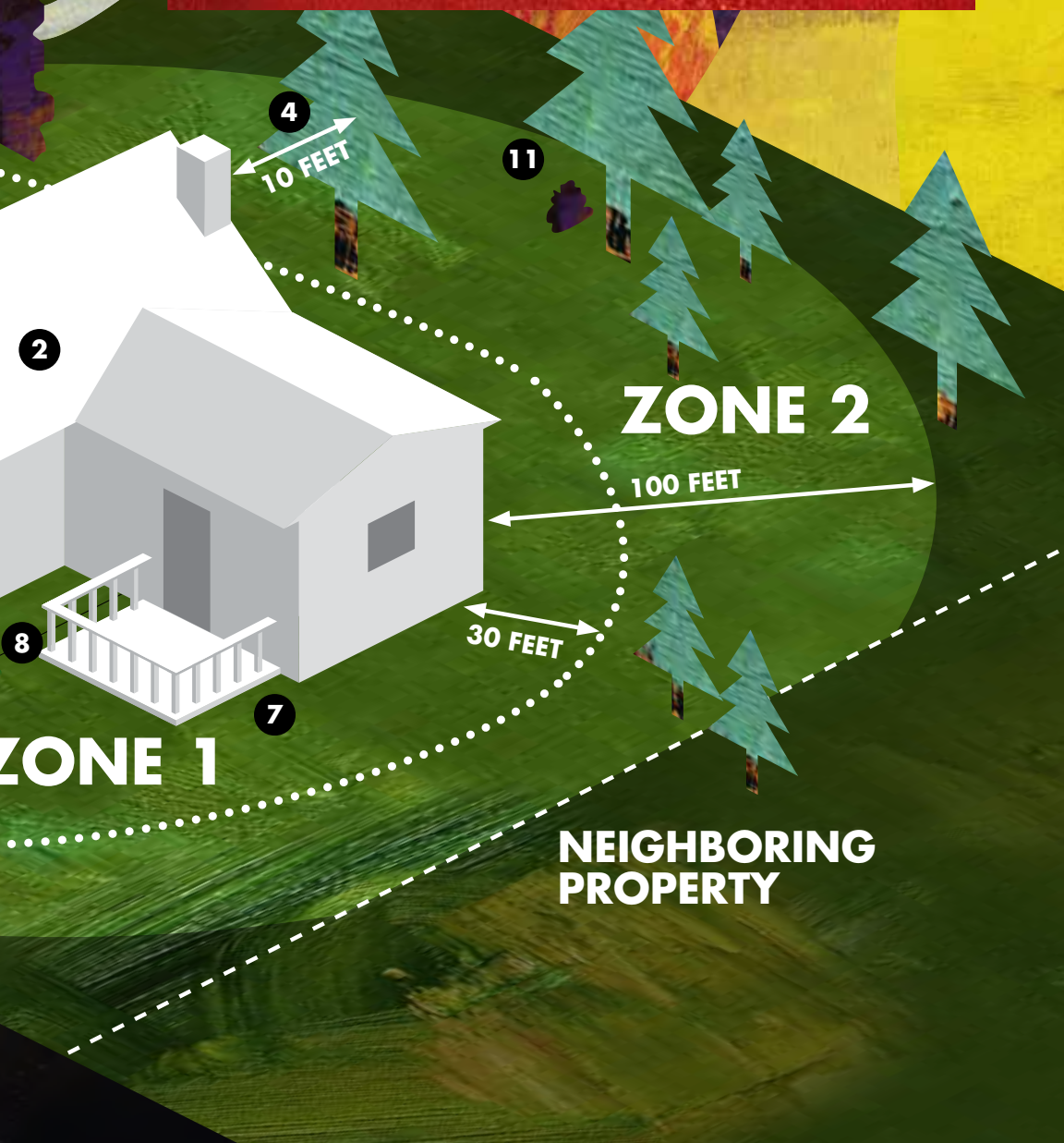
portable, gasoline-powered equipment. This includes tractors, harvesters, chainsaws, weed-trimmers and mowers.

- Keep the exhaust system, spark arresters and mower in proper working order and free of carbon buildup.
- Use the recommended grade of fuel, and don't top it off.



