

Five Steps to Creating an Effective Defensible Space

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.

Fortunately for Lake Tahoe Basin homeowners, there are a variety of resources available to assist them in creating defensible space. Local fire districts and departments will conduct free defensible space inspections. Advice on integrating defensible space practices with Best Management Practices (BMPs) and other landscape management topics can be provided by the Conservation Districts and Cooperative Extension in conjunction with the Tahoe Regional Planning Agency (TRPA) and fire professionals. See Pages 17 and 23 for contact information.



Photo courtesy of John Caburn

Through proper planning, an effective defensible space can be attractive and control soil erosion.



Step One

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.

RECOMMENDED DEFENSIBLE SPACE DISTANCE			
	Flat To Gently Sloping 0-20%	Moderately Steep 21-40%	Very Steep +40%
Grass Dry grass and weeds	100 feet	100 feet	100 feet
Shrubs and Woodland Sagebrush, manzanita and mountain mahogany	100 feet	200 feet	200 feet
Forest Trees Fir and pine. If there's a substantial shrub understory, use those values stated above.	100 feet	100 feet	200 feet



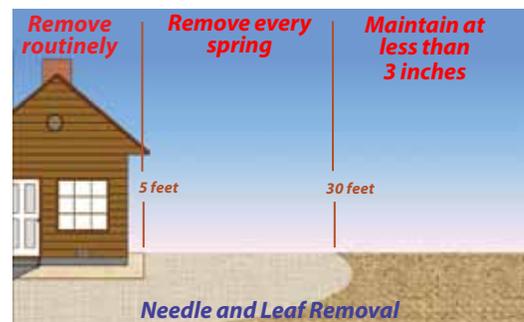
Step Two

Within the recommended Defensible Space Zone, remove:

- Dead and dying trees.
- Dead native and ornamental shrubs.
- Dead branches.
- Dried grass, weeds and flowers.
- Exposed branches from fallen trees that are embedded into the ground and located **more than 30 feet** from the house. The embedded tree can be left in place.

Regarding fallen needles and leaves:

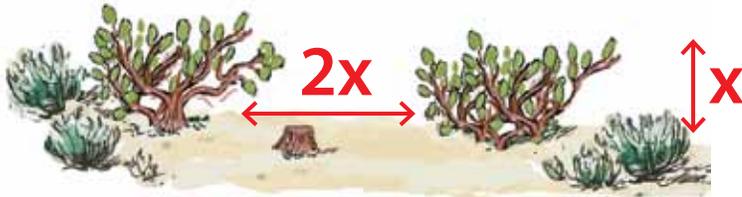
- **Within 5 feet** of the house, remove routinely throughout fire season.
- From **5 feet to 30 feet** of the house, remove every spring by May 1. Needles and leaves that fall after the spring removal period can accumulate on the ground as long as they do not create a fire hazard.
- **More than 30 feet** from the house, do not allow fallen needles and leaves to exceed a depth of 3 inches.





Step Three

Within the Defensible Space Zone, native trees and shrubs, (Jeffrey pine, white fir and manzanita) 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.

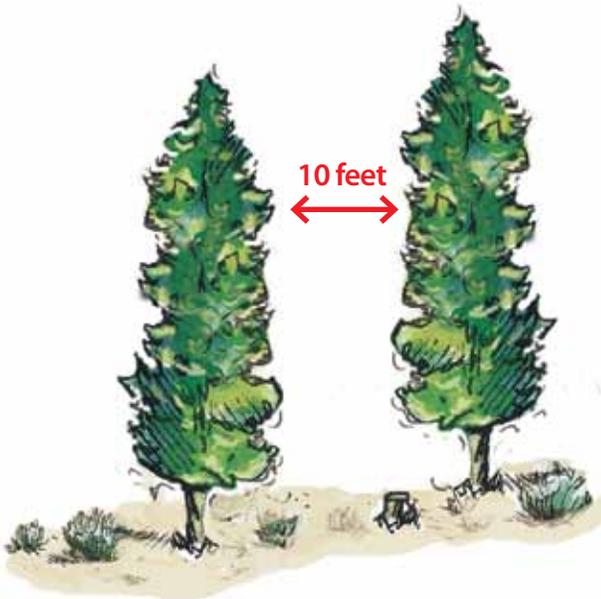


Sagebrush, Manzanita, Huckleberry Oak and Other Shrubs

On flat to gently sloping terrain **more than 30 feet** from the house, 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. For homes located on steeper slopes, the separation distance should be greater. Remove shrubs or prune to reduce their height and/or diameter. See Step Five for shrub management recommendations **within 30 feet** of the house.

Forest Trees

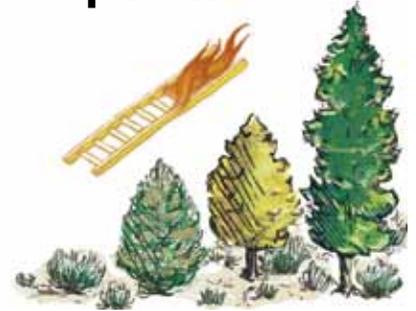
On flat to gently sloping terrain **more than 30 feet** from the house, individual trees or small groups of several trees should be thinned to provide an average separation between canopies of at least 10 feet. For homes located on steeper slopes, the separation distance should be greater.



