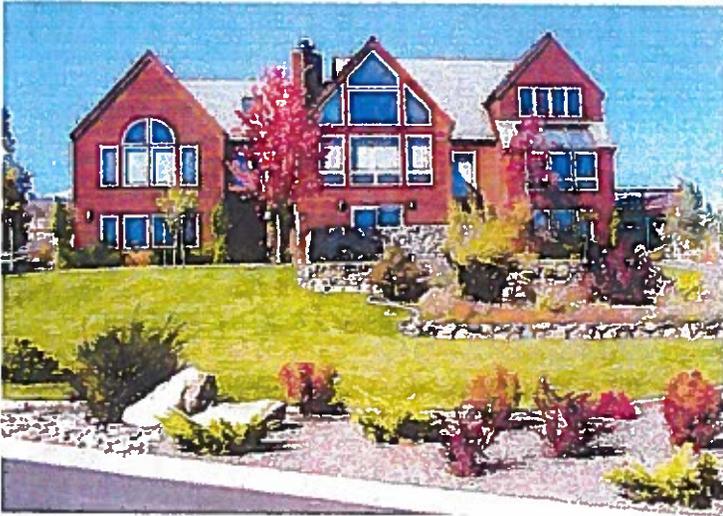


# 6 Steps to Creating an Effective Defensible Space



A homeowner can have both an effective defensible space and an attractive landscape.

The term "defensible space" refers to the area between a house and an oncoming wildfire where the vegetation has been managed to reduce the wildfire threat and allow firefighters to safely defend the house. In the event that firefighters are not available, defensible space also improves the likelihood of a home surviving without assistance.

Unfortunately, when some homeowners hear the term "defensible space," they envision a large expanse of bare ground surrounding their home. While this is certainly effective at increasing home survivability, it is unacceptable for aesthetic reasons and can contribute to soil erosion. It is also unnecessary.



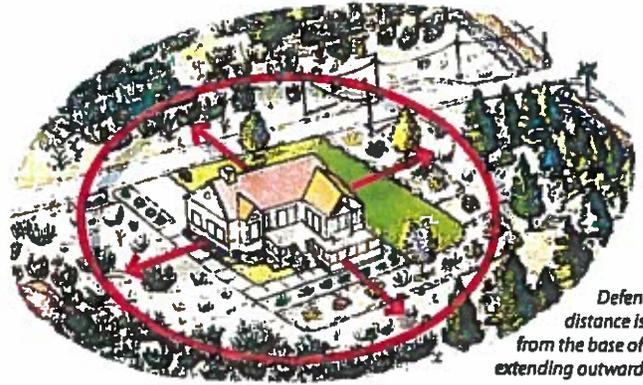
Make your house safe for firefighters to defend.

## Step One

**Determine the size of an effective defensible space:** The size of the defensible space is usually expressed as a distance extending outward from the house in all directions. The recommended distance is not the same for every home. It varies depending on the dominant vegetation surrounding the home and steepness of slope. Use the Recommended Defensible Space Distance table to determine the right space for your home.

Once the recommended distance for defensible space is known, mark it by tying strips of cloth or flagging to shrubs. This becomes the "Defensible Space Zone."

If the Defensible Space Zone exceeds your property boundaries, seek permission from adjacent landowners before doing work on their property. It is important to note that the effectiveness of the Defensible Space Zone improves when entire neighborhoods implement defensible space practices.



Defensible space distance is measured from the base of the house, extending outward.

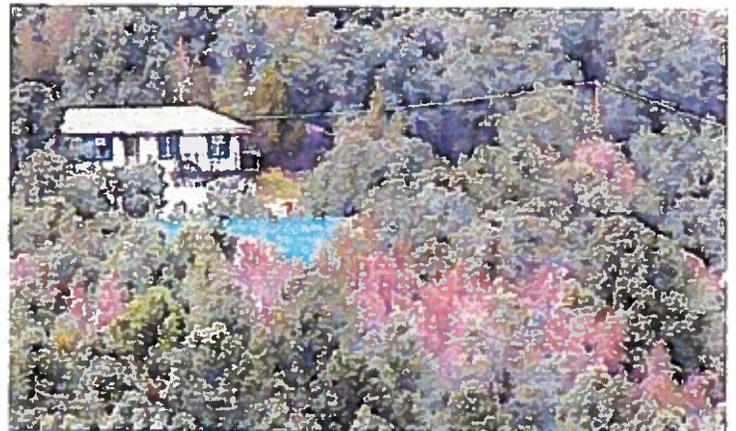
## Recommended Defensible Space Distance

