

**COMMUNITY PLAN FOR WILD FIRE AND FOREST RESOURCE MANAGEMENT  
BETWEEN ARROYO HONDO AND GLORIETA, NEW MEXICO**

December 2002

Project Sponsor: Earth Works Institute

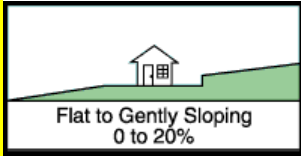
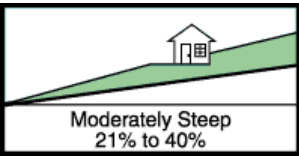
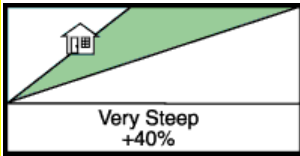
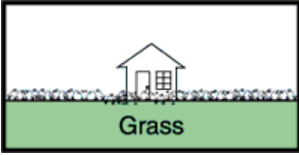
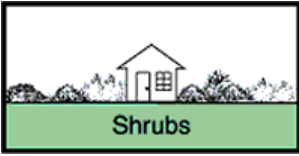
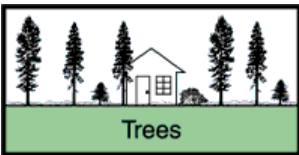
**APPENDIX D HOW TO CREATE DEFENSIBLE SPACE?**

The following steps illustrate the size of defensible space your property needs based on vegetative cover and slope:

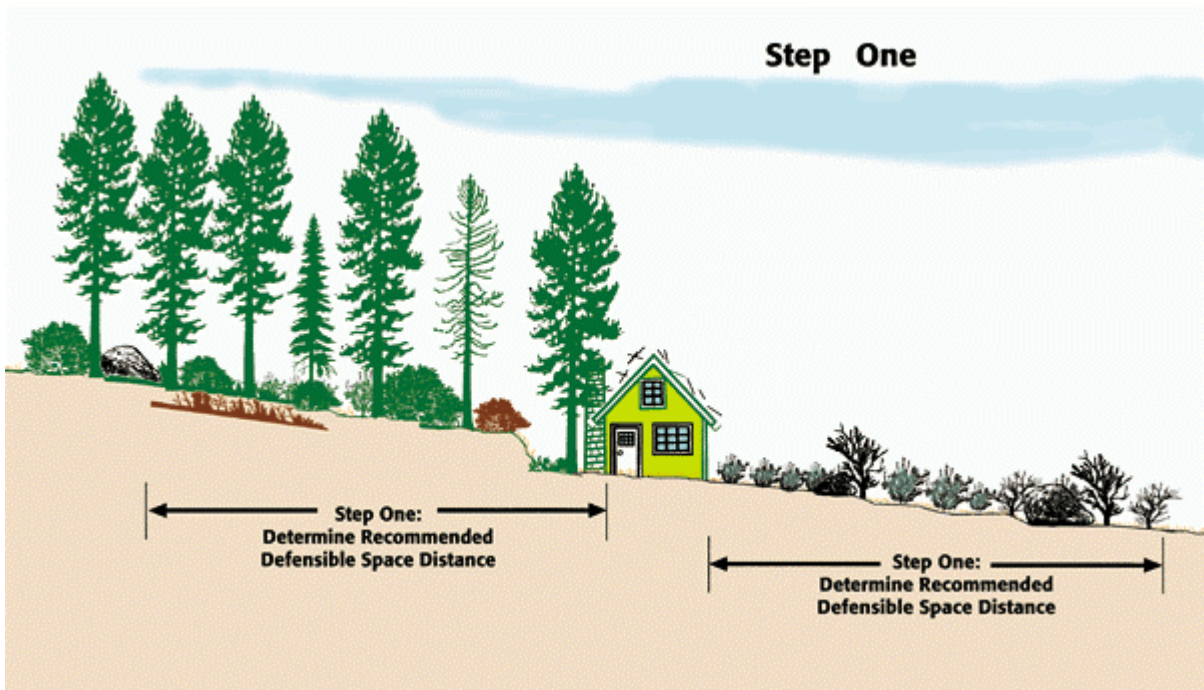
**DEFENSIBLE SPACE DISTANCE CHART**

On the recommended Defensible Space Distance chart presented below, find the vegetation type and percent slope (rise divided by run multiplied by 100) which best describes the area where your house is located. Then find the recommended defensible space distance for your situation.

