

SESSION 2

DEFENSIBLE SPACE & HOME HARDENING

Science behind defensible space and home hardening with updates from CAL FIRE plus practical resident guidance.

Purpose

Join city/county planners with wildfire professionals and experts to proactively protect and preserve housing from wildfires.

Learn from state and national experts that outline current science, technology, programs and best practices.



● Expectations Overall

- The Bay Area has overlapping crises. We need to solve for multiple complicated and connected crises.
 - Housing affordability, climate change, and inequity are all pressing challenges. We can't solve just one crisis.
- Get grounded with current experts to frame issues and ideas more comprehensively with staff.
- Need holistic and integrated policies and programs. Solutions exist - focus on what local government can do to have an impact.

● Expectations of the Session

- Seeking active conversations and the wisdom in the room.
- Turn on camera and participate during discussion portion.

WORK GROUP MEETINGS

WILDFIRES - PRESERVATION & PROTECTION OF HOMES

9/30

COMPLETED

Wildfires & Housing 101

Overview of fire evolution, fire science, intro to home hardening & defensible space, plus introduction of Marin Wildfire Prevention Authority.

10/14

Defensible Space & Home Hardening + CAL FIRE Update

Deep dive into defensible space & home hardening with updates from CAL FIRE plus practical resident guidance.

11/4

Evacuations: Laws, Practices & Technology

Exploration of new evacuation laws, OPR updates, and tips on practical implementation of new technology.

12/2

Land Use Planning in the WUI + ADUS

Outline planning & risk mitigation initiatives for wildfires. Explore how to add ADUs and housing in the WUI.



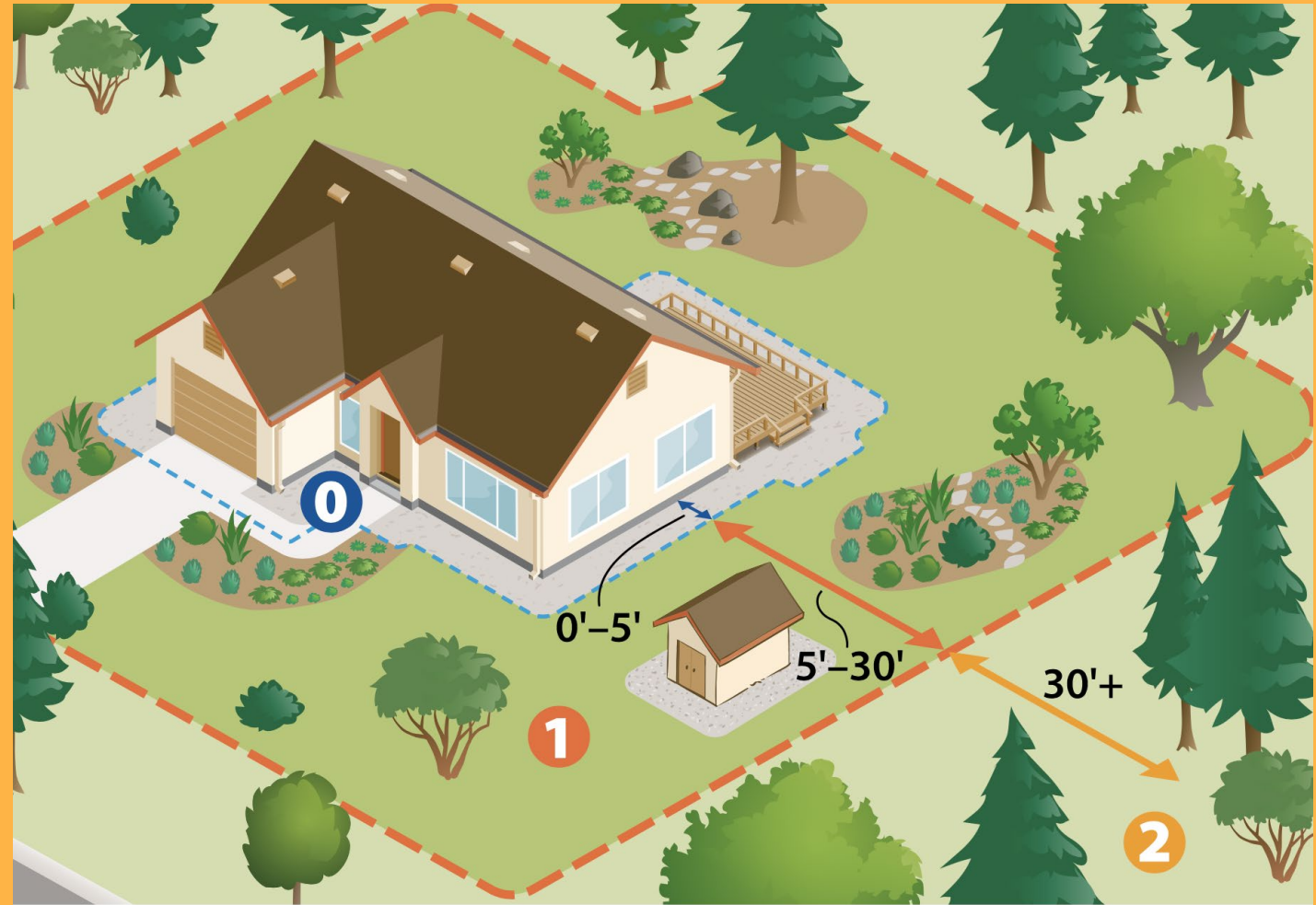
Technical Assistance
for Local Planning

HOUSING

SESSION 2

DEFENSIBLE SPACE & HOME HARDENING

Protecting communities from wildfire by reducing home ignition potential.



Agenda

01

OVERVIEW

Welcome, introductions, and overview of Session 2 “Home Hardening and Defensible Space.”

02

CURRENT SCIENCE FOR DEFENSIBLE SPACE & HOME HARDENING

Two speakers will ground us in the current science on reducing home ignitions. After presentations, we will pause for Q&A.

03

PROGRAMS FOR DEFENSIBLE SPACE & HOME HARDENING

CAL FIRE and Fire Safe Marin will highlight programs and resources to support action. After presentations, we will pause for Q&A.

04

CONCLUSION

Review upcoming sessions and review Resource Guides.

Today's Speakers

STEPHEN QUARLES, Ph.D.

UC Cooperative Extension
Advisor Emeritus & Chief Scientist
for Wildfire and Durability,
IBHS (retired)



*What is home
hardening and
science behind why it
works.*

YANA VALACHOVIC

County Director, Forest Advisor
for the UC Cooperative
Extension in Humboldt and Del
Norte Counties



*What is defensible
space and science
behind why it works.*

STEVEN HAWKS

Staff Chief,
CAL FIRE Wildfire Planning and
Engineering Division



*Overview of CAL FIRE
resources, programs and
upcoming initiatives*

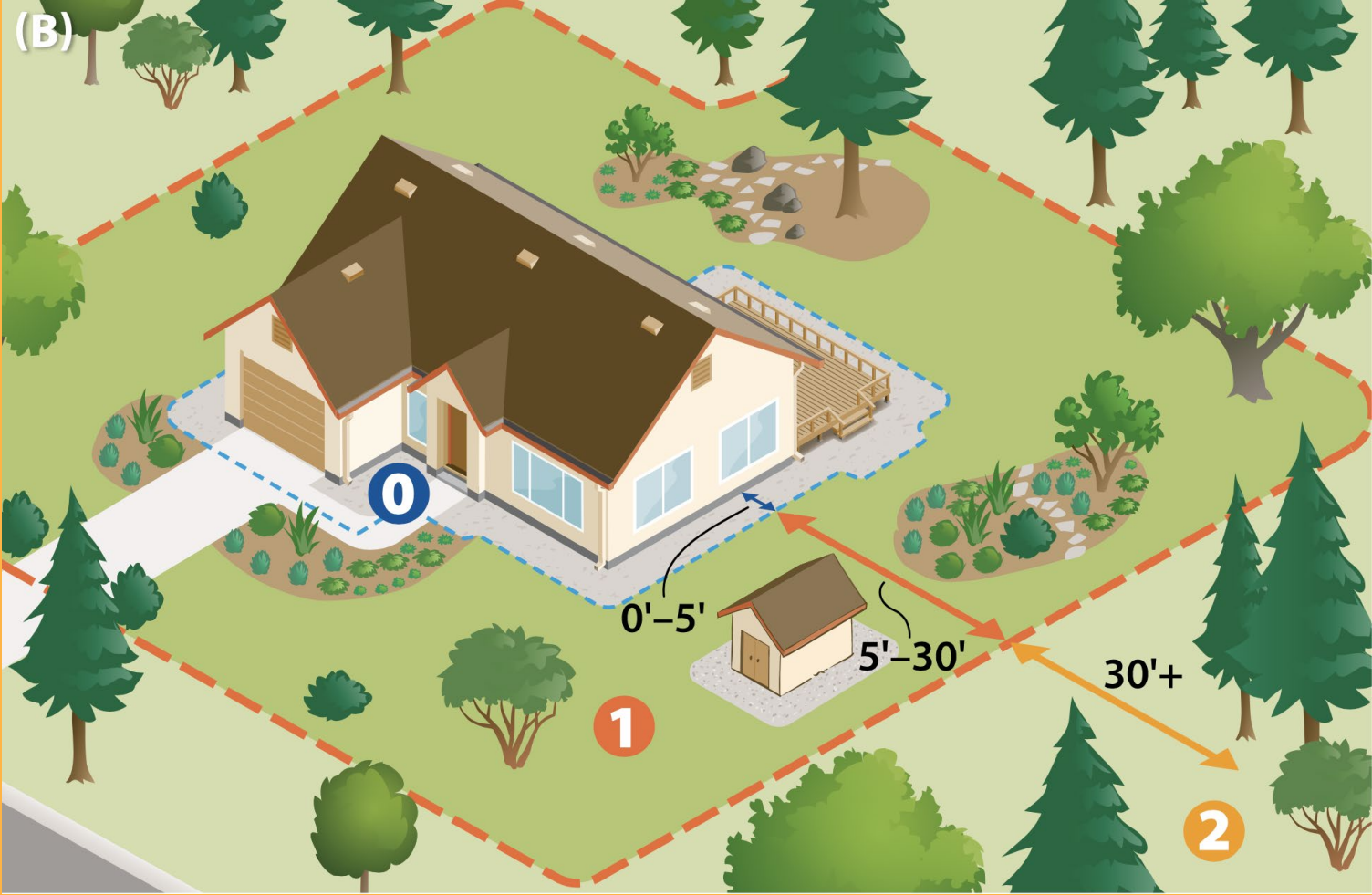
RICH SHORTALL

Executive Coordinator,
Fire Safe Marin



*Overview of Fire Safe
Marin resources for
home hardening and
defensible space.*

Speaker Introductions





*What is home hardening
and science behind why it
works.*

STEPHEN QUARLES, Ph.D.

University of California Cooperative Extension Advisor Emeritus and Chief Scientist for Wildfire and Durability, Insurance Institute for Business & Home Safety (retired)

- Steve served 26 years with the University of California, and 8 years as Chief Scientist for Wildfire and Durability with the Institute for Business & Home Safety (IBHS).
- His research and outreach focus on wildfire protection for residential and light commercial buildings and improving the moisture-related durability and resilience of buildings following hurricane/high-wind events.
- Steve joined the FIRESafe MARIN Board of Directors in 2019.
- Steve earned a Bachelor's degree in Wood Science from Virginia Tech, and a Master's and a Doctorate degrees in Wood Science from the University of Minnesota.

Living in Wildfire-prone Areas: Home Hardening Focus

Presented at the
ABAG Wildfire Series

October 14, 2021

Steve Quarles

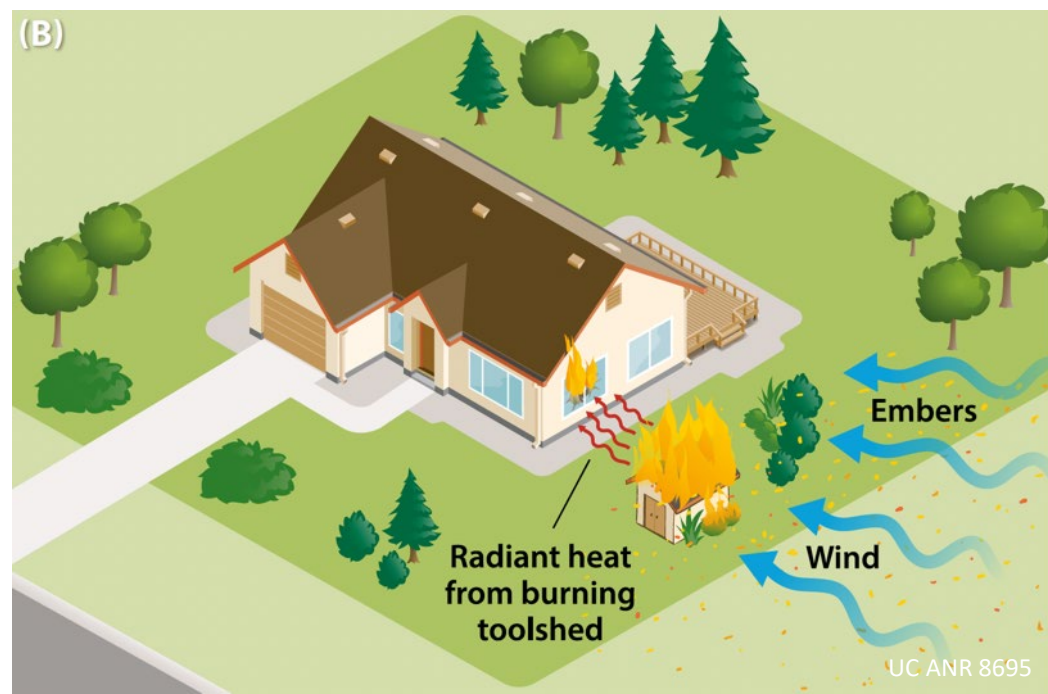
UCCE Advisor emeritus

IBHS Chief Scientist for Wildfire and Durability, Retired



Agenda:

- Expand on information provided by Dan Gorham @ IBHS
- How to think about home hardening (i.e, reducing the vulnerability of homes and buildings to wildfire)



Home Survival: A Coupled Approach



- Home: Construction materials and design features
- Vegetation and other combustibles on the property: Selection, Location and Maintenance

Importance of Wind-blown Embers



Radiant Heat Exposure



Tubbs Fire – Coffey Park



©Insurance Institute for Business & Home Safety

Materials Versus Details – Ember Exposure

“... the resistance to (wild)fire is determined more by the details of construction than by the materials used in the walls.”

—G.J. Barrow, after the 1944 Beaumaris Fire in Australia



© Insurance Institute for Business & Home Safety

Zone 0 - 0-5 ft &
under the
footprint of any
attached deck



©Insurance Institute for Business & Home Safety



©Insurance Institute for Business &



Stephen Quarles

Vertical Separation



Stephen Quarles

Home-Hardening Checklist

Defensible Space

- Noncombustible Zone (Zone 0) | 0–5 feet around the home
- Lean, Clean and Green (Zone 1) | 5–30 feet around the home
- Reduced Fuel Zone (Zone 2) | 30–100 feet around the home

Your Home

ROOF

- Replace roof with a Class A roof covering or roof assembly
- Keep roof clear of debris and install metal flashing at roof-to-wall intersections
- Install a gutter cover device
- Clear debris around skylights

EXTERIOR WALL

- Enclose open-eaves
- Make sure to have a 6-inch noncombustible zone between the siding and the ground
- Ensure windows are multi-pane and install screens

VENTS

- Cover all vents with 1/8 inch mesh screening
- Inspect vents regularly to check for tears or other damage

ATTACHMENTS

- Install metal flashing between the deck ledger board and joists
- If fence is combustible, replace the 5ft closest to the home with a noncombustible option
- Make sure garages are well sealed

Which Scenario Describes Your Home?