	Flat to Gently Sloping 0-20%	Moderately Steep 21-40%	Very Steep +40%
<b>Grass</b> Dry grass.	30 feet	30 feet	30 feet
<b>Shrubs</b>	30 feet	100 feet	100 feet
<b>Trees</b> Forest trees, such as redwood and bay. If there's a substantial shrub understory, use those values stated above.	30 feet	100 feet	100 feet

## Step Two

**Remove dead vegetation:** Within the recommended Defensible Space Zone, remove:

- dead and dying trees
- dead native and ornamental shrubs
- dead branches
- dead leaves, needles, and twigs that are still attached to plants, draped on live plants, or lying on the ground within 30 feet of the house
- dried grass, weeds, and flowers



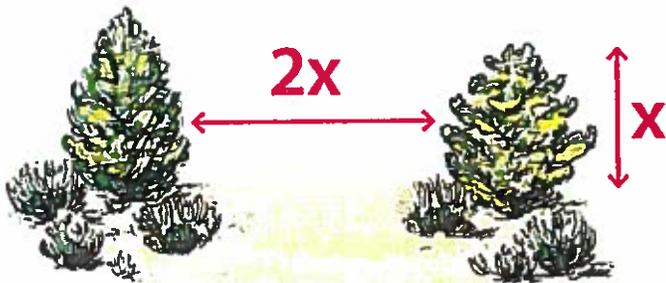
Remove all dead trees from within the Defensible Space Zone.

# Step Three

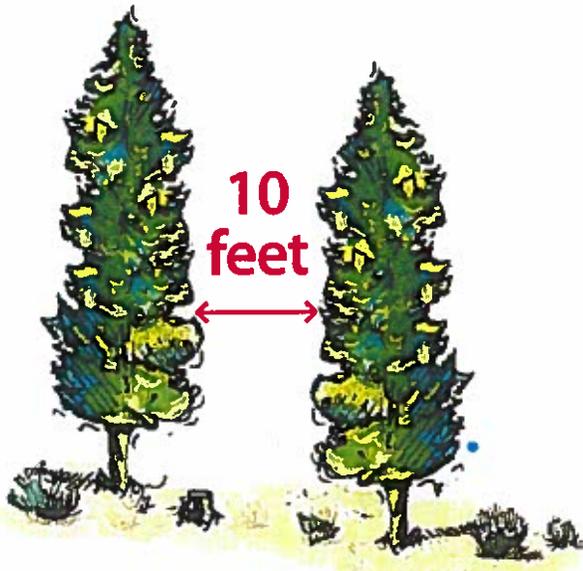
**Create a separation between trees and shrubs:** Within the Defensible Space Zone trees and shrubs should not occur in dense stands. Dense stands of trees and shrubs pose a significant wildfire threat. Thin dense tree and shrub stands to create more space between them.



Dense pinyon poses a high fire threat.



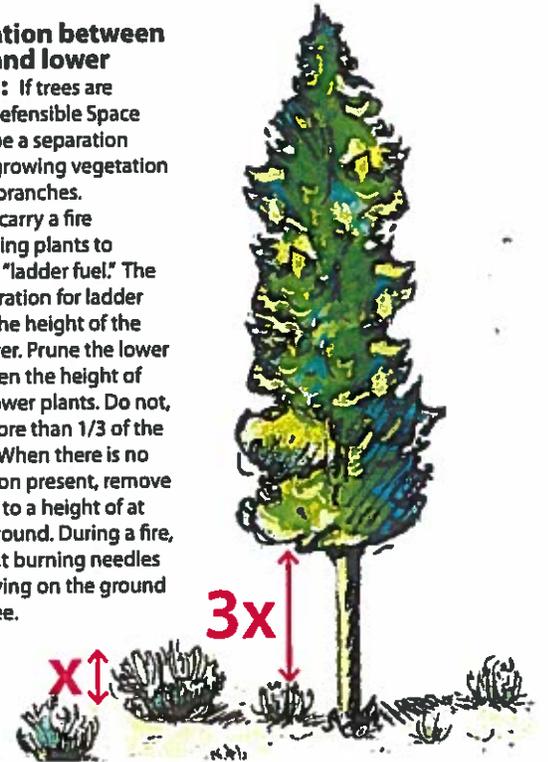
**Shrubs:** On flat to gently sloping terrain, individual shrubs or small clumps of shrubs within the Defensible Space Zone should be separated from one another by at least twice the height of the average shrub. For homes located on steeper slopes, the separation distance should be greater. For example, if the typical shrub height is 2 feet, then there should be a separation between shrub branches of at least 4 feet. Remove shrubs or prune to reduce their height and/or diameter. In most instances, removing big sagebrush is the preferred approach. Remove all broom, juniper, pampas grass and bamboo. They are extremely flammable and should not be within the Defensible Space Zone.