For example, if your property is surrounded by wildland grasses such as wild oats and mustard, and is located on flat land, your recommended defensible space distance would extend out 30 feet from the sides of the house. If your house sets on a 25% slope and the adjacent wildland vegetation is dense tall brush, your recommended defensible space distance would be 200 feet.

Recommended Defensible Space Distance	STEEPNESS OF SLOPE		
	 Flat to Gently Sloping 0 to 20%	 Moderately Steep 21% to 40%	 Very Steep +40%
 Grass	30 feet	100 feet	100 feet
 Shrubs	100 feet	200 feet	200 feet
 Trees	30 feet	100 feet	200 feet



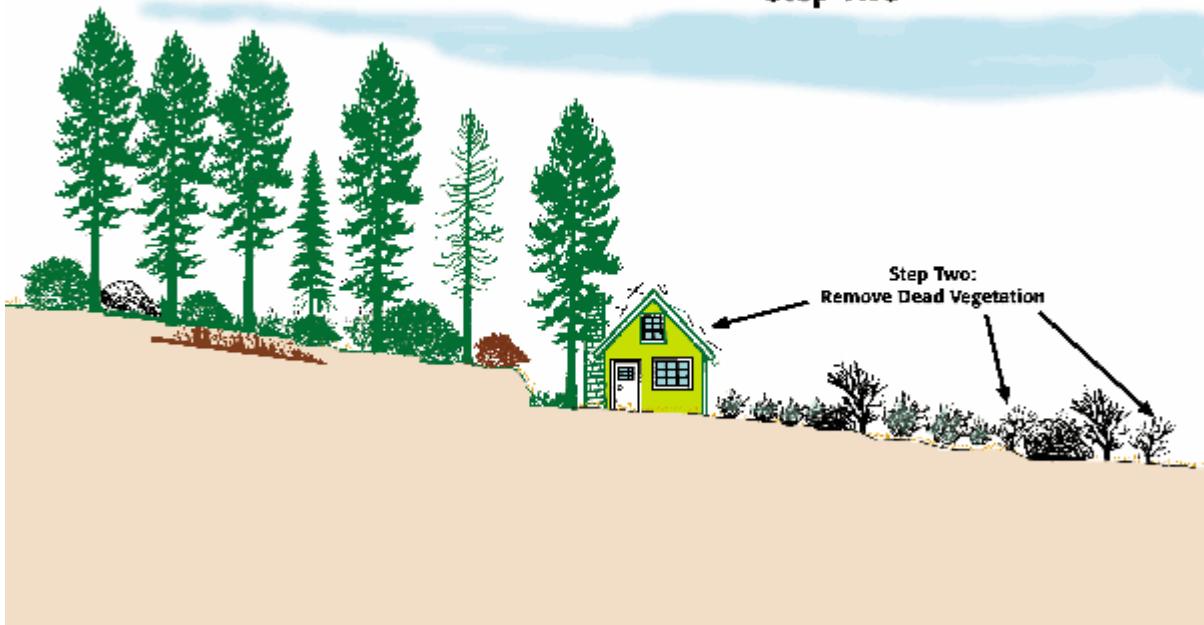


The size of the defensible space area is usually expressed as a distance extending outward from the sides of the house. This distance varies by the type of wildland vegetation growing near the house and steepness of the terrain. Consult the [Defensible Space Distance chart](#) to see what's appropriate for your particular property.

If the recommended distance goes beyond your property boundaries, contact the adjacent property owner and work cooperatively on creating a defensible space. The effectiveness of defensible space increases when multiple property owners work together. The local assessor's office can provide assistance if the owners of adjacent properties are unknown. Do not work on someone else's property without permission.

Temporarily mark the recommended distance with flagging or strips of cloth tied to shrubs, trees, or stakes around your home. This will be your defensible space area.