KNOW THE LAW BE FIRE SMART

100 FEET OF DEFENSIBLE SPACE IS REQUIRED UNDER THE PUBLIC RESOURCES CODE (PRC) 4291. CALIFORNIA BUILDING CODE CHAPTER 7A REQUIRES CERTAIN CONSTRUCTION MATERIALS AND METHODS FOR HOMES IN WILDLAND AREAS. BE SURE TO CONTACT YOUR LOCAL FIRE DEPARTMENT FOR ADDITIONAL REQUIREMENTS TO ENSURE YOUR HOME IS COMPLIANT WITH THE LAW. [READYFORWILDFIRE.ORG/THELAW](https://www.readyforwildfire.org/thelaw)



HARDENING YOUR HOME

FLYING EMBERS CAN DESTROY HOMES UP TO A MILE AHEAD OF A WILDFIRE. PREPARE (HARDEN) YOUR HOME NOW BEFORE FIRE STARTS.

SOME THINGS YOU CAN DO TO HARDEN YOUR HOME:

Roof: Your roof is the most vulnerable part of your home. Homes with wood or shingle roofs are at high risk of being destroyed during a wildfire.

Build your roof or re-roof with materials such as composition, metal or tile. Block any spaces to prevent embers from entering and starting a fire.

Vents: Vents on homes create openings for flying embers.

- Cover all vent openings with 1/8-inch to 1/4-inch metal mesh. Do not use fiberglass or plastic mesh because they can melt and burn.
- Protect vents in eaves or cornices with baffles to block embers. (Mesh is not enough.)

Eaves and Soffits:

Eaves and soffits should be protected with ignition-resistant or non-combustible materials.

Windows: Heat from a wildfire can cause windows to break even before the home ignites. This allows burning embers to enter and start fires inside. Single-paned and large windows are particularly at risk.

- Install dual-paned windows with one pane of tempered glass.
- Consider limiting the size and number of windows that face large areas of vegetation.

Decks: Surfaces within 10 feet of the building should be built with ignition-resistant, non-combustible, or other approved materials.

- Remove all combustible items from underneath your deck.

Exterior 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 your walls with ignition-resistant building materials, such as stucco, fiber or cement siding, fire-retardant-treated wood, or other approved materials.
- Be sure to extend materials from the foundation to the roof.

Rain Gutters: Screen or enclose rain gutters to prevent accumulation of plant debris.

Patio Cover: Use the same ignition-resistant materials for patio covers as a roof.

Fences: Consider using ignition-resistant or non-combustible fence materials to protect your home during a wildfire.

Additional Home Fire Safety Steps:

Go to [ReadyForWildfire.org/hardening](https://www.readyforwildfire.org/hardening) for more important information on the following:

- Driveways and Access Road Information
- Address Visibility
- Equipment Use Safety
- Garage Safety
- Water Supply Access
- Ignition-Resistant Materials

READY, SET, GO! PREPARATION GUIDES

Preparing for a wildfire starts with three simple steps: **Ready, Set, Go!** Keep all three wildfire preparation guides on hand as a quick reference for helping your family and property be safe in the event of a wildfire.

WILDFIRE IS COMING PREPARATION GUIDES:



Step 1: **Is Your Home Ready?**

Creating defensible space and hardening your home against wildfire.



Step 2: **Are You Set?**

Developing a Wildfire Action Plan.



Step 3: **Are You Ready to Go?**

A quick-reference evacuation guide.



Go to **ReadyForWildfire.org** for more detailed information on all three guides to prepare for and survive a wildfire.

**WILDFIRE IS COMING.
ARE YOU...**

SET?

**GET PREPARED TO EVACUATE
BEFORE WILDFIRE STRIKES.**



**THOUSANDS OF WILDFIRES STRIKE CALIFORNIA
EVERY YEAR. IT'S NOT A MATTER OF IF YOUR
HOME IS AT RISK, BUT WHEN.**

ReadyForWildfire.org

USE THIS GUIDE TO PREPARE YOUR EVACUATION PLAN AND EMERGENCY SUPPLY KIT

Once you complete your plan, rehearse and discuss it regularly with your family. Consider practicing the plan at night as well. Keep it in a safe, visible place for quick access when a wildfire emergency occurs.

