



DEFENSIBLE

Landscaping

Create defensible space for fire safety

Every year, wildfires have burned hundreds of thousands of acres in the United States, forced evacuations, burned structures, and claimed lives. Firefighting agencies will do all they can in the event of wildfire but can become quickly overwhelmed by a large blaze. Only you, the homeowner, can help guarantee your safety, the safety of family members, firefighters, and pets, and increase the ability of your home, outbuildings, and landscaping to survive a wildfire. For Wyoming homeowners, there are many things that can be done during a weekend to increase the survivability of structures and the safety of your family.

The 3 R's of defensible space

Use these 3 R's as a guide for creating defensible space around your home. Inventory the vegetation around you and your neighbors' homes. Neighborhoods and subdivisions should work together to create defensible space around homes.

Remove

- Remove dead vegetation, and clear weeds.
- Remove low tree branches.
- Remove ladder fuels (these are explained below).
- Remove firewood piles from near the house.

Reduce

- Break up dense shrub fields and thick tree cover.
- Prune dead wood from shrubs.
- Reduce the amount of highly flammable native vegetation.

Replace

- Replace highly flammable plant material with less flammable, low-growing species within 30 feet to 100 feet of your house; check with your fire agency for local regulations.
- Consider replacing flammable roofing, siding, and other combustible building materials with fire-rated

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SPACE

steps to reduce wildfire threat



From Natrona County Firewise — www.firewisewyoming.com

What is Defensible Space?

The term "defensible space" is used to describe an area of reduced wildfire threat around a home. You can modify your landscape to create defensible space by altering vegetation to decrease overall fuel volume and altering the arrangement and height of plant material. It is also important to ensure adequate space for firefighters to operate safely. These practices can make the difference between a structure surviving a wildfire or being destroyed.

Factors affecting how easy it will be to create your own defensible space are:

- The size of your property.
- Types of vegetation.
- Accessibility.
- Slopes and steepness.

In some instances, a homeowner may already have an effective defensible space in place and need to perform only minimal additional work to contribute substantially to protecting a home from wildfire.

non-combustible materials such as class A asphalt roof shingles, fiber cement siding, etc.

- Replace attic vents and soffits that are plastic or can easily allow embers to pass into the attic or other parts of the house. Vents should be metal and less than ¼-inch mesh.

It is also important to follow local regulations when creating defensible space. For example, the Casper Mountain Zoning District of Natrona County has regulations pertaining to fuel reduction requirements (see sidebar for Casper Mountain requirements). These requirements for homeowners on Casper Mountain are the only of their kind in Wyoming. If you live in an area without any requirements, these regulations may work as a guide.

Most people realize that homes in or adjacent to wildland vegetation are at risk for damage from wildfire. However, few people recognize that homes within urbanized areas are also threatened. During intense wildfires, burning pinecones, branches, and other material can be carried a half-mile or more beyond the fire front. As a result, showers of embers are produced. If these embers land in spots where there are easily ignited fuels such as wood shingle roofs, trash piles, and dried grass, new fires can start. Consequently, homes located in the urbanized portions of mountain communities, blocks away from wildland vegetation, are also at risk.

How to create effective defensible space

Make the areas closest to your house lean, clean, and green—reduce the amounts of fuel, remove dead or high-risk vegetation, and keep the areas closest to your home well-maintained, green, and healthy. Many people find defensible space fits their other landscape objectives as well. The area closest to the house is where you entertain guests, eat outside in good weather, and enjoy a lawn or flower garden. Many homes are located adjacent to forests or prairie or on steep vegetated slopes, which are areas of high wildfire hazard. They need both the lean, clean, and green zone (first 100 feet) and the area outside of that as well.

Step One: Determine your defensible space

The two main factors that will influence how much defensible space you'll need for your property are 1) the amount and type of highly flammable wildland vegetation (grass, shrubs, or trees) growing on or adjacent to your property and 2) how steep the area around and leading up to the home is. The minimum for most homes in Wyoming is 100 feet from the home, but a heavier



This mountain cabin owner thinned and pruned up the trees, and removed a significant amount of under-brush. Limbs and whole trees have been chipped.

amount of vegetation or steep slopes could mean at least 200 feet.