PRIORITIZE ACTIONS ACCORDINGLY

It is helpful to think about the location of your home on your property, distance to neighboring buildings, and defensible space when deciding how to prioritize your home-hardening efforts.

Steep Slopes



When homes are located on steep slopes, decks commonly overhang the slope below and this downslope area is often heavily vegetated. You should prioritize defensible space actions so that flames from burning vegetation cannot reach the underside of your deck and ignite your home. Consider installing a noncombustible retaining wall downslope and parallel to the deck.

PRIORITY ACTION ITEMS for the downslope side of your home:

- Defensible space
- Decks
- Windows
- Eaves

Dense Neighborhoods



Dense neighborhoods with homes close together have an increased risk of building-to-building ignition because of the radiated heat and potential flames that are generated if a neighbor's home burns. You should prioritize actions to reduce the possibility of homes igniting each other. Intensify your defensible space by thinning trees and shrubs between homes.

PRIORITY ACTION ITEMS for sides of your home that are within 30 feet of a neighbor's home:

- Defensible space
- Windows
- Siding
- Vents
- Fences

Large Parcel Lots



When homes are on large parcel lots and neighboring homes are far apart, vegetation can be a large factor in home ignition. You should prioritize creating and maintaining defensible space, including the near-home noncombustible zone, and home-hardening techniques to reduce vulnerability from embers.

PRIORITY ACTION ITEMS for your home and surrounding property:

- Defensible space
- All ember-resistant home-hardening components

By Component Approach

- ✓ Roof
- ✓ Vents
- ✓ Exterior Wall
- ✓ Attachments
- ✓ Fences



SECTION 707A - EXTERIOR COVERING **Siding**

707A.3 Exterior walls. The exterior wall covering or wall assembly shall comply with one of the following requirements:

1. Noncombustible material
2. Ignition-resistant material
3. Sawn lumber or glue laminated wood with the smallest minimum nominal dimension of 4 inches (102mm). Sawn or glue-laminated planks splined, tongue-and-grove, or set close together and well spiked.
4. Log wall construction assembly
5. Wall assemblies that have been tested in accordance with the test procedures for a 10-minute direct flame contact exposure test set forth in ASTM E2707 with the conditions of acceptance shown in Section 707A.3.1.



©Insurance Institute for Business & Home Safety

Vertical and Lateral Flame Spread

707A.4 Open roof eaves.

Exceptions: The following materials do not require protection:

1. Solid wood rafter tails on the exposed underside of open roof eaves having a minimum nominal dimension of 2 inch (50.8 mm)



Stephen Quarles

ASTM E108 – Fire Rating for Roof Coverings



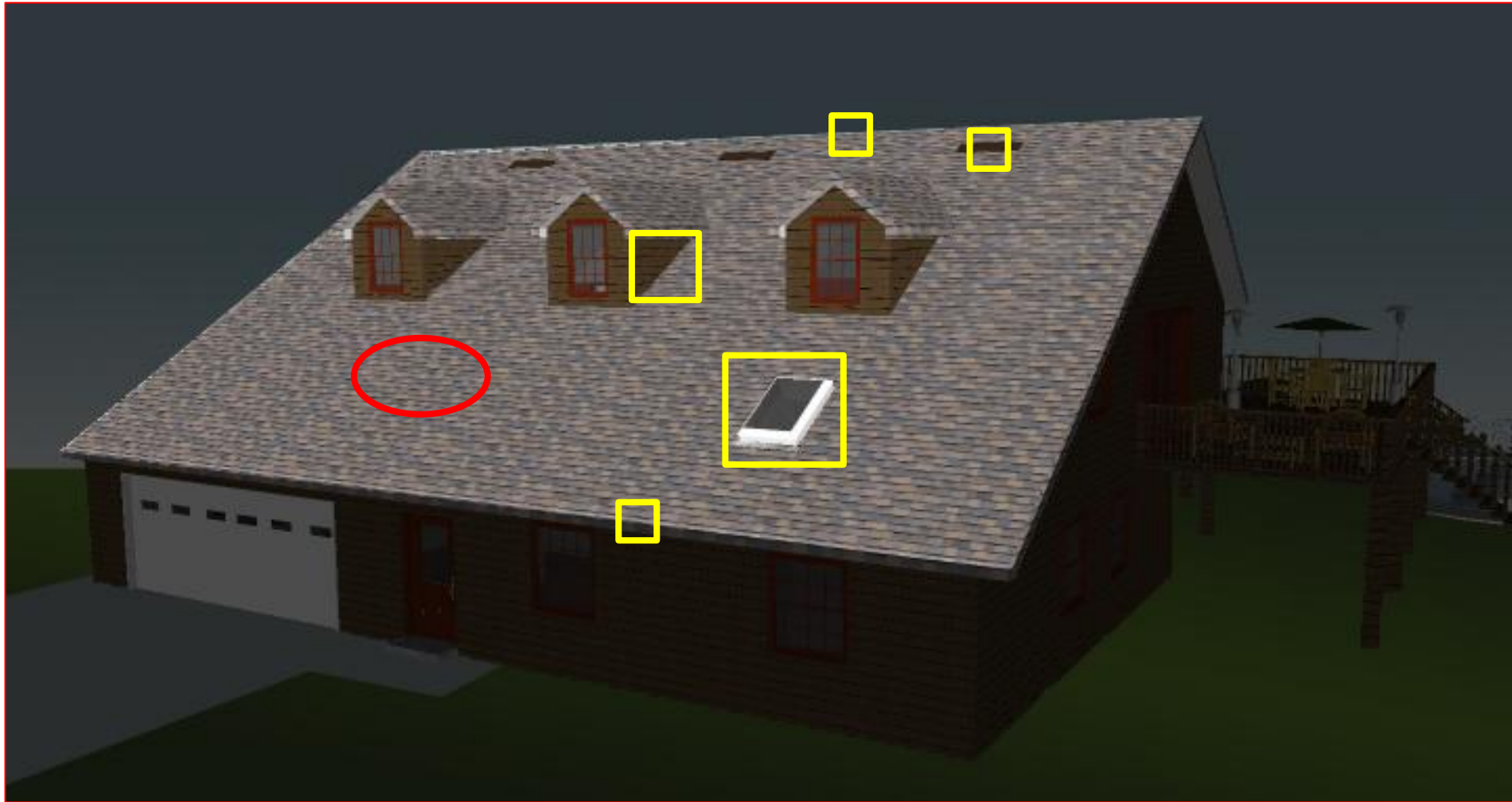
Damage versus Failure



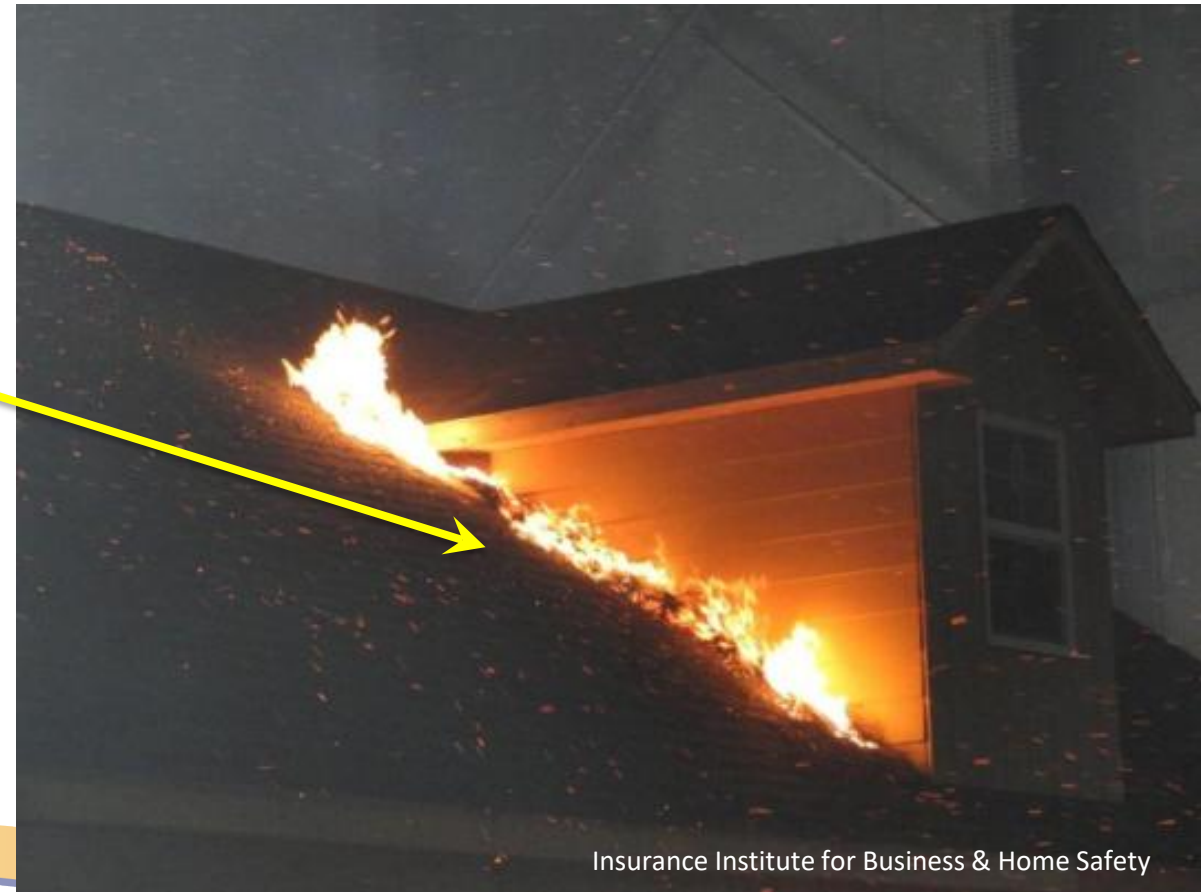
Insurance Institute for Business & Home Safety



Roof Covering & Vulnerabilities



Complex Roof



Edge of Roof Vulnerabilities



Summary

- Importance of embers in building ignitions
 - Direct ignition
 - Indirect ignition
- Installation details important when ember exposure is dominant threat. A building threatened by wildfire will have to resist this exposure.
- Material important when extended radiant heat exposure is likely. Important to avoid flame contact exposure.
- A coupled approach is critical to minimize likelihood of building ignition.



Thank you for your attention!

Steve Quarles

steve.quarles@berkeley.edu



*What is defensible space
and the science behind
why it works.*

YANA VALACHOVIC

UC Cooperative Extension in Humboldt and Del Norte Counties

- Registered professional forester and forest scientist.
- Currently the co-lead of the Northern California region of the California Fire Science Consortium and is a founding steering committee member of the Northern California Prescribed Fire Council.
- Co-authored papers on fire behavior in coastal California forests and the intersection of fire performance in home and landscape design.
- Masters Degree in Forest Science from Oregon State University.

Creating and maintaining defensible space: A review of changing codes, guidance, and science

ABAG Wildfire Series

Yana Valachovic, UC Cooperative Extension Forest Advisor

Stephen Quarles, UC Cooperative Extension Advisor (emeritus); IBHS, Chief Scientist for Wildfire and Durability (retired)

October 2021



UNIVERSITY OF CALIFORNIA
Agriculture and Natural Resources

Cooperative Extension

How do we shift the paradigm in California to achieve adaptation?

- In the last ten years, over **43,000 structures** and **173 lives** have been lost to wildfire.
- **Economic losses** associated with California's 2018 fire season were estimated at \$148.5 billion dollars, including \$27.7 billion in capital losses, \$32.2 billion in health costs, and \$88.6 billion in indirect losses.
- The majority of economic losses were indirect and affected industries and sectors in locations distant from the fires ([Wang et al. 2020](#)).

The 2021 Hopkins Fire took the house of an elderly homeowner who was receiving D Space assistance from the Mendo FSC.



California has been a leader in fire preparedness

- 1965 – California enacts **PRC 4291**. Vegetation modification requirements around buildings in forest, brush and grass covered areas.
- 1982 – California enacts PRC 4201 – 4204. **State Responsibility Areas** (SRA) classified into Fire Hazard Severity Zone.
- 1991- State establishes **Fire Safe Regulations** PRC 4290
- 1992 – Following Oakland-Berkeley Hills fire, passage of Bates Bill (AB 337). **Local Responsibility Areas** (LRA) assessed based on accumulated fuels, topography, fire weather, building density.
- 2005- Defensible space expanded to 100 feet.
- 2008- Wildland Urban Interface Building Standards (WUIBS) **Chapter 7A** – California Building Code (Office of the Fire Marshal <https://osfm.fire.ca.gov/divisions/fire-engineering-and-investigations/building-materials-listing/bml-search-building-materials-listing/>)
- 2018- **Fire Safe Regulations** (SB 901) update
- 2020- Defensible Space (**Zone Zero**) in response to ember awareness PRC 4291 (AB 3074)
- 2021- Board of Forestry and Fire Protection updating the **Fire Safe Regulations** (in progress)

Home hardening priorities

Highest Priorities

- ✓ Roof / Edge
- ✓ Vents
- ✓ Vegetation/ D. Space

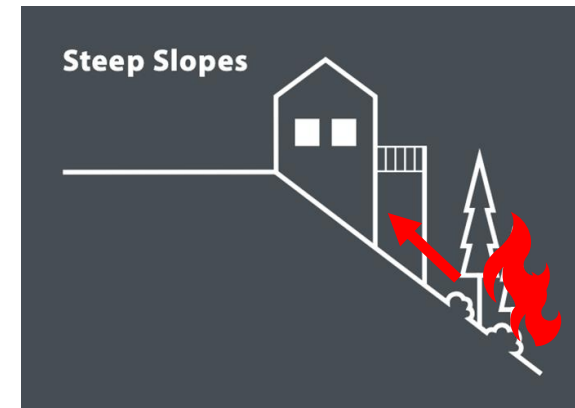
Embers ignite near-home vegetation and debris.