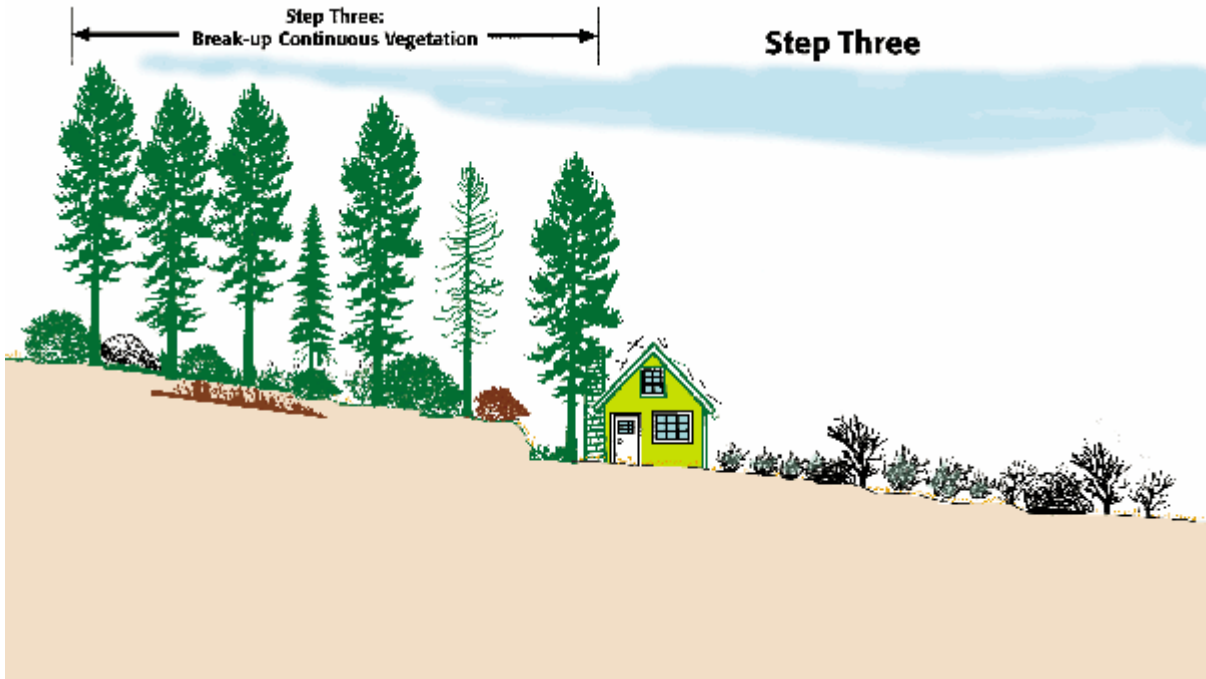
## Step Two



### STEP TWO: IS THERE ANY DEAD VEGETATION WITHIN THE RECOMMENDED DEFENSIBLE SPACE AREA?

Dead vegetation includes dead trees and shrubs, dead branches lying on the ground or still attached to living plants, dried grass, flowers and weeds, dropped leaves and needles, and firewood stacks. In most instances, dead vegetation should be removed from the recommended defensible space area

DEAD FUEL TYPE	RECOMMENDED PRACTICE
Standing Dead Tree	Remove all standing dead trees from within the defensible space area.
Down Dead Tree	Remove all down dead trees within the defensible space area if they have recently fallen and are not yet embedded into the ground. Downed trees that are embedded into soil and which cannot be removed without soil disturbance should be left in place. Remove all exposed branches from an embedded downed dead tree.
Dead Shrubs	Remove all dead shrubs from within the defensible space area.
Dried Grasses and Wildflowers	Once grasses and wildflowers have dried out or cured, cut down and remove from the defensible space area. Avoid the use of lawn mowers and weed eaters during the afternoon hours when sparks or hot mufflers can ignite a fire.
Dead Needles, Leaves, Branches, Cones (on the ground)	Reduce thick layers of pine needles to a depth of five inches. Do not remove all needles. Take care not to disturb the duff layer (dark area at the ground surface where needles are decomposing) if present. Remove dead leaves, twigs, cones, and branches.
Dead Needles, Leaves, Branches, and Twigs (other than on the ground)	Remove all dead leaves, branches, twigs, and needles still attached to living trees and shrubs to height of 15 feet above ground. Limb all living trees 7 feet from the ground, or one third their height. Remove all debris that accumulates on the roof and in rain gutters on a routine basis (at least once annually).
Firewood and Other Combustible Debris	Locate firewood and other combustible debris (wood scraps, grass clippings, leaf piles, etc.) at least 30 feet uphill from the house. Cover all firewood piles.