If the recommended distance goes beyond the property boundaries, contact the adjacent property owner, and work cooperatively to create defensible space. The effectiveness of defensible space increases when property owners work together. Do not implement defensible space practices on neighboring properties without first securing permission. The county assessor's office can provide assistance if the owners of adjacent parcels are unknown.

Once the recommended distance is determined, temporarily mark the outer boundary with survey flagging, or paint on trees or shrubs. The land located within this designated boundary is the defensible space you need.

Step Two: Make a list of what you need to do, and do it *Clean Up*

Look around; is there any dead vegetation in your defensible space zone?

Dead vegetation includes dead trees and shrubs, dead branches lying on the ground or still attached to plants, dried grass and flowers, dropped leaves and needles, and firewood. Dead vegetation should be removed from the defensible space area. Two important exceptions are pine needles covering bare soil and downed trees embedded in the ground. Pine needles are good cover for bare soil but should be kept to a thickness of between one and two inches—more is a hazard, and less promotes erosion. Be careful not to remove the duff area – the dark brown zone beneath the needles where the needles have begun to decompose. Remove all pine needles under decks and



This cabin owner followed up a year after the treatment with a native wildflower mix on the bare soil. Photo credit: Nick Williams

within two feet of any structure. Move firewood piles away from the structure during fire season.

Break up the canopy

Within your defensible space area, is there a dense, continuous cover of shrubs or tree canopies? Sometimes wildland plants grow as an uninterrupted layer of vegetation as opposed to patchy or widely spaced plants. The more continuous and dense the vegetation, the greater the threat of wildfire. If the branches of neighboring trees or shrubs touch without large openings between them, break them up. There are two types of dense, continuous vegetation that homeowners are likely to encounter in mountain areas – brush fields and crowded stands of coniferous trees.

Prairie and other brush fields

Create a separation between shrubs based on shrub height and steepness of slope. The separation between individual or small groups of shrubs on flat to gently sloping terrain should be twice the height of remaining shrubs. For example, if the shrub height is four feet, then the recommended separation should be eight feet ($2 \times 4\text{-foot shrub height} = 8\text{-foot separation}$). Separation is measured from the edge of the canopy of one shrub to another, not from trunk to trunk. The separation between shrub canopies should increase as the steepness of the slope increases.

Crowded and dense stands of trees

In many mountain areas, coniferous trees occur in dense, overcrowded stands where their branches are touching or interwoven. These conditions contribute to the risk of an uncontrollable and possibly catastrophic

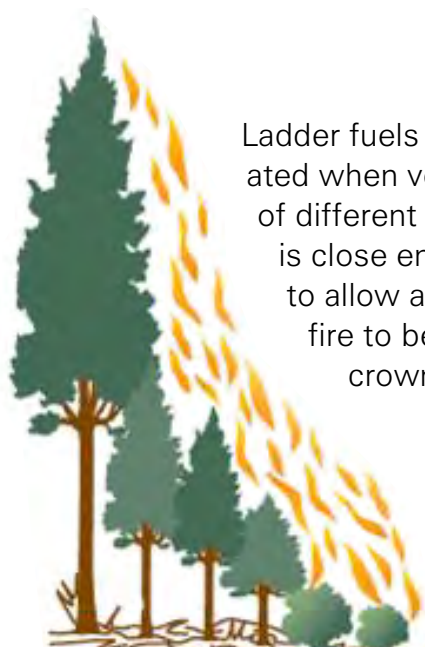
crown fire (wildfire burning through the tree canopies, independent of the understory vegetation). To address this problem, create a separation between trees within the defensible space area. This is typically accomplished through tree removal or thinning of the stands. Note the photos in this section; homeowners do not have to “clear cut” or completely remove all of the trees around their homes to have adequate defensible space.