Medium Priorities, but

- ✓ Decks
- ✓ Windows
- ✓ Siding

Ember, radiant, and flame contact from near-home vegetation, other structures, or wildfire

Key Considerations

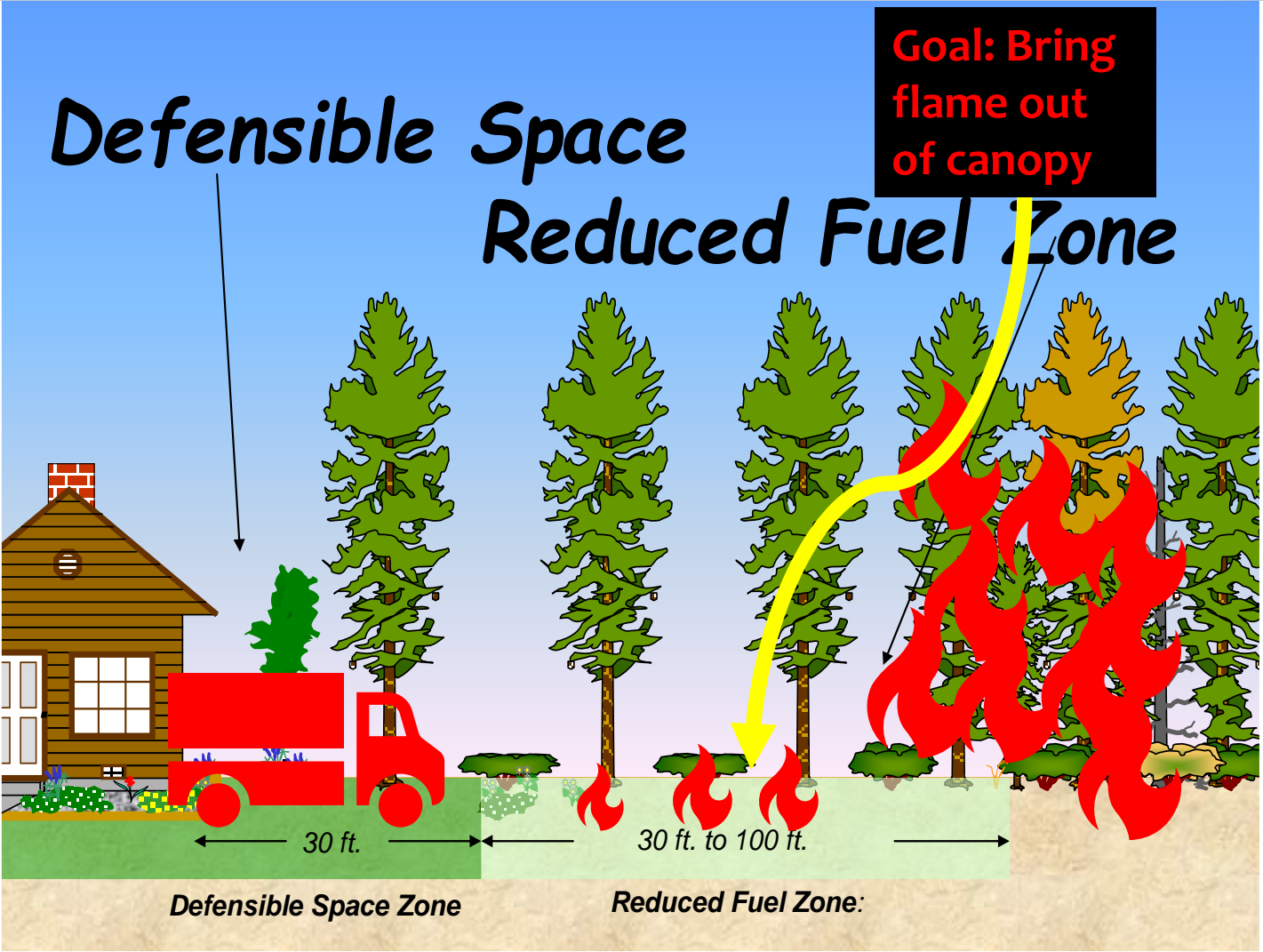


Deck vulnerability increases.



All actions are important because of radiant heat issues.

Defensible space guidance has been about creating a defendable space



What type of fire should we prepare for?

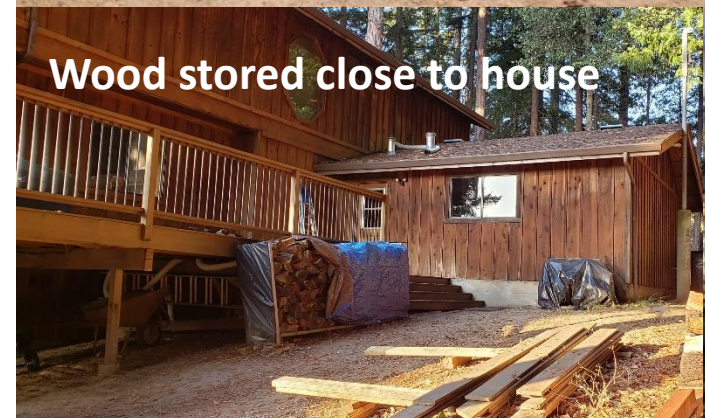
Timescale of attack:
impact of the fire front



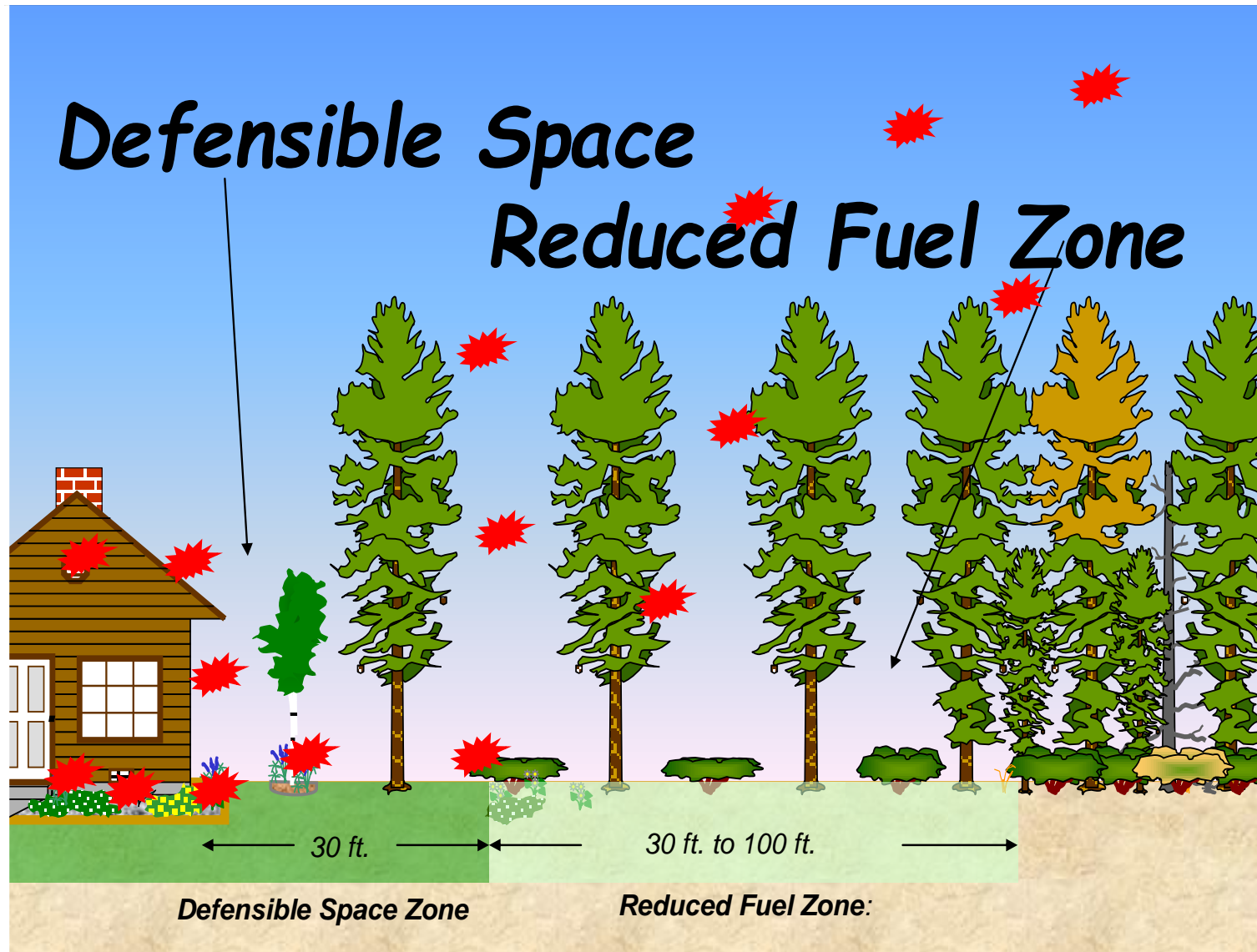
- ✓ Direct flame contact
- ✓ Ember exposure
- ✓ Radiant heat
- ✓ Average fire conditions
- ✓ Extreme fire conditions

Fuel is... anything that will burn

- Vegetation (trees, shrubs, grass)
- Wood mulch
- Lawn furniture and cushions
- Fencing, decks, arbors, trellises, planter boxes
- The house!

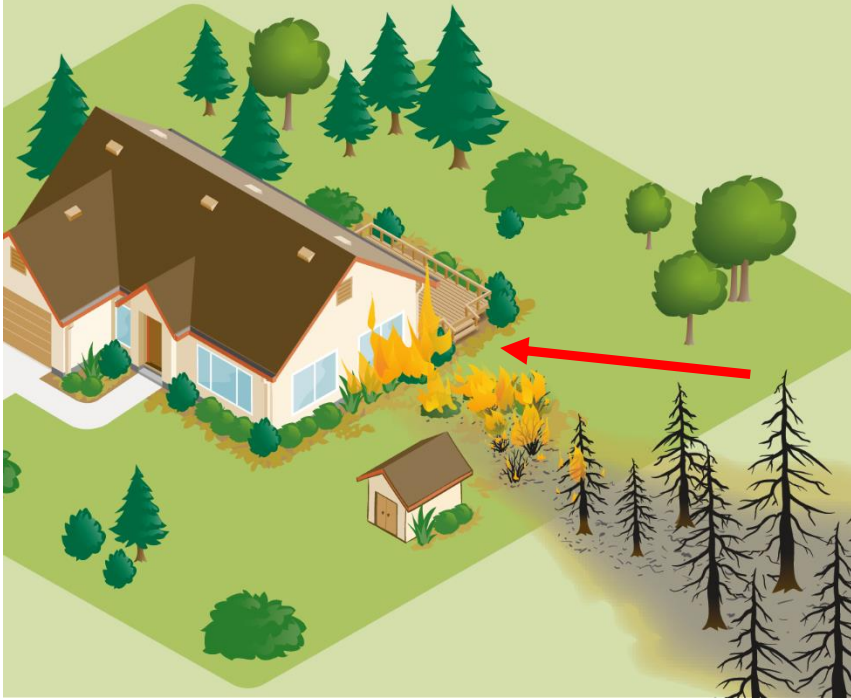


Ember defense requires landscape modifications and home hardening

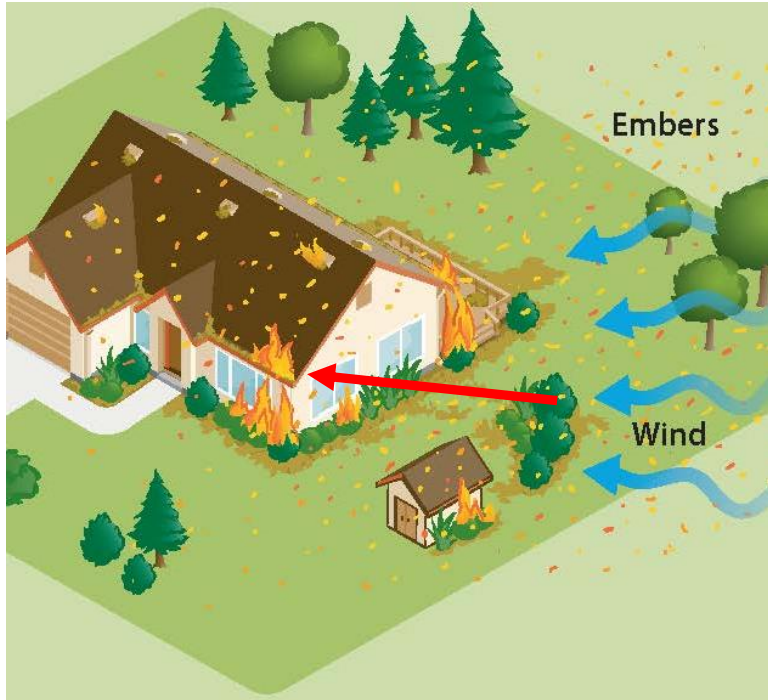


Three types of fire exposures

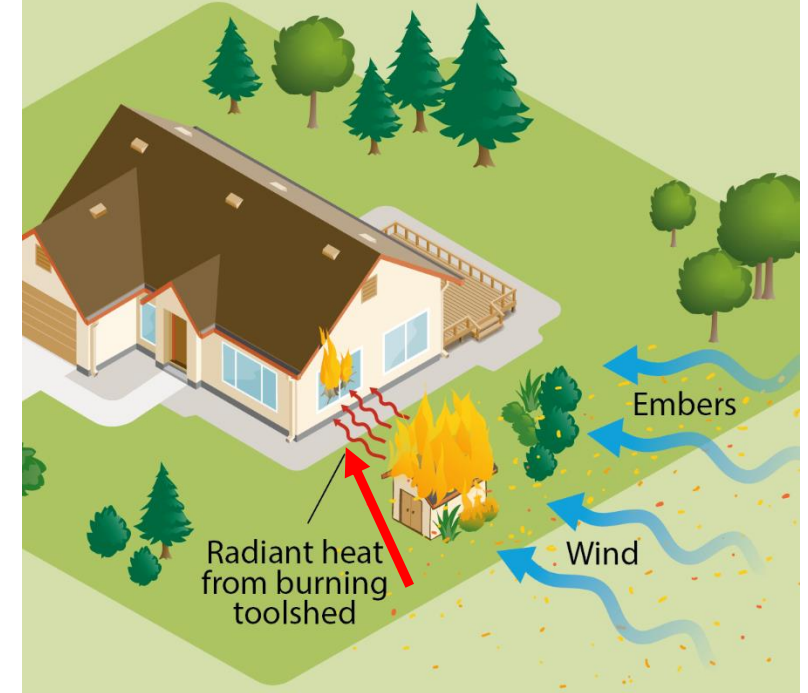
Direct flame contact



Embers



Radiant heat

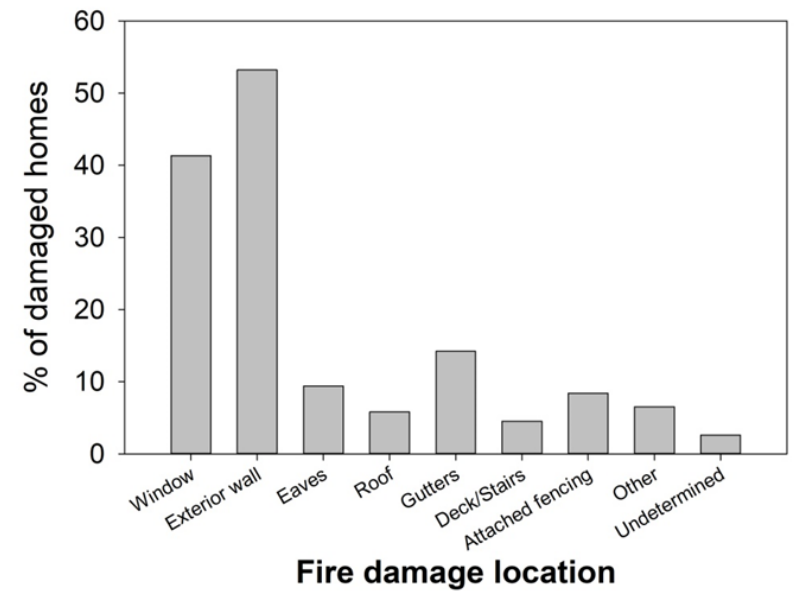
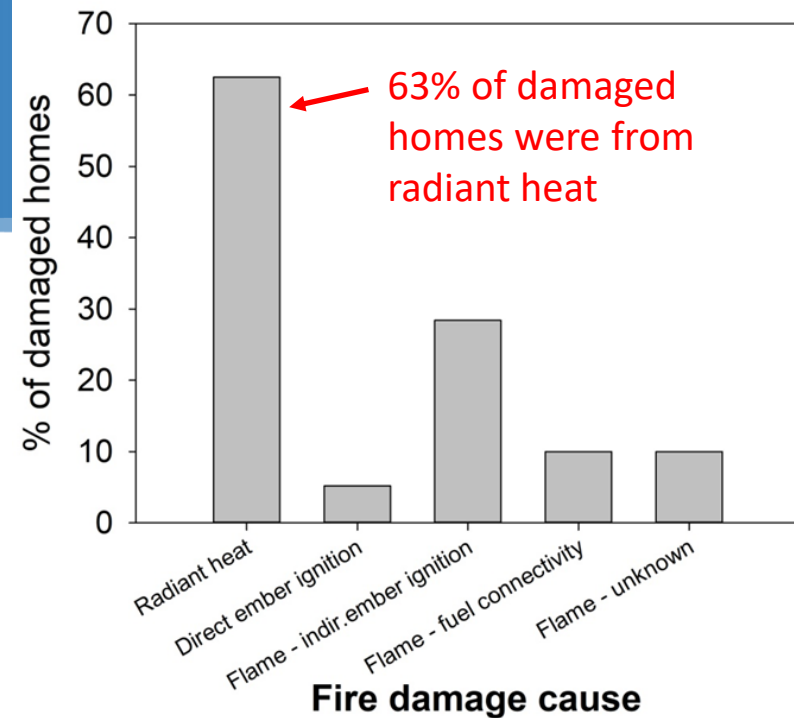