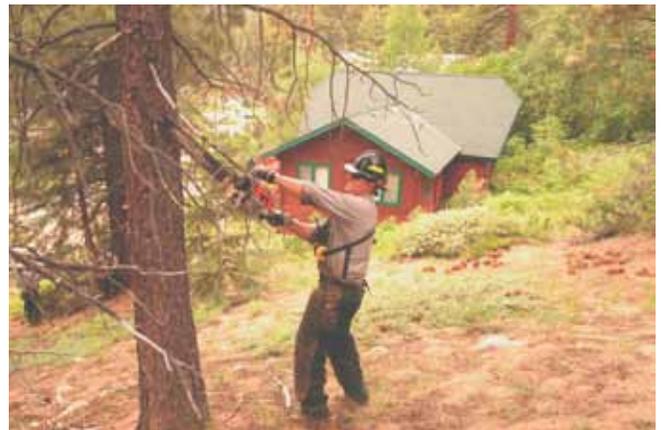
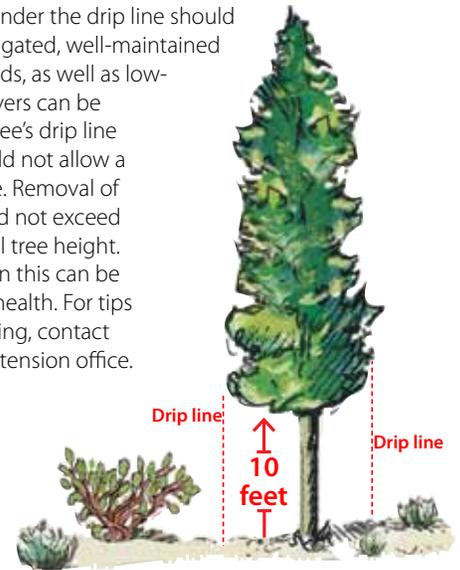
Within 30 feet of the house, the canopies of individual or small groups of several trees should be separated by 10 feet to 30 feet. A continuous tree canopy maintained as previously described is also an option for this area. Contact your local fire professionals (see Page 23) or TRPA to have your trees evaluated and marked for removal.



Step Four



Vegetation that can carry a fire from low-growing plants to taller plants is called ladder fuel. In areas where trees have been thinned as per Step Three, lower tree branches should be removed to a height of at least 10 feet. Shrubs and trees growing under the drip line should also be removed. Irrigated, well-maintained lawns and flower beds, as well as low-growing ground covers can be present under the tree's drip line as long as they would not allow a fire to ignite the tree. Removal of tree branches should not exceed one third of the total tree height. Removing more than this can be detrimental to tree health. For tips on proper tree pruning, contact your Cooperative Extension office.



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Step Five

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. The landscape should be arranged so that vegetation would not allow a fire to travel rapidly across the area.

Lean, Clean and Green Area Tips

Within the Lean, Clean and Green Area:

- Remove dead shrubs and trees; dried grass, flowers and weeds; dead branches; and firewood.
- Remove fallen needles and leaves every spring by May 1.
- Wood and bark mulches can be used, but not in a widespread manner. If used, these areas should be separated by ignition-resistant materials, such as irrigated lawn, clover and flowers or noncombustible materials such as gravel and rock.
- Native shrubs should be substantially reduced. Individual specimens or small groups can be retained as long as they are kept healthy and vigorous, and pruned to reduce height and amount. When removing shrubs, leave the root systems in place. Low-growing native shrubs, such as pinemat manzanita and Mahala mat, can be retained.
- Use low-growing (less than 18 inches tall), irrigated, actively growing herbaceous plants that are recommended for the Lake Tahoe Basin, such as lawn, clover, flowers, some ground covers and succulents. Plant materials that are cured out for the season should be removed.
- Ornamental, deciduous trees and shrubs can be used as specimens or in small groups. They should be irrigated, kept healthy and vigorous, and free of dead leaves and wood. Deciduous trees should be placed so that their mature canopy can be easily maintained at a distance of at least 10 feet from other trees and the house. Shorter deciduous shrubs are preferred.
- Ornamental evergreen shrubs and trees, such as juniper, mugo pine, Austrian pine and others, should not be used in this area.
- Clear all flammable vegetation from within 10 feet of the propane tank.
- Remove tree limbs that are within 10 feet of the chimney, house, deck or roof. Remove limbs that are encroaching on power lines.
- Create a noncombustible area at least 5 feet wide around the perimeter of the house and any combustible attachments (decks). See Noncombustible Area Tips in the adjacent column.