Reminder: In an emergency it is easy to become confused or panicked. Preparing your wildfire action plan in advance will help keep you focused and able to act quickly when evacuation is anticipated or needed.

For more information on wildfire evacuation planning and survival, see the Ready for Wildfire "Go!" brochure or visit ReadyforWildfire.org/go.



KNOW THE LAW BE READY TO EVACUATE

CALIFORNIA LAW AUTHORIZES OFFICERS TO RESTRICT ACCESS TO ANY AREA WHERE A MENACE TO PUBLIC HEALTH OR SAFETY EXISTS DUE TO A CALAMITY SUCH AS FLOOD, STORM, FIRE, EARTHQUAKE, EXPLOSION, ACCIDENT OR OTHER DISASTER. REFUSAL TO COMPLY IS A MISDEMEANOR. (PENAL CODE 409.5)

CREATE A WILDFIRE ACTION PLAN

Your Wildfire Action Plan must be prepared and familiar to all members of your household well in advance of a wildfire. Use the checklist below to help create your plan. Each family's plan will be different, depending on a variety of issues, needs and situations.

YOUR WILDFIRE ACTION PLAN CHECKLIST:

Create an evacuation plan that includes:

- A designated emergency meeting location outside the fire or hazard area. This is critical to determine who has safely evacuated from the affected area.
- Several different escape routes from your home and community. Practice these often so everyone in your family is familiar in case of emergency.
- Have an evacuation plan for pets and large animals such as horses and other livestock.
- A family communication plan that designates an out-of-area friend or relative as a point of contact to act as a single source of communication among family members in case of separation. (It is easier to call or message one person and let them contact others than to try and call everyone when phone, cell, and internet systems can be overloaded or limited during a disaster.)

Be Prepared:

- Have fire extinguishers on hand and train your family how to use them. (Check expiration dates regularly.)
- Ensure that your family knows where your gas, electric, and water main shut-off controls are located and how to safely shut them down in an emergency.
- Assemble an Emergency Supply Kit for each person, as recommended by the American Red Cross. (See next section for details.)
- 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 cannot get to your home because of fire or other emergency.
- Have a portable radio or scanner so you can stay updated on the fire.
- Tell your neighbors about Ready, Set, Go! and your Wildfire Action Plan.

REMEMBER THE SIX "P's" KEEP THESE SIX "P's" READY IN CASE IMMEDIATE EVACUATION IS REQUIRED:

- **People and pets**
- **Papers, phone numbers, & important documents**
- **Prescriptions, vitamins, and eyeglasses**
- **Pictures and irreplaceable memorabilia**
- **Personal computer hard drive and disks**
- **"Plastic" (credit cards, ATM cards) and cash**

ASSEMBLE AN EMERGENCY SUPPLY KIT

Put together your Emergency Supply Kit long before a wildfire or other disaster occurs and keep it easily accessible so you can take it with you when you have to evacuate. Plan to be away from your home for an extended period of time. Each person should have a readily accessible Emergency Supply Kit. Backpacks work great for storing these items (except food and water) and are quick to grab. Storing food and water in a tub or chest on wheels will make it easier to transport. Keep it light enough to be able to lift it into your car.

Emergency Supply Kit Checklist:

- Three-day supply of non-perishable food and three gallons of water per person
- Map marked with at least two evacuation routes
- Prescriptions or special medications
- Change of clothing
- Extra eyeglasses or contact lenses
- An extra set of car keys, credit cards, cash or traveler's checks
- First aid kit
- Flashlight
- Battery-powered radio and extra batteries
- Sanitation supplies
- Copies of important documents (birth certificates, passports, etc.)
- Don't forget pet food and water!

Items to take if time allows:

- Easily carried valuables
- Family photos and other irreplaceable items
- Personal computer information on hard drives and disks
- Chargers for cell phones, laptops, etc.

ALWAYS KEEP A STURDY PAIR OF SHOES AND A FLASHLIGHT NEAR YOUR BED AND HANDY IN CASE OF A SUDDEN EVACUATION AT NIGHT.

FOR MORE INFORMATION ON EMERGENCY SUPPLIES, VISIT WWW.READY.GOV.