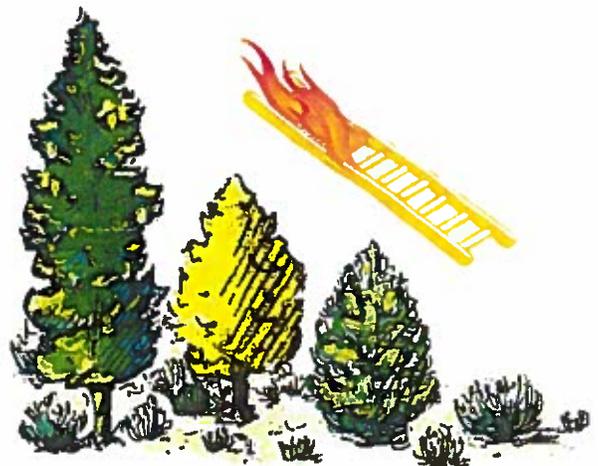
**Trees:** On flat to gently sloping terrain, trees or groups of trees, should be thinned to provide an average separation between canopies of at least 10 feet. For homes located on steeper slopes, the separation distance should be greater. When selecting trees for removal, consider cutting unhealthy, damaged, or weak trees. Remove flammable trees such as pine, Blue Gum eucalyptus, and acacias. If you can't remove them, keep them clear underneath and limbed up.

# Step Four

**Create a separation between tree branches and lower growing plants:** If trees are present within the Defensible Space Zone, there should be a separation between the lower growing vegetation and the lowest tree branches. Vegetation that can carry a fire burning in low growing plants to taller plants is called "ladder fuel." The recommended separation for ladder fuels is three times the height of the lower vegetation layer. Prune the lower tree branches, shorten the height of shrubs, or remove lower plants. Do not, however, remove more than 1/3 of the total tree branches. When there is no understory vegetation present, remove lower tree branches to a height of at least 2 feet above ground. During a fire, this will help prevent burning needles and twigs that are lying on the ground from igniting the tree.



A pinyon tree before and after ladder fuel removal. Removing ladder fuel will help prevent a ground-level fire from reaching the trees.



# Step Five

## Create a Lean, Clean, and Green Area extending at least 30 feet from the house:

There are two goals for the Lean, Clean, and Green Area. The first goal is to eliminate easily ignitable fuels, or "kindling," near the house. This will help prevent embers from starting a fire in your yard. The second goal is to keep fire intensity low if it does ignite near the house. By proper management of the fuels near the house, a fire would not be able to generate enough heat to ignite the home.

For most homeowners, the Lean, Clean, and Green Area is also the residential landscape. This area often has irrigation, is planted with ornamental vegetation, and is regularly maintained.

### Lean, Clean, and Green Area Tips

- Remove all flammable trees and shrubs such as pine, Blue Gum eucalyptus, acacias, broom, juniper, pampas grass and bamboo. If you wish to retain a few of these as specimen plants, make sure they are free of dead wood and leaves, pruned to reduce the amount of fuel, and separated from adjacent brush fields.
- Select less flammable plants for the home landscape. Some rules of thumb in selecting landscape plants for the Lean, Clean, and Green Area are...
  - Shorter plants, less than 2 feet tall, are better choices than taller plants.
  - When green, herbaceous plants, such as grass and non-woody flowers, are better choices than shrubs and trees.
  - Deciduous shrubs and trees are better choices than evergreen types. Avoid planting juniper, mugo pine and arborvitae.
- Emphasize the use of hard surfaces and mulches. Hard surfaces include materials such as concrete, asphalt, and brick. Mulches include rock and wood types. Wood mulches should not be used within 3 feet of the house.
- Clear all flammable vegetation from within 10 feet of the propane tank.
- Remove tree limbs that are within 10 feet of the chimney, touching the house or deck, within 6 feet of the roof, or encroaching on power lines.
- Create a noncombustible area at least 3 feet wide around the base of the house. Emphasize the use of irrigated herbaceous plants, such as lawn, ground covers, and flowers. Also use rock mulches and hard surfaces.

