

# LIVING WITH FIRE

IN MARIN COUNTY, CA

A GUIDE TO LIVING IN A FIRE PRONE COMMUNITY



## INDEX

ADDITIONAL DETAILS ON THE WEB

Look for QR codes in this publication to find additional details and more information on the web.

[www.firesafemarin.org](http://www.firesafemarin.org)PAGE 03  
**FIRESafe MARIN**PAGES 05-08  
**WILDFIRES TODAY**PAGES 09-16  
**WILDFIRE EVACUATION**PAGES 17-26  
**HOME HARDENING**PAGES 27-38  
**DEFENSIBLE SPACE**PAGES 39-40  
**FIREWISE COMMUNITIES**PAGES 41-47  
**HOMEOWNER RESOURCES****READY SET GO**

The principles outlined in this book help residents be **Ready** with preparedness before a fire, be **Set** with situational awareness when fire threatens, and to **Go** early when a fire starts.

**CONNECTING PEOPLE, IDEAS, AND SOLUTIONS TO REDUCE THE THREAT OF WILDFIRE IN MARIN**

In the past 10 years, annual home losses from wildfire have more than tripled in the U.S. In 2018, nearly 30,000 structures and 100 lives were lost due to wildfire in California alone! While firefighters work diligently to protect our property, the truth is, they can't save every home, and their efforts and safety are increasingly compromised by today's severe wildfires.

The good news is, unlike floods, hurricanes or earthquakes, there are simple and often inexpensive ways to make homes safer from wildfire. With a good understanding of wildfire hazards and mitigation strategies, community residents

can effectively lower the wildfire risk and losses to their homes, neighborhoods, and natural resources.

FIRESafe MARIN recognizes that the change needed to reverse this loss trend begins with a rock-solid understanding of the basics of how wildfires ignite structures combined with scientifically proven mitigation actions.

Read on in this guidebook to learn effective strategies to protect your family, your home, and our community, from the inevitable wildfire.





FIRESafe MARIN was established in 1991 in the aftermath of the devastating Oakland "Tunnel Fire." We are a nonprofit dedicated to reducing wildland fire hazards and improving fire-safety awareness in Marin County, California. We foster community involvement by building partnerships and providing resources for mitigating fire danger.

OUR PROGRAMS

- Community Education
- Firewise USA
- Goat Grazing
- Chipper Days
- Living With Fire
- Grants
- Planning & Policy
- Agency Coordination



YOUR TAX-DEDUCTIBLE DONATION HELPS PROTECT MARIN NEIGHBORHOODS, COMMUNITIES, AND LANDSCAPES FROM WILDFIRE!

We need your help! FIRESafe MARIN depends on donations from the community, foundations, private and public grants, and volunteers to achieve our mission of enhancing Marin's wildfire preparedness.

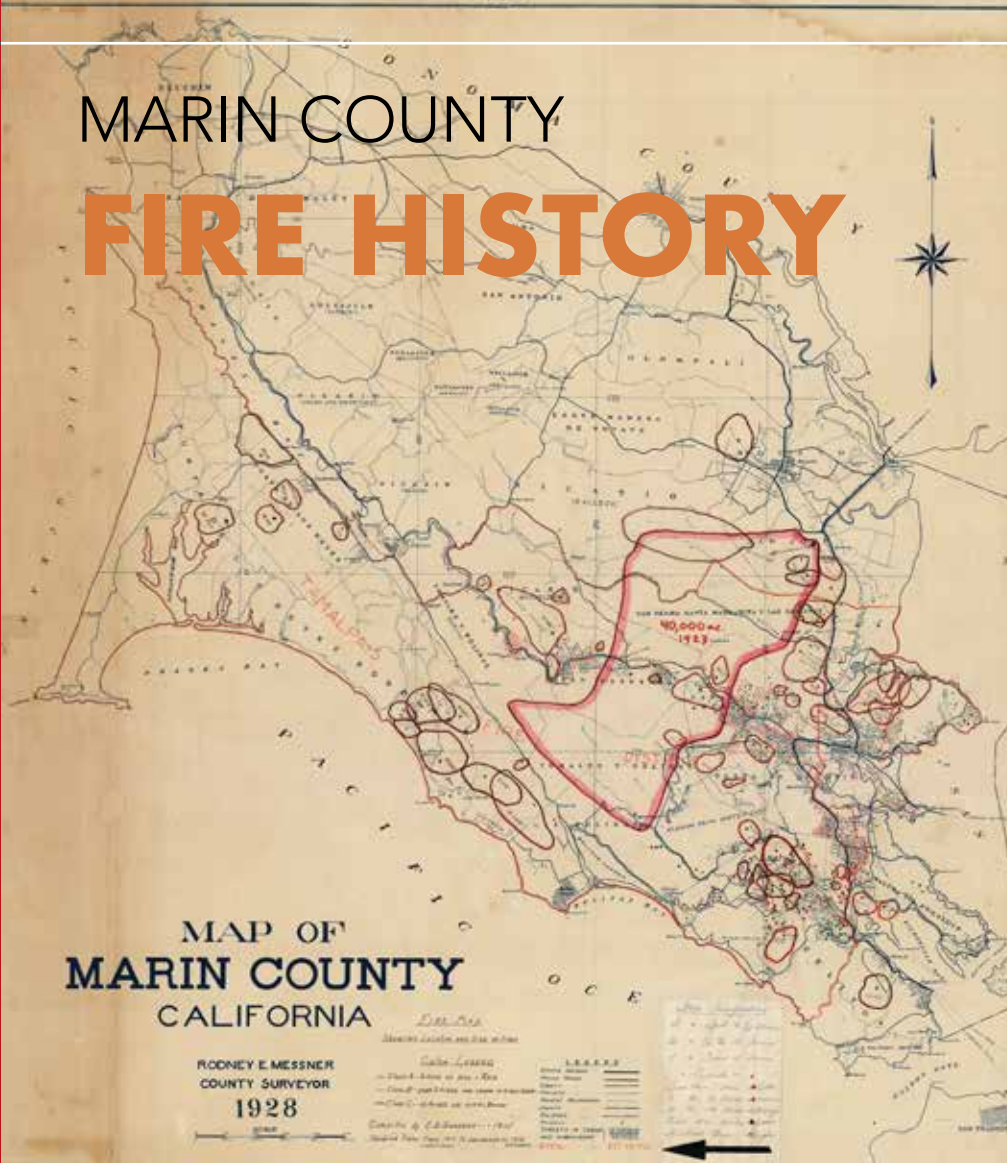
Our funds go directly to important wildfire safety projects in Marin County, California, measurably improving fire safety for all residents and visitors to Marin. Our small staff and dedicated volunteers use support from contributors like you to complete these vital projects, and your donation will directly enhance our mission.

We operate with EXTREMELY low overhead - virtually every dollar donated or secured through grants goes directly to enhancing Marin's wildfire safety through our education, vegetation management, planning and hazard mitigation activities. We believe in putting our money where our mouth is, and unlike many nonprofits do not invest heavily in fundraising. If you donate, you can be assured that your dollars will go directly to work "on the ground."

[www.firesafemarin.org/donate](http://www.firesafemarin.org/donate)



MARIN COUNTY FIRE HISTORY



150+ Years of Major Wildfires

Marin County, California has a long history of major wildfires. The Tamalpais Forest Fire District, formed in 1917 was the first agency of its kind in California, and a decade of catastrophic fires followed its creation from 1919 to 1929. Hundreds of homes were lost in Sausalito, Mill Valley, and West Marin as new residents built homes closer and closer to Marin's forests and wildlands.

In 1919, Marin's first "urban conflagration" burned dozens of homes in Sausalito's Hurricane Gulch. In 1923, a fire that started in Novato burned 50,000 acres in 2 days (an area similar in size to the 2017 Tubbs Fire in Santa Rosa). This fire destroyed the town of Woodacre and burned through Sleepy Hollow and Fairfax, eventually stopping near Bolinas and the Pacific Ocean. A 1929 wildfire burned 110 homes in Mill Valley. In 1995, the Vision Fire burned 45 homes and 12,000 acres near Inverness in west Marin.

A detailed look at Marin's long history of wildfires, including a list of major fires and where they burned from the 1880s to present is available online at: [www.firesafemarin.org/fire-history](http://www.firesafemarin.org/fire-history)

It's important to understand wildfire history, since topography, vegetation, and weather patterns tend to cause wildfires to burn in the same areas repeatedly over time. 100 years of aggressive fire suppression in Marin has kept us relatively safe, but one spark on the wrong day may change our luck...



# WILDFIRES TODAY

## California Burning

According to the National Interagency Fire Center (NIFC), 2018 saw 64,249 wildfires burn over 10 million acres and destroy more than 20,000 structures in California alone, surpassing 2017 as the most damaging fire season ever recorded in the U.S.

2018 saw more structures destroyed by wildfires than the previous 10 years combined. An amazing feat, since the prior year, 2017, also saw more homes burn in wildfires than in the previous ten years combined.

From 2004 – 2018, more than 55,000 homes were lost to wildfires in the U.S. California leads the nation in lives, homes, and dollars lost to wildfire.

The 2017 North Bay Fires are among the most destructive in U.S. history, destroying three times as many homes as the 1991 “Tunnel Fire” in the Oakland and Berkeley hills, which held the record for 26 years.

More than 43 people died in the 2017 North Bay fires. The Oakland fire killed 25. These fires all occurred less than 20 miles from Marin.

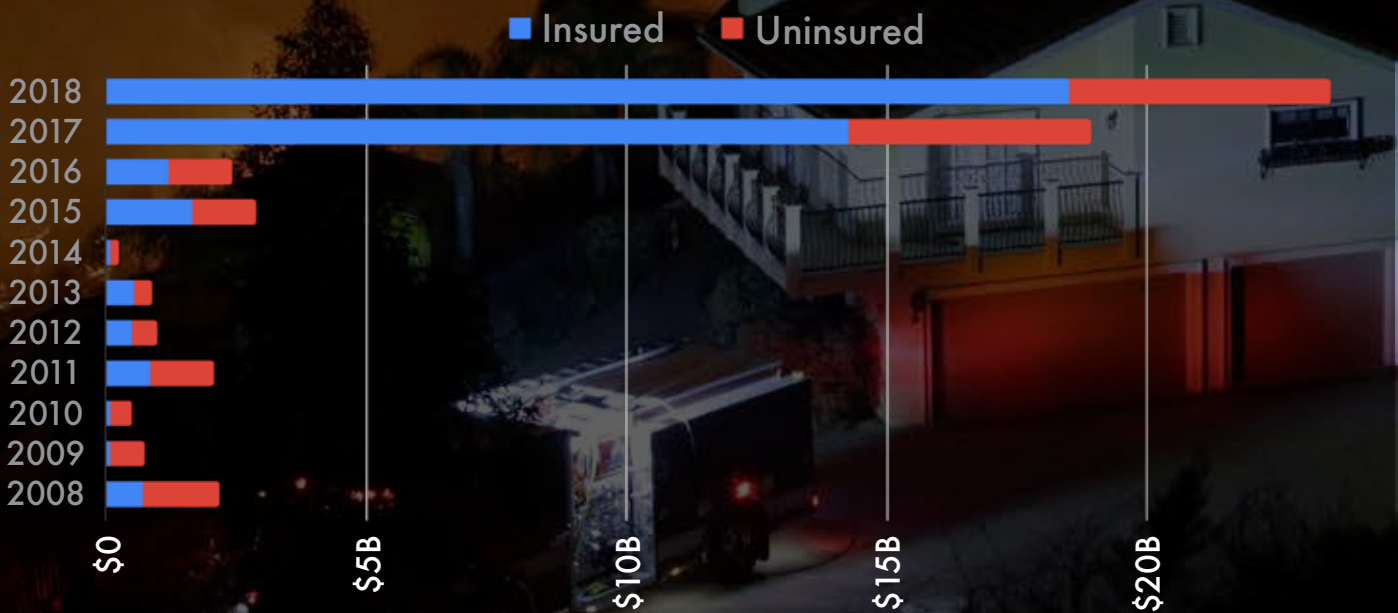
According to the U.S. Fire Administration, in 2017, 71,499 wildfires burned more than 10 million acres (an area bigger than New Jersey, Maryland, Connecticut and Delaware combined). This makes 2017 the second highest year for acres burned since national wildfire statistics have been kept. 2015, with 10.1 million acres, 2012 with 9.3 million, 2006 with 9.9 million, and 2007 with 9.3 million, hold the number two, three, four, and five spots.

Six of California’s 10 most destructive wildfires have occurred in the last decade. Four burned within 30 miles of Marin, including the Tubbs and Tunnel Fires, among the most destructive wildfires in US history.