SAVE THIS FAMILY COMMUNICATION PLAN

Fill out this form and place it near your telephone where it can easily be found by everyone in your household. Copy the form and keep it in your Emergency Supply Kits. This will allow all family members to have access to this key information in case you get separated.

WHEN WE HAVE TO EVACUATE, WE WILL MEET AT:

OUR OUT-OF-AREA EMERGENCY CONTACT PERSON IS:

Name: _____ Relationship: _____

Home Phone #: _____ Cell Phone #: _____

E-mail: _____

OTHER IMPORTANT NUMBERS ARE:

Emergency 911: _____ Local Police: _____

Local Fire Department: _____ Other: _____

Other: _____ Other: _____

OUR TWO EVACUATION ROUTES ARE (SKETCH ROUTES BELOW):

READY, SET, GO! PREPARATION GUIDES

Preparing for a wildfire starts with three simple steps: **Ready, Set, Go!** Keep all three wildfire preparation guides on hand as a quick reference for helping your family and property be safe in the event of a wildfire.

WILDFIRE IS COMING PREPARATION GUIDES:



Step 1: **Is Your Home Ready?**

Creating defensible space and hardening your home against wildfire.



Step 2: **Are You Set?**

Developing a Wildfire Action Plan.



Step 3: **Are You Ready to Go?**

A quick-reference evacuation guide.



Go to **ReadyForWildfire.org** for more detailed information on all three guides to prepare for and survive a wildfire.

**WILDFIRE IS COMING.
ARE YOU READY TO...**

GO!



WILDFIRE EVACUATION GUIDE.



**GIVE YOUR FAMILY THE BEST CHANCE OF
SURVIVING A WILDFIRE BY EVACUATING EARLY.**

ReadyForWildfire.org

TAKE ACTION IMMEDIATELY WHEN WILDFIRE STRIKES

Follow these steps as soon as possible to get ready to Go!

- 1.** Review your Evacuation Checklist.
- 2.** Ensure your Emergency Supply Kit is in your vehicle.
- 3.** Cover up to protect against heat and flying embers. Wear long pants, long sleeve shirt, heavy shoes/boots, cap, dry bandanna for face cover, goggles or glasses. 100% cotton is preferable.
- 4.** Locate your pets and take them with you.

WHEN TO EVACUATE

Leave as soon as evacuation is recommended by fire officials

to avoid being caught in fire, smoke or road congestion. Don't wait to be ordered by authorities to leave. Evacuating early also helps firefighters keep roads clear of congestion, and lets them move more freely to do their job. In an intense wildfire, they may not have time to knock on every door. If you are advised to leave, don't hesitate!

- Officials will determine the areas to be evacuated and escape routes to use depending upon the fire's location, behavior, winds, terrain, etc.
- Law enforcement agencies are typically responsible for enforcing an evacuation order. Follow their directions promptly.
- You will be advised of potential evacuations as early as possible. You must take the initiative to stay informed and aware. Listen to your radio/TV for announcements from law enforcement and emergency personnel.
- You may be directed to temporary assembly areas to await transfer to a safe location.

The terms "Voluntary" and "Mandatory" are used to describe evacuation orders. However, local jurisdictions may use other terminology such as "Precautionary" and "Immediate Threat." These terms are used to alert you to the significance of the danger. All evacuation instructions provided by officials should be followed immediately for your safety.

WHAT TO DO IF YOU BECOME TRAPPED

WHILE IN YOUR VEHICLE:

- Stay calm.
- Park your vehicle in an area clear of vegetation.
- Close all vehicle windows and vents.
- Cover yourself with a wool or cotton blanket or jacket.
- Lie on vehicle floor.
- Use your cell phone to advise officials—**Call 911.**



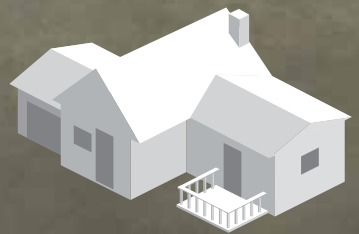
WHILE ON FOOT:

- Stay calm.
- Go to an area clear of vegetation, a ditch or depression on level ground if possible.
- Lie face down and cover up your body.
- Use your cell phone to advise officials—**Call 911.**



WHILE IN YOUR HOME:

- Stay calm and keep your family together.
- **Call 911** and inform authorities of your location.
- Fill sinks and tubs with cold water.
- Keep doors and windows closed, but unlocked.
- Stay inside your house.
- Stay away from outside walls and windows.