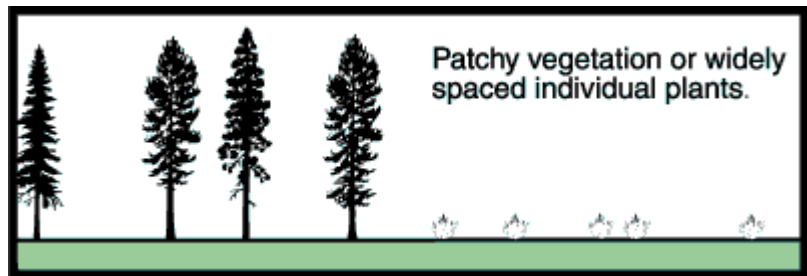
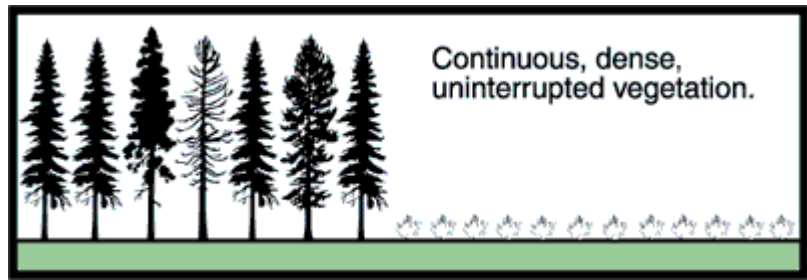


**STEP THREE: IS THERE A CONTINUOUS DENSE COVER OF SHRUBS OR TREES PRESENT WITHIN THE RECOMMENDED DEFENSIBLE SPACE AREA?**

Sometimes wildland plants can occur as an uninterrupted layer of vegetation as opposed to being patchy or widely spaced individual plants.

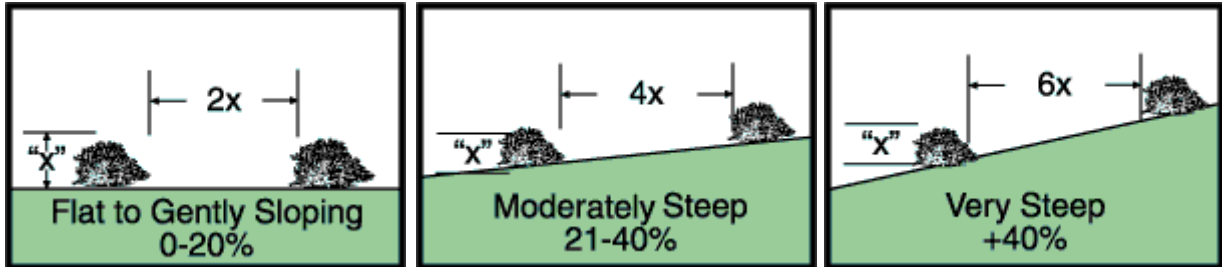
The more continuous and dense the vegetation, the greater the wildfire threat.

If this situation is present within your recommended defensible space area, you should break-it-up by providing for a separation between plants or small groups of plants



## Recommended Separation Distances for Shrubs

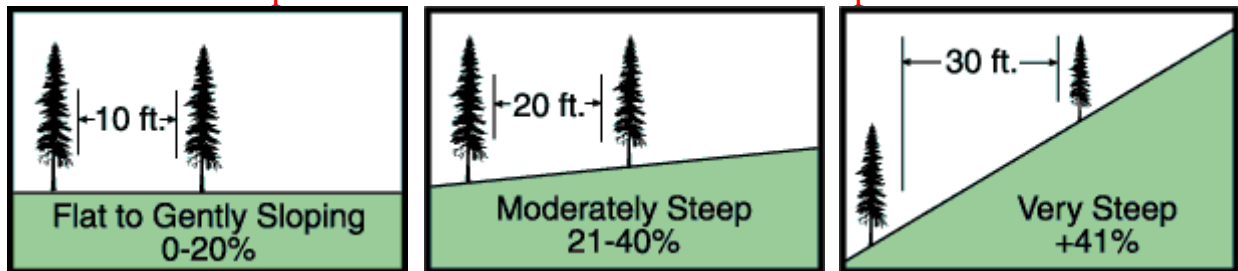
For areas with dense brush, the recommended separation distance is dependent upon shrub height and steepness of slope. Specific recommendations are presented below.



Note: Separation distances are measured between canopies (outermost branches) and not between trunks.

For example, if your home is located on a 10% slope and the brush is four feet tall, the separation distance would be two times the shrub height or eight feet (2 x 4 ft shrub height equals 8 ft of separation between shrubs). The recommended separation distance can be accomplished by removing plants or through pruning that reduces the diameter or height (shorter height means less separation) of shrubs.