Here are California’s most destructive fires, based on the total number of structures damaged:

- 1. **CAMP FIRE** - (Butte County), Nov 2018  
Structures destroyed: 18,804  
Acres burned: 153,336  
Deaths: 85
- 2. **TUBBS FIRE** - (Sonoma County), Oct 2017  
Structures destroyed: 5,636  
Acres burned: 36,807  
Deaths: 22
- 3. **TUNNEL FIRE** - Oakland Hills (Alameda County), Oct 1991  
Structures destroyed: 2,900  
Acres burned: 1,600  
Deaths: 25
- 4. **CEDAR FIRE** (San Diego County), Oct 2003  
Structures destroyed: 2,820  
Acres burned: 273,246  
Deaths: 15
- 5. **VALLEY FIRE** (Lake, Napa & Sonoma County), Sept 2015  
Structures destroyed: 1,955  
Acres burned: 76,067  
Deaths: 4
- 6. **WITCH FIRE** (San Diego County), Oct 2007  
Structures destroyed: 1,650  
Acres burned: 197,990  
Deaths: 2
- 7. **CARR FIRE** (Shasta County, Trinity County), Jul 2018  
Structures destroyed: 1,604  
Acres burned: 229,651  
Deaths: 7
- 8. **NUNS FIRE** (Sonoma County), Oct 2017  
Structures destroyed: 1,355  
Acres burned: 54,382  
Deaths: 3
- 9. **THOMAS FIRE** (Ventura County, Santa Barbara), Dec 2017  
Structures destroyed: 1,063  
Acres burned: 281,893  
Deaths: 1
- 10. **OLD FIRE** (San Bernardino County), Oct 2003  
Structures destroyed: 1,003  
Acres burned: 91,281  
Deaths: 6

U.S. Wildfire Losses: Insured and Uninsured (2008-2018)



Sources: National Interagency Wildfire Center (NIFC); Insurance Information Institute



# EVACUATION PREPAREDNESS

## Emergency Notification WARNING SYSTEMS



### 1. ALERT MARIN

[www.alertmarin.org](http://www.alertmarin.org)

**WHEN WE USE IT**  
Alert Marin is Marin County’s primary emergency notification system. Alert Marin will be used to send **emergency and evacuation notices** when immediate action is needed at **YOUR ADDRESS**.



### 2. NIXLE

[www.nixle.com](http://www.nixle.com)

**WHEN WE USE IT**  
Nixle is a public information notification system. Marin authorities send **informational messages** through Nixle when new information is available about important events in **YOUR ZIP CODE**.



### 3. SOCIAL MEDIA

Facebook, Twitter, NextDoor

**WHEN WE USE IT**  
Authorities will use common social media channels to distribute lower level, **non-emergency informational messages**, incident updates, recovery information, and evacuee resources when new information is available.



#### PREPARE IN ADVANCE

Prepare yourself, your family, your pets, and your home in advance, long before a fire strikes. Pack a “Go Kit” for everyone, create defensible space, and harden your home. Complete a Family Communications Plan and practice regularly.

#### MONITOR CONDITIONS

Monitor weather and local fire conditions, and understand when risk is highest. During Red Flag Warnings take steps to prepare: review your evacuation checklist; double-check your Go Kit; charge your phones; monitor TV & radio.

#### LEAVE EARLY

Leave immediately if ordered. If a fire is burning nearby (especially during a Red Flag Warning), dress appropriately and follow your checklist if time allows. Leave early if conditions change or you feel unsafe or unsure.

#### STAY CALM

Take the fastest & most protected route to a valley floor. Carpool! Stay in your car or a refuge area if trapped. Don’t panic in traffic - a wide road on the valley floor is one of the safest places you can be. Monitor AM/FM news radio for information.

## ALERT MARIN: Sign Up to Receive Emergency Alerts!

Marin residents must register their cell phones or VoIP phones to receive emergency alerts by call, text, email, or app from the Marin Office of Emergency Services. Register your family’s home phone, and all family members’ cell

phones to be sure to receive warning when emergencies threaten your community!

[www.AlertMarin.org](http://www.AlertMarin.org)



## Other Emergency Information Sources

### Warning Sirens, Horns, LRAD

Some Marin communities maintain alternate notification systems. Sirens, air-horns, LRAD (Long Range Acoustical Device) or loudspeakers may be used to alert communities of imminent dangers or evacuations. Take the time to learn what your community offers, and understand how to respond when an alert is sounded.

### Local TV and Radio

Local TV and radio stations remain one of the best sources of information during emergencies, even in the age of social media. In Marin, AM 740 (KCBS), AM 810 (KGO), and FM 88.5 (KQED) are good options. In West Marin, KWMR FM 90.5 Point Reyes & FM 89.9 Bolinas are excellent local options. KPIX, KRON, KTVU are good local TV news sources.

### Wireless Emergency Alerts (WEA)

Wireless Emergency Alerts (WEA) is well known as the system that distributes “Amber Alerts.” These are sent to large geographic areas, and may be used to send information for large scale emergencies and disasters. Be sure to verify that Wireless Emergency alerts (Amber alerts and Emergency Alerts) are turned on in your cell-phone’s settings

### NOAA Weather Radios

When a Red Flag Warning or other severe weather watch or warning is issued by the National Weather Service, many NOAA Weather Radios can alert you with a loud warning tone or flashing lights. Evacuation notices may be transmitted through this radio based system as well, providing a backup notification system during power outages.



## Prepare & Leave Early WHEN TO EVACUATE

Monitor phones and radio for emergency information and evacuation notifications. Emergency personnel will attempt to provide timely evacuation notifications and emergency information if your community is threatened by wildfire. Act quickly and follow their instructions. Leave early if unsure.

## EVACUATION TERMINOLOGY

The terms "voluntary" and "mandatory" are often incorrectly used to describe evacuations. In Marin, fire agencies and law enforcement will use the terms **Evacuation Order**, **Evacuation Warning**, and **Shelter-In-Place** to alert you to the significance of the danger and provide basic instructions.

### EVACUATION ORDER

Leave now! Evacuate immediately, do not delay to gather belongings or prepare your home. Follow any directions provided in the evacuation order.

### EVACUATION WARNING

Evacuate as soon as possible. A short delay to gather valuables and prepare your home (see below & pg 12) may be ok. Leave if you feel unsafe.

### SHELTER IN PLACE

Stay in your current location or the safest nearby building or unburnable area. May be required when evacuation isn't necessary or is too dangerous.

In an emergency, officials may use many different tools to communicate information and instructions to the community. Sign up and prepare to use these systems now, before an emergency occurs. These systems are not guaranteed to work in an emergency or during a power outage, and monitoring and under-

standing them is your personal responsibility. To ensure that you have access to information from multiple sources in an emergency, review the available systems on the preceding page. Monitor a battery powered AM/FM radio continuously during power outages to keep apprised of current conditions.

## PACK A WILDFIRE "GO KIT"



**Put together an emergency supply kit in advance for each family member 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." Store the kits in backpacks near your front door.**

- ☐ Bandana, N95 respirator, goggles, leather gloves, long shirt and pants (cotton or wool), sturdy leather boots, cotton hat
- ☐ Flashlight and headlamp
- ☐ Extra car keys, credit cards, cash
- ☐ Map marked with two evacuation routes (if possible)
- ☐ Prescription medications
- ☐ Spare eyeglasses/contact lenses
- ☐ First aid kit
- ☐ Battery-powered AM/FM radio
- ☐ Family "walkie-talkie" radios
- ☐ Spare batteries
- ☐ Copies of important documents (birth certificates, passports, insurance policies, etc.)
- ☐ Pet food and water, leashes, pet supplies and medications
- ☐ Water bottles and food
- ☐ Sanitation supplies
- ☐ Change of clothing
- ☐ Spare chargers for cell phones, laptops, etc.

### Items to take **only if time allows**:

- ☐ Easily carried valuables
- ☐ Family photos, small heirlooms, and other irreplaceable items
- ☐ Personal computer data and digital information backups on hard drives and/or disks

## WHEN EVACUATING, DRESS FOR SURVIVAL

When preparing to evacuate, dress yourself and family in clothes that will shield from heat, embers and flames. Natural fabrics, such as heavy denim or pure wool are better than synthetics, no matter how hot it is. Keep these items near your "Go Kit" during fire season:

- Sturdy leather boots with Vibram-lug soles
- Long pants (wool or cotton) with sturdy belt
- Floppy cotton hat
- Handkerchief or bandana to cover face
- Full-coverage goggles
- Long sleeved shirt that covers neck (tuck into pants)
- Wool socks
- Leather work gloves

Put these clothes on at the first sign of trouble. If you can smell or see smoke, it's time to prepare.







# 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(s)."

**EVACUATION NOTIFICATIONS & INFORMATION** Register for Alert Marin and Nixle to receive evacuation and fire information notices!

**ALERT MARIN** [www.alertmarin.org](http://www.alertmarin.org)

Used when **emergency action** is needed at a **specific address**: wildfires, imminent flooding, evacuations, or other public safety incidents where lives may be at risk; critical information about evacuation routes, hazards, and shelters. *Online registration required!*



**NIXLE** [www.nixle.com](http://www.nixle.com)

Used to provide **incident information** for a specific **zip code**: road closures, general updates, issues affecting larger areas; post-disaster information about shelters, transportation, or supplies; police activity and general public safety information.

**SOCIAL MEDIA, RADIO, TV**

Used to provide less critical and low level frequent **updates** intended for larger populations: traffic updates, road closures, incident updates, and contact information; safety announcement, power outages, minor issues; disaster recovery resources.

## SHELTER IN PLACE

### Temporary Refuge - When Evacuation is Not Possible

Wildfires are unpredictable and spread quickly. Even if you've prepared in advance, you may be required to "shelter in place" if ordered or if you find yourself trapped by a wildfire. To survive this frightening scenario, it is important to remain calm and keep everyone together. Prepare yourself mentally for darkness (even during the day), noise, chaos, and the natural urge to flee the safety of your shelter. If you're unable to evacuate, it's probably safer **INSIDE** a car or building where your airway, eyes, and skin are protected!

Take shelter in the nearby place that is best able to withstand the fire. This may be your home, another building made of more resistant materials or that is less exposed to burning vegetation, your car, or an open outdoor area like an irrigated playing field or parking lot far from vegetation. Stay calm and together while the wildfire passes. When directed, or when the fire outside subsides, move to a safer area.

**If safe evacuation is not an option, follow these steps:**

#### Shelter in a House or Building

- A building should be your first choice for shelter if evacuation is not possible.
- Close all doors and windows and leave them unlocked.
- Keep car keys, cell phone, ID, and flashlight with you.

- Gather all family members and pets (in carriers) and lay down near the front door, protecting your airway by breathing near the floor if it becomes smoky or hot.
- Monitor the fire and be observant. Watch for small (spot) fires.
- Call 9-1-1 and let them know your location.
- Leave the house only if it becomes too hot or smoky inside, or when it's obviously safer outside.

#### Shelter in Your Car

- If your escape route is blocked and there is no safe building nearby to take refuge in, park and stay in your car - it is far safer than being out in the open.
- Never attempt to evacuate by unpaved fire-roads.
- Find a place to park on pavement that has little or no vegetation, in an *outside turn* if on a hillside.
- Turn on headlights and emergency flashers to make your car more visible through heavy smoke.
- Close all windows and doors, shut off all air vents, and turn off the air conditioner.
- Get below the windows, under blankets (preferably wool) and lie on the floor to shelter yourself from radiant heat if it becomes hot.
- Call 9-1-1 and let them know your location.
- Stay in the vehicle as long as possible.
- Wait until the fire front passes and temperature has dropped outside, then get out and move to a safe area that has already burned.

#### ALWAYS:

##### COMMUNICATIONS

- ☐ Keep your cell phone fully charged.
- ☐ Notify an out-of-area contact of your phone number, location and status. Update regularly.
- ☐ Leave a note with your contact info and out-of-area contact taped to fridge or inside a front window.
- ☐ Check on or call neighbors to alert them to prepare at first sign of fire.

##### ON YOUR PERSON

- ☐ Dress all family members in long sleeves and long pants; heavy cotton or wool is best, no matter how hot it is.
- ☐ Wear full coverage goggles, leather gloves, head protection.
- ☐ Cover faces with a dry cotton or wool bandanna or scarf over an N95 respirator. Tie long hair back.
- ☐ Carry a headlamp *and* flashlight (even during the day).
- ☐ Carry car keys, wallet, ID, cell phone, and spare battery.
- ☐ Drink plenty of water, stay hydrated.
- ☐ Put "Go Kits" (*reverse*) in your vehicle.

##### PETS & ANIMALS

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

#### IF TIME ALLOWS:

##### INSIDE THE HOUSE

- ☐ Shut all windows and doors (interior too) and leave them *unlocked*.
- ☐ Remove combustible window shades and curtains; close metal shutters.
- ☐ Move furniture to the center of the room, away from windows.
- ☐ Leave indoor and outdoor lights on.
- ☐ Shut off HVAC and ceiling fans.

##### OUTSIDE & IN NEIGHBORHOOD

- ☐ Place combustible outdoor items (patio furniture, toys, doormats, trash cans, etc.) in garage or 30' from structures (optional: place in a pool).
- ☐ Shut off gas at the meter or propane tank; move small tanks at least 15' away from combustibles.
- ☐ Connect garden hoses with squeeze-grip nozzles to outdoor spigots for use by firefighters.
- ☐ Fill water buckets and place around outside of house, especially near decks and fences.
- ☐ Clean your gutters and blow leaves away from house.
- ☐ Back your car into driveway, loaded, with doors and windows closed.
- ☐ Prop open fence and side gates.
- ☐ Place ladder(s) at the corner(s) of structures for firefighters.
- ☐ Seal attic and ground vents with pre-cut plywood or metal covers (even duct tape will protect from ember entry) if time allows.
- ☐ Patrol your property and monitor conditions. Leave if spot fires ignite or conditions change.