PRE-EVACUATION PREPARATION STEPS

When an evacuation is anticipated, follow these checklists (if time allows) to give your home the best chance of surviving a wildfire:



OUTSIDE

-  **1** Gather up flammable items from the exterior of the house and bring them inside (patio furniture, children's toys, door mats, trash cans, etc.) or place them in your pool.
-  **2** Turn off propane tanks.
-  **3** Move propane BBQ appliances away from structures.
-  **4** Connect garden hoses to outside water valves or spigots for use by firefighters. Fill water buckets and place them around the house.
-  **5** Don't leave sprinklers on or water running; they can affect critical water pressure.
-  **6** Leave exterior lights on so your home is visible to firefighters in the smoke or darkness of night.
-  **7** Put your Emergency Supply Kit in your vehicle.
-  **8** Back your car into the driveway with vehicle loaded and all doors and windows closed. Carry your car keys with you.
-  **9** Have a ladder available and place it at the corner of the house for firefighters to quickly access your roof.
-  **10** Seal attic and ground vents with pre-cut plywood or commercial seals.
-  **11** Monitor your property and the fire situation. Don't wait for an evacuation order if you feel threatened and need to leave.
-  **12** Check on neighbors and make sure they are preparing to leave.

INSIDE THE HOUSE

-  **13** Shut all windows and doors, leaving them unlocked.
-  **14** Remove flammable window shades and curtains. Close metal shutters.
-  **15** Move flammable furniture to the center of the room, away from windows and doors.
-  **16** Shut off gas at the meter. Turn off pilot lights.
-  **17** Leave your lights on so firefighters can see your house under smoky conditions.
-  **18** Shut off the air conditioning.

ANIMALS

-  **19** Locate your pets and keep them nearby.
-  **20** Prepare farm animals for transport and think about moving them to a safe location early.



ROAD

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HOW TO BE PREPARED BEFORE WILDFIRE STRIKES

DEVELOP AN ACTION PLAN THAT INCLUDES:

Where to Go

Have a safe destination planned. It should be a low-risk area, such as a well-prepared friend's or relative's house, an evacuation center, motel, etc.

How To Get There

Plan several travel route options in case one route is blocked by the fire or by emergency vehicles and equipment.

What To Take

Assemble your emergency supply kit long before a wildfire or other disaster occurs. Plan to be away from your home for at least three days. Don't forget to plan for your pets or livestock as well.

For more information on preparing your family, pets and property for wildfire see the Ready for Wildfire "Are You Set?" brochure or visit ReadyforWildfire.org/set.

RETURNING HOME AFTER A WILDFIRE

Do not return to your home until fire officials determine it is safe. Notification that it is safe to return home will be given as soon as possible considering safety and accessibility.

When you return home:

- Be alert for downed power lines and other hazards.
- Check propane tanks, regulators, and lines before turning gas on.
- Check your residence carefully for hidden embers or smoldering fires.

READY, SET, GO!

PREPARATION GUIDES

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WILDFIRE IS COMING PREPARATION GUIDES:



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Step 3: Are You Ready to Go?

A quick-reference evacuation guide.



Go to **ReadyForWildfire.org** for more detailed information on all three guides to prepare for and survive a wildfire.

Teller County Emergency Assistance and Response Program (EARP)

Teller County's Local Emergency Planning Committee (LEPC) and the Office of Emergency Management have initiated a program to identify individuals within our area that may require special assistance during a future emergency or disaster. Known as the "Emergency Assistance and Response Program (EARP)," the LEPC will solicit participation in this voluntary program through cooperation with the Teller County Senior Coalition, Prospect Home Care & Hospice, local churches, and social groups. Interested individuals can fill out the simple form below that will allow authorities to quickly contact that individual during an emergency, such as an evacuation, and determine if that individual needs help or assistance. The EARP program will be integrated with the El Paso – Teller 911 System and allow authorities to automatically call the entire "group" or selected individuals within a specific area depending upon the emergency. Additionally, the program will allow authorities to display the exact residence location on an electronic map allowing response teams to quickly locate those individuals.