- Educational messages have mostly focused on how to reduce direct flame contact through defensible space.
- **Preparing for embers and radiant heat exposures takes a different approach.**

Paradise- radiant heat was a big factor for damaged homes

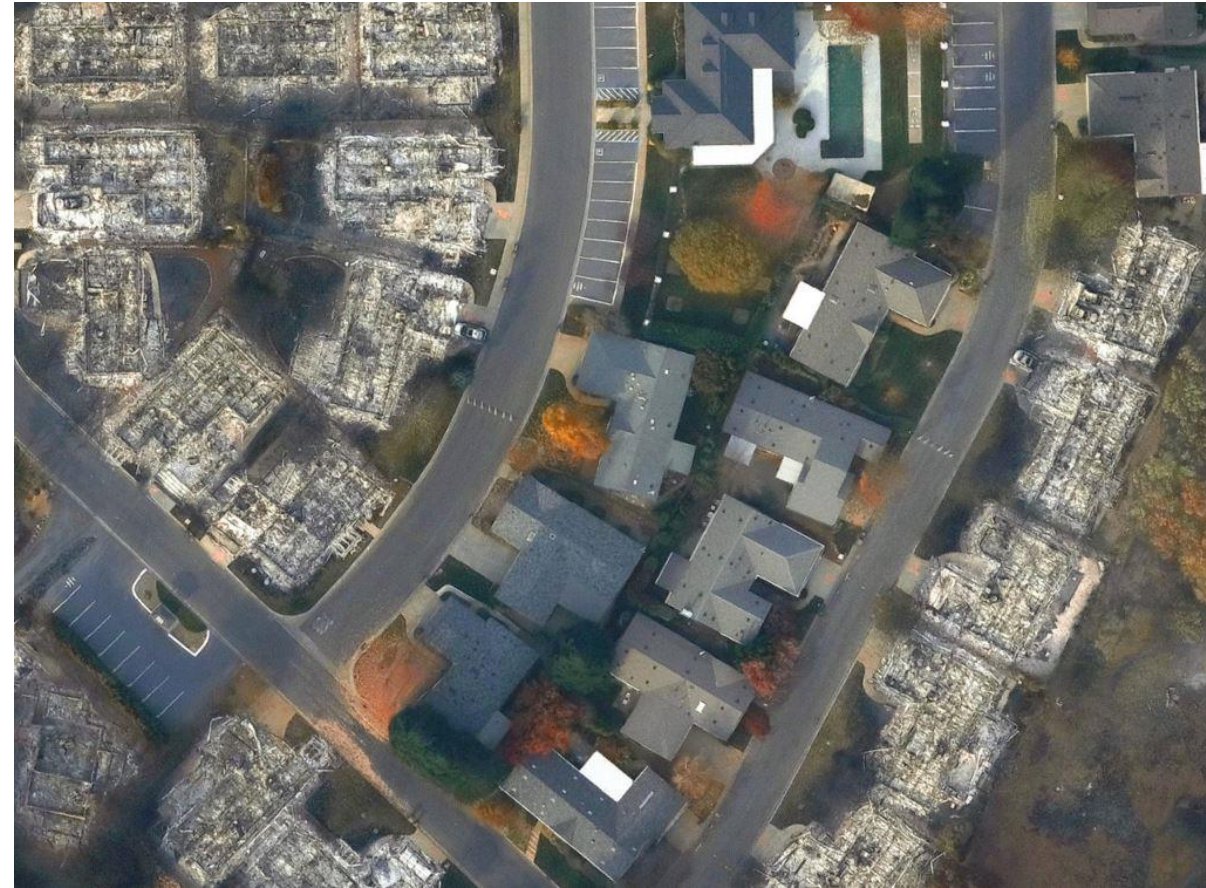


Photo courtesy Zeke Lunder
Data source: CAL FIRE DINS data



Neighborhood Effect:

73% of homes were ≤ 18 m of a destroyed structure



Photos courtesy of WaldoAir
www.waldoair.com

Housing arrangement and vegetation factors associated with single-family home survival in the 2018 Camp Fire, California by Knapp, Valachovic, Quarles and Nels G. Johnson is published in the journal *Fire Ecology* at <https://fireecology.springeropen.com/articles/10.1186/s42408-021-00117-0>.



UNIVERSITY OF CALIFORNIA
Agriculture and Natural Resources



2006 Guidance

Strengths: Reduced fuel, no fuel ladders, safe place for a fire crew

Weaknesses: Vegetation next to house vulnerable to embers likely leading to spot fires touching the house

(photo: UC Master Gardeners)

OUTSIDE



1 Design/Construction

See the Wildfire Urban Interface Guidelines at fire.ca.gov

- The ignition resistant construction effective January 1, 2006, is required on windows, doors, vents, decks, exterior walls, exterior windows.
- Seal the underside of eaves, ledges and other ground decks with fire resistant materials.
- Show your 100 foot Defensible Space on plot plan.
- Build your home away from ridge tops, crevices and areas between high points of a ridge.
- Consider installing residential sprinklers.
- Make sure that electric service lines, fuel lines and circuit breaker panels are installed and maintained per code.
- Contact qualified individuals to perform electrical maintenance and repairs.

2 Access

- Make sure that your street name sign is clearly posted at each street intersection.
- Post your home address so it is easily visible from the street, especially at night.
- Address numbers should be at least 2 inches tall and on a contrasting background.
- Mow at least once each season from your neighborhood.
- Clear flammable vegetation at least 10 feet from roads and five feet from driveways.
- Cut back overhanging tree branches above access roads.
- Construct roads that allow two-way traffic.
- Make sure dead end roads, and long drive ways have turn around areas wide enough for emergency vehicles.
- Design bridges to carry heavy emergency vehicles.
- Post clear road signs to show traffic restrictions such as dead end roads, and weight and height limitations.

3 Roof

- Install a fire resistant roof. Contact your local fire department for current roofing requirements.
- Remove dead leaves and needles from your roof and gutters.
- Remove dead branches overhanging your roof and keep branches 10 feet from your chimney.
- Cover your chimney outlet and storage with a noncombustible screen of 1/2 inch or smaller mesh.

4 Landscape

- Create a Defensible Space of 100 feet around your home. It is required by law.
- Create a "LEAN, CLEAN and GREEN EDGE" by removing all flammable vegetation within 20 feet immediately surrounding your home.
- Then create a "REDUCED FUEL ZONE" in the remaining 70 feet or to your property line. You have two options in this area:
 - Create horizontal and vertical spacing between plants. The amount of space will depend on how steep your property is and the size of your plants.
 - Large trees do not have to be removed as long as all of the plants beneath them are removed.
- Remove lower tree branches at least six feet from the ground.
- Landscape with fire resistant plants.
- Maintain all plants with regular water, and keep dead branches, leaves and needles removed.
- When clearing vegetation, use care when operating equipment such as lawnmowers. One small spark may start a fire; a string trimmer is much safer.

5 Yard

- Stack woodpiles at least 30 feet from all structures and remove vegetation within 10 feet of woodpiles.
- Store ground Liquefied Petroleum Gas (LPG) gas cylinders (200 or less cubic gallons) shall be located a minimum of 10 feet with respect to buildings, public ways, and hot lines of adjoining property that can be built upon. - CFC 3904.2
- Remove all stacks of construction materials, pine needles, leaves and other debris from your yard.
- Contact your local fire department to see if debris burning is allowed in your area; if so, obtain a burning permit and follow all local air quality restrictions.

6 Emergency Water Supply

- Maintain an emergency water supply that meets fire department standards through one of the following:
 - a community water/hydrant system
 - a supplementary emergency storage tank with supplies
 - a minimum storage supply of 2,000 gallons on your property - like a pond or pool.
- Clearly mark all emergency water sources.
- Create easy daylighted access to your closest emergency water source.
- If your water comes from a well, consider an emergency generator to operate the pump during a power failure.

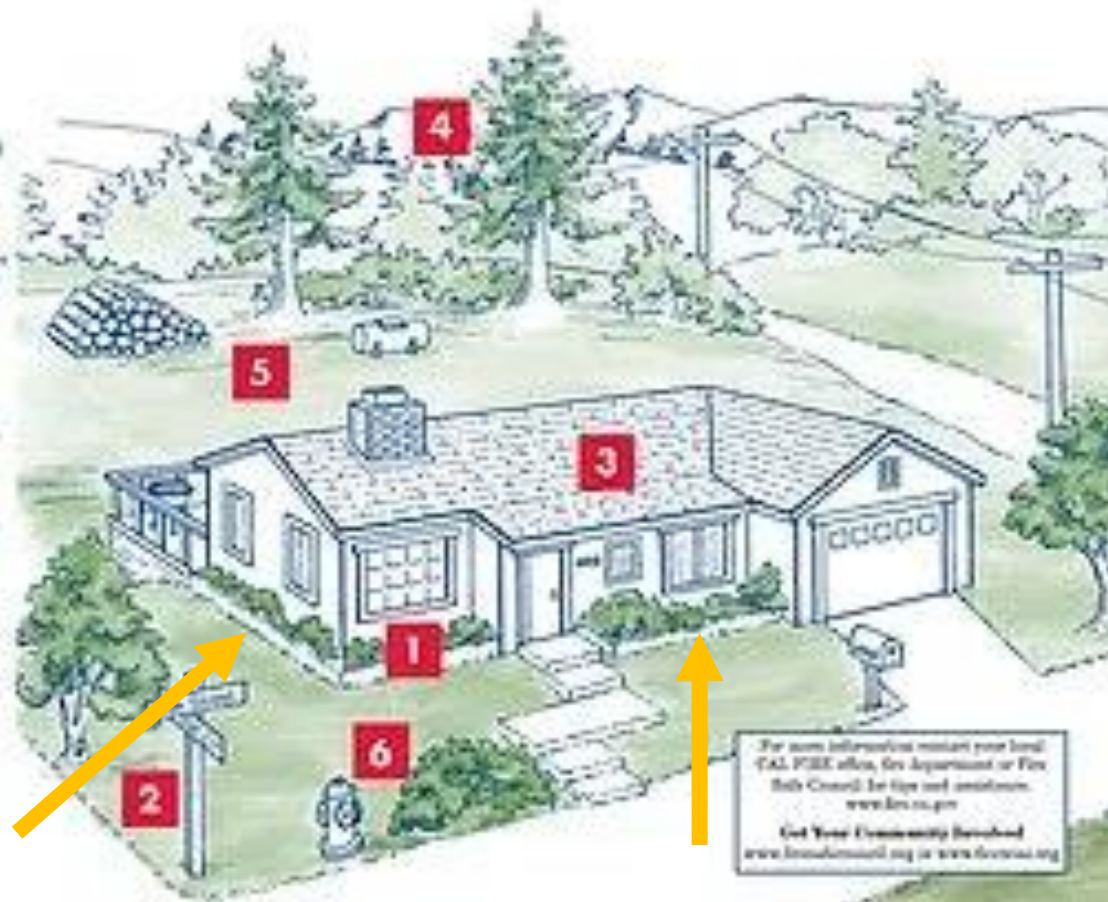
California Department of Forestry and Fire Protection

Homeowners Checklist



www.fire.ca.gov

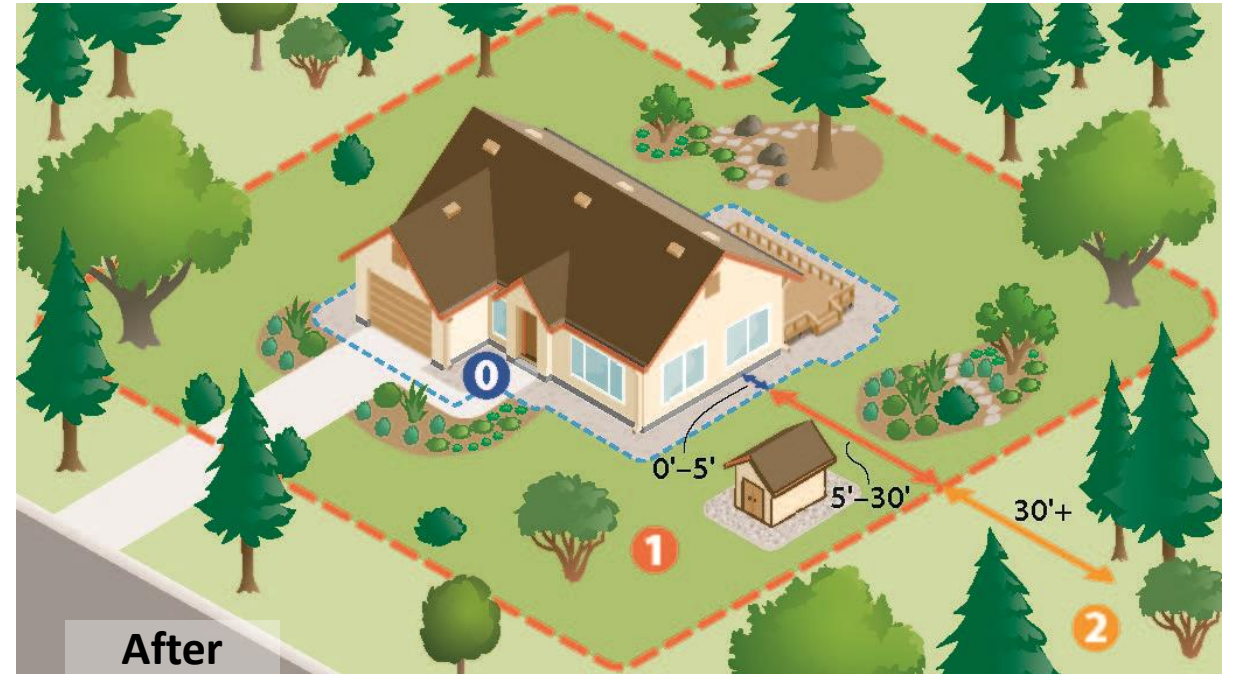
How To Make Your Home Fire Safe



For more information, contact your local CAL FIRE office, fire department or Fire Safe Council for tips and assistance. www.fire.ca.gov

Get Your Community Involved www.firecommunity.org or www.fire.ca.gov

Defensible space: Three Zones (work from the house out)