#### WHEN YOU LEAVE:

- ☐ Leave immediately if ordered.
- ☐ Don't wait for an evacuation order if you feel unsafe or conditions change; leave early if unsure.
- ☐ Assist elderly or disabled neighbors.
- ☐ Carpool with neighbors to reduce traffic.
- ☐ Take only essential vehicles with adequate fuel.
- ☐ In your car, turn on headlights, close windows, turn on inside air and AC, tune to local radio.
- ☐ Drive slowly and defensively; be observant.
- ☐ The best evacuation route is usually the one you know best. Take the fastest *paved* route to a valley floor, away from the fire if possible.
- ☐ Proceed downhill, away from the fire if possible. Know at least two routes.
- ☐ If roads are impassable or you are trapped: take shelter in a building, car, or an open area; park in an *outside turn* if trapped on a hillside; stay far from vegetation; look for wide roads, parking lots, playing fields, etc.
- ☐ If trapped, you are better protected inside a building or vehicle.
- ☐ Don't abandon your car in the road if passage is impossible. If you must leave your car, park it off the road and consider other options for shelter.
- ☐ Evacuate on foot *only* as a last resort.
- ☐ Don't evacuate by fire road, uphill, or into open-space areas with unburned vegetation.
- ☐ Remain calm - panic is deadly.





Your Family's Name

Family Emergency Communications Plan

HOUSEHOLD INFORMATION

ADDRESS

PHONE

EMAIL

NAME

MOBILE

EMAIL

OTHER # or SOCIAL MEDIA

NAME

MOBILE

EMAIL

OTHER # or SOCIAL MEDIA

NAME

MOBILE

EMAIL

OTHER # or SOCIAL MEDIA

NAME

MOBILE

EMAIL

OTHER # or SOCIAL MEDIA

SCHOOL, CHILDCARE, CAREGIVER, WORKPLACE

NAME

ADDRESS

PHONE

EMAIL

WEB

EMERGENCY PLAN/PICKUP

NAME

ADDRESS

PHONE

EMAIL

WEB

EMERGENCY PLAN/PICKUP

LOCAL CONTACTS

NAME

ADDRESS

PHONE

EMAIL

NAME

ADDRESS

PHONE

EMAIL

OUT-OF-AREA CONTACTS

NAME

ADDRESS

PHONE

EMAIL

NAME

ADDRESS

PHONE

EMAIL

LOCATION 1

INSTRUCTIONS

LOCATION 2

INSTRUCTIONS

LOCATION 3

INSTRUCTIONS

IMPORTANT NUMBERS & INFORMATION

FIRE & MEDICAL EMERGENCIES IN MARIN 911 or 415-472-0911

POLICE, SHERIFF EMERGENCIES IN MARIN 911 or 415-472-0911

MARIN FIRE INFORMATION HOTLINE 415-473-7191

POISON CONTROL IN MARIN or CA 800-222-1222

SOCIAL MEDIA, FIRE INFO @marinsheriff, @marincountyfire

YOUR LOCAL AGENCIES (SOCIAL MEDIA)

LOCAL RADIO AM 740, AM 810, FM 106.9, FM 88.5; West Marin: FM 90.5 Point Reyes, FM 89.9 Bolinas.

PHYSICIAN

PEDIATRICIAN

VETERINARIAN

INSURANCE

HOMEOWNER/RENTER POLICY

AUTO POLICY

MEDICAL POLICY 1

MEDICAL POLICY 2

WILDFIRE & EMERGENCY "GO KIT"

- Put together an emergency supply kit in advance for each family member 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. Store kits in backpacks.

  - Bandana, N95 respirator, goggles, leather gloves, long shirt and pants (cotton or wool), boots, hat
  - Flashlight and headlamp with spare batteries
  - Extra car keys, credit cards, cash
- Map marked with two evacuation routes (if possible)
  - Prescription medications
  - Extra eyeglasses or contact lenses
  - First aid kit
  - Battery-powered radio and extra batteries
  - Copies of important docs (birth certificates, passports, insurance policies, etc.)
  - Pet food and water, leashes, pet supplies and medications
- Water bottles and food
  - Sanitation supplies
  - Change of clothing
  - Spare chargers for cell phones, laptops, etc.

Items to take *only if time allows:*

  - Easily carried valuables
  - Family photos, small heirlooms, and other irreplaceable items
  - Personal computer data and digital information backups on hard drives and/or disks

Maintain Awareness, Leave Early THE EVACUATION PROCESS

YOUR WILDFIRE EVACUATION ROUTE

Your primary evacuation route is usually the one you would take to the grocery store! Take the fastest and most familiar route to a wide, primary road on the valley floor, away from the fire if possible. Never evacuate uphill unless directed to do so by fire or law enforcement authorities. Don't evacuate by fire road or "cross country" trails where you might be exposed to unburned vegetation.

Alerts and Notifications

When a wildfire threatens your community, emergency managers will determine areas to be evacuated, and routes to use, depending upon the fire's current and predicted location. Law enforcement officers are responsible for enforcing an evacuation order. Follow their directions promptly.

If time allows, officials will attempt to advise you of the safest evacuation routes. You must take the initiative to keep informed and alert. Listen to your radio for updates on changing conditions. Monitor Alert Marin and Nixle for notifications and updates You may be directed to temporary assembly or refuge areas to await transfer to a safe location.

Children and Schools

Public and private schools will attempt to notify parents, and evacuate children only if time allows. Schools may need to "shelter in place" and will protect children in safe places on campus if a wildfire strikes without time to evacuate.

When an evacuation is ordered, parents may not be allowed in to the evacuated area to pick up students! Communicate this with your children in advance, and send them to school prepared with the tools they need to communicate and protect themselves, such as extra food, long cotton clothing, and a list of primary and alternate emergency contacts and numbers.

Fire Roads

Fire roads are for firefighter use, and are never a safe option for evacuation. Stay on pavement, in your vehicle if possible. The unmaintained vegetation on fire roads, and requirement for high-clearance, 4-wheel drive vehicles makes them unsuitable for evacuation.

Paved Roads

Take the fastest route towards the open areas and wide roads of a valley floor - the route you normally take to the grocery store is usually the best route to evacuate by. If available, law enforcement officers will direct traffic and wave vehicles through intersections. Even during an extreme wildfire, when there may be fire on both sides of the road, you will be safer inside your vehicle than out. Keep the windows rolled up, outside vents closed, turn your lights on, and drive slowly and carefully. Don't panic if caught in traffic. You are safer in your car than outside! Do not stop to ask law enforcement officers or firefighters for fire information.

Temporary Refuge or Assembly Areas

Open locations free of unburned vegetation may be safe places to wait while a fire passes. If your evacuation route is blocked or impassable, a wide parking lot, ball field, or even a house or commercial building may provide temporary shelter. Parking your car, with windows up, in a location far from vegetation or structures and waiting for the fire to pass, is often a safe option for sheltering in place. Authorities may choose to evacuate the temporary refuge areas en-masse when it's safe to do so.

Evacuation Centers

Emergency managers will attempt to provide information on safe evacuation centers if time allows. Plan to drive towards the highway 101 corridor. The Marin Civic Center Fairgrounds are a pre-designated evacuation facility and a safe location for evacuees. For small-scale local evacuations or disaster recovery and sheltering, local schools, community centers, or large parking lots may be used.



# Fire Weather

## RED FLAG WARNINGS

Monitoring predicted fire weather can provide advanced warning and extra time to prepare before a fire strikes. During the North Bay Fires of 2017, the National Weather Service issued a Red Flag Warning 72 hours before the fires began.



### What is a Red Flag Warning?

A Red Flag Warning or Fire Weather Watch is issued by the National Weather Service (NWS) when predicted weather conditions may result in extreme fire behavior.

**Red Flag Warning: Take Action.** A Red Flag Warning alerts the public and land managers of an ongoing or imminent critical fire weather pattern. NWS issues a Red Flag Warning when fire conditions are ongoing or expected to occur shortly.

**Fire Weather Watch: Be Prepared.** A Watch alerts land managers and the public that upcoming weather conditions could result in wildfire ignitions or extreme fire behavior. A watch means critical fire weather conditions are expected but not imminent or occurring.

### How are Red Flag Warnings Determined?

Low relative humidity, strong winds, dry fuels, the possibility of dry lightning strikes, or any combination of the above may lead to a Red Flag Warning. Red Flag conditions are often related to north and northeast wind events ("Diablo" winds in Northern California, "Santa Ana" winds in Southern California) lasting at least eight hours. Relative humidity and wind speed are the primary factors driving a Red Flag Warning declaration.

### How will I be notified of a Red Flag Warning?

Local TV, print, and radio weather stations will broadcast Red Flag and other weather warnings. Marin authorities will use "Nixle" and social media to send information about Red Flag Warnings by text message. Monitor National Weather Service at @NWSBayArea or [www.wrh.noaa.gov/fire2/cafw/index.php](http://www.wrh.noaa.gov/fire2/cafw/index.php).

### Are public lands closed during a Red Flag Warning?

Marin fire agencies work with public land owners to determine if land use restrictions will go into effect. These restrictions may include temporary road closures or suspension of special use permits. For information on Red Flag Land Use Restrictions, call public lands before visiting or call the Marin County Fire Department public information line at (415) 499-7191.

During a Red Flag Warning, local fire agencies may place additional firefighters on duty, staff more fire engines and keep more equipment on 24 hours a day to be able to respond to any new fires.

### What Should I Do During a Red Flag Warning?

During a Red Flag Warning or Fire Weather Watch, you must be extremely cautious, prepare your family, and take steps to prevent wildfires.

- Review your Go Kit and ensure it's complete (page 13).
- Prepare your home and family for a potential fire by reviewing the steps on your evacuation checklist (page 12).
- Gather your important documents and belongings where they can be quickly loaded if evacuation is necessary.
- Ensure your phones are charged and receiving messages.
- Remain alert and monitor conditions outside and nearby.
- Don't use power tools, barbecues, or any potential heat or spark source outside.

# Wildfire Evacuation

## TIPS & TRICKS

### Evacuating During a Power Failure

It's very common for the power to go out before a fire strikes, since fire and winds can damage electrical infrastructure. PG&E may have shut the power down preemptively. You need to be prepared to communicate and escape, even without power. How will you receive warning at night if the power is out, and how will you open your garage door to evacuate if there is no power?



### Garage Doors: Battery Backup

For garage doors, a battery backup should be installed. They typically cost less than \$100, and can be installed by homeowners. Check with your garage door opener manufacturer to see if they make a battery specific to your opener model, although universal models are available. Many new openers have a battery built-in.

### Communications: Battery Backup/UPS

For home phones and internet connections, a "UPS" Uninterruptible Power Supply is a good option. They are available locally, in-stock at Best Buy, Costco, and other electronics stores.

The larger the UPS is, the longer it will last when the power goes out (consider the 1500VA model, about \$150). Consider keeping one dedicated to your home phone, and another dedicated to your internet cable modem. A 1500VA model will last about 2-4 hours when attached to a cable modem and router, and a home phone may run for up to 24 hours, depending on usage.



Please consult with the manufacturer for specifics and installation instructions. Test regularly to confirm function.

### Evacuating Your Pets

Lives have been lost when evacuating residents stayed behind, unable to find or catch their own pets. Your pets will hide when they sense a threat or your own anxiety. Locate your pets early, and place in carriers with food and water near your front door at the first sign of trouble.

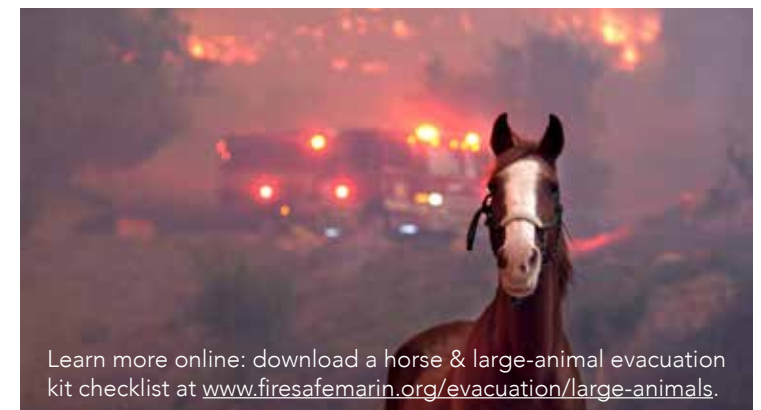
Ensure your pet's safety by:

- Microchip and register your pets.
- Keep recent photos of your animals electronically.
- Pack a "Go Kit" for yourself and your pets with food, medications, and leashes.
- Keep a soft carrier and food/water bowls nearby.
- Allow extra time to locate and pack your animals.



### Evacuating Large Animals

Preparing horses and other large animals for a wildfire evacuation requires an extra level of planning, preparedness and practice. Building an evacuation kit for each animal, and having a plan for them that's been practiced, increases the potential your horse will be able to leave when you do. If the wildfire's proximity does not permit the time needed to load horses, it's best to turn them loose and not leave them confined in a barn or pasture. Close the doors and gates so they can't re-enter the area.



