A BEGINNER'S GUIDE TO
A WILDFIRE-READY HOME
"HARDENING" YOUR HOME AGAINST WILDFIRE
A WILDFIRE-READY HOME
WILDFIRES AT OUR DOORSTEPS

Fires have always been a part of California's natural ecology. However, in recent years, wildfires have been breaking records in frequency and severity.

6 of the 20 largest California wildfires occurred in 2020, including the August Complex, a "gigafire" that burned more than 1 million acres and destroyed almost 1,000 buildings.

Communities living in areas at risk of wildfire must urgently adapt and prepare for this new reality.

One action we can take is to take care of the land surrounding our homes and communities and "harden" our homes to improve their chance of surviving wildfire.
You may have heard of the fire triangle. It tells us that with enough heat, oxygen, and fuel present, a spark can ignite and sustain a fire. But, if you take away any one of those, fire won’t burn.

Most homes - about 90% - lost due to wildfires are from ember cast, rather than encounter with the wildfire front itself.

Embers can drift miles ahead of the wildfire and start fires if they land on fuels on, near, or inside a home. If not controlled, those fires can start a chain of fires within a neighborhood.

Out of the 3 sides of the fire triangle, you may not have control over the oxygen in the air or the heat during a wildfire, but you can control the fuel! By lowering the amount of fire fuels close to your home, you can slow or stop the spread of wildfire and protect your home from catching fire. This guide will help you start doing that.
WHAT CAN I DO?

There are 2 main ways that you can maximize a home’s chance of surviving wildfire: Home Hardening and Defensible Space.

HOME HARDENING

Home Hardening refers to strategies to improve a home’s chance of surviving wildfire through home retrofitting. Retrofitting refers to installing or replacing parts of the home.

For example, you can retrofit your home with fire resistant building components – such as roof shingles, metal vent covers, and double-paned tempered glass windows.

Strapped for cash? You can accomplish a lot just through regular home maintenance or some inexpensive improvements.
Defensible Space refers to managing vegetation & flammable materials around the home to decrease the chance of a fire starting around a home.

Current state regulations require 100’ of defensible space around homes (or to your property lines) in very high fire hazard severity zones.

Zone 0 - Ember-Resistant Zone (0-5 ft)
Zone 1 - Lean, Clean, and Green Zone (5-30 ft)
Zone 2 - Reduce Fuel Zone (30-100 ft)
How to start? The process of home hardening and defensible space all start with knowing what needs to be done. There's no one-size-fits-all solution, since every home and community is a little different. Use this guide to start figuring out what will work for you.

Walk around your home as you read this guide. Imagine paths embers might take: onto the roof, through vents or an open window, or onto dead vegetation, dry wood, or combustible materials near the home.

Feel free to record areas of your home that should be improved for fire safety. Prioritize those areas based on how important they are to reducing fire risk, the work required, and affordability. Then, make a plan and get to working!
Start by going outside and looking at your roof. Look for nooks & crannies where debris and embers will collect. Focus your clean up in these areas.

**TO DO:**

Remove all leaves, branches, and flammable debris from your roof and gutters during fire season.

If you have a wood shake or shingle roof covering, replace it with a Class A fire rated shingle. An untreated wood shake or shingle roof covering is the greatest threat to a home.

Use non-flammable material to plug areas between roof covering and roof deck.
Consider getting **gutter covers** or **metal flashing** at roof-to-wall or gutter-to-roof intersections.

It’s very important to inspect and maintain your roof and gutters regularly.
Next, walk around your home exterior and identify all vents and other openings into your home. Embers can pass through vents into attics or crawl spaces and burn your home from the inside out.

**TO DO**

Inspect locations inside your house close to the attic or crawl space vents. Move flammable items and vegetation away.

Purchase state-approved vents (see CA Chapter 7A) or screens for openings. Screens should have 1/8" or 1/16" wire mesh. Consult an expert to confirm your home will still have enough ventilation.
Check if your dryer vent is an open outlet. You can get dryer vents that close when not in operation.

Close pet doors, windows, and other openings when wildfire is threatening.

Eave vents should be protected by fire safe screening.
After you examine your home exterior, start looking at the area surrounding your home. Defensible space involves landscaping to prevent fires from having a direct path to your home, with priority on areas closest to your home.

Zone 0 - Ember-Resistant Zone (0’-5’)

Look at the ground within 5 feet of your home. This, including the 6 inches at the base of your home exterior and the area under and around all attached decks and structures, is “Zone 0.” Observe and remove anything flammable in this zone. It’s scientifically proven to be the most important of the 3 zones for preventing fire.
Remove all dead plants, grass, weeds, leaves, pine needles, and other dry plant material.