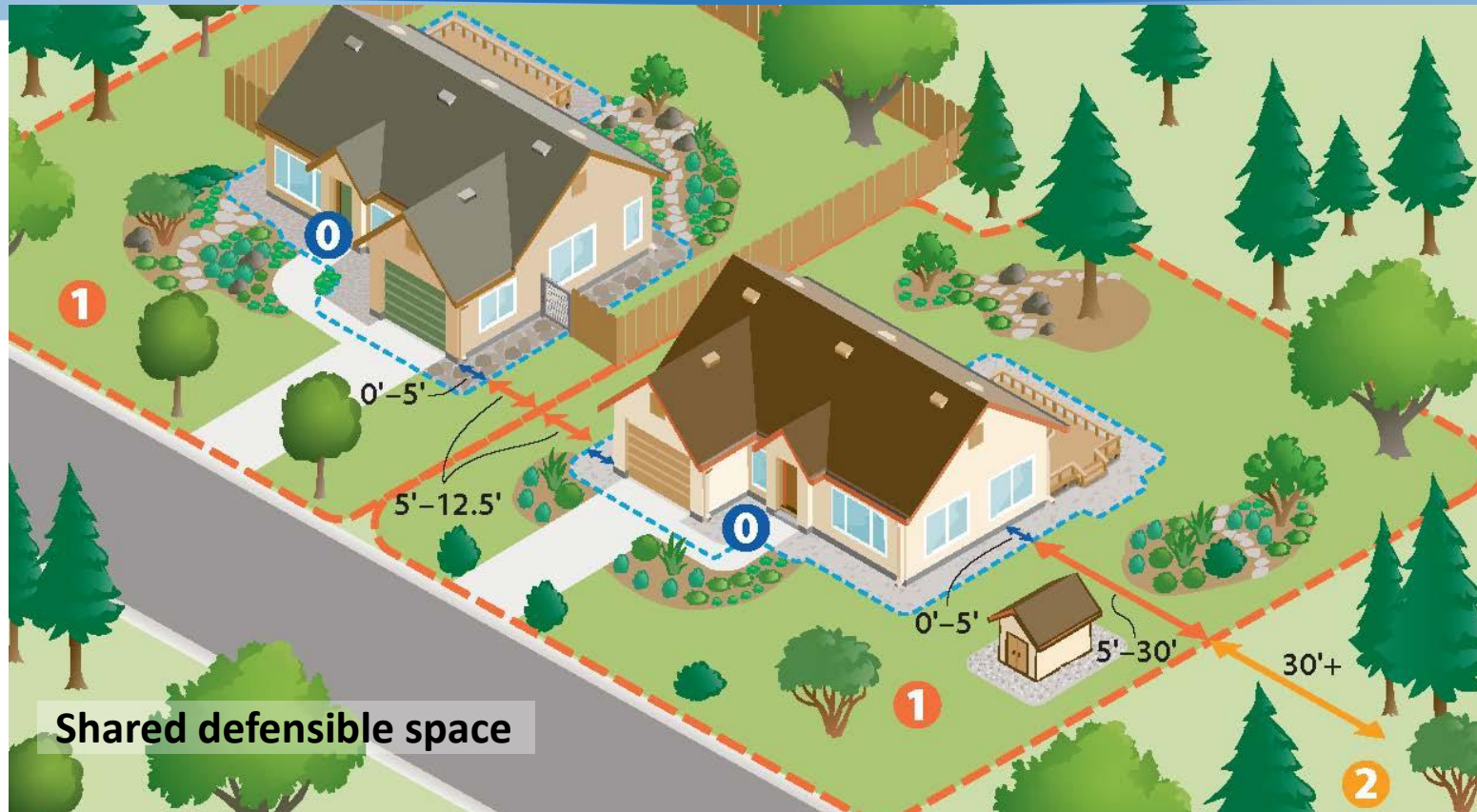


0= Noncombustible Zone 0-5' from the house and any attached deck + 6" vertical clearance around the house

1= Intermediate Zone 5-30'

2= Extended Zone 30-100'+

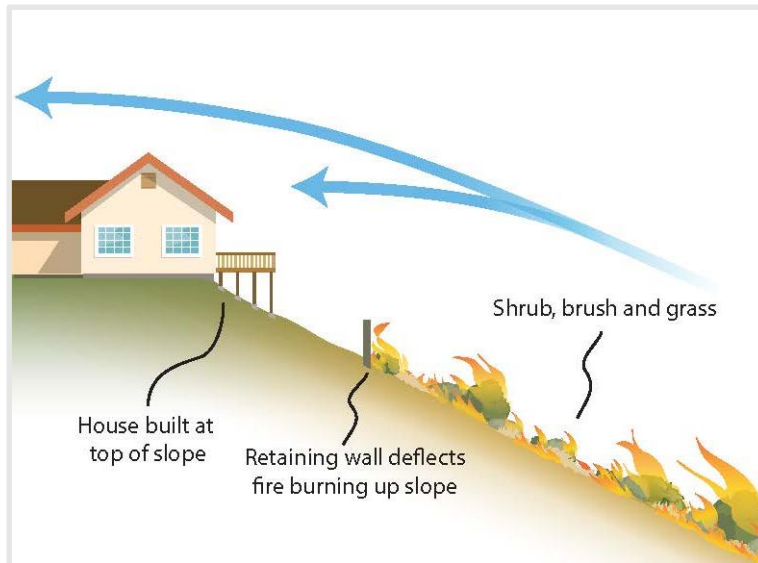
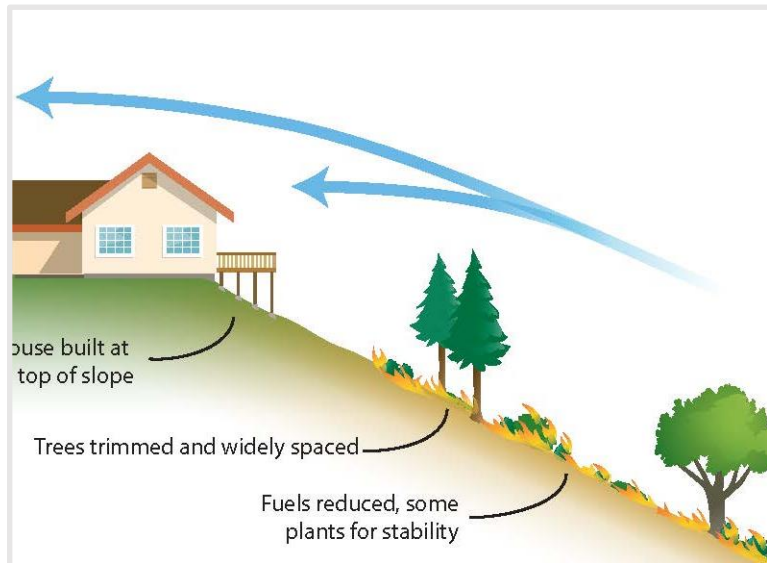
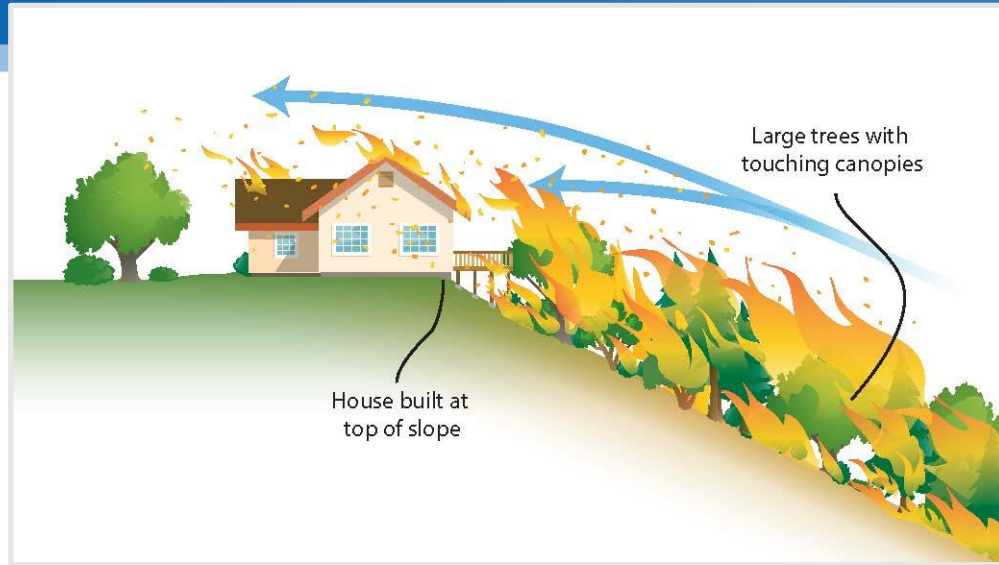
Defensible space: Three Zones (work from the house out)



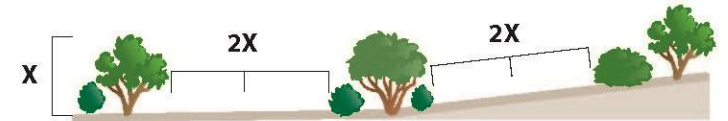
0= Noncombustible Zone 0-5' from the house and any attached deck + 6" vertical clearance around the house

1= Intermediate Zone 5-30' 2= Extended Zone 30-100'+

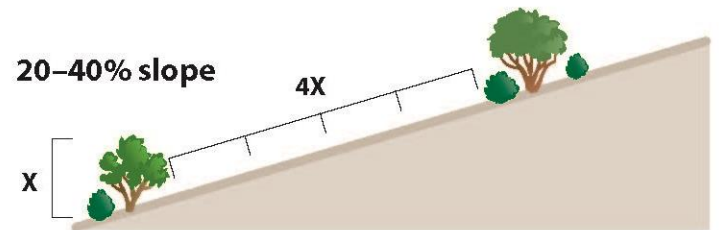
Fire and steep slopes



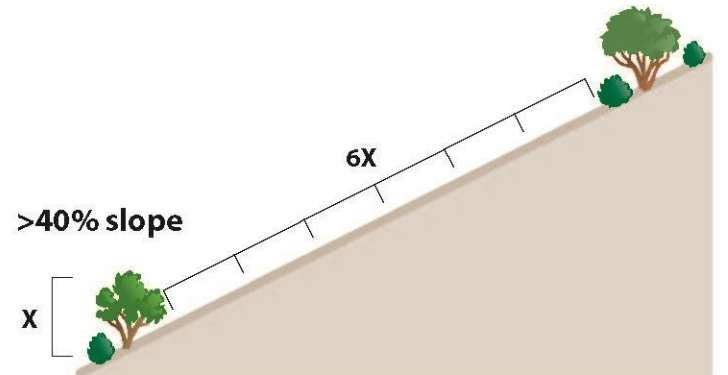
0-20% slope



20-40% slope



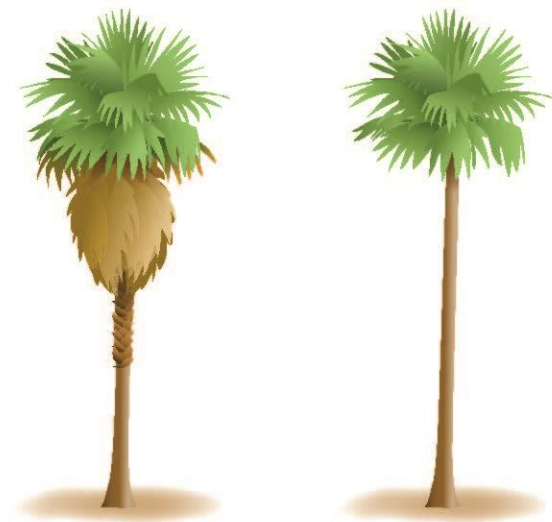
>40% slope



Plant placement is more important than plant type

- ✓ All plants can burn regardless of how they are marketed
- ✓ **Fire safe landscaping requires maintenance** (pruning, irrigation, clean-up)
- ✓ Select low growing, open structured, less resinous, higher moisture content plants
- ✓ Native and drought tolerant can be options, if maintained well
- ✓ **More info:** Research Literature Review of Plant Flammability

Testing, Fire-Resistant Plant Lists and Relevance of a Plant Flammability Key for Ornamental Landscape Plants in the Western States (Bethke, et al 2016 UCCE San Diego)



Paradigm shifting

- ✓ Home loss from wildfire is predictable until we implement changes; **there is reason for hope!**
- ✓ We don't fight earthquakes, tornados, or hurricanes. We **adapt** and build smarter.
- ✓ The majority of homes are ignited from **embers**
- ✓ We need **unified messaging and alignment**
- ✓ New WUI construction codes are helping
- ✓ Need to **incentivize** upgrades to existing homes for **ember** and **radiant heat** exposures
- ✓ Need to incentivize implementing a **5-foot noncombustible defensible space zone (Zone 0)**



What does a Paradise (2018 Camp Fire) survivor look like?



2

3

4

1

- 1= vertical and horizontal noncombustible zone
- 2= ember and flame-resistant vent
- 3= evidence of ember damage on doormat
- 4= Class A roof

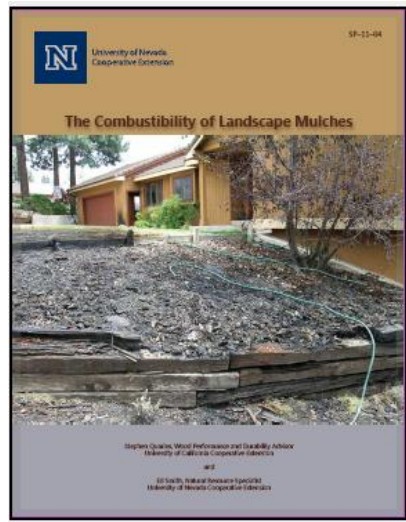
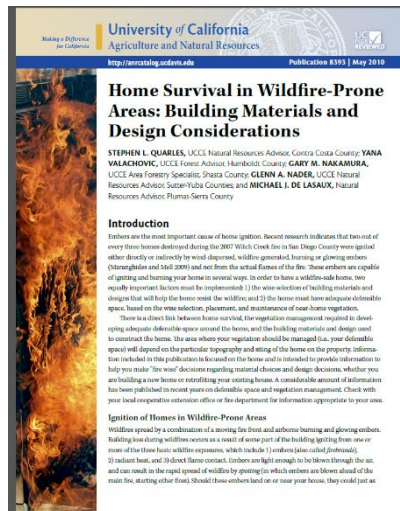
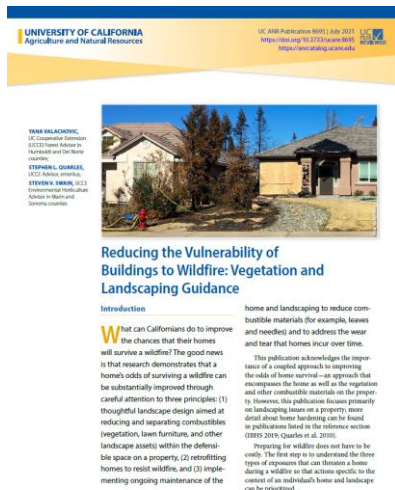
Photos: Y . Valachovic

Resources

- <https://ucanr.edu/sites/fire/>
- <https://disastersafety.org/wildfire/>
- <https://www.nfpa.org/Public-Education/Fire-causes-and-risks/Wildfire/Firewise-USA/Firewise-USA-Resources/Research-Fact-Sheet-Series>
- <https://firesafemendocino.org/homehardening/>
- http://www.readyforwildfire.org/wp-content/uploads/Wildfire_Home_Retrofit_Guide-1.26.21.pdf
- <https://www.firesafemarin.org/>

CA Building Code Chapter 7A WUI construction

- http://www.fire.ca.gov/fire_prevention/fire_prevention_wildland_codes
- <http://osfm.fire.ca.gov/codedevelopment/wildfireprotectionbuildingconstruction>
- <https://osfm.fire.ca.gov/divisions/fire-engineering-and-investigations/building-materials-listing/bml-search-building-materials-listing/>



Questions & Answers

- ✓ Use the **Chat** feature to share specific questions.
- ✓ Use the **Raise Hand** feature to verbally share ideas from your community or raise more difficult questions.

Be considerate of others - keep your comments and questions focused.