## Recommended Separation Distances Between Tree Canopies



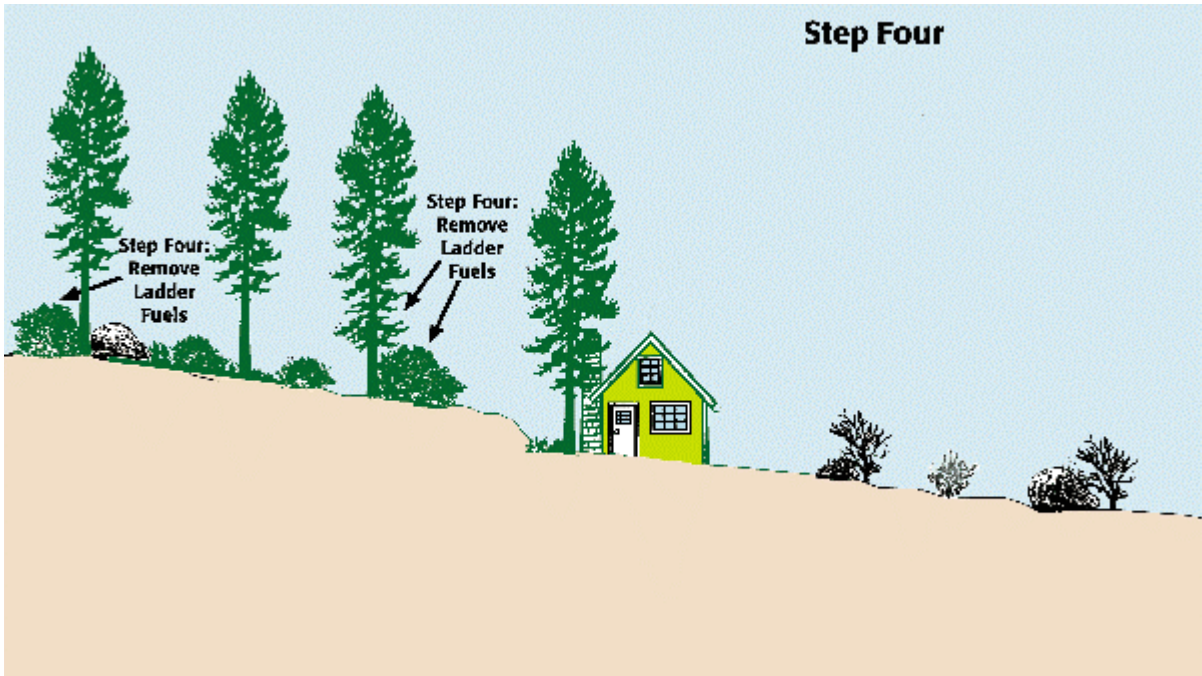
For forested areas, the recommended amount of separation between tree canopies is determined by steepness of slope. The specific recommendations are presented above.

Note: Separation distances are measured between canopies (outer most branches) and not between trunks.

For example, if your house is situated on a 30% slope, the separation of tree canopies within your defensible space should be 20 feet. Creating separation between tree canopies can be accomplished through tree removal.

Note: Removal of live trees in the San Jacinto Mountains may be subject to County Ordinances and the State Forest Practice Rules. Contact the California Department of Forestry and the Fire Protection for more information.

Not only are steep slopes often considered high wildfire areas, they are also highly erodable. When removing shrubs and trees from steep slopes, keep soil disturbance to a minimum. Also, it may be necessary to replace flammable vegetation with other plant materials to prevent excessive soil erosion.