Make sure there are no ladder fuels within your defensible space

Sometimes plants serve like rungs of a ladder; they can carry flames from fuels burning at ground level, such as dead grass and weeds, to taller fuels such as shrubs, which ignite still taller fuels such as tree branches. The ladder fuel problem can be remedied by raising the height of the upper fuel layer by removing lower tree branches or reducing the height of lower fuel layers by pruning or removing tall shrubs or small trees. You could remove the lower tree branches or reduce the height of the shrub, or both. Exceptions to this practice are:

Removal of lower tree branches should not exceed one-third to half of the tree’s total height.

- Lower tree branches should be removed to at least seven feet in height when no understory vegetation is present.



Ladder fuels are created when vegetation of different heights is close enough to allow a surface fire to become a crown fire.

From "A Landscape Guide for Mountain Homes," by University of Nevada Cooperative Extension



This cabin appears at first glance to not have any problems, but look closely at how thick and dense the forest is, how tall the brown grass is, and the firewood pile under and near the deck. See the photo to the right after the wildfire arrived



Firefighters were unable to reach this home in time before embers entered the firewood pile and the cabin, which caused the cabin to become fully involved with fire. Wildland fire fighters are often not equipped to handle structure fires once the house is fully involved with fire. Photo credit: Chris Fallbeck

- Lower branches on shrubs taller than three feet should be removed to provide at least 12 inches of separation from the ground.

Step Three: Choose plants for defensible space areas

Once you have accomplished the steps above, consider enhancing your defensible space when planning a landscape or planting. This can be fundamental to the effectiveness of the defensible space you are creating. In addition to choosing plants to meet needs such as providing shade, producing wind protection, adding color,

and controlling erosion—select plants rated as having a low fire hazard. Unfortunately, there are no fireproof plants. Any plant can burn during extreme fire conditions. There are, however, important differences in flammability. Some plants are more difficult to ignite, burn more slowly, produce less heat, and have shorter flame length. Ask a forester or arborist in your area if you are considering planting trees, shrubs, or grasses in your defensible space. Another resource is the “Wildfire” section of the *Barnyards & Backyards* website (barnyardsandbackyards.com). There are a number of informative articles ranging

If forced to evacuate, you will want to be ready.

Have a plan and list of things needed well before fire season. Here is a list of items to have on hand:

1. Three days of supplies for each person and animal
 - Water
 - Food that will not spoil (including pet food)
 - Clothes
2. Sleeping bag or blankets for each person
3. Sanitation supplies
4. Extra car keys, cash, and checks

5. Emergency tools

- First aid kit
- Flashlight
- Extra batteries
- Portable radio

6. Important family documents in a waterproof container
7. Extra supplies or medications for infants, older family members, or those having disabilities.
8. Map with two evacuation routes.

Put these items in easy-to-carry containers such as backpacks, duffle bags, or plastic crates.

from fire resistant landscape plants to ponderosa pine and aspen fire ecology.

Step Four: Maintain for fire safety

Remember these three words—lean, clean, and green—when there is any potential of wildfire in your area. Keep your landscape lean by reducing, removing, or replacing the most flammable vegetation within your defensible zone. Keep it clean—make sure there is no accumulation of dead vegetation or other flammable debris. Keep it green—make sure plants are healthy and green during the fire season. Creating a defensible space should not be viewed as a one shot effort. Maintaining an effective defensible space is an ongoing process.

Working together in your community, neighborhood, or homeowners association will improve the chances of you and others, along with your home and property, surviving a wildfire. Ask a forester or local fire department about how your community could become a nationally recognized “Firewise Community.” For more information about Firewise USA™, including additional tips on preparing your home for wildfire season, go to <http://firewise.org/>.

Step Five: Ready, Set, GO!

Once wildfire season is here, follow these three easy steps to help ensure you and your family’s safety:

Ready – Preparing for the Fire Threat: Be ready, be prepared, and create defensible space through completing the steps described above. Take personal responsibility, and prepare long before the threat of a wildfire so you, other family members, and your home are ready in case of fire. Assemble emergency supplies and belongings in a safe spot. Make sure all residents residing within the home are on the same page; plan escape routes.