Noncombustible Area Tips

The area immediately adjacent to a house is of critical importance to house survival during a wildfire. It should consist of noncombustible landscape materials and ignition-resistant, low-volume plants. Within this area:

- Remove dead shrubs and trees; dried grass, flowers and weeds; dead branches; and firewood.
- Remove fallen needles and leaves.
- Do not use wood and bark mulches.
- Do not use wood landscape timbers or boards.
- Remove flammable shrubs and trees. This includes native plants (big sagebrush, bitterbrush, greenleaf manzanita, snowbrush, rabbitbrush, huckleberry oak, pine and fir) and ornamental plants (juniper, mugo pine, arborvitae, scotch broom and large exotic grasses). When removing plants, leave their root systems in place.
- Noncombustible landscape materials, such as gravel, rock and brick, are acceptable.
- Use low-growing (less than 18 inches tall), irrigated, herbaceous plants that are recommended for the Lake Tahoe Basin, such as lawn, clover, flowers, some ground covers and succulents.
- Use low-growing (less than 18 inches tall), irrigated deciduous shrubs recommended for the Lake Tahoe Basin as individual specimens or in small groups. Prune these shrubs to remove branches in contact with the ground and sides of the house.
- Do not plant shrubs under first-story windows, under soffit vents, in front of foundation vents, or in corners.
- Trellises used in this area should be made of noncombustible materials.

Maintenance

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, re-evaluate your property using the previous five steps and implement the necessary defensible space recommendations.



Photo courtesy of University of Nevada Cooperative Extension

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 the area. 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.

TRPA Promotes Defensible Space

There are some popular myths about TRPA and wildfire safety. Defensible space is actually supported by TRPA's environmental goals and its ordinances. A healthy forest means a healthy lake. A few defensible space recommendations may call for consultation or a permit from TRPA to reduce other potential impacts to the ecosystem.

Managing Trees	Cutting of live trees with trunks greater than 14 inches in diameter requires a permit from your local fire agency (no visit to TRPA required).
Plant Selection	Plants being used in areas other than borders, entryways, flower beds and similar locations need to be selected from the TRPA Recommended Plant List, which includes information on the fire resistance of different plants. This plant list, as well as a list of accent plants suitable for Lake Tahoe Basin conditions, can be found in the "Home Landscaping Guide for Lake Tahoe and Vicinity."
Noncombustible Area	In the 5-foot Noncombustible Area around structures, using gravel, rock, pervious concrete, pervious pavers or appropriate vegetation will avoid the need for a permit from TRPA. Land-coverage standards may apply when increasing the amount of hard or impervious surfaces around a property.
Enclosing Decks	Enclosing the underside of a deck may increase the amount of land coverage on a property and may require a permit.
Sensitive Areas	If the Defensible Space Zone includes sensitive areas, including lakeshores, a beach, stream environment zones, scenic resource areas and conservation/recreation areas, additional considerations may apply. Adequate defensible space can still be achieved with professional advice.



For more information, contact TRPA at 775-588-4547 or visit www.trpa.org.



The area within 5 feet of your house is important to both water quality and defensible space concerns. When constructing erosion-control BMPs in this area, such as the installation of an infiltration trench shown at left, contact your local fire professional and Conservation District for advice on defensible space and BMPs.

Working Together



The Tahoe Network of Fire Adapted Communities is an alliance of organizations working to reduce the wildfire threat in the Lake Tahoe Basin. It is made up of firefighting agencies, land management agencies, engaged communities and others. The Tahoe Network focuses on these objectives:

- **Connect** residents and firefighting agencies to create defensible space.
- **Educate** residents to become knowledgeable and capable citizens in the face of the wildfire threat.
- **Empower** leaders to organize their neighbors and build resilient communities.

For more information about the Tahoe Network, contact the Tahoe Resource Conservation District at 530-543-1501, ext. 114.

“TRPA values our partnership with the Lake Tahoe Basin Fire Districts and our collective work to assure fire defensible space around people’s homes and properties. Reducing the risk of a catastrophic wildfire in the Tahoe Basin is essential for the future of our communities and the Lake.”

*Joanne Marchetta, Executive Director
Tahoe Regional Planning Agency*

Conservation Landscaping Concepts

When creating defensible space, be aware of Lake Tahoe water quality concerns. If misapplied, defensible space practices could encourage accelerated erosion, a major contributor to the lake’s declining clarity. Consider using the following conservation landscaping concepts when creating defensible space:

- Do not remove all vegetation from the Defensible Space Zone.
- Low-fire-hazard vegetation is the preferred alternative to incorporate the objectives of both Best Management Practices (BMPs) and defensible space.
- Do not dig out plant roots. Leave them in place.
- When breaking up dense brush fields on steep slopes, leave islands of lean and green shrubs staggered horizontally across the slope.
- Implement BMPs on your property. BMPs are measures that help slow water runoff and control soil erosion. For a free BMP inspection of your property, contact the Conservation District in California, 530-543-1501, ext. 113, or in Nevada, 775-586-1610, ext. 28.
- For educational materials and programs about defensible space, erosion control and general landscape management, call University of Nevada Cooperative Extension at 775-784-4848 or the University of California Cooperative Extension, 530-542-2571.