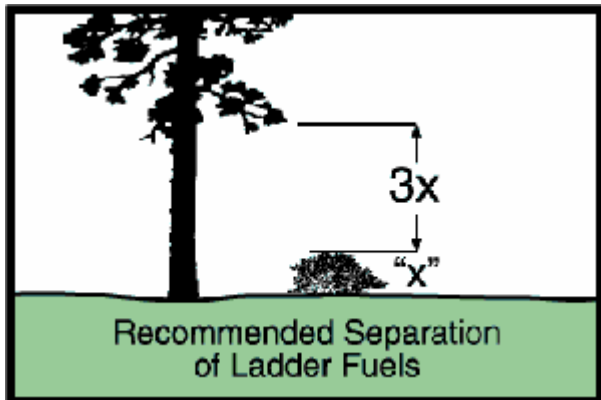
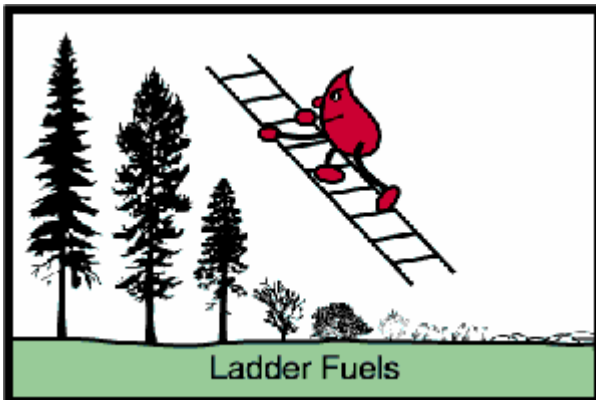


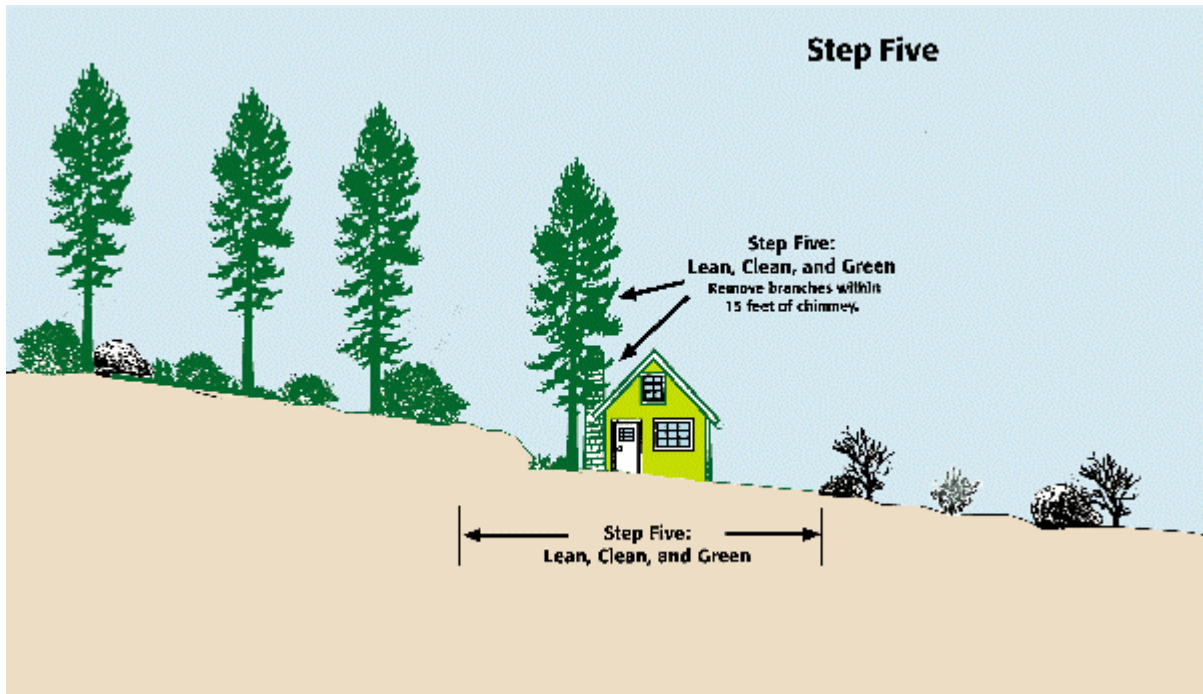
**STEP FOUR: ARE THERE ANY LADDER FUELS PRESENT WITHIN THE RECOMMENDED DEFENSIBLE SPACE AREA?**

Vegetation is often present at varying heights, similar to the rungs of a ladder. Under these conditions, flames from fuels burning at ground level, such as a thick layer of pine needles, can be carried to shrubs, which can ignite still higher fuels like tree branches. Vegetation that allows a fire to move from lower growing plants to taller ones is referred to as ladder fuel. The ladder fuel problem can be corrected by providing a separation between the vegetation layers.

Within the defensible space area, a vertical separation of three times the height of the lower fuel layer is recommended.

For example, if a shrub growing adjacent to a large pine tree is three feet tall, the recommended separation distance would be 9 feet (3 ft shrub height x 3 = 9 feet). This could be accomplished by removing the lower tree branches, reducing the height of the shrub, or both. The shrub could also be removed.






