How To:

Plan a Successful Fuels Treatment Project

PURPOSE

It's about controlling the potential heat output of a fire. Fuel treatment projects are aimed at affecting fire behavior to reduce the negative effects of a wildfire burning through the treated area. In fact, after a successful fuels treatment project a wildfire or prescribed burn can have positive effects on the environment by recycling forest floor litter into soil nutrients and removing additional fallen forest organic material. Fuel treatments are necessary within your 100 feet of defensible space and along evacuation routes. It is recommended that once the defensible space has been treated, fuel treatments are then expanded beyond the 100 feet defensible space zone 2. In effect, you are creating a shaded fuel break to reduce fire intensity and rate of spread as a fire approaches your home. You can find the CALFIRE defensible space zones definition and diagram here.

STEPS

Fire Behavior can be mitigated through fuel treatments by focusing on these concepts:

1. **Reducing vertical fuel continuity.** This refers to the ladder fuels that can draw fire into the crowns and tops of larger trees. Thinning out small trees and shrubs and pruning branches up to 10 feet high will break up vertical continuity. Some small trees, such as dogwoods and maples, are considered "low volume" fuels and can be retained in places beneath the larger tree canopy.
2. **Reducing horizontal continuity.** This refers to eliminating the continuous layer of fuels on the ground so that a fire will run into lighter fuels, slow down, and burn with less heat output. Ground fuels include downed branches, twigs and accumulations of leaves and needles. It is best to reduce horizontal continuity within your 100-foot defensible space at a minimum.
3. **Reducing aerial fuel continuity.** This refers to removing, by selective thinning, some of the medium-sized trees to create openings in the tree canopy. This will allow heat from a surface fire to escape and vent above the treetops. It also allows fire retardant dropped from aircraft to penetrate the tree canopy and hit the ground, where it is needed to slow a

fire. Additionally, thinning reduces tree competition for soil moisture and nutrients, making the retained trees healthier and more drought resistant.

4. **Reducing the quantity of fuel**. Obviously, less available fuel means a slower burning fire with less heat output. Any fuel you remove will lower the heat output of a fire. After removal of ladder fuels, focus on removal of the carrier fuels, which a fire needs to spread quickly. Carrier fuels are smaller in size such as pine needles, leaves, cones, and sticks, up to a couple of inches in diameter. These comprise the fluffy, top layer of the ground fuels. The compacted lower layer of the fuel bed (duff or organic matter layer) will not burn as quickly as the upper, fluffy layer. Retain the lower layer as protection for the trees' roots and soil microorganisms, except within your ZONE 0 (0-5 feet of structures) where you must remove all the combustible materials including soil organic matter.
5. **Snags, rotten logs, and stumps.** These fuels can burn for a long time and send larger embers aloft, starting spot fires or threatening your home. Snags (standing dead trees) and logs on the ground can provide valuable wildlife habitat for nesting and foraging. These should be removed from strategic locations only; within the 100 feet of defensible zone or along evacuation routes. Old stumps within 30 feet of structures should be removed or cut as low as possible and covered with soil.
6. **Fuel Reduction vs. Fuel Rearrangement.** Mastication and chipping, with the chips put back onto the ground, may be the only option in some situations. However, that fuel has been rearranged, not removed, and is still available to burn during wildfire. Additionally, the added layer of wood chips will absorb tremendous amounts of rainfall, preventing it from recharging the soil, which is important to help trees survive annual summer droughts. The best option is to burn it to create biochar, remove it for use as green waste, or burn it in piles.
7. **Maintenance is critical**. It is far more work to do the initial fuel reduction than it is to maintain the area you cleared annually. Maintenance can include raking the annual drop of leaves, needles, cones and sticks and burning in piles or placing them in a Waste Management Green Waste barrel. The best maintenance method, once you have had some training, is a prescribed burn (broadcast burn). This will recycle the nutrients contained in the organic material back into the soil.

	8. **Grassland vs Forested topography.** It is important to understand the distinction. Grasslands are different from forested landscapes in that the main fuel that will carry a fire is the dry grass. Grass fires spread very quickly and burn hot for a short duration. Mow, weed whack or graze grasses to below 4 inches tall after they start to dry. Within 30 feet of structures the cut grasses should be raked and moved farther away to reduce the heat output near structures. If you encounter patches of native bunch grasses or wildflowers it is fine to leave them to produce seed, but they should be cut after the seeds are released. On large grassland areas, leaving about 10% of the area untreated can provide some diversity without significantly increasing the fire danger. Fuel reduction projects will generally improve forest health and sustainability. Natural and indigenous-set fires kept fuel buildup and forest density low prior to the Gold Rush. Our aim is to restore that condition as much as possible.
TIPS	CALFIRE Fuels Reduction Guide Nevada County Resource Conservation District