Set – Situational Awareness When a Fire Starts: Pack your vehicle with your emergency items. Keep up on the latest news from local media and your local fire department. Think ahead and prepare domestic animals and livestock early if they may need to be evacuated.



Photo: BLM Idaho

Livestock trailers should be pre-positioned to capture any large animals long before the fire arrives.

Go – Leave early! Following your plan makes you prepared to leave at a moment’s notice, which gives firefighters the best opportunity to deal with the wildfire. Do not return to your home unless directed that it is safe to do so by an official person.

Obtaining more information

Wyoming State Forestry Division and most counties have Firewise® and fuels reduction programs to assist landowners who live in the wildland–urban interface. Some counties even have federal assistance grants for landowners to help offset some of the costs of creating defensible space. For more information, please contact your local state forester or Reed Oldenburg, Senior Resource Forester - Fuels, with the Wyoming State Forestry Division in Cheyenne, at reed.oldenburg@wyo.gov or (307) 777-6137. Or go to <http://wsfd.wyo.gov/fire-management/fire-grants-assistance/fuels-mitigation>.

This document was modified from the University of Nevada’s Cooperative Extension document “A Landscape Guide for Mountain Homes”.

Nick Williams was the fire resource forester for the Wyoming State Forestry Division.

Public agencies and some local homeowners associations have fuel reduction requirements. Below are those for the Casper Mountain Zoning Area of Natrona County:

Casper Mountain Zoning Fuel Reduction Requirements for Building Permits

VEGETATIVE MANAGEMENT & DEFENSIBLE SPACE:

(a) A mitigation plan for vegetative management and defensible space/fire safety shall be submitted with site plans for principle building construction. Zoning Certificates shall be issued after approval by the reviewing officials (fire inspector or other designated official, and building official).

(i) Vegetative Management Recommendations:

(A) Fuel breaks: This can be implemented along access roads, driveways, and subdivision boundaries. The fuel break should be a minimum of 10 feet wide, and all material should be removed as well as all live brush and trees under 20 feet tall. A few larger trees (20 feet tall and larger) can be left, although all branches should be pruned off to a height of 10 feet.

(ii.) Defensible Space Zones:

(A) Zone 1 – This area is the first 30 feet from the structure.

(I) Remove all dead material from this area, as well as firewood piles and other combustible materials.

(II) Maintain an area of non-combustible material 3 to 5 feet away from structure.

(III) Remove all shrubs and trees except for a few individuals. (Minimum spacing between crowns of trees is 10 feet.)

(IV) Prune branches off of remaining trees to a minimum height of 10 feet. If a tree is less than 20 feet tall, prune it to half of total height.

(V) Plant species in this zone should be of a fire resistant variety, which is mostly leafy species.

(These plants need to be watered well to maintain adequate moisture content.)

(VI) Keep all vegetation mowed to a height not exceeding 2 inches.

(VII) Prune away any branches that are within 10 feet of structure and 15 feet away from any chimney outlets.

(VIII) Clear pine needles, leaves, limbs and other debris from roofs and gutters.

(B) Zone 2 – This zone extends 70 feet beyond the outer edge of zone 1.

(I.) Thin all trees to a spacing of 8 feet between tree crowns.

(II.) Prune all remaining trees to a minimum height of 10 feet

(III.) Remove dead trees and downed combustible materials. (Firewood and other combustible material can be stored here, but keep it at least 15 feet away from trees.)

(IV.) Control ground vegetation.

(C) Recommendations for remaining lot area:

(I.) Mark all fire protection equipment and water sources so they are clearly identified.

(II.) Inspect power lines which are located on the property and ask the utility company to remove any trees located within 15 feet of the lines.

(III.) Locate propane tanks at least 50 feet from structures and maintain a clear 10 foot area around the tank. Also locate tanks at same or lower level as structure.