**STEP FIVE: IS THERE AN AREA AT LEAST 30 FEET WIDE SURROUNDING YOUR HOUSE THAT IS LEAN, CLEAN, AND GREEN?**


The area immediately adjacent to your house is particularly important in terms of an effective defensible space. It is also the area that is usually landscaped. Within an area extending at least 30 feet from the house, the vegetation should be kept....


- Lean - small amounts of flammable vegetation,
- Clean - no accumulation of dead vegetation or other flammable debris, and
- Green - plants are healthy and green during the fire season.


The Lean, Clean, and Green Zone Checklist will help you evaluate the area immediately adjacent to your house.


### **A. THE LEAN, CLEAN, AND GREEN CHECKLIST**


 Emphasize the use of low growing herbaceous (non-woody) plants that are kept green during the fire season through irrigation if necessary. Herbaceous plants include lawn, clover, a variety of ground covers, bedding plants, bulbs, perennial flowers, and conservation grasses.


 Emphasize use of mulches, rock, and non-combustible hard surfaces (concrete sidewalks, brick patios, and asphalt driveways) but remember not to damage existing tree root systems.

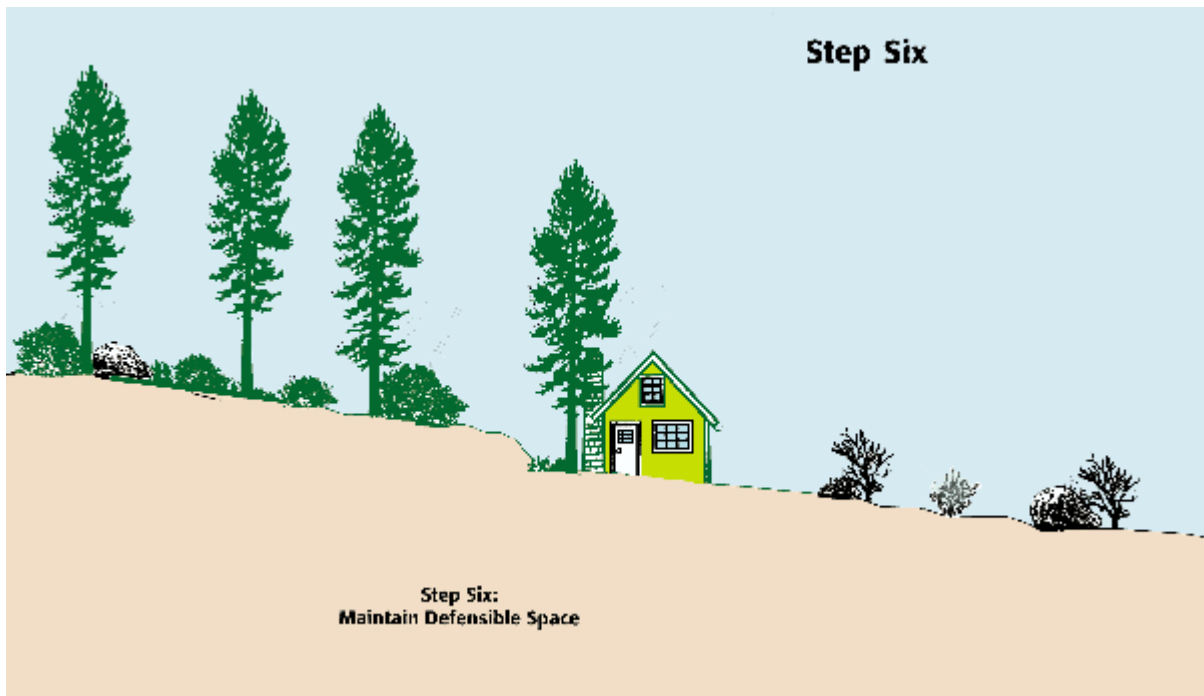
 Deciduous ornamental trees and shrubs are acceptable if they are kept green, free of dead plant material, ladder fuels are removed, and individual plants or groups of plants are arranged in a manner in which adjacent wildland vegetation cannot convey a fire through them to the structure. Shorter deciduous shrubs are preferred.

 Minimize the use of ornamental coniferous shrubs and trees (such as juniper, and Monterey pine) and tall exotic grasses (such as pampas grass).