Avoid mulch and use non-combustible hardscape like gravel, pavers, or concrete.

Move firewood and lumber to Zone 2.

Replace combustible fencing and gates with non-combustible alternatives.

Remove vegetation and items that could catch fire from around and under decks, balconies, and stairs.

Limit plants (if any) to be low-growing and non-woody. Properly water and maintain them.
Zone 1 – Lean, Clean, and Green Zone (5’-30’)

Next, moving outward from the home, look at the area under 30’ away from the home or to your property line, whichever is closer. In “Zone 1”, or the “Lean, Clean, and Green” Zone, your goal should be to separate vegetation into “islands” so that if one catches on fire, it won’t catch other vegetation or your home on fire.

**TO DO**

- Remove all dead plants, grass, weeds, leaves, pine needles, and other dry plant material.
- Create a separation between trees, shrubs, and anything that can catch fire. Trim trees regularly to keep branches 10’ away from other trees.
- Remove all branches within 10’ of chimneys and remove or prune flammable plants and shrubs near windows.
- Move firewood and lumber to Zone 2.
Zone 2 - Reduce Fuel Zone (30'-100')

Finally, look at the area 30-100' away from the home or to your property line, whichever is closer. In “Zone 2”, or the “Reduce Fuel” Zone, your goal should be to minimize the likelihood that flammable vegetation will form a direct path to your home.

**TO DO**

- Mow grass to 4".
- Create horizontal and vertical spacing between shrubs and trees. See next page.
- Exposed wood piles must have 10' of clearance.

**Plant and Tree Spacing**

The appropriate spacing for defensible space depends on both type and size of vegetation and the slope. Steeper slope requires greater spacing.
Horizontal Spacing

Fires burn faster uphill than on flat ground. That’s because heat travels upward, and fires pre-heat areas uphill, causing them to ignite quickly.

Refer to the chart below to determine appropriate horizontal spacing.

<table>
<thead>
<tr>
<th>Flat to Mild Slope (Less Than 20%)</th>
<th>Mild to Moderate Slope (20%-40%)</th>
<th>Moderate to Steep Slope (Greater Than 40%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shrub X 2x</td>
<td>Shrub X 4x</td>
<td>Shrub X 6x</td>
</tr>
<tr>
<td>Tree 10 ft</td>
<td>Tree 20 ft</td>
<td>Tree 30 ft</td>
</tr>
</tbody>
</table>

NOTES
**Vertical Spacing**

**Ladder fuels** are fuel that can carry a fire from low-growing vegetation (like a bush or tree’s low branches) to tall vegetation (like a tree).

**TO DO**

- Remove all tree branches below 6' from the ground.
- Allow extra vertical space between shrubs and trees.
COMMUNITY ACTION

These actions improve likelihood of individual home survival during wildfire, but they are most effective when done collectively. In many cases, your home is only as "fire safe" as your neighbors'.

Get to Know Your Neighbors

It's helpful to know your neighbors in case you need help from each other.

**TO DO**

- Check in to see if they have specialized knowledge, equipment, or tools.
- Host a neighborhood gathering to discuss wildfire preparation, home hardening, and d-space.
- Check in to see if some could use support with wildfire preparedness or evacuation in case they are elderly, disabled, or don't have a car.
Local Community Organizations

If you're ready to get involved at a deeper level, establish, join, or support community organizations working on wildfire preparedness or intersecting issues. There are endless ways to get involved! Some examples are:

🌟 Emergency and evacuation preparedness
  Fire Safe Councils, Community Emergency Response Teams - CERT, Ham Radio Groups

🌟 Fuel management projects, including prescribed burning, grazing, and chipping.
  Fire Safe Councils, Resource Conservation Districts, Home/Property Owners’ Associations, Land Trusts

🌟 Climate action & environmental protection
  350.org, Sunrise Movement, Sierra Club, other environmental organizations

🌟 Local indigenous tribes & stewardship

🌟 Community cohesion and social safety nets
  Red Cross, mutual aid groups, churches and religious communities, affordable housing advocacy
**SOURCES**

*Defensible Space, CAL FIRE, 2019*
https://www.readyforwildfire.org/prepare-for-wildfire/get-ready/defensible-space/

*Embers Cause Up to 90% of Home & Business Ignitions During Wildfire Events, IBHS, 2019*

*Home Hardening Video Series, Mendocino County Fire Safe Council and UC Cooperative Extension, 2020*
https://firesafemendocino.org/homehardening/

*Top 20 Largest California Wildfires, CAL FIRE, 2021*
https://www.fire.ca.gov/media/4jandlh/top20_acres.pdf
GET CONNECTED!

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