

# **Protecting Homes and Communities from Wildfire: Preventative Cross-training Education for the Business Sector**

## Curriculum Outline

### **HOME AND COMMUNITY SITE DESIGN, DEFENSIBLE/SURVIVABLE SPACE, AND FUEL MANAGEMENT**

**Module Structure:** 1 hour cross-training

**Curriculum Objectives:**

Students will be able to:

1. Identify the primary agency contact for regulations regarding their project and be aware of their need to consult with any other groups that could affect their activities.
2. Describe four appropriate actions that reduce fire risk to communities and will understand the idea of defensible/survivable space.
3. Describe appropriate site improvements and plant arrangements on individual landscapes that can make a structure safer
4. Describe four criteria to use in selecting species of plants for a sustainable low-risk landscape.
5. Describe five key maintenance considerations for reducing fire risk.

**Summary:**

Our best efforts to protect property from wildland fire involve a comprehensive approach to the entire home site and the community that abuts wildlands. Property loss during severe wildfires is greatly reduced by building the most non-combustible structures possible. In addition, appropriate actions can be taken on the land surrounding homes and in the design and layout of communities to further reduce the fire risk to structures. Ideally these actions are planned and carried out before the structures or communities are built. Defensible/survivable space is then a matter of maintenance. Homes built without the benefit of modern low-combustion building practices and materials can be remodeled or retrofitted, and existing sites can be modified to greatly reduce risk.

The following discussion covers what can be done on the land surrounding homes and communities, and what needs to be done according to regulation.

- a. First Steps
  - i. Step one: Contact local fire marshal
  - ii. Code research – Local authority having jurisdiction; codes vary slightly by jurisdiction and it is local jurisdiction codes that must be adhered to.
  - iii. Reconcile requirements from different stakeholders
    1. Homeowners
    2. Local fire jurisdiction
    3. Multiple Species Conservation Plan (MSCP): Does the work impact adjacent native habitat?
    4. Insurance and others
- b. Large-scale / community planning for new development
  - i. Common development features can be used as buffers
    1. Irrigated greenbelts (parks, golf courses)
    2. Roads and parking lots
  - ii. Access
    1. Two ways in, two ways out
    2. Roads should provide adequate width (24 ft) for two emergency vehicles to pass
  - iii. Site Location
    1. Canyon rim will abut wildlands and has greater defensible space issues to reconcile
    2. Homes in the middle of the development are prone to wildfire due to the reach of embers
    3. Once a fire resistant home begins burning, any structure closer than 16' is subject to the intense radiant heat given off by the burning home
  - iv. Building pad site-design
    1. Setbacks from slopes reduce heat and flame exposure to structure
    2. Setbacks allow fuel management zones to fall within property boundary –reduces impacts to open space and/or sensitive habitats
- c. Planning and development of reduced fire risk landscapes and defensible/survivable space:
  - i. Requirements differ by jurisdiction – Check with local fire marshal – generally agreed at 100 feet
  - ii. Goals:
    1. Reduce flame length and keep those flames from touching structure
    2. Reduce radiant heat that the structure is exposed to
    3. Allow emergency personnel room to maneuver, if present
    4. To minimize adverse effects on local habitat
  - iii. Plan layout so plants are well-spaced for their width and height to reduce spread of fire and allows firefighters room to maneuver, if they are present
  - iv. >50% of soil should have living plant canopy
    1. Resists invasion from weedy, flashy fuels
    2. Canopy and roots prevent erosion
  - v. Other considerations when altering landscape
    1. Federal, state regulations can restrict clearing in their habitat

2. US Fish & Wildlife Service and Calif. Dept. of Fish & Game should be contacted prior to projects
- vi. Plan locations of structures, and choose fire-resistant materials
  1. Well-placed masonry fences and walls can create flame and radiant heat barriers
  2. Fabric awnings are high risk
  3. Small dimension lumber structures are very flammable
  4. Wood storage or other outdoor flammable materials must be screened from house by non-combustive walls or fences
  5. Use non-flammable materials for fencing within five feet of structure
  6. Wood fences should not come within five feet of structure
- d. Plant Selection
  - i. Plant lists:
    1. San Diego has a broad spectrum of climate, soil and other conditions suitable for different plants making lists difficult
    2. There has been little agreement on a comprehensive “fire-safe” plant list
    3. Most agencies are moving away from plant lists. Many plant species are appropriate if maintained to reduce their flammability.
    4. Consider choosing from a list of regional evergreen broadleaf native shrubs. Many native shrub species sustain leaf moisture (reduce flammability) with less water, and grow slowly and so require less annual care
  - ii. Consult local invasive plant lists to avoid invasive plants
    1. Invasive plants harm native plant and animal communities
    2. Invasive annual and perennial grasses and annual broadleaf weeds put out more growth and dead matter annually than shrubs and dry many months earlier, so are MORE of a fire hazard
    3. Invasive species cost public and private landholders
  - iii. Consult sensitive/protected species lists for species that might be especially important to protect or restore on the site
  - iv. Water needs vary:
    1. Lowest maintenance costs are required by species that require less watering to maintain healthy leaf moisture
    2. Plants that need frequent water dry and die if deprived, and create a high fire risk
  - v. Litter production varies by species and by size of plants.
    1. Fire hazard increases as leaf and bark litter accumulates
  - vi. Plan so annual plant maintenance costs are sustainable
    1. Don’t “clear”: exposed soil supports weeds, costly to cut
    2. Erosion causes property loss upstream and damage downstream every year, and can and should be avoided
    3. Size of plants and trees varies: Smaller, slower growing trees and shrubs reduce pruning needed over time
      - a. Large trees add annual costs for litter, pruning

4. Irrigation costs for some plants are lower than others
- e. Maintenance
- i. Critical to reduce flame size and radiant heat risk to home in a wildfire and involves:
    1. *Correct* irrigation in Zone 1
    2. *Thinned and healthy spaced native shrubs in Zone 2*
  - ii. A well-maintained landscape is NOT cleared to mineral soil; “Clearance” to soil supports weedy plants that burn easily
  - iii. Pruning should be done in a way as to not promote flush of new growth but to eliminate dead, lift skirt, and help restrain growth
  - iv. Chipping vegetation for mulch 30’ or more from the structure is a low fire hazard and reduces weeds.
  - v. Gravel or decomposed granite is best closer to the structure
  - vi. Kept clean of dead and downed material, litter or branches
  - vii. Water adequately for good health; foliage with moisture withstands ignition better

**Materials/References:**

Fire, Brush, and Building Code Contact Information for Municipalities in the County of San Diego, Compiled by U.C. Cooperative Extension in partnership with the San Diego County Department of Planning and Land Use

*Website pending*

The Homeowners Checklist, CDF and Fire Safe Council, Also available in Spanish

[http://www.fire.ca.gov/php/education\\_checklist.php](http://www.fire.ca.gov/php/education_checklist.php)

Fire, Defensible Space and You, San Diego County DPLU

[http://www.co.san-diego.ca.us/dplu/fire\\_resistant.html](http://www.co.san-diego.ca.us/dplu/fire_resistant.html)

Fire Safety and Brush-Management, City of San Diego

<http://www.sandiego.gov/fireandems/pdf/brushpdf.pdf>

Southern California Don’t Plant a Pest Brochure, Invasives and Alternatives, California Invasive Plant Council

<http://www.cal-ipc.org/landscaping/dpp/planttypes.php?region=socal>

Public Resource Code 4291, California Department of Forestry