Learn more online: download a horse & large-animal evacuation kit checklist at [www.firesafemarin.org/evacuation/large-animals](http://www.firesafemarin.org/evacuation/large-animals).



# HOME HARDENING

## Preventing Structural Ignition



**Most structural losses during wildfires can be minimized with ember and ignition resistant materials and design. The materials and tools required are already on the shelf at your local building supply company!**

## WILDFIRE EMBERS

Embers are the most significant cause of home ignition in wildfires. Wildfires can shower entire neighborhoods with millions of tiny, burning embers, often well in advance of the main fire and often before firefighters have time to respond.

Recent research indicates that 66%-90% of homes destroyed by wildfires are ignited by embers - not from the actual flames of the fire.

Embers are capable of igniting and burning your home in several ways. To create a wildfire-safe home, two equally important factors must be considered: 1) select building materials and designs that help the home resist ignition and the intrusion of embers; and 2) create adequate defensible space and firescaping based on the wise selection, placement, and maintenance of vegetation and hardscape features.

Protection from embers should be every homeowner's top priority when creating a fire safe home.

## Common Ember Vulnerabilities



### Roofing Materials

A fire rated roof is the most important feature you can install to protect from embers. Installing a roof covering with "Class A" fire rating, such as steel, tile, or asphalt composition shingles provides the greatest amount of protection from embers. See page 23.



### Vents and Openings

Research conducted by the Insurance Institute for Business & Home Safety (IBHS) shows that the simple, inexpensive measure of placing 1/8" or smaller wire mesh screens over attic and crawlspace vents can reduce the likelihood of an ember igniting a home. See page 25.



### Decks and Balconies

Decks and balconies are vulnerable because they are usually attached to a home and are often next to a window or sliding glass (or other) door. Decks are vulnerable to embers from above and below, due to large flat surfaces and often debris and storage below. See page 22.



### Rain Gutters

Even homes with a fire resistant roof can burn if rain gutters are not kept clean. Even a small amount of leaves or needles may be enough to ignite from embers and spread fire to the home. Metal rain gutters with flashing and a metal cover provides the best protection. See page 24.



Wildfire Resistant Homes

DESIGN & MATERIALS

Simple design and material decisions can make a big difference in your home’s survivability. Choosing a “Class A” roof; siding materials like stucco or fiber-cement; double-pane, tempered glass windows; and ember resistant screens over attic and crawlspace vents can potentially save your home, family, and belongings.

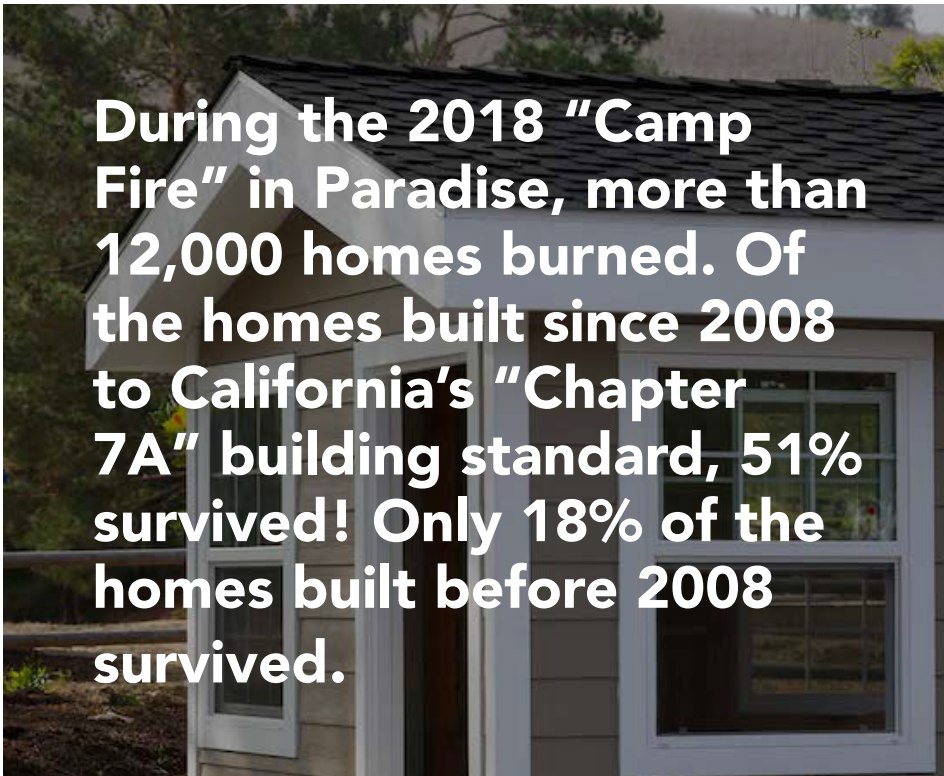
When planning improvements to reduce wildfire vulnerability, consider your home’s immediate surroundings. The vulnerability of your home is largely determined by the exposure of exterior material to embers, radiant heat and flames during the wildfire.

The higher the expected fire intensity near your home, the greater the need for fire resistant and noncombustible construction materials and design. Since embers may travel great distances ahead of a fire, ember resistance should be considered even when direct flame contact is unlikely.

In California, the Wildland Urban Interface (WUI) Building Standard, Chapter 7A of the Building Code, affects how new homes are built in wildfire-prone areas. This code applies to new construction in Marin’s WUI areas, and mandates the use of fire-resistant materials, assemblies, and design features.

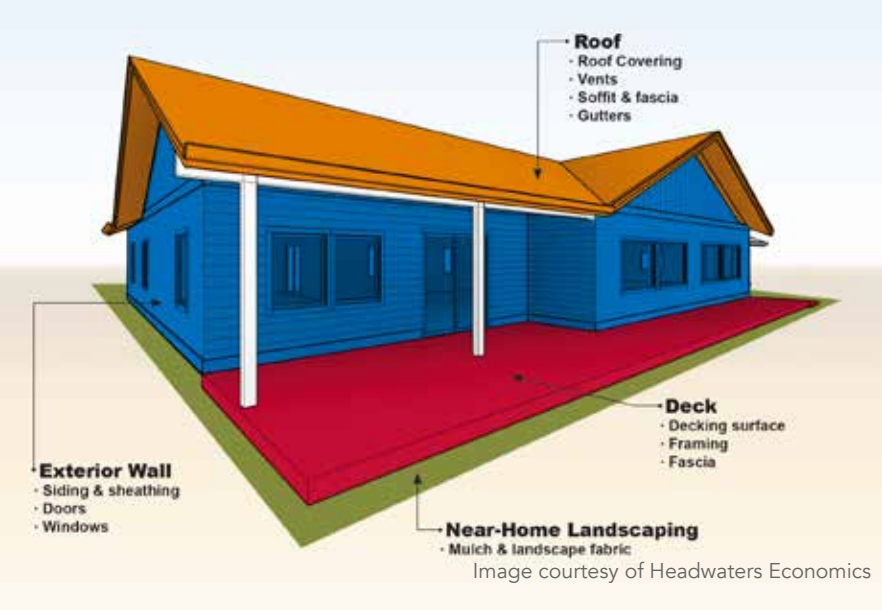
The ideal time to address home ignition is when it is in the design phase. Owners of existing homes and buildings should utilize the code to help decide what fire resistant features and materials are required when remodeling. Check with your local fire and building departments to find out about additional local requirements.

Homeowners can still take steps to reduce ignitability of an existing home by retrofitting materials and features. Many times, simple retrofits like vent-screens or new rain gutters, or removing combustibles from the surfaces and undersides of decks, are the most cost effective measure one can take to protect their home.



What’s the cost of a wildfire resistant home?

A landmark 2018 report by Headwaters Economics found that a new home built to wildfire-resistant codes can be constructed for roughly the same cost as a typical home. The study found negligible cost differences between a typical home and a home constructed using wildfire-resistant materials and design features. Decades of research and post-fire assessments have provided clear evidence that building materials and design, coupled with landscaping on the property, are the most important factors influencing home survivability during a wildfire.



Building Material Ratings

What’s the meaning?

Combustible, non-combustible, ignition-resistant, and fire-resistant materials

When researching, designing, and choosing materials for homes in wildfire-prone areas, you’ll likely encounter these four terms. Though the definition of “combustible” materials may be obvious, “noncombustible,” “ignition resistant,” and “fire resistant” materials are different, even though they often serve the same function. These basic definitions will help in your quest for to build a more resilient home.

**Combustible** Materials that ignite and burn easily are described as combustible. They also release flammable vapors that support further combustion during a fire. Many common building materials are combustible, including wood, composites, and plastics. Avoid combustible materials on the exterior of structures in wildfire-prone areas.

**Noncombustible** By passing certain testing criteria, materials like concrete, brick, most metals, and glass are rated noncombustible, and do not ignite, burn, or release combustible vapors during a fire. Non-combustible materials are the best option for a fire-safe exterior.

**Ignition resistant** This designation often applies to manufactured products like treated lumber and refers to the amount of time they take to ignite during a fire. Because ignition-resistant materials are combustible, they must be subjected to accelerated weather testing to ensure consistent performance over time.

**Fire resistant** This rating is commonly given to materials and assemblies that are designed to contain fire and retain structural integrity, offering time for occupants to escape and for firefighters to arrive. This rating is often accompanied by a time. Some exterior doors and walls, for example, have a fire-resistance rating of 20, 60, or 90 minutes.



# BUILDING FEATURES

**ROOFING** (see pages 23-24)  
The roof is the most vulnerable part of your home. Homes with wood or shingle roofs are at high risk of being destroyed during a wildfire. *Learn more on page 23.*



**GUTTERS**  
Screen or enclose rain gutters to minimize accumulation of leaves. Choose metal gutters instead of vinyl. Clean frequently during fire season. *Learn more on page 24.*

**POWER & GENERATORS**  
There is a high likelihood that power will be out when a fire strikes. A backup generator can provide power to phones and internet, well pumps, refrigerators, and safety systems like fire alarms, garage door openers, and lights. Inexpensive Uninterruptible Power Supply (UPS) backup batteries can power small devices like landline phones, internet routers, and garage door openers for short periods.

**SIDING**  
Wood products, such as boards, panels or shingles, are combustible, making poor choices for fire-prone areas. Consider replacing wood or vinyl\* siding with ignition resistant or noncombustible materials such as:

- Fiber-cement
- Plaster
- Stucco
- Masonry (concrete, stone, brick or block)

*\* Vinyl siding will melt and fall away when exposed to radiant heat, exposing combustible materials beneath.*

Good defensible space protects siding from exposure to radiant heat or flames (pg 27).

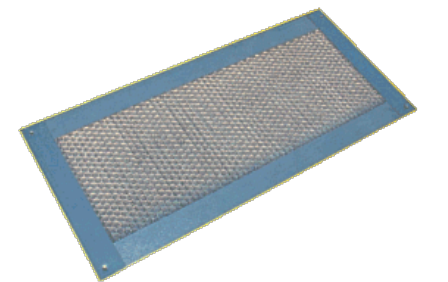
**WINDOWS**  
Use multi-pane or tempered glass. Tempered glass has a greater resistance to breaking when exposed to heat, compared to regular annealed glass, and is required by Chapter 7A. Vinyl windows can fail when exposed to extreme heat.

Consider limiting the size and number of windows that face large areas of vegetation.

**SOFFITS & EAVES**  
Enclose the under-eave area by “boxing in” and protecting vent openings. Eaves and soffits should be built with ignition-resistant or noncombustible materials. Soffit vent openings should be covered with 1/8” (minimum) metal mesh screen or commercial vents approved by the California Office of the State Fire Marshal (preferred).

**SKYLIGHTS**  
For skylights, glass is a better choice than plastic or fiberglass. Watch for leaf and needle buildup behind, and on top of skylights on flat and lower sloped roofs.

**VENTS** (see pages 25-26)  
Foundation, attic, and soffit vents on homes create openings for flying embers. Cover all vent openings with 1/8” (minimum) metal mesh screen. Do not use plastic-clad fiberglass because they can melt and burn.



Commercial vents such as the “Vulcan Vent” (pictured) provide even better protection, when they have been approved by the California Office of the State Fire Marshal as being ember and flame resistant. Retrofitting vents can be a cost effective ways to make your home more resilient. *Learn more on Page 25.*

**CHIMNEYS**  
Cover your chimney and stove-pipe outlets with a non-combustible screen. Use metal screen material with openings between 3/8” and 1/2” to minimize the size of escaping embers. Ensure that no tree limbs are closer than 10’ to the roof or chimney.

# EXTERIOR FEATURES

**ATTACHMENTS**  
Anything attached to the house, such as room additions, bay windows, fences, decks, porches, and carports should be considered part of the house. These can act as fuel bridges and ember catchers, and are particularly dangerous if constructed from combustible materials like wood.

Protect all overhangs and “attachments” by removing all vegetation and other combustibles within 5 feet. Follow the steps for creating Defensible Space within 30’ of these components.

Replace wood gates and fences with metal where they are attached to the house.

**DECKS, BALCONIES**  
Decks should be kept free of combustible materials, furniture, and debris. Never store combustible items such as lumber or firewood beneath your deck.