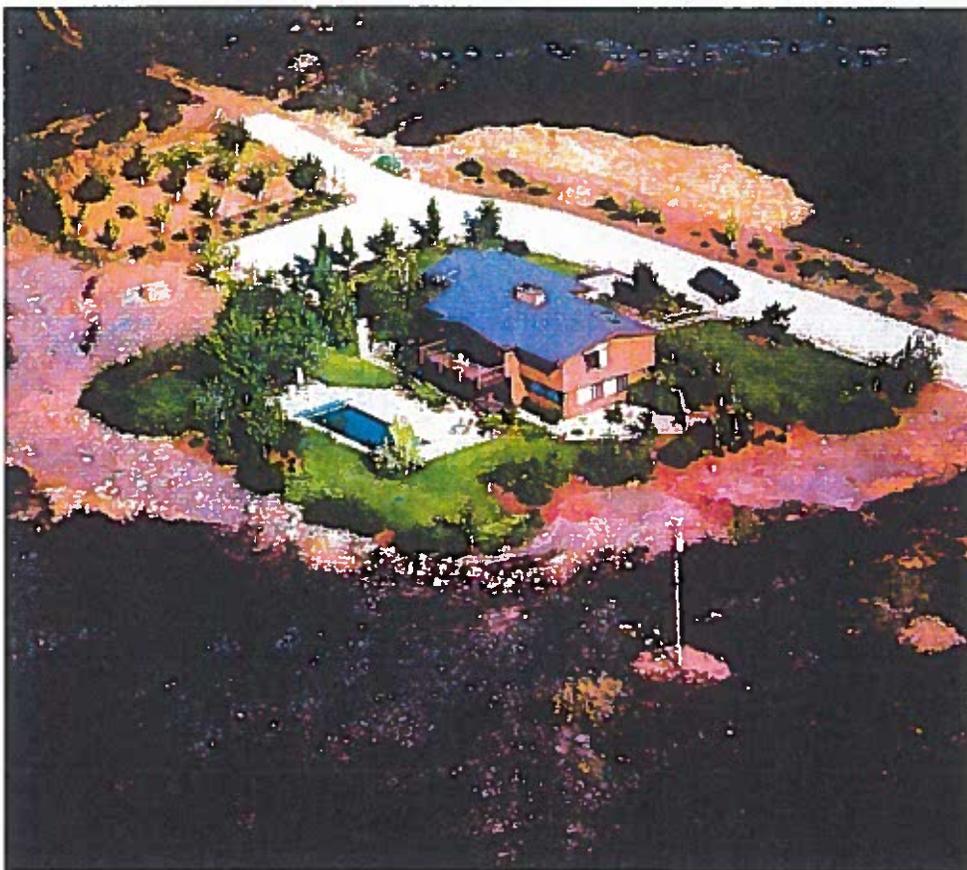


Photo courtesy of California Department of Forestry and Fire Protection

**Miracle House?** This home survived northern California's Forty-niner Fire and has been referred to as the "Miracle House." That title, however, is misleading. The reason this home survived was not due to a miracle. It survived because the homeowner was proactive and created a Lean, Clean, and Green Area, had a fire-resistant roof, and provided good access. It was designed to survive.

# Step Six

## Maintain the Defensible Space

**Zone:** Maintaining a defensible space is an ongoing activity. Plants grow back and flammable vegetation needs to be routinely removed and disposed of properly. Before each fire season, reevaluate your property using the previous five steps and implement the necessary defensible space recommendations.



Remove flammable vegetation and dispose of properly.



## Little Green Gas Cans

Firefighters often refer to ornamental junipers as "little green gas cans." During a wildfire involving homes, embers can smolder undetected under ornamental junipers. The junipers can then ignite and burn intensely after firefighters have left your property. Planting ornamental junipers next to your house is never a good idea. Keep these "little green gas cans" at least 30 feet from the house or replace them with low-growing deciduous shrubs, herbaceous flowers, rock mulches, and hard surfaces.

# FREQUENTLY ASKED QUESTIONS ABOUT DEFENSIBLE SPACE



## WHAT IS DEFENSIBLE SPACE?

Defensible space is the area between a house and an oncoming wildfire where the vegetation has been modified to reduce the wildfire threat and to provide an opportunity for firefighters to effectively defend the house. Sometimes, a defensible space is simply a homeowner's properly maintained backyard.

## WHAT IS THE RELATIONSHIP BETWEEN VEGETATION AND WILDFIRE THREAT?

Many people do not view the plants growing on their property as a threat. But in terms of wildfire, the vegetation adjacent to their homes can have considerable influence upon the survivability of their houses. All vegetation, including plants native to the area and ornamental plants, is potential wildfire fuel. If vegetation is properly modified and maintained, a wildfire can be slowed, the length of flames shortened, and the amount of heat reduced, all of which assist firefighters in defending the home against an oncoming wildfire.