WILDFIRE/HOUSING SERIES


Resource Guides

Completed

- ✓ 1 Wildfires - Research, Science & Key Organizations
- ✓ 2 Marin Wildfire Prevention Authority (MWPA)
- ✓ 3 Home Hardening and Defensible Space Resources for Residents
- ✓ 4 Fire Safe Marin's Collaborative Wildfire Public Education and Programs

Under development

- ❑ 5 Overview of SB 99 (2019) and AB 747 (2019)
- ❑ 6 Evacuation Modeling Approaches in the Bay Area



Technical Assistance
for Local Planning
HOUSING


RESOURCE GUIDE #1
Draft 9/29/2021

RESOURCE GUIDE #1
Wildfire – Research, Science & Key Organizations

A number of organizations provide key wildfire information for local governments to use to support their wildfire planning and programs. This guide is organized as a directory of key wildfire organizations, with links to specific materials that may be helpful for planning efforts. The guide includes four sections: (1) national wildfire organizations, (2) California wildfire organizations, (3) community-based wildfire organizations and (4) current key research documents.

SECTION 1: NATIONAL WILDFIRE ORGANIZATIONS


National Fire Protection Association (NFPA)
800.344.3555; www.nfpa.org




The National Fire Protection Association (NFPA) is a global self-funded nonprofit organization, established in 1896, devoted to eliminating death, injury, property and economic loss due to fire and related hazards. NFPA delivers information and knowledge through consensus codes and standards, research, training, education, outreach and advocacy. NFPA also is the sponsor and manager of the Firewise Communities Program (see *Community Wildfire Preparedness* later in this Guide).

- ✓ [Virtual Workshops](#) provide conference quality, free learning opportunities for wildfire stakeholders, by connecting them with leading researchers and practitioners in a live interactive format. Each session is an hour-long and features a wildfire related topic that closes with questions from participants.

Insurance Institute for Business & Home Safety
803.789.8000; www.ibhs.org/




IBHS is a team of scientists and risk communicators who deliver strategies to build safer and stronger homes and businesses. IBHS is an independent, nonprofit, scientific research and communications organization supported solely by property and casualty insurers and reinsurers that conduct business in the U.S. IBHS has a state-of-the-art research facility and is the only lab in the world that can test full-scale residential and commercial buildings in a controlled, repeatable fashion for highly realistic windstorms, hailstorms and wildfire ember storms. IBHS has extensive practical [risk research](#) on their site regarding wildfires and sponsors, DisasterSafety.org, which features projects to help home and business owners protect their property from damage caused by wildfire and other hazards.



IBHS Research Center

Headwaters Economics
406.599.7841; www.headwaterseconomics.org



Headwaters Economics (HE) is an independent, nonprofit research group that works to improve community development and land management decisions. Headwaters Economics informs community decision-making and identifies practical solutions by making complex data understandable, beautiful, and interactive, helping develop solutions to some of the most urgent and important issues that communities face. The organization works in partnership with USDA Forest Service, ISHS, and others.

- ✓ [Wildfire Risk to Communities](#): *Wildfire Risk to Communities* is a free, easy-to-use website with interactive maps, charts, and resources to help communities explore and reduce wildfire risk.

Association of Bay Area Governments

WORK GROUP: Wildfires – How to Preserve and Protect Housing

1



STEVEN HAWKS

CAL FIRE

- Served since 1989 with the California Department of Forestry and Fire Protection (CAL FIRE).
- Oversees CALFIRE's Land Use Planning, Wildfire Prevention Engineering, CalStats, Fire Plan, and Fire Prevention Grants programs.
- Bachelor of Science Degree in Forest Resource Management with a minor in Business Administration from Humboldt State University.

*Overview of CAL FIRE
resources for home
hardening and defensible
space.*



ABAG Wildfire Presentation

Defensible Space & Home Hardening CAL FIRE Programs

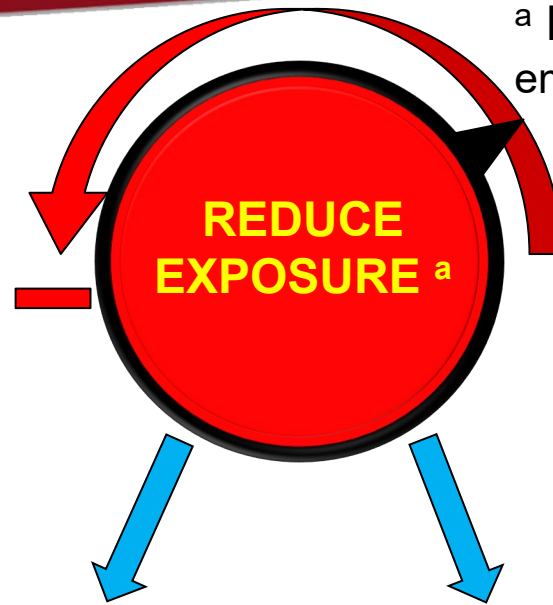
Steven Hawks
Staff Chief

Wildfire Planning and Engineering Division

Wildfire Mitigation Actions

- Land use planning
- Pre-fire planning
- Fuel modification
 - ✓ Remove/Reduce
 - ✓ Separate/Location
- New home construction
 - ✓ Fire resistant design
 - ✓ Noncombustible or ignition-resistant materials/assemblies
- Retrofitting existing structures

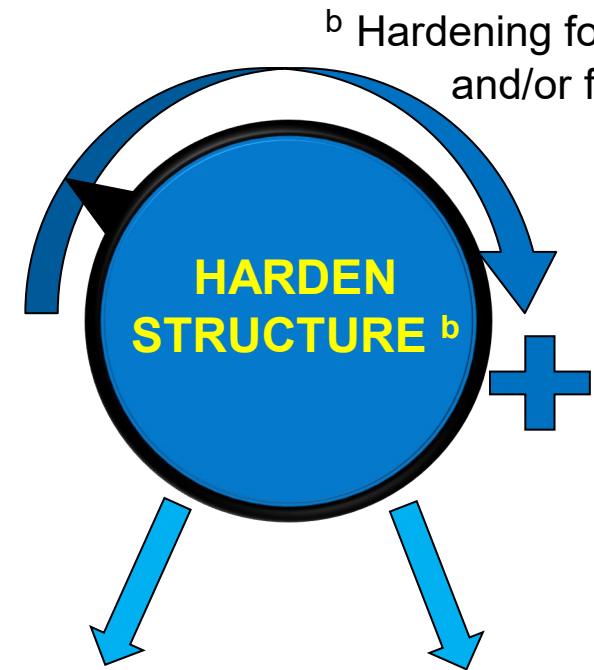
Hardening actions must be based on anticipated exposure



^a Reduce fire and/or ember exposure

Displace Fuels

Remove Fuels



^b Hardening for embers and/or fire

Fire Resistant Design

Ignition/Fire Spread Resistant Materials

Community and Building Design

Building Materials and Assemblies

Source: NIST

AB38 California Wildfire Mitigation Program

□ California Wildfire Mitigation Program

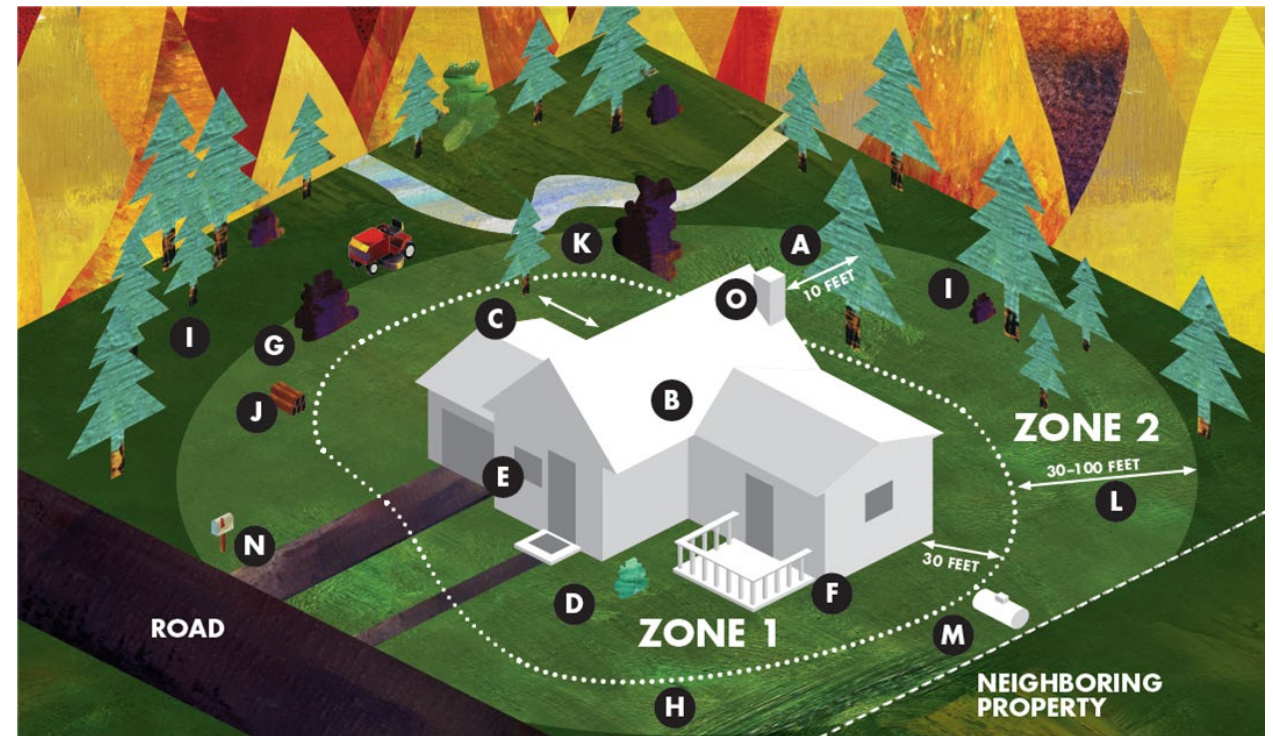
- ✓ JPA between Cal OES and CAL FIRE to
 - Encourage cost-effective structure hardening and retrofitting that creates fire-resistant home, businesses, and public buildings
 - Facilitate vegetation management, the creation and maintenance of defensible space, and other fuel modification activities that provide neighborhood or communitywide benefits against wildfire
- ✓ Identify building retrofits and structure hardening measures eligible for financial assistance that are both cost-effective and provide for appropriate site or structure fire risk reduction
- ✓ Develop a comprehensive financial assistance program to help property owners, whole communities, and local governments with retrofits



Defensible Space Assistance Program

□ California Fire Safe Council

- ✓ Improve Defensible Space Compliance with PRC 4291 and GC 51182
 - Low-income
 - Elderly
 - People with disabilities
- ✓ Pilot in 3 counties: Butte, Napa, and Los Angeles
- ✓ Expand to additional counties



Fire Prevention Grants Program

- ❑ Provides funding for a year-round fire prevention effort in and near wildfire threatened communities
- ❑ Benefits to “Low-Income” and “Disadvantaged Communities”
- ❑ Reduction of Greenhouse Gas Emissions from uncontrolled wildfires
 - ✓ Less wildfire starts
 - ✓ Reduction in severity of wildfires and total acres burned
 - ✓ Structures not damaged or destroyed by wildfire
- ❑ Fund projects for
 - ✓ Hazardous Fuel Reduction
 - ✓ Wildfire Prevention Planning
 - ✓ Wildfire Prevention Education



Fire Prevention Grants Program

- ❑ **State agencies**
- ❑ **Federal agencies**
- ❑ **Native American tribes**
- ❑ **Local agencies, including**
 - ✓ Cities, counties, cities and counties
 - ✓ Fire protection districts
 - ✓ Community service districts
 - ✓ Resource conservation districts
 - ✓ Water districts
 - ✓ Special districts
- ❑ **Certified local conservation corps**
- ❑ **Fire safe councils with a 501(c)3 designation**
- ❑ **Other qualified nonprofit organizations with a 501(c)3 designation**

Fire Prevention Grants Program

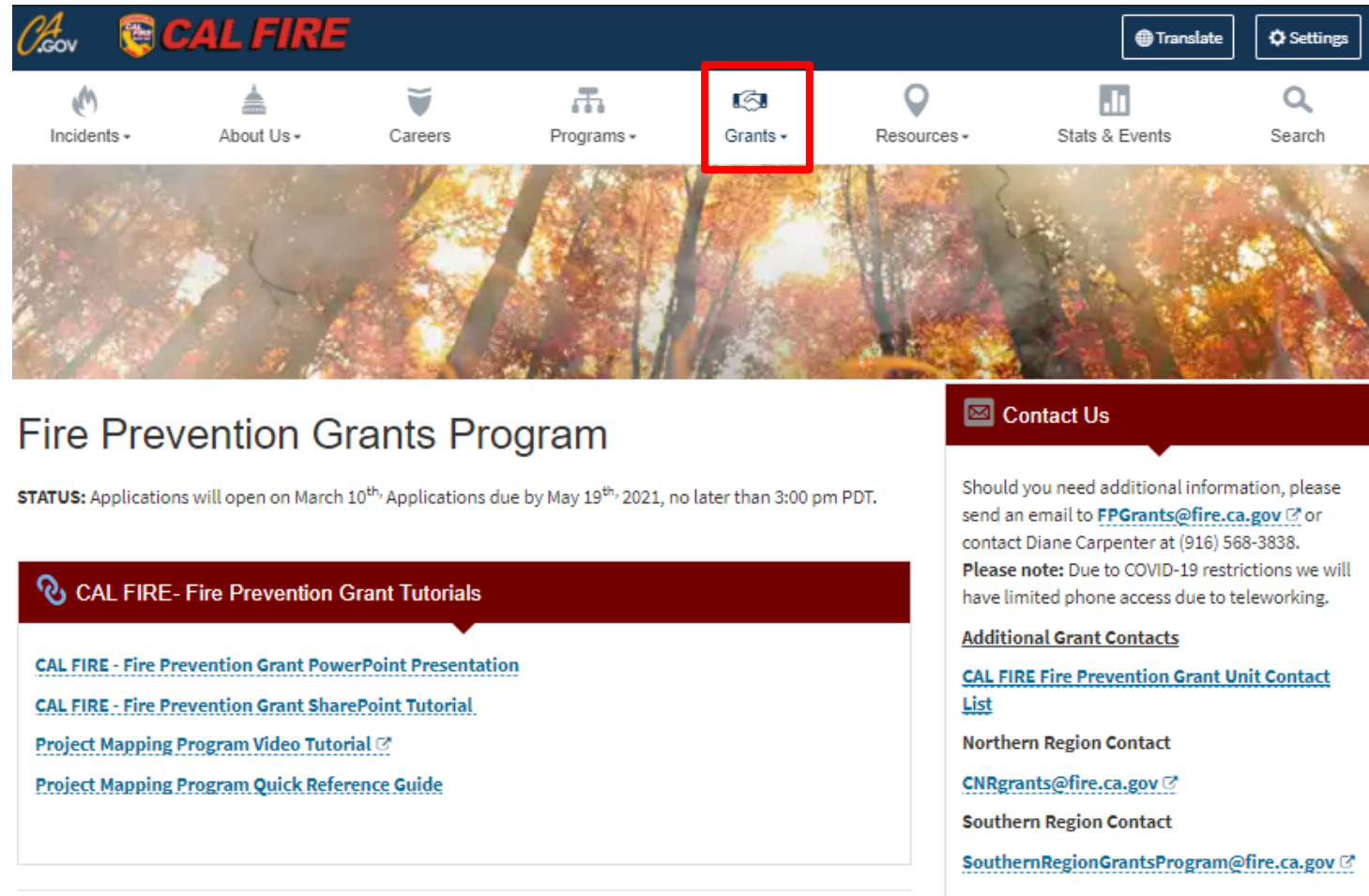
□ FY 2020/21

- ✓ Awarded 105 grants for nearly \$138 million

□ FY 2021/22

- ✓ \$120 million in funding
- ✓ \$200 million/year through 2028

□ For more information, visit the [Fire Prevention Grants](#) web page



CAL FIRE

Incidents ▾ About Us ▾ Careers Programs ▾ **Grants ▾** Resources ▾ Stats & Events Search

Fire Prevention Grants Program

STATUS: Applications will open on March 10th. Applications due by May 19th, 2021, no later than 3:00 pm PDT.