The undersides of decks can be enclosed with 1/8” wire screen to reduce the entry of embers. Fully enclosing the underside of decks with noncombustible materials is an option.

Deck surfaces within 10 feet of a building should be built with ignition-resistant, noncombustible, or other approved materials.

Elevated wooden decks should not be located at the top of a hill where a fire can burn below. Consider a terrace with a concrete, stone or brick surface.



**FENCES**  
Wood fences should not be attached directly to the house, as they catch wind blown embers and readily ignite. Consider using ignition resistant or noncombustible fence materials.

If a wood fence must be attached to the house, separate the fence from the house with a masonry barrier or metal gate.

**GARAGE**  
Install weather-stripping around and under the garage door to prevent embers from blowing in. Ensure that the garage door is regularly adjusted for a tight seal.

Keep combustibles elevated off of the floor on shelving in case an ember gets in.

Install a battery backup for your door opener!

**PATIOS**  
Use noncombustible materials such as tile, stone, or concrete. Patios can be placed strategically as fire breaks.

**DRIVEWAYS**  
Driveways must be built and maintained in accordance with state and local codes to allow fire and emergency vehicles to reach your home. Fire Engine turn-arounds may be required on new driveways.

Maintain vegetation to provide at least 10’ horizontal clearance from a road or driveway edge (similar to Defensible Space Zone 1 requirement) in order to reduce heat exposure during a fire.

Ensure that gates open inward and are wide enough for emergency vehicles (12’ minimum).

Trim trees overhanging roads and driveways to 14’ vertically to allow emergency vehicle clearance.



**ADDRESS NUMBERS**  
Make sure your address is clearly visible from the road. 4” numbers on a contrasting background are required by law. Lighted numbers are best!

**WATER SUPPLY**  
Keep multiple garden hoses with “squeeze grip” nozzles, long enough to reach all areas of your home and other structures on your property. If you have a pool or well, install a fire pump.



# Fire Resistant Homes

## ROOF AND GUTTERS



With a large surface likely to catch embers during a wildfire, the roof is the most vulnerable part of a home.

Roofs tend to collect dead vegetation such as pine needles and leaf litter, which readily ignite from even tiny embers. Even a small handful of leaf litter can put your home at risk, so regular cleaning and maintenance of a roof may be as important as the materials used to construct it.



The roof is most likely to ignite along the surface and the edges where gutters are connected, and where the roof meets other vertical surfaces, such as siding on a split level home, or at a dormer. Ignitions are usually the result of embers igniting debris.

**Regular cleaning and maintenance of a roof may be just as important as the materials used to construct it.**

Homeowners can reduce this threat by regularly clearing leaves, needles, and debris from the roof and gutters, and using ignition-resistant roof and gutter materials.

Roofing materials are tested and receive a fire rating. Class A is the highest rating, offering the highest resistance to fire, and is required for most new roofs.

- Recommended roof materials:
- Metal
  - Tile (with bird stops)
  - Asphalt (composition) shingles

**ROOF MAINTENANCE**  
Maintenance is critical! As roofs age, they become more susceptible to ignition. Regularly inspect your roof, paying close attention to debris accumulation in the valleys, where vertical surfaces meet the roof (like dormers and skylights), and in gutters. Remove accumulated debris.



Regardless of the roofing material, inspect it regularly, maintain it when necessary, and replace it when needed. Consider replacing combustible siding located on dormers or other vertical roof-to-wall locations with a noncombustible siding material like stucco or fiber-cement shingles.

**ROOF REPLACEMENT**  
Replacing a roof is a major project, but it can yield significant benefits. Evaluating the vulnerability of the roof should be a top priority when considering a new home, or remodeling an existing property. An untreated wood shake or shingle roof covering is arguably the greatest threat to a building. The fire rating for a roof covering can be Class A, B, C, or unrated. Class A provides the best performance and protection. An untreated wood shake or shingle roof is unrated (i.e., it has less than a Class C fire rating) and should never be used in Marin. FIRESafe MARIN recommends avoiding even treated wood shingles due to the risk of weathering and the combustibility once the treatment has been compromised.

It can be difficult to tell whether you have a Class A fire-rated roof. The most common example of a Class A covering is asphalt composition shingles. If you are not sure about the fire rating of your roof covering, schedule an inspection by a professional roofer to find out. If you replace your roof, choose one that has a Class A fire rating.

**ROOF DESIGN**  
Roof shape also affects the potential vulnerability of a roof. Roof designs that result in roof-to-vertical-wall intersections (e.g., at a dormer or a chimney chase),



are often referred to as having a complex roof shape. A vertical wall with combustible siding can make your home more vulnerable to ignition when vegetative debris accumulates at these intersections, even if you have a Class A roof covering.

If the roof is adjacent to a vertical wall with combustible siding, like a dormer or other roof protrusion, the ember ignited vegetative debris may ignite the vertical surface and burn your home. Even a fire resistant roof covering may be vulnerable if leaves, needles, or other debris is present.

Consider replacing combustible siding located on dormer or other vertical roof-to-wall locations with

a noncombustible siding product.

Even some non-combustible roof materials like terra-cotta tile may need specific design features to enhance their fire resistance. “Bird stops” on tile ends keep birds from nesting, and embers from igniting, in the exposed space beneath tiles.



Only 1/2 of the tiles shown in this image have bird-stops installed. Embers may ignite debris beneath the exposed tiles.

### RAIN GUTTERS



During a wildfire, material in gutters is likely to ignite, allowing fire to spread to the roof and eaves. Metal angle flashing should be placed between gutters and fascia to provide some protection. Vinyl gutters can melt and detach, leaving this area exposed.

- Recommended gutter materials:
- Metal (aluminum, copper)
  - Metal gutter guards
  - Metal flashing

Install guards to minimize debris accumulation in rain gutters. Maintain the roof where the gutter connects to make sure debris does not accumulate between the guard and roof. Metal gutter guards are best, and plastic or foam materials should be avoided, even if they are advertised as “fire resistant.” Inspect regularly during the fall.



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# Attic, Roof, Foundation

## VENTS AND OPENINGS



**WHAT YOU SHOULD KNOW**  
Attic, roof and foundation vents can be entry points for embers and flames. Embers that enter attics or crawlspaces often ignite combustible debris accumulated or stored in these spaces.

Laboratory testing by the Insurance Institute for Building & Home Safety (IBHS) has demonstrated the vulnerability of vents mounted on vertical walls and surfaces to the entry of embers. Gable end, foundation vents, and eave vents (especially in open-eave construction) are all vulnerable to embers, heat, and flames. Vents in a soffit (boxed-in) eave are not as vulnerable to ember entry or direct flame contact exposures.

Open-eave construction can be vulnerable even if vents are absent. If blocking is improperly installed or has warped over time, gaps can develop where the blocking and rafter tails intersect. As a result, wind-blown embers



Open-eaves and eave-vents are particularly vulnerable to flames and embers.

could become lodged there and ignite debris and potentially the structural support wood members in these areas.

### Attic, roof and foundation vents are often entry points for embers and flames.

Testing conducted at the IBHS Research Center, found that dormer-type through-roof vents are vulnerable to ember entry. Ridge vents rated to resist the entry of wind-driven rain will also resist the entry of embers.

**WHAT YOU SHOULD DO**  
If you have vented openings to your attic or crawl space, make sure screening is present. At a minimum, these vents should be covered with 1/8-inch corrosion resistant metal mesh screen, fine enough to stop embers. Chapter 7A of the California Building Code will allow screening as small as 1/16-inch. Laboratory research shows that embers small enough to pass through 1/4-inch or 1/8-inch screens may ignite fine fuels, so while screening helps, it isn't a perfect answer. While finer mesh screens offer better protection against embers, they also require more maintenance to keep free of debris and maintain airflow.

Keep in mind that flames can pass through mesh screening. This reinforces the importance of defensible space and actions that minimize combustibles near the house. Minimizing the opportunity for flames to impinge on vents and other screened openings on the exterior wall is a critical step to protect your home.



Commercial vents are available that resist both ember and flame entry, while allowing proper ventilation (photo courtesy of Vulcan Technologies).

Gable end vents have been shown to be vulnerable to ember entry. Consider instead a ridge vent with external baffles. These are effective in resisting the entry of embers. Plastic ridge vents must be covered with a noncombustible wire mesh for Chapter 7A compliance, and regular debris removal and cleaning is required.



The "Vulcan Vent®" (left) is one of three vent systems approved by the California State Fire Marshal for use in building construction in the WUI. The other approved vents at the time of printing are "Brandguard®" (middle) and "Embers Out®" (right). Available in different sizes and applications, these vents reduce ember entry and can seal the opening off when exposed to flames and/or radiant heat. O'Hagin Fire & Ice® Line – Flame and Ember Resistant Vents (not pictured) are a good option for through roof vents.

For more information and links to the current list of CA approved vents, visit: [www.firesafemarin.org/vents](http://www.firesafemarin.org/vents)

A new generation of high-tech vents are emerging, engineered to resist both embers and flames. These vents incorporate advanced design features that enhance performance over metal screening alone. Engineered vents offer enhanced protection by dramatically reducing the number of embers entering the space behind the vent, and resisting heat (or closing off entirely) when exposed to flames.

Depending on the ease of accessing your vents, you may prepare vent covers (e.g., using 1/2-inch plywood or sheet metal) and include their installation as part of your wildfire pre-evacuation plan (if time allows). Use of duct or metal tape may also be used as a last-resort. Covers are particularly beneficial for vents on vertical surfaces (gable end, foundation, and eaves) since these vents and locations are most vulnerable to embers.

Commercial closure devices for gable end and open-eave vents are also available. These devices may be manually activated (i.e., closed) by turning or pulling a wall or ceiling-mounted handle. Manufacturers such as Vulcan Technologies and BrandGuard make commercial gable and eave vents that seal or close when exposed to heat and flame.

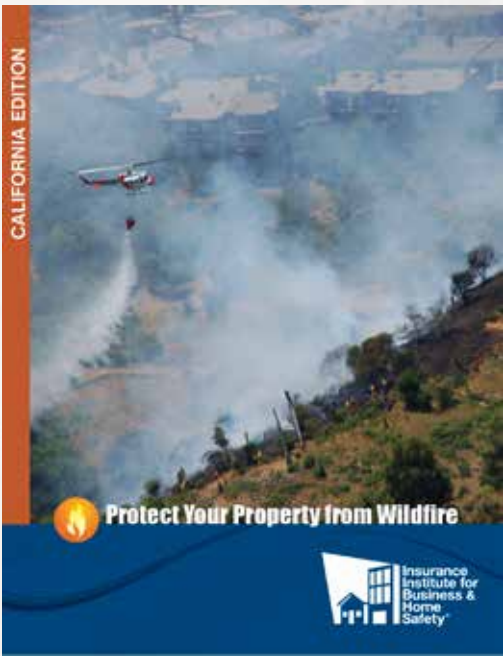


## IBHS RETROFIT GUIDE

Wildfire risk can vary from region to region, and is highly dependent upon the quality of state-wide and/or local building codes, types of building styles, and topography. To address the unique risks facing property owners nationwide, Insurance Institute for Building & Home Safety (IBHS) developed a series of free regional wildfire retrofit guides which include a risk assessment checklist and a cost estimator to help home and business owners prioritize necessary retrofit projects.

Download the California version at:  
[www.firesafemarin.org/retrofit-guide](http://www.firesafemarin.org/retrofit-guide)

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# DEFENSIBLE SPACE

## A ZONE DEFENSE



Defensible Space is the area maintained around homes, roads, and driveways to reduce the intensity of an approaching wildfire while protecting structures and people from flames, heat, and embers.



### Zone Zero: 0'-5'

0

This area starts at your roof and extends 5 feet from walls. Embers are your home's biggest threat!

Remove *all* combustible materials and protect vents and openings where wind-blown embers can enter.

1. Use only inorganic, non-combustible mulches such as stone or gravel.
2. Remove combustible outdoor furniture. Replace with metal or non-combustible varieties.
3. Replace jute or natural fiber doormats with heavy rubber or metal grates.
4. Remove or relocate all combustible materials including garbage and recycling containers, lumber, trash, and patio accessories.
5. Clean all fallen leaves and needles.
6. No vegetation is recommended within 5' of any structure.
7. Remove tree limbs that extend into this zone. Fire prone tree varieties should be removed if they extend into this zone.
8. Do not store firewood, lumber, or combustibles here, even (especially) under decks or overhangs. Move stored combustibles inside or at least 30' from any structure.
9. Hardscaping is strongly recommended around the base of structures.

### Zone 1: 5'-30'

1

Zone 1 extends 30 feet out from buildings, decks, and other structures.

Keep this area "Lean, Clean, and Green," and be sure to maintain regularly throughout fire season!

1. Remove all dead grasses, weeds, plants, and foliage.
2. Remove fire-prone plant varieties.
3. Remove all fallen leaves, needles, twigs, bark, cones, and branches.
4. Remove "Gorilla Hair" or shredded bark mulch. Use only compost or heavy bark mulch to maintain soil moisture, or for erosion control.
5. Choose only fire resistant plants, and keep them healthy and well irrigated.
6. Provide spacing between shrubs, and add space on steeper slopes.
7. Remove limbs 6' to 10' from the ground.
8. Remove branches that overhang your roof or within 10' of chimneys.
9. Move firewood and lumber out of Zone 1.
10. Remove combustibles around and under decks and awnings.
11. Clear vegetation around fences, sheds, outdoor furniture, play structures.
12. Outbuildings and LPG tanks should have at least 10' of clearance.