If you would like to participate in this program, please fill out the required form below and send to the Teller County Sheriff Office, ATTN: EARP, PO Box 27, 11400 West Highway 24, Divide, CO 80814. Questions can be directed to the Office of Emergency Management at 689-2988.

Please Print Clearly

Date of Application ____/____/____ (Month / Day / Year)

Last Name: _____ First Name: _____ MI: _____

Date of Birth: _____ Sex: M F (circle)

Address: _____ Apt/Lot # _____

City: _____ Subdivision _____ Zip Code: _____

How many people reside at this address: _____

Mailing Address (if different than above): _____

Telephone: Home: (____) _____ (TTY/TDD line ☐ Yes) Work: (____) _____

Preferred E-mail address: _____

The following information will further help us prepare for your evacuation. Check all that apply:

- | | |
|--|--|
| <input type="checkbox"/> Deaf/hearing impaired | <input type="checkbox"/> Mobility impaired (need cane, walker, crutches, wheelchair etc) |
| <input type="checkbox"/> Blind/sight impaired | <input type="checkbox"/> Bed bound |
| <input type="checkbox"/> Use oxygen | <input type="checkbox"/> Dialysis |
| <input type="checkbox"/> Use respirator | <input type="checkbox"/> Mentally challenged |
| <input type="checkbox"/> Alzheimer/dementia | <input type="checkbox"/> Other _____ |
| <input type="checkbox"/> Elderly/frail | _____ |

What is your weight range: ☐ Less than 300 lbs ☐ Over 300 lbs

Do you use medical equipment requiring electricity? ☐ Yes ☐ No (☐ intermittent ☐ continuous)

Are you receiving home hospice or home health care assistance? ☐ Yes ☐ No

Agency: _____ Phone: _____

Shelter-In-Place

Would you require the delivery of food or medical supplies during a “stay-in-place” situation (i.e., winter storm, dangerous animal or fugitive in your area, epidemic quarantine order, etc.)? ☐ Yes ☐ No

Pets

Do you have pets living with you? ☐ Yes ☐ No Do you have a service animal/guide dog? ☐ Yes ☐ No

You are responsible for providing cages (for small animals), leashes, food, medicine etc for your pet.

Evacuation Transportation

In the event of an emergency what type of transportation do you require?

☐ Standard transportation (car, van, bus) Can you slide transfer? ☐ Yes ☐ No

☐ Vehicle with a wheelchair lift

☐ Transport by ambulance

List life-saving equipment or medication you must take with you:

Name of nearest friend, caregiver, or relative: _____

Home phone: (____) _____ Alternate phone: (____) _____

STATEMENT OF UNDERSTANDING

I understand that based on this application and the data I have provided, the Teller County Office of Emergency Management will determine which emergency evacuation assistance, if any, will be provided to me during an emergency situation. I am providing this information voluntarily for use by emergency personnel in the event of a disaster or emergency. Providing this information does not create any special relationship between me and Teller County or any other agency. I realize that I should provide for my own safety to the best of my ability. **I also understand that I may be responsible for transportation charges for my evacuation and any costs associated with my stay at a hospital or other medical facility.**

Signature of Applicant: _____ **Date:** _____

Note: the Health Insurance Portability and Accountability Act (HIPAA) does not apply as you are voluntarily providing your information to us for use during an emergency.

In addition to this Emergency Assistance and Response Program, Teller County has initiated two other related programs:

- 1) **FILE OF LIFE:** The File of Life is a small red envelope with a magnetic strip that you can place on your refrigerator which contains a form listing your emergency contacts, special medical conditions, and medications. Emergency personnel that may come to your rescue are trained to look for this red envelope. This program is free of charge. Are you interested in receiving one of the envelopes? ☐ Yes ☐ No
- 2) **PROJECT LIFESAVER:** Supported by a federal grant, the Teller County Sheriff Department will issue special electronic bracelets to selected individuals that can be used to locate these special needs individuals should they become lost and disoriented. This bracelet will send out a signal that will assist rescue personnel in finding that individual quickly. Are you interested in learning more about this program? ☐ Yes ☐ No