CAL FIRE - Fire Prevention Grant Tutorials

- [CAL FIRE - Fire Prevention Grant PowerPoint Presentation](#)
- [CAL FIRE - Fire Prevention Grant SharePoint Tutorial](#)
- [Project Mapping Program Video Tutorial](#)
- [Project Mapping Program Quick Reference Guide](#)

Contact Us

Should you need additional information, please send an email to FPGGrants@fire.ca.gov or contact Diane Carpenter at (916) 568-3838. **Please note:** Due to COVID-19 restrictions we will have limited phone access due to teleworking.

Additional Grant Contacts

- [CAL FIRE Fire Prevention Grant Unit Contact List](#)
- Northern Region Contact
CNRgrants@fire.ca.gov
- Southern Region Contact
SouthernRegionGrantsProgram@fire.ca.gov

Upcoming Resources

- ❑ **Develop a model defensible space program**
 - ✓ Shall be made available for use by a city, county, or city and county in the enforcement of defensible space provisions
- ❑ **Develop a Wildland-Urban Interface Fire Safety Building Standards Compliance training manual**
 - ✓ For use by local building officials, builders, and fire service personnel
 - ✓ Make it available on the CAL FIRE internet
- ❑ **Defensible Space/Home Hardening Assessment Training**
- ❑ **Development of a Land Use Planning Course to provide training to local planners on land use planning issues. In coordination with the Community Wildfire Planning Center**

Legislative Bills

□ [SB 63](#) (Stern, 2021)

- ✓ Requires moderate and high FHSZs in the LRA
- ✓ CBC Chapter 7A would apply in the high FHSZ in the LRA and may apply in the moderate FHSZ in the LRA
- ✓ Defensible Space/Home Hardening Assessment Program

□ [AB 642](#) (Friedman, 2021)

- ✓ Requires moderate and high FHSZs in the LRA
- ✓ Make recommendations on how to understand and model risk for a community and specific parcels in the LRA or SRA through the input of mitigating factors

Land Use Planning Program

□ **SB 1241 (Kehoe, 2012)**

- ✓ Established the CAL FIRE Land Use Planning Program in 2014
- ✓ Work with planning and development agencies in 189 cities with LRA VHFHSZ and 56 Counties with SRA
- ✓ Ensures specific issues related to wildfire hazards and risk are addressed in the local jurisdictions Safety Element of the General Plan
- ✓ Upon the next revision of the Housing Element on or after January 1, 2014, the Safety Element shall be reviewed and updated as necessary (GC 65302(g)(3))

□ **Senator Kehoe's Vision**

- ✓ “SB 1241 will save lives and property. It will also ease the financial burden for fire suppression on both state and local governments through early, consistent and meaningful fire hazard planning statewide.”

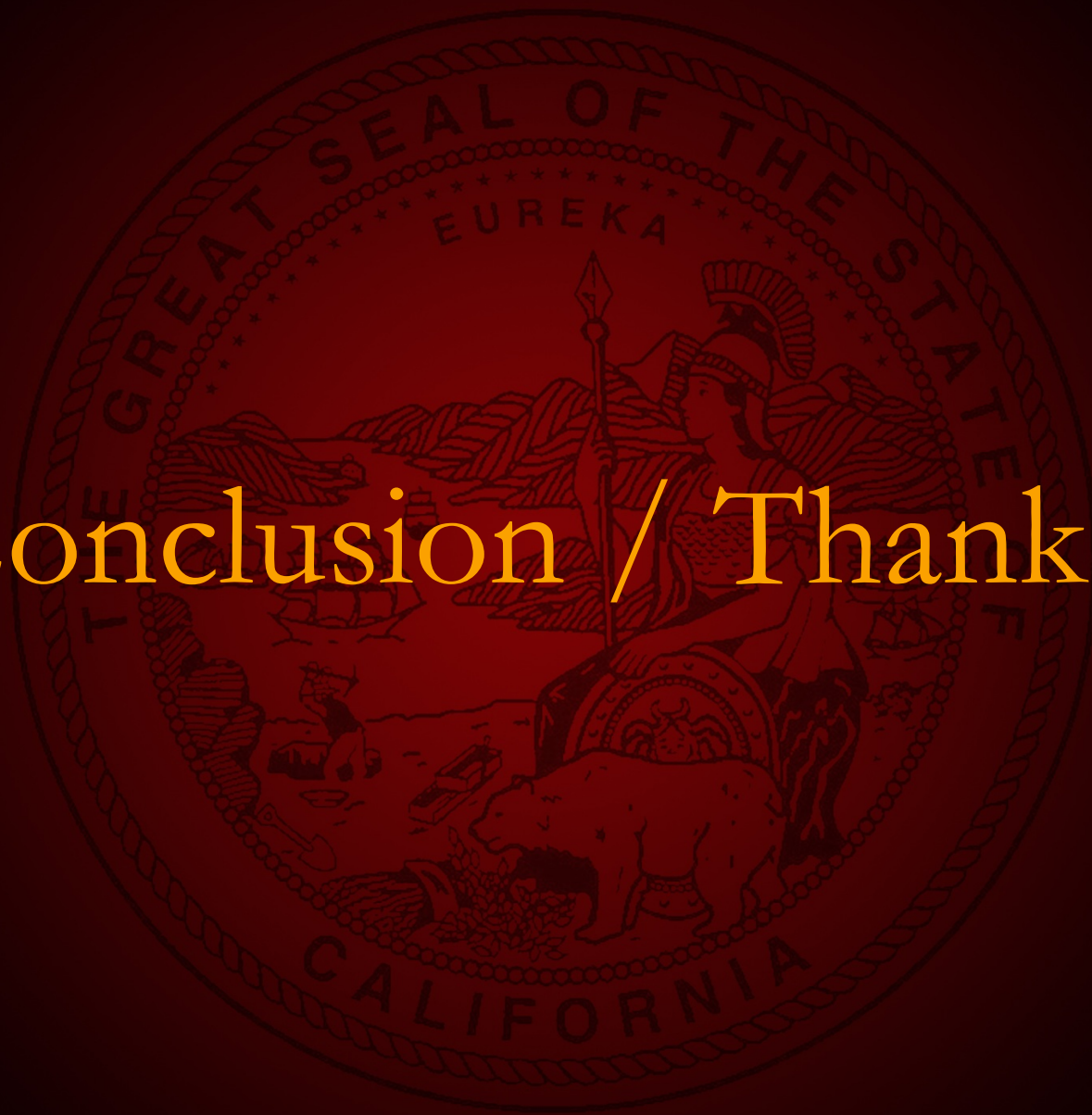
Subdivision Review Program

□ AB 2911 (Friedman, 2018)

- ✓ Established the CAL FIRE Subdivision Review Program in 2019
- ✓ Added Public Resources Code 4290.5 requiring the Board of Forestry and Fire Protection in consultation with the State Fire Marshals Office to work with local agencies, including cities, counties, and fire districts, to identify existing subdivisions in the SRA or LRA VHFHSZ without a secondary egress route that are at significant wildfire risk
- ✓ Subdivisions with more than 30 dwelling units
- ✓ Develop recommendations to improve the subdivision's wildfire safety
- ✓ The Board shall provide the final recommendations developed to the local agency and the residents of the subdivision



Conclusion / Thank You





*Overview of Fire Safe Marin
resources for home
hardening and defensible
space.*

RICH SHORTALL

Fire Safe Marin

- Rich is a retired San Francisco Fire Department Assistant Deputy Chief. He has also served as the SFFD EMS Chief, Deputy Director of the San Francisco Office of Emergency Services, and General Manager of the Bay Area SUASI Homeland Security Program.
- Rich is currently a member of the Board of the Ross Valley Fire Department and is an elected Director of the Sleepy Hollow Fire Protection District.
- He joined Fire Safe Marin as a Director in 2015 and currently resides in San Anselmo.



Technical Assistance
for Local Planning
HOUSING



**FIRE
SAFE
MARIN**

Adapting to Wildfire

Wildfire Preparedness in Marin

Rich Shortall



425,000

Represents the points of contacts that Fire Safe Marin has made with residents and partners through all channels including webinars, workshops, phone calls, emails, community meetings, social media and programs.

Prepare Yourself

Harden Your Home

Create a Fire Smart Landscape

Ready Your Community

In 2020-2021, Fire Safe Marin delivered high-quality educational content through 19 different programs, collaborating with more than 20 community partners, and tapping into leading experts to provide the latest information on wildfire preparedness, working to help residents own their responsibility in preparing for and reducing wildfire risks in Marin. The overarching message in all content is that Marin residents must

“Adapt to Wildfire”



Adapting to Wildfire

Board of Directors

Partner Agencies



Staff

- Executive Coordinator
- Director of Education
- Operations Manager
- Firewise Liason
- Public Outreach



Consultants

- Videography
- Graphic Design
- Public Relations

Adapt to wildfire to protect your family and your home

Prepare Yourself



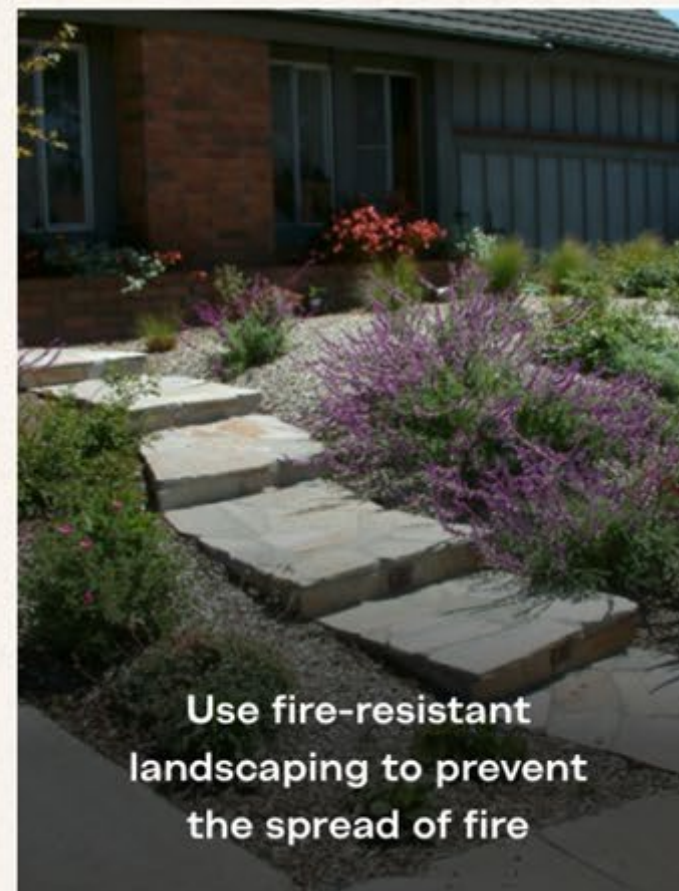
What to do before, during, and after a wildfire

Harden Your Home



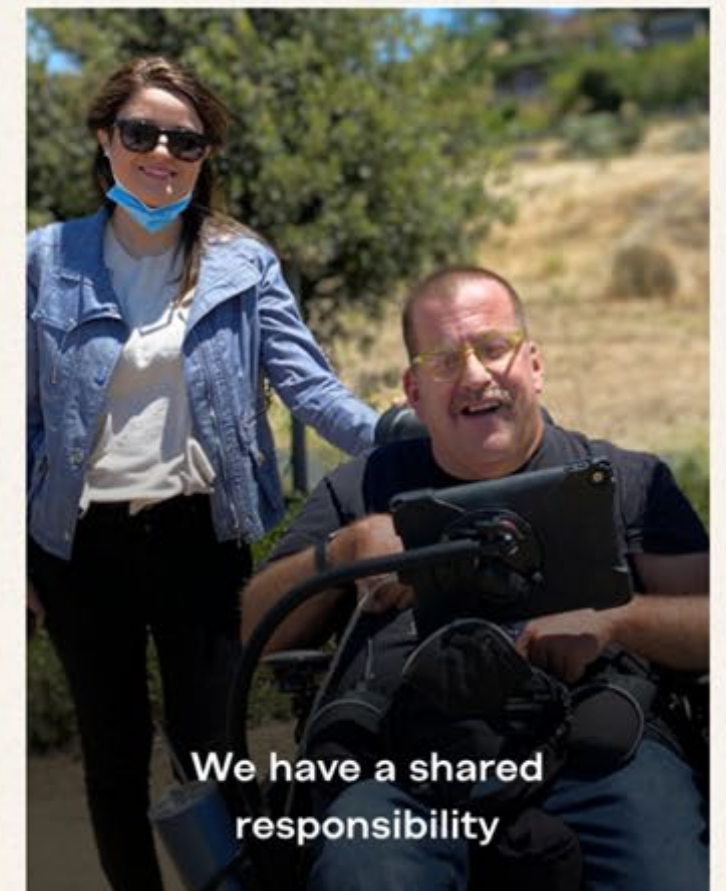
How to protect your home against wildfires

Create a Fire-Smart Yard



Use fire-resistant landscaping to prevent the spread of fire

Ready Your Community



We have a shared responsibility

Know What to Do Before, During and After an Evacuation

PREPARE YOURSELF

READY SET GO!
WILDFIRE EVACUATION CHECKLIST
 If evacuation is anticipated and time allows, follow this checklist to give your family and home the best chance of survival. Complete the Family Communication Plan on the opposite side for each family member and keep in your "Go Kit".

ALERT MARIN
 www.fire-safe-marin.org

EVACUATION ORDER
 Leave your home immediately, do not stop to gather belongings or prepare your car. Follow the evacuation route to the evacuation order.

EVACUATION WARNING
 Evacuate as soon as possible. A short notice evacuation may be necessary if you feel unsafe.

EMERGENCY IN PLACE
 Stay in your current location or the safest nearby building or vehicle area. May be necessary if you feel unsafe, but dangerous, or unnecessary.

ON YOUR PERSON

- Wear all family members in long sleeves and long pants - heavy denim or wool is preferable to water fire heat it is.
- Wear leather gloves, head, and eye protection - full coverage goggles are best.
- Cover your face with a dry bandana or cotton or wool scarf over a N95 respirator.
- Carry a headlamp and flashlight (even during the day), cell phone, and spare battery.
- Carry car keys, wallet, and ID on your person.
- Drink lots of water and stay hydrated.
- Put your "Go Kit" in your vehicle.

PETS & ANIMALS

- Locate your pets and place in carriers NOW. You will not be able to catch them when the fire approaches.
- Be sure your pets wear tags and microchips.
- Pets carriers (with your pets in them) near the front door, with fresh water and extra food.
- Prepare crates and large animals for transport and consider moving them to a safe location early, before evacuation is ordered.

INSIDE THE HOUSE

- Shut off windows and doors (interior too) and leave them unlocked.
- Remove combustible window shades and lightweight curtains, close metal shutters.
- Move furniture to the center of the room, away from windows.
- Shut off gas at the meter or propane tank, turn off pilot lights.
- Leave indoor and outdoor lights on for firefighters.
- Shut off all conditioning and HVAC fans.

OUTSIDE & IN NEIGHBORHOOD

- Get up combustible items outside the house (patio furniture, children's toys, door mats, trash cans, etc) and place in garage or move them at least 30' from structures (optionally place in your yard).
- Close propane tank valves. Move small tanks away from structures.
- Connect garden hoses to outside water valves or spigots for use by firefighters. Attach escape gap covers if you have them.