### Zone 2: 30'-100'

2

Zone 2 is the space extending 30 to 100 feet from buildings, decks, and other structures.

Reduce fuel for fire, and separate trees and shrubs in this area. Remove dead vegetation regularly.

1. Cut annual grasses and weeds to a maximum height of 4".
2. Create horizontal spacing between shrubs & trees.
3. Create vertical spacing between grass, shrubs and lower tree limbs.
4. Allow no more than 3" of loose surface litter (consisting of fallen leaves, needles, twigs, cones, and small branches), if needed, to protect from erosion.
5. Remove all piles of dead vegetation.

#### Work with your neighbors

Many homes do not have 100' of space between structures and parcel lines. Property owners are required to maintain defensible space only to their property line.

Work with neighbors to help provide defensible space for their homes, and ask neighbors for help if their property threatens yours. In most cases, the most effective solution is a cooperative approach between neighbors.

### Access Zone: 0'-10'

3

Property owners are responsible for vegetation adjacent to roads and driveways.

Access roads are critical for evacuation and first responder access. Maintenance is required year-round.

1. Clear vegetation 14' overhead and 10' from sides of roads and driveways in the same manner as Defensible Space Zone 1.
2. Maintain 12' of unobstructed pavement for passage of vehicles.
3. Within this zone, choose only fire resistant plant varieties and ensure that they do not extend into the roadway.
4. 14' of clearance is required above the roadway for emergency vehicle access.
5. Address numbers must be clearly visible from the road, with at least 4" numbers on a contrasting background. Reflective or lighted numbers are best.
6. Create vertical spacing between shrubs and lower tree limbs.

#### Public Right of Way

Many property owners mistakenly believe that they are not responsible for roadside vegetation fronting their property. Property owners are responsible for vegetation adjacent to roads and driveways, even in the public right of way. Ensure that vegetation is maintained on all sides of your property.



# Landscape Design

## FIRESCAPING



**Firescaping is landscape design that incorporates “hardscape” and “plantscape” to reduce a property’s vulnerability to wildfire.**

The goal of Firescaping is to develop a landscape design and choice of plants that offers the best possible fire protection. Select plants that are less likely to burn; and, use hardscape features that will not burn (such as paths and retaining walls) while blocking radiant heat and redirecting wind-blown embers.

Simple landscaping features can significantly improve your home’s chances of surviving a wildfire. “Firescaping” integrates traditional landscaping features into a design that reduces the threat from wildfire.

**“Simple landscape features can provide protection from heat and embers.”**

Firescaping can meet a home’s aesthetic and functional needs while including vegetation modification, water-wise irrigation, and thoughtful use of green areas and hardscape features to create a fire-hardened, defensible space.



Careful planning and firescape design will reduce the possibility of ignition, lower fire intensity, and slow the spread of fire – all factors which will increase a home’s survivability during a wild-fire.

In firescaping, plant selection is balanced with fire resistant landscape features such as retaining walls, paths, fencing, and open areas.

Fuel breaks are a vital component in firescape design. Creating fuel breaks with driveways, lawns, walkways, patios, parking areas, or areas with inorganic mulches, and fences constructed of nonflammable materials such as rock, brick, or concrete slows the spread of fire and separates your home from ignition sources. While bare soil can’t burn, it is not promoted as a firescape element due to aesthetic and soil erosion concerns.

Choose fire resistant plants – typically plants with a high moisture content, larger leaves, low growing, with stems and leaves that are not resinous, oily or waxy. Deciduous trees are generally more fire resistant than evergreens because they have



a higher moisture content when in leaf, and a lower fuel volume when dormant.

Placement and maintenance of trees and shrubs is as important as actual plant selection. When planning tree placement consider their size at maturity. Keep tree

limbs at least 10 feet from chimneys, power lines and structures, and separate canopies so no trees touch. Do not plant shrubs beneath trees. Do not allow trees to overhang roofs where leaves and debris will collect.

**“When designing a fire resistant landscape, remember that less is better.”**



When designing a fire resistant landscape, remember that less is better. Allow plants and garden elements to reveal their innate beauty by leaving space between plants and groups of plants. Open spaces and landscape features such as paths and walls are as important as the plants.



# FIRESCAPING

# 1

## PLANNING & DESIGN

When designing a landscape for fire safety remember: less is better. Simplify visual lines and groupings. A fire safe landscape lets plants and garden elements reveal their innate beauty by leaving space between plants and groups of plants. In firescaping, the open spaces are more important than the plants.

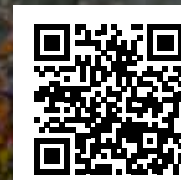
# 2



## PLANT SELECTION

In firescaping, plant selection is primarily determined by a plant's ability to resist ignition. Other considerations may be important, such as appearance, ability to hold the soil in place, wildlife habitat value, pollinator friendliness, and water hardness.

# 3



## HARDSCAPING

"Hardscape" features use ignition resistant or non-combustible materials, like gravel, stone, or heavy timber. These can act as a fuel break and help to slow down or change the path of an approaching fire. Hardscaping reduces water usage, provides visual and aesthetic details, and requires little maintenance. Carefully placed hardscape features like stone walls and basins can break up or deflect airflow, reducing the likelihood that wind blown embers will reach more vulnerable structures.



# FIRE HAZARDOUS PLANTS

## Highest Hazard Species

Certain fire prone shrubs and trees, like juniper, cypress, pampas/jubata grass and bamboo are so combustible that they should be removed & replaced with fire resistant plants (see facing page). Eucalyptus trees, as well as many conifers like pine, cedar, and fir trees should be removed or maintained aggressively for fire resistance.



## FIRE PRONE PLANT CHARACTERISTICS

Many plants are particularly susceptible to fire, igniting readily and burning intensely. These plants should be removed, or separated and aggressively maintained, if present in a home's Defensible Space zones.

- Fire-prone plants typically share certain characteristics:
- They are often blade-leaf or needle-leaf evergreens.
  - They may have stiff, woody, small or fine, lacey leaves.
  - Their leaves and wood often contain volatile waxes, fats, terpenes, or oils (crushed leaves will have strong odors).
  - Their sap is often gummy and resinous, with a strong odor.
  - They usually contain abundant fine, twiggy, dry or dead materials.
  - They may have pubescent (hair covered) leaves.
  - They may have loose or papery bark.
  - These plants flame (not smolder) when preheated and ignited with a match.

## COMBUSTIBILITY & CONDITION

The condition of the plant is often as important as its species. Even some fire-prone species can be relatively fire-resistant if carefully maintained, especially natives. Depending on growth form and access to water, the same species may be fire resistant in one environment and combustible in another. Water-stressed plants in poor health are more likely to burn readily. Species already identified as fire-prone may become explosively flammable when poorly maintained. South-facing slopes, windy areas, sites with poor soils, and urban landscapes cause more stress to plants and lead to greater hazard.

## COMMON FIRE PRONE PLANTS IN MARIN

<i>Abies</i> spp.	Firs
<i>Acacia</i> spp.	Acacia species
<i>Adenostoma fasciculatum</i>	Chamise, Greasewood
<i>Arctostaphylos</i> spp.	Manzanita (some twiggy)
<i>Baccharis</i> spp.	Coyote Brush
<i>Bambusa</i> spp.	Bamboo
<i>Cortaderia jubata</i>	Jubata Grass
<i>Cortaderia selloana</i>	Pampas Grass
<i>Cupressus</i> spp.	Cypress
<i>Cytisus scoparius</i>	Scotch Broom
<i>Eucalyptus</i> spp.	Eucalyptus
<i>Genista monspessulana</i>	French Broom
<i>Juniperus</i> spp.	Junipers
<i>Notholithocarpus</i> spp.	Tan Oak, Tanbark Oak
<i>Pennisetum</i> spp.	Fountain Grass
<i>Picea</i> spp.	Spruces
<i>Pinus</i> spp.	Pine trees
<i>Rosmarinus officinalis</i>	Rosemary
<i>Spartium junceum</i>	Spanish Broom
<i>Thuja</i> spp.	Arborvitae
<i>Tsuga</i> spp.	Hemlock
<i>Ulex europea</i>	Gorse
<i>Umbellularia californica</i>	California Bay
<i>Artemisia californica</i>	Coastal Sagebrush
<i>Cedrus</i> spp.	Cedars
<i>Chamaecyparis</i> spp.	False Cypress
<i>Chrysopsis chrysophylla</i>	Chinquapin, Giant
<i>Erigeron fasciculatus</i>	California Buckwheat
<i>Larix</i> spp.	Larch
Palms	Palm (if dry fronds)
<i>Pickeringia montana</i>	Chaparral Pea
<i>Pseudotsuga menziesii</i>	Douglas-Fir
<i>Quercus</i> spp.	Scrub Oak (brushy oaks)
<i>Salvia mellifera</i>	Black Sage
<i>Taxus</i> spp.	Yew
<i>Vaccinium ovatum</i>	Evergreen Huckleberry

# FIRE RESISTANT PLANTS

Select from this list of fire resistant plants, or consult [www.firesafemarin.org/plants](http://www.firesafemarin.org/plants) for additional species recommendations. **Remember: even "fire resistant" plants will burn without proper maintenance and irrigation!**



## Covers

<i>Ajuga reptans</i>	Carpet Bugle
<i>Armeria maritima</i>	Common Thrift
<i>Cerastium tomentosum</i>	Snow-in-Summer
<i>Delosperma "Alba"</i>	Trailing Iceplant
<i>Drosanthemum</i> sp.	Rosea Ice Plant
<i>Eouonymus F. coloratus</i>	Winter Creeper
<i>Erigeron glaucus</i>	Beach Aster
<i>Fragaria chiloensis</i>	Beach Strawberry
<i>Fragaria vesca</i>	Wood Strawberry
<i>Lampranthus</i> spp.	Bush Ice Plant
<i>Liriope gigantea</i>	Giant Turf Lily
<i>Pelargonium peltatum</i>	Ivy Geranium
<i>Phyla nodiflora</i>	Common Lippia
<i>Potentilla neumanniana</i>	Alpine Cinquefoil
<i>Santolina virens</i>	Lavender Cotton
<i>Sedum</i> sp.	Stonecrop
<i>Senecio</i> spp.	Blue chalksticks
<i>Thymus praecox arcticus</i>	Creeping Thyme
<i>Verbena peruviana</i>	Perennial Verbena
<i>Festuca rubra</i>	Red Fescue
+many more online!	



## Perennials

<i>Achillea millefolium</i>	Yarrow
<i>Aeonium</i> spp.	Aeonium
<i>Agapanthus</i> spp.	Lily-of-the-Nile
<i>Agave</i> spp.	Agave
<i>Aloe</i> spp.	Aloe
<i>Aquilegia formosa</i>	W. Columbine
<i>Asarum caudatum</i>	Wild Ginger

<i>Bergenia</i> spp.	Bergenia
<i>Centaurea cineraria</i>	Dusty Miller
<i>Clinopodium douglasii</i>	Yerba Buena
<i>Cotyledon</i> spp.	Cotyledon
<i>Crassula</i> spp.	Crassula
<i>Dietes bicolor</i>	African Iris
<i>Dietes vegeta</i>	Fortnight Lily
<i>Dudleya dudleya</i>	Cliff Lettuce
<i>Echeveria</i> spp.	Hen and Chicks
<i>Eriogonum</i> spp.	Wild Buckwheat
<i>Eriophyllum confertiflorum</i>	Golden Yarrow
<i>Erysimum capitatum</i>	Foothill Wallflower
<i>Erysimum linifolium</i>	Wallflower
<i>Eschscholzia</i> spp.	California Poppy
<i>Hemerocallis hybrids</i>	Daylily
<i>Hesperaloe parviflora</i>	Red Yucca
<i>Heuchera maxima</i>	Island Alum Root
<i>Heuchera micrantha</i>	Coral Bells
<i>Iris douglasiana</i>	Douglas Iris
<i>Iris macrosiphon</i>	Ground Iris
<i>Iris</i> spp.	Iris
<i>Kniphofia uvaria</i>	Torch Lily
<i>Lupinus</i> spp.	Lupine
<i>Monardella villosa</i>	Coyote Mint
<i>Oenothera berlandieri</i>	Evening Primrose
<i>Penstemon</i> spp.	Beard Tongue
<i>Polystichum munitum</i>	Sword Fern
<i>Ranunculus californica</i>	Buttercup
<i>Romneya coulteri</i>	Poppy
<i>Sidalcea malviflora</i>	Checkerbloom
<i>Sisyrinchium bellum</i>	Blue-eyed Grass
<i>Sisyrinchium californicum</i>	Yellow-eyed Grass
<i>Stachys byzantina</i>	Lamb's Ears
<i>Triteleia [Brodiaea] laxa</i>	Grass Nut
<i>Tulbaghia violacea</i>	Society Garlic
<i>Zauschneria californica</i>	California Fuchsia
<i>Achillea tomentosa</i>	Woolly Yarrow
<i>Mimulus</i> spp.	Monkey Flower
+many more online!	