Photo courtesy of Bob Hamilton

## THE FIRE DEPARTMENT IS SUPPOSED TO PROTECT MY HOUSE, SO WHY BOTHER WITH DEFENSIBLE SPACE?

Some individuals incorrectly assume that a fire engine will be parked in their driveway and firefighters will be actively defending their homes if a wildfire approaches. During a major wildfire, it is unlikely there will be enough firefighting resources available to defend every home. In these instances, firefighters will likely select homes they can most safely and effectively protect. Even with adequate resources, some wildfires may be so intense that there may be little firefighters can do to prevent a house from burning. The key is to reduce fire intensity as wildfire nears the house. This can be accomplished by reducing the amount of flammable vegetation surrounding a home. Consequently, the most important person in protecting a house from wildfire is not a firefighter, but the property owner. And it is the action taken by the owner before the wildfire occurs (such as proper landscaping) that is most critical.

## DOES DEFENSIBLE SPACE REQUIRE A LOT OF BARE GROUND IN MY LANDSCAPE?

No. Unfortunately, many people have this misconception. While bare ground is certainly effective in reducing the wildfire threat, it is unnecessary and unacceptable due to appearance, soil erosion, and other reasons. Many homes have attractive, well-vegetated landscapes that also serve as effective defensible space.

## DOES CREATING A DEFENSIBLE SPACE REQUIRE ANY SPECIAL SKILLS OR EQUIPMENT?

No. For the most part, creating a defensible space employs routine gardening and landscape maintenance practices, such as pruning, mowing, weeding, plant removal, appropriate plant selection, and irrigation. Equipment needed includes common tools such as a chain saw, a pruning saw, pruning shears, loppers, a weed-eater, a shovel, and a rake. A chipper, compost bin, or large rented trash dumpster may be useful in disposing of unwanted plant material.

## HOW BIG IS AN EFFECTIVE DEFENSIBLE SPACE?

Defensible space size is not the same for every home, but varies by slope and type of wildland vegetation growing near the house. See "Step One" on page 1.

## DOES DEFENSIBLE SPACE MAKE A DIFFERENCE?

Yes. Investigations of homes threatened by wildfire indicate that those with an effective defensible space are much more likely to survive a wildfire. Furthermore, homes with both an effective defensible space and a nonflammable roof (composition shingles, tile, metal, etc.) are many times more likely to survive a wildfire. Defensible space also allows firefighters to effectively and safely defend your home.

## DOES HAVING A DEFENSIBLE SPACE GUARANTEE MY HOUSE WILL SURVIVE A WILDFIRE?

No. Under extreme conditions, almost any house can burn. However, having a defensible space will significantly improve the odds of your home surviving a wildfire.

## WHY DOESN'T EVERYONE LIVING IN A HIGH FIRE HAZARD AREA CREATE A DEFENSIBLE SPACE?

The specific reasons for not creating a defensible space vary. Presented below are responses to common excuses for not creating defensible space.

## What's your excuse?

**"I don't have the time or money":** If you live in a high fire hazard area, creating defensible space needs to be a high priority use of your spare time. Many defensible space activities require little or no money to implement. For bigger, more expensive tasks, consider forming a Nevada Fire Safe Council chapter for assistance in acquiring grant funds.

**"It's wrong to cut trees":** In many areas, Nevada's Jeffrey pine, pinyon, and juniper trees occur in unnaturally dense stands. Thinning of these thick stands of trees not only reduces the fire threat, but often promotes forest health.

**"It won't look good":** There is a misconception that defensible space has to be ugly and barren to be effective. Through proper planning, a homeowner can have both an attractive landscape and an effective defensible space.

**"It's not my responsibility":** The manner in which a house is built, characteristics of the adjacent vegetation, and maintenance often determine survivability during wildfire. The homeowner, not the firefighter, is usually responsible for these factors.

**"I don't have an easy way to dispose of the unwanted vegetation":** Check to see if there is a free community cleanup day in your area, ask your fire marshal if they have a fuels reduction chipping program, or join several other neighbors and rent a chipper and trailer for a weekend.

**"It's not going to happen to me":** If you live near areas of dense sagebrush, cheatgrass, pinyon, juniper, or Jeffrey pine, it is only a matter of time before these areas burn.

**"It's against the law to remove vegetation":** If there are regulations that prohibit the removal of vegetation necessary to create defensible space, contact your local fire official and ask for help in resolving the conflict.

**"I've got insurance":** While insurance can rebuild a house, it cannot recreate a home. Photo albums, heirlooms, and other memorabilia are often irreplaceable.

**"I don't know what to do":** For more information about creating defensible space, go to [www.livingwithfire.info](http://www.livingwithfire.info) or contact your local firefighting agency or University of Nevada Cooperative Extension office.