 Where permitted, most wildland shrubs and trees should be removed from this zone and replaced with more desirable alternatives (see first box). Individual specimens or small groups of wildland shrubs and trees can be retained so long as they are kept healthy, free of dead wood, and pruned to reduce the amount of fuel and height, and ladder fuels are removed.

 The substantial removal of wildland vegetation may be prohibited in some locations due to the presence of endangered plants or animals. In these instances, wildland vegetation should conform to the recommended separation distances, be kept free of dead plant material, pruned to remove ladder fuels and reduce fuel load, and arranged so it cannot readily convey a fire from the wildland to the house. Please become familiar with local requirements before removal of wildland vegetation.

 Tree limbs within 15 feet of a chimney, encroaching on power lines, or touching the house should be removed.



### **STEP SIX: IS THE VEGETATION WITHIN THE RECOMMENDED DEFENSIBLE SPACE AREA MAINTAINED ON A REGULAR BASIS?**

Keeping your defensible space effective is a continual process. At least annually, review these defensible space steps and take action accordingly. An effective defensible space can be quickly diminished through neglect.

## **FIRESCAPING**

Firescaping is landscape design that reduces house and property vulnerability to wildfire. The goal is to develop a landscape whose design and choice of plants offers the best fire protection and enhances the property. The idea is to surround the house with things that are less likely to burn. It is imperative that when building homes in wildfire-prone areas that fire safety be a major factor in landscape design.

Firescape integrates traditional landscape functions and needs into a design that reduces the threat from wildfire. It need not look much different than a traditional design. In addition to meeting a homeowners aesthetic desires and functional needs such as entertaining, playing, storage, erosion control, firescape also includes vegetation modification techniques, planting for fire safety, defensible space principles and use of fire safety zones.

Minimize use of evergreen shrubs and trees within 30 feet of a structure, because junipers, other conifers and broadleaf evergreens contain oils, resins and waxes that make these plants burn with great intensity. Use ornamental grasses and berries sparingly because they also can be highly flammable. Chose fire smart plants. These are plants with high moisture content. They are low growing. Their stems and leaves are not resinous,

oily or waxy. Deciduous trees are generally more fire resistant than evergreens because they have a higher moisture content when in leaf, but a lower fuel volume when dormant.

Placement and maintenance of trees and shrubs is as important as actual plant selection. When planning tree placement in the landscape, remember their size at maturity. Keep tree limbs at least 15 feet from chimneys, power lines and structures. Specimen trees can be used near a structure if pruned properly and well irrigated.

Firescape design uses driveways, lawns, walkways, patios, parking areas, areas with inorganic mulches, and fences constructed of nonflammable materials such as rock, brick, or cement to reduce fuel loads and create fuel breaks. Fuel breaks are a vital component in every firescape design. Water features, pools, ponds or streams can also be fuel breaks. Areas where wildland vegetation has been thinned or replaced with less flammable plants are the traditional fuel break. Remember, while bare ground is effective from the wildfire viewpoint, it is not promoted as a firescape element due to aesthetic, soil erosion, and other concerns.

A home located on a brushy site above a south or west facing slope will require more extensive wildfire safety landscape planning than a house situated on a flat lot with little vegetation around it. Boulders and rocks become fire retardant elements in a design. Whether or not a site can be irrigated will greatly influence location of "hardscape" (concrete, asphalt, wood decks, etc.), plant selection and placement. Prevailing winds, seasonal weather, local fire history, and characteristics of native vegetation surrounding the site are additional important considerations.

The area closest to a structure out to 30 ft will be the highest water use area in the fire safe landscape. This is an area where highly flammable fuels are kept to a minimum and plants are kept green throughout the fire season. Use well-irrigated perennials here. Another choice is low growing or non-woody deciduous plants. Lawn is soothing visually, and is also practical as a wildfire safety feature. Rock mulches are good choices. Patios, masonry or rock planters are excellent fuel breaks and increase wildfire safety. Be creative with boulders, riprap, dry streambeds and sculptural inorganic elements.

When designing a landscape for fire safety, remember less is better. Simplify visual lines and groupings. A fire safe landscape lets plants and garden elements reveal their innate beauty by leaving space between plants and groups of plants. In firescaping, the open spaces are more important than the plants.

**Lawn can be an effective firescape feature. But extensive areas of turf grass may not be right for everyone, especially in areas where water is in short supply. Some good alternatives include clover, ground covers, and conservation grasses that are kept green during the fire season through irrigation.**