## Shrubs

<i>Strelitzia reginae</i>	Bird of Paradise
<i>Brugmansia</i> spp.	Angel's Trumpet
<i>Carpenteria californica</i>	Bush Anemone
<i>Coleonema</i> aka "Diosma"	Breath of Heaven
<i>Convolvulus cneorum</i>	Morning Glory
<i>Coreopsis</i> spp.	Coreopsis
<i>Escallonia</i> spp.	Escallonia
<i>Lantana montevidensis</i>	Lantana
<i>Lavandula</i> spp.	Lavender
<i>Lavatera assurgentiflora</i>	Malva Rose
<i>Nolina</i> spp.	Nolina
<i>Prunus lyonii</i>	Catalina Cherry
<i>Punica granatum</i>	Pomegranate
<i>Rhapiolepis</i> spp.	India Hawthorn
<i>Rhododendron</i> spp.	Rhododendrons

<i>Rhus integrifolia</i>	Lemonade Berry
<i>Simmondsia chinensis</i>	Jojoba
<i>Vaccinium corymbosum</i>	Blueberry
<i>Yucca</i> spp.	Yucca
<i>Santolina chamaecyparissus</i>	Lavender Cotton
+many more online!	



## Trees

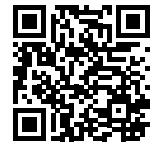
<i>Acer</i> spp.	Maple
<i>Arbutus unedo</i>	Strawberry Tree
<i>Ceratonia siliqua</i>	Carob
<i>Cercis occidentalis</i>	Western Redbud
<i>Cercocarpus betuloides</i>	Ironwood
<i>Citrus</i> species	Citrus
<i>Fagus</i> spp.	Beech
<i>Feijoa sellowiana</i>	Pineapple Guava
<i>Fraxinus</i> spp.	Ash
<i>Macadamia hybrids</i>	Macadamia Nut
<i>Pistacia chinensis</i>	Chinese Pistache
<i>Rhus lancea</i>	African Sumac
<i>Quercus</i> spp.	Oaks
+many more online!	

## Vines

<i>Lonicera hispidula</i>	Pink Honeysuckle
<i>Rosa banksiae</i>	Lady Banks' Rose
<i>Solanum jasminoides</i>	Potato Vine
<i>Symphoricarpos mollis</i>	C. Snowberry
<i>Tecomaria capensis</i>	Cape Honeysuckle
+many more online!	

FIRESafe MARIN maintains an extensive list of locally appropriate fire resistant plants suitable for Marin's climate at [www.firesafemarin.org/plants](http://www.firesafemarin.org/plants).

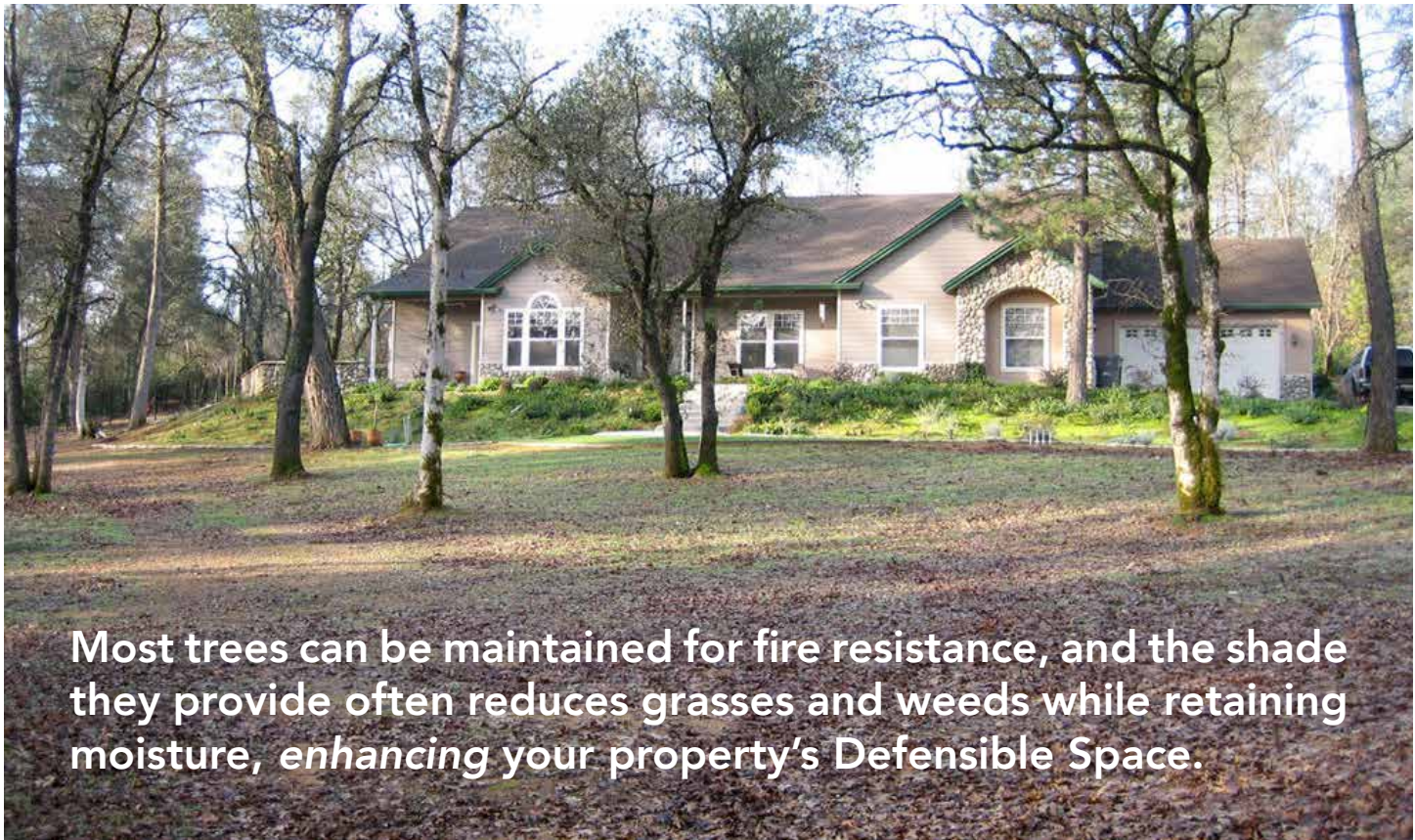
Scan this QR code to learn more about fire resistant plant selection online!





Limb and Maintain

# FIRE RESISTANT TREES



Most trees can be maintained for fire resistance, and the shade they provide often reduces grasses and weeds while retaining moisture, enhancing your property's Defensible Space.

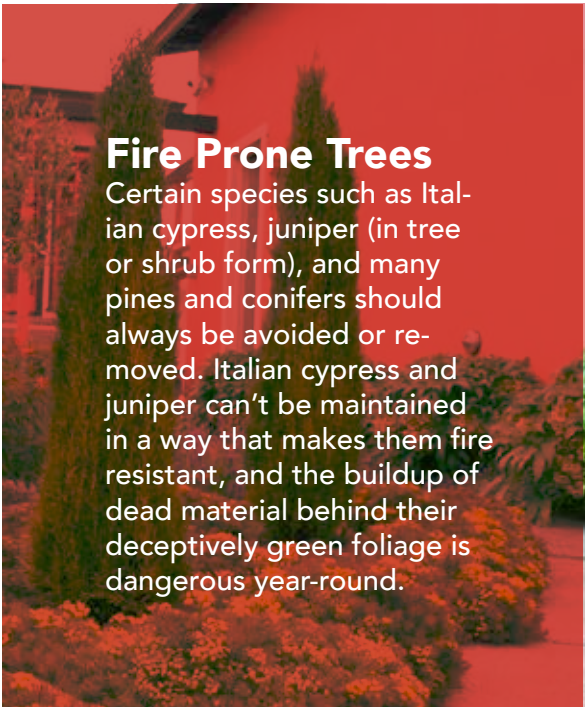
Remove lower limbs of trees so that no foliage is within 10' of the ground (or 1/3 the height of the tree if it's less than 30' tall). Space trees so that the canopies don't touch, and add space on slopes. Remove shrubs and grasses beneath trees, and remove limbs that overhang roofs or within 10' of chimneys.

Fire resistant tree species like oaks, fruit trees, and ornamentals with broad leaves should be favored within 100' of structures. A single specimen is usually okay.

## Limb and maintain trees for enhanced fire resistance.

Consult FIREsafe MARIN's plant list or a licensed arborist to help select the safest species, and maintain your trees in good health for optimum fire resistance.

Consider the species, height, and width at maturity when selecting new trees.



**Fire Prone Trees**  
Certain species such as Italian cypress, juniper (in tree or shrub form), and many pines and conifers should always be avoided or removed. Italian cypress and juniper can't be maintained in a way that makes them fire resistant, and the buildup of dead material behind their deceptively green foliage is dangerous year-round.

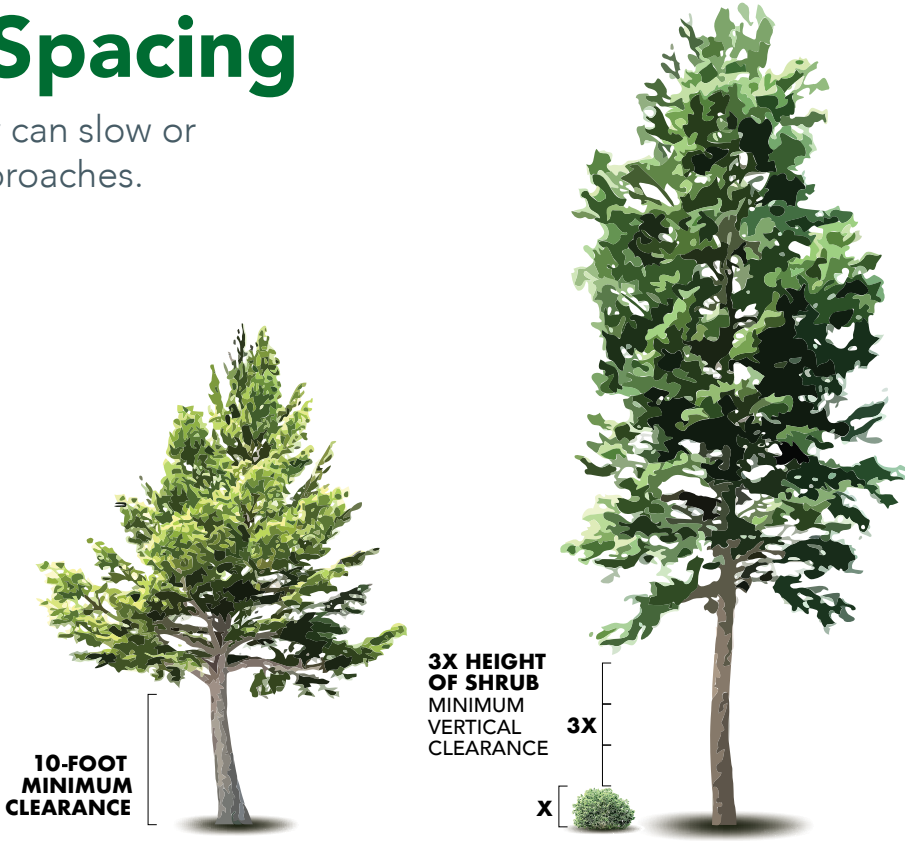
# Tree & Shrub Spacing

Spacing trees and shrubs properly can slow or stop the spread of fire when it approaches.

## Vertical Spacing

Eliminate opportunities for fire to spread to trees:

- Remove shrubs beneath trees.
- Remove limbs to 10' above grade (6' for fire resistant species like oaks & fruit trees), or 1/3 the height of the tree if the tree is immature.
- If fire resistant shrubs are placed beneath tree, create vertical spacing between top of shrubs and the lowest branches as shown - at least three-times (3X) the height of the shrub, and no less than 10'.



Remove lower limbs, shrubs, and grasses which act as "fire ladders" beneath trees.