WILDFIRE & EMERGENCY "GO KIT"
 Put together an emergency supply kit in advance and keep it easily accessible. Plan to be away from your home for an extended period of time. Each person should have their own Go Kit. Backpacks work great for storing these items.

- Bandana, N95 respirator, goggles, water, gloves
- Water bottles and food
- Map marked with law enforcement routes (if possible)
- Prescription medications
- Change of clothing
- Extra eyeglasses or contact lenses
- Extra set of car keys, credit cards, cash
- First aid kit
- Flashlight and headlamp with spare batteries
- Extra powered tools and extra batteries
- Copy of important docs (birth certificates, passports, insurance policies, etc)
- First aid and wound supplies, first aid kit, and medications
- Spare chargers for cell phones, laptops, etc.
- Sanitation supplies

Items to Take only if time allows

- Essential medication
- Family photos and other irreplaceable items
- Personal computer and digital information (backups on hard drives and/or disks)

Wildfire Evacuation Checklist and Family Communication Plan 2019 05 22 FIRE SAFE MARIN | www.fire-safe-marin.org

ALERT MARIN
NIXLE TEXTS
SOCIAL MEDIA
TV NEWS
RADIO
PRINT



BUSH FIRE SURVIVAL PLAN

Personal Protective Clothing

WHY WEAR PERSONAL PROTECTIVE CLOTHING?

Being in or near a bush fire can cause a number of different injuries and everyone should wear protective clothing to avoid injury from smoke, sparks, embers and extreme heat. Loose fitting clothing made from natural fibres such as pure wool, heavy cotton drill or denim is important to protect you from injury. Synthetic fabrics can melt or burn.

- A wide-brimmed hat or hard hat can stop embers from dropping onto your head or down the back of your shirt.
- Goggles or goggles will protect your eyes against any smoke, embers and debris that may be in the air.
- Gloves
- A mask or cloth (non-synthetic) to cover your nose and mouth will protect you from inhaling smoke, ash and embers.
- A pair of heavy cotton pants. For example denim jeans, oil-free drill pants or cotton overalls.
- A long-sleeved shirt made from natural fibres such as cotton or wool is ideal.
- Sturdy leather work boots or shoes along with a pair of woolen or cotton socks.



United Policyholders™
 Empowering the Insured

Prevent Ember Ignition

Harden Your Home

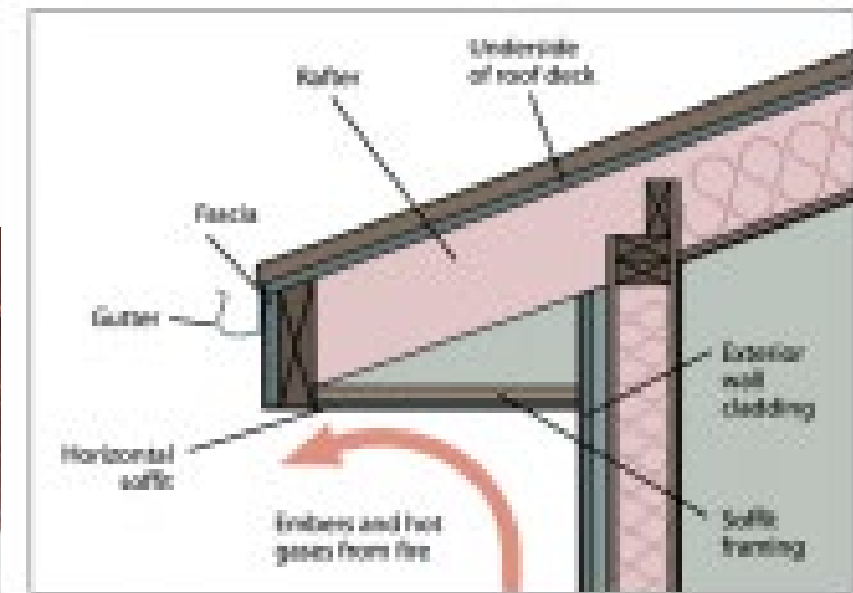


Figure 3: An enclosed overhang with a horizontal soffit.

Create a Fire-Smart Yard

Use **Fire-Resistant** Landscaping to Prevent the Spread of Fire



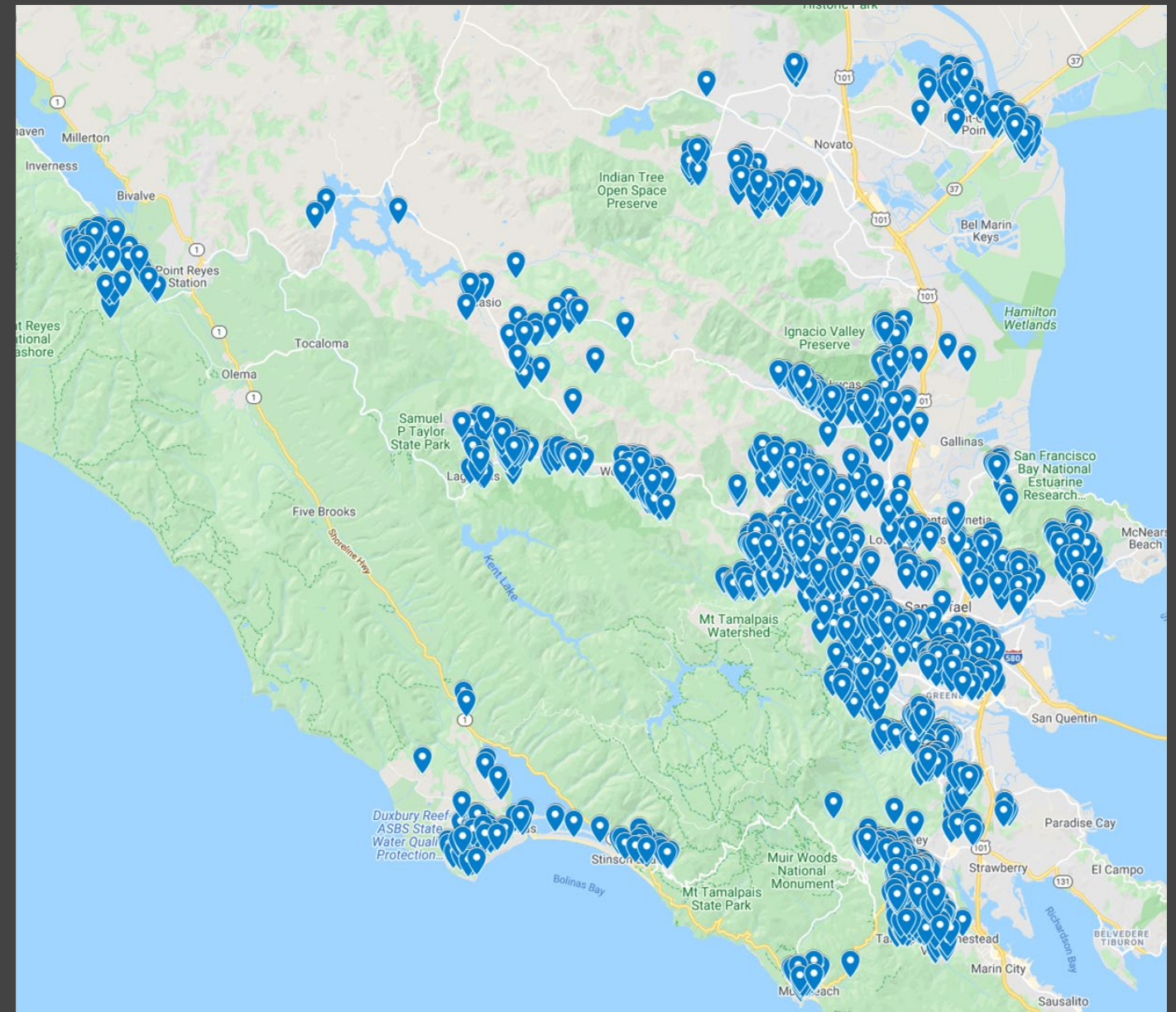
Wildfire Prevention and Preparedness is a Shared Responsibility

Ready
Your
Community



FIREWISE USA™

Residents reducing wildfire risks



WILDFIRE WATCH



Coming this fall on
Channel 30 &
Fire Safe Marin YouTube Channel
September 16, 2021





PowerPoint Slide Show - [LWF Evac Presentation - 8-2020]

Ready. Set. Go.

Todd Lando

6:26 / 1:29:10

2020-08-25 18:09:00

How to Survive a Wildfire: 2020 Webinar #2

3,593 views • Aug 26, 2020

11



31



1



SHARE



SAVE



READY



PREPARING FOR FIRE

Set



**RED FLAG DAYS &
EVACUATION WARNINGS**

GO!



EVACUATION



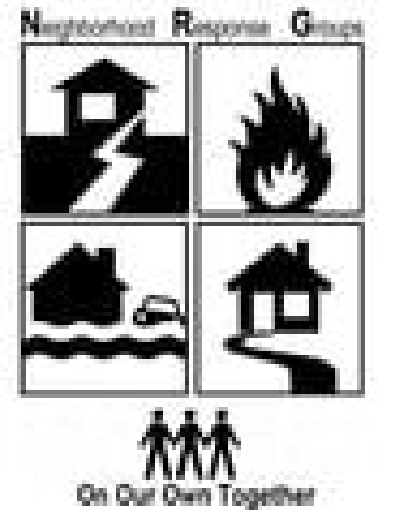


Fire-Smart Landscaping 101



25,000 Home Evaluations





MARIN CENTER FOR INDEPENDENT LIVING

PARTNERS CAL FIRE • California Fire Safe Council • Ecologically Sound Practices • Firewise USA • Marin Association of Realtors • Marin Center for Independent Living • Marin County Fire Chiefs Association • Marin County Office of Education • Marin County Office of Emergency Services • Marin County Parks and Open Space • Marin Municipal Water District • Marin VOAD – Voluntary Organizations Active in Disaster • Marin Wildfire Prevention Authority • Neighborhood Response Groups • Northern California Landscape Contractors Association • Sonoma Fire Safe Council • UC Marin Master Gardeners



FIRE SAFE MARIN

Adapting to Wildfire

In partnership and support with:

Bolinas Fire District

City of Larkspur

City of Mill Valley

City of San Rafael

County of Marin

Inverness Public Utility District

Kentfield Fire Protection District

Marinwood Community Services District

Muir Beach Community Services District

Novato Fire Protection District

Sleepy Hollow Fire Protection District

Southern Marin Fire Protection District

Stinson Beach Fire Protection District

Town of Corte Madera

Town of Fairfax

Town of Ross

Town of San Anselmo



Questions & Answers

QUESTION FOR THE AUDIENCE

What ways can home hardening and defensible space be advanced in the general plan update?

- ✓ Use the **Chat** feature to share specific questions.
- ✓ Use the **Raise Hand** feature to verbally share ideas from your community or raise more difficult questions.

Be considerate of others - keep your comments and questions focused.

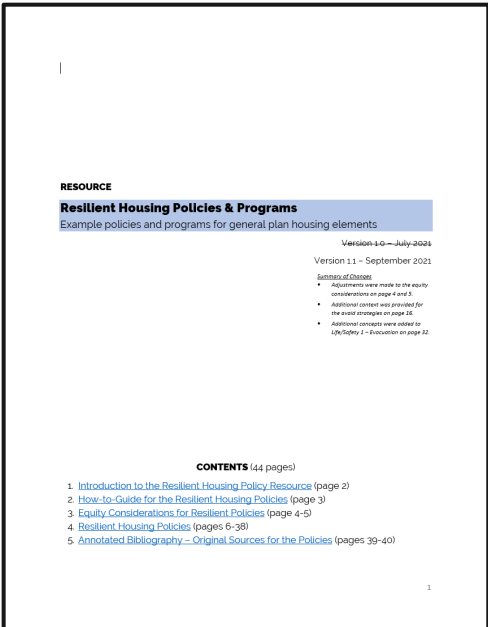


REVISIT REGIONAL TRAINING PRODUCTS (July 27th Workshop) Housing Element Resources

“Resilient Housing Policies & Programs”

A starting point to consider 60 different resilient housing policies.

Example of how policy edits can refine generic strategies into specific wildfire housing policies.



Adptv Cpty 4.c Launch an education outreach campaign

Work with community partners, local officials, and non-profit organizations to incorporate social media, traditional forms of outreach, and education programs into community plans that seek to educate homeowners and landlords on how to reduce risks to structures, landscaping, and property.

Adptv Cpty 4.c Launch an defensible space and home hardening education outreach campaign

Work with ~~community partners~~ Firewise communities, local officials, and ~~non-profit organizations~~ the school district to incorporate CAL FIRE guidance on home hardening and defensible space on social media, ~~traditional forms of outreach~~ city websites, and ~~education programs~~ k-12 school newsletters into ~~community plans~~ that seek to educate homeowners and landlords on how to reduce wildfire risks to structures, landscaping, and property.



WILDFIRE/HOUSING SERIES

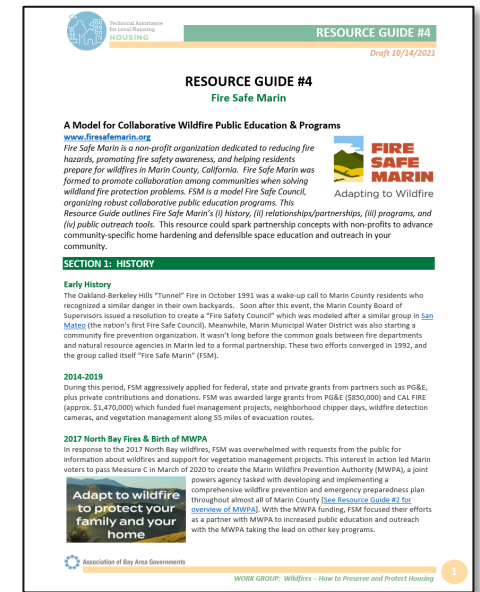
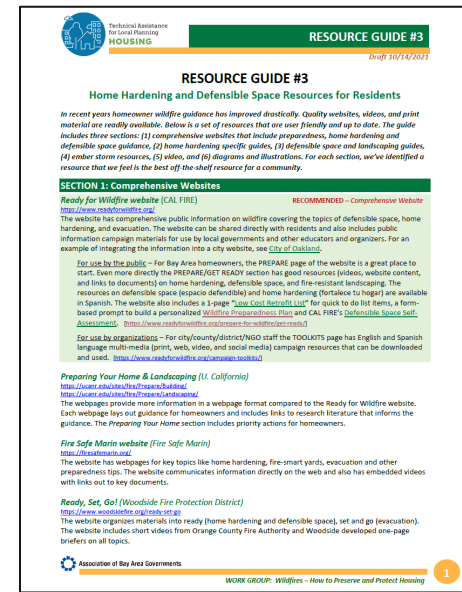
Resource Guides

Completed

- ✓ 1 Wildfires - Research, Science & Key Organizations
- ✓ 2 Marin Wildfire Prevention Authority (MWPA)
- ✓ 3 Home Hardening and Defensible Space Resources for Residents
- ✓ 4 Fire Safe Marin's Collaborative Wildfire Public Education and Programs

Under development

- ❑ 5 Overview of SB 99 (2019) and AB 747 (2019)
- ❑ 6 Evacuation Modeling Approaches in the Bay Area



Take a 90 second survey.

Provide us with feedback to make the sessions and resource guides more helpful.



SESSION 3

November 4, 3:00-5:00

EVACUATIONS: LAWS, PRACTICES, & TECHNOLOGY

Exploration of new evacuation laws (SB 99, AB 747), OPR updates, and approaches to modeling.



Thank you for joining today!

Remember the Resource Guides

Take the Feedback Survey

See you on 11/4