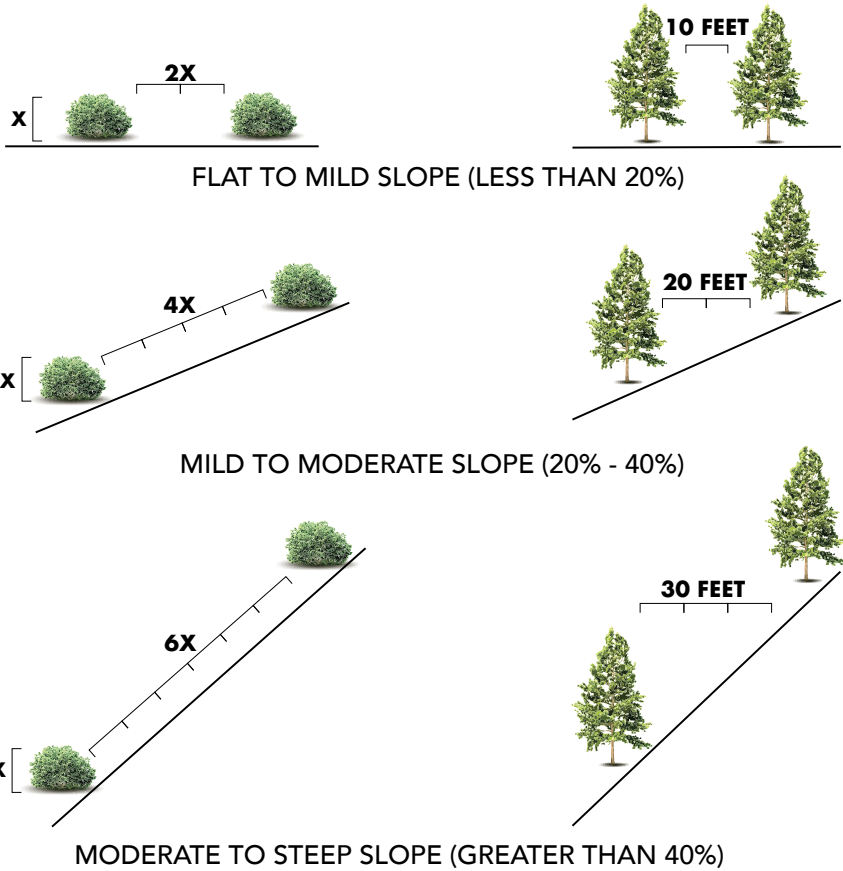
## Horizontal Spacing

Horizontal plant spacing depends on the slope of the land and the height of the shrubs or trees. Check the diagram at right to determine the *minimum* spacing distance.

Add additional spacing as the slope becomes steeper.



Healthy forests with adequate tree spacing are naturally resistant to high intensity wildfires.





# Irrigation, Pruning, Cleanup

## LANDSCAPE MAINTENANCE

Landscape maintenance plays a major role in your home’s resistance to wildfire. Once you’ve established Defensible Space, proper maintenance is required to keep it defensible.



**Water-wise, Firewise**  
A fire-wise landscape can be water-wise, too! Over-watering plants does not improve their health. Maintain plants in a healthy state by watering appropriately for the species. Use a fire resistant heavy bark or compost mulch to hold water in the soil.



**Pruning and Trimming**  
As plants grow, the spacing between them “shrinks.” Regular pruning helps maintain spacing, and removes the dead twiggy materials that can make even a fire resistant plant burn. Larger shrubs should be pruned to provide space between it and the ground.

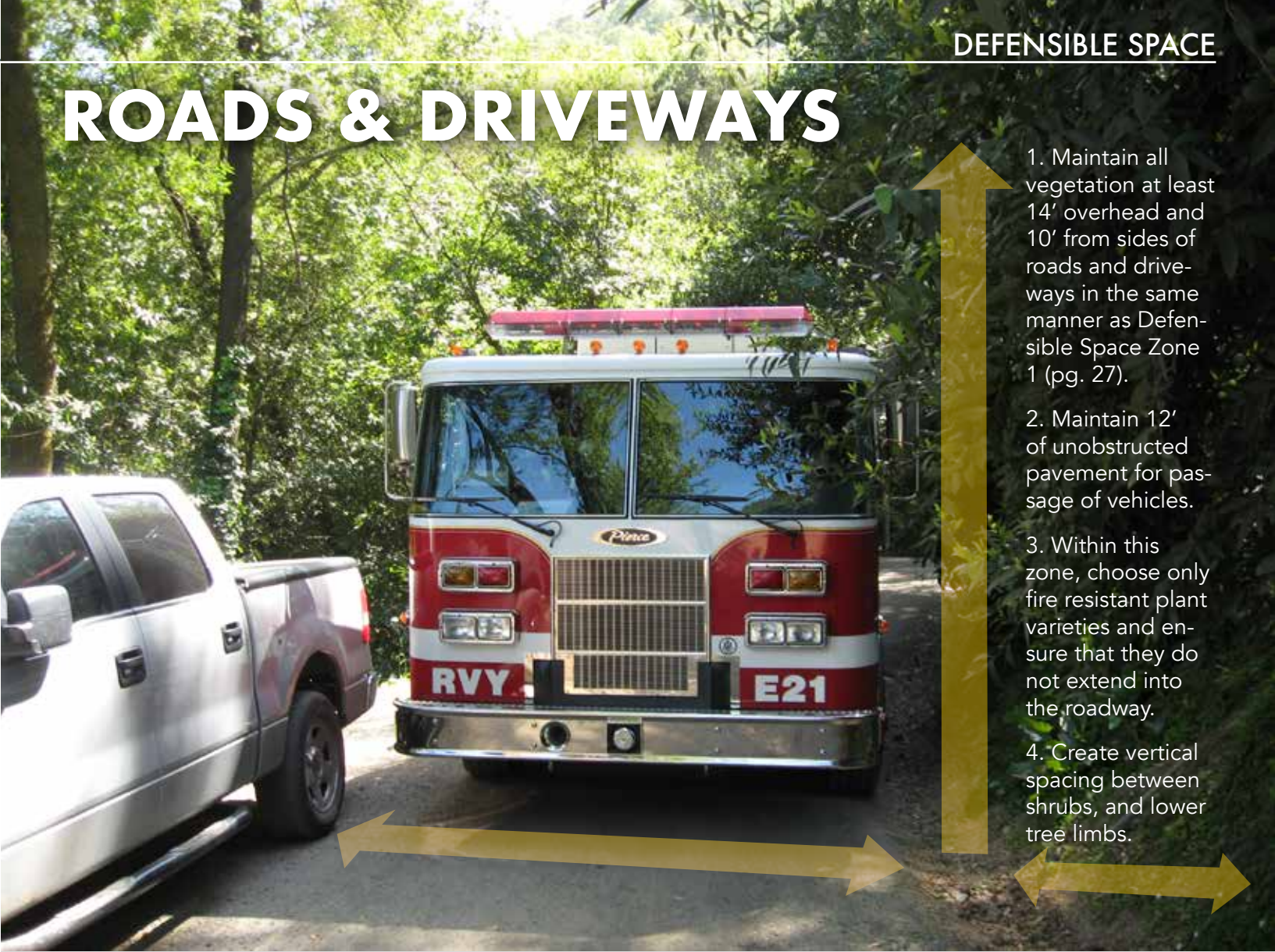


**Fallen Leaves & Needles**  
Even the most fire resistant trees drop leaves regularly, especially in the fall when fire-season is at its worst. Clean up as often as needed, and pay careful attention to your roof and the base of your home. Clean up aggressively when fire weather is extreme.

**Mulches**  
Only noncombustible mulch like pea gravel should be used within 5’ of any structure.  
  
In areas 5’ to 30’ from structures, use only rock, compost, heavy bark, or wood chip mulches greater than 1/2” diameter. Fine bark or shredded red-wood mulch is highly combustible, and ignites easily from embers.



# ROADS & DRIVEWAYS



1. Maintain all vegetation at least 14’ overhead and 10’ from sides of roads and drive-ways in the same manner as Defensible Space Zone 1 (pg. 27).
2. Maintain 12’ of unobstructed pavement for pas-sage of vehicles.
3. Within this zone, choose only fire resistant plant varieties and en-sure that they do not extend into the roadway.
4. Create vertical spacing between shrubs, and lower tree limbs.



Property owners are responsible for maintaining vegetation adjacent to roads and driveways. Clear access to roads and driveways is critical for evacuation, and for first responder access. Maintenance is required year-round.

# POWER EQUIPMENT

Hundreds of fires are started each year by power tools. If you live in a wildland area, use extreme cau-tion during fire season. Lawn mowers, string trimmers, chain saws, grinders, welders, and tractors can all start fires if not used properly.  
  
Mowing: Striking rocks can create sparks and start fires in dry grass. Use caution, mow only early in the day (before 10 a.m., when the weather is calm, cool, and moist). Never mow on a Red Flag day.

Spark Arresters: In wildland areas, spark arresters are required on all portable, gasoline-powered equip-ment. This includes tractors, harvesters, chainsaws, weed-trimmers and mowers.  
  
Keep the exhaust system, spark arresters and mower in proper working order and free of carbon buildup. Use the recommended grade of fuel, and don’t top it off.



# National Recognition “FIREWISE” COMMUNITIES



In 2018, Marin became the *fastest growing county in the nation* for adoption of the Firewise USA program. Firewise USA is a framework for organizing neighborhood scale efforts towards wildfire hazard reduction.

Marin has more recognized Firewise USA sites than any other county in California. Community interest in wildfire safety has never been stronger, and now more than 46 Marin neighborhoods are actively engaged in this valuable grass roots organizing framework, which helps neighbors work together to reduce risk around their homes and in their communities.

## “Scientific research has shown the effectiveness and benefits of implementing the Firewise USA wildfire mitigation concepts”

Since 2002, The Firewise USA recognition program of the National Fire Protection Association (NFPA) has empowered neighbors to work together in reducing their wildfire risk. As of May 2019, there are more than 1600 recognized Firewise USA sites in the U.S., taking action and ownership in preparing and protecting their homes against the threat of wildfire.

Using a six-step process, neighborhoods develop a strategic action plan that guides community risk reduction activities, while engaging and encouraging neighbors to become active participants in building a



safer place to live. Benefits include living in a community more likely to survive a wildfire, and potential discounts on homeowners insurance.

Scientific research has shown the effectiveness and benefits of implementing the Firewise USA wildfire mitigation concepts across individual property boundaries and throughout communities like ours.

Firewise USA sites may receive specific benefits, such as discounts on homeowners insurance, and access to grant funding opportunities for future hazard reduction projects - not to mention a safer community. Reach out to FIRESafe MARIN for help organizing YOUR neighborhood.



**FIREWISE USA®**  
Residents reducing wildfire risks

[www.firesafemarin.org/firewise](http://www.firesafemarin.org/firewise)

# Free Community Chipper Days



FIRESafe MARIN offers support for free “chipper days” in recognized Firewise USA sites. With matching grants and sweat equity, Marin communities dispose of thousands of tons of combustible vegetation each year: [www.firesafemarin.org/chipper](http://www.firesafemarin.org/chipper)

# Goat Grazing Program

To support goat grazing in Marin, text **GOAT** to 77453

FIRESafe MARIN supports goat and sheep grazing as a sustainable, carbon-neutral alternative to mechanical (gas powered) clearing.

In 2019, 1200 goats worked to clear more than 600 acres of vegetation in strategic locations in Marin. This work enhanced “shaded fuel breaks,” restored grasslands, and cleared vegetation to reduce the intensity of potential wildfires and provide safer locations for firefighters to protect Marin communities.

Your support is needed to continue this program. A \$50 donation gets an invitation to a “goat tour,” and \$100 names a goat! Any donation helps! [www.firesafemarin.org/goats](http://www.firesafemarin.org/goats)



[www.firesafemarin.org/goats](http://www.firesafemarin.org/goats)



# YOUR FIRE DEPARTMENT

Marin residents are served by a variety of local municipal fire departments and fire districts. Your local fire department is responsible for enforcement of the Fire Code, setting standards, and providing community safety education and services. All fire departments share responsibility for emergency response, and work together closely through a “mutual aid” system to ensure a statewide response to major wildfires and other large emergency incidents. Get to know your fire department!

	<b>Bollinas Fire Protection District</b> <a href="http://www.bollinasfire.org">www.bollinasfire.org</a> Service Area: Bollinas	100 Mesa Rd, PO Box 126 Bollinas, CA 94924 (415) 868-1566 <a href="mailto:info@bollinasfire.org">info@bollinasfire.org</a>
	<b>Central Marin Fire Department</b> <a href="http://www.centralmarinfire.org">www.centralmarinfire.org</a> Service Area: Corte Madera, Larkspur, incorporated Greenbrae	342 Tamalpais Drive Corte Madera, CA 94925 (415) 927-5077 <a href="mailto:info@centralmarinfire.org">info@centralmarinfire.org</a>
	<b>Inverness Public Utilities District</b> <a href="http://www.invernesspud.org">www.invernesspud.org</a> Service Area: Inverness Public Utilities District	50 Inverness Way Inverness, CA 94937 (415) 669-7151 <a href="mailto:info@invernesspud.org">info@invernesspud.org</a>
	<b>Kentfield Fire Protection District</b> <a href="http://www.kentfieldfire.org">www.kentfieldfire.org</a> Service Area: Kentfield, unincorporated Greenbrae	1004 Sir Francis Drake Blvd Kentfield, CA 94904 (415) 453-7464 <a href="mailto:info@kentfieldfire.org">info@kentfieldfire.org</a>
	<b>Marin County Fire Department</b> <a href="http://www.marincountyfire.org">www.marincountyfire.org</a> Service Area: Marin City, Throckmorton Ridge, West Marin (Woodacre, Hicks Valley, Point Reyes, Tomales)	33 Castle Rock Rd, PO Box 518 Woodacre, CA 94973 (415) 473-6717 <a href="mailto:info@marincountyfire.org">info@marincountyfire.org</a>
	<b>Marinwood Fire Department</b> <a href="http://www.marinwood.org">www.marinwood.org</a> Service Area: Marinwood Community Services District	777 Miller Creek Road San Rafael, CA 94903 (415) 479-0122

	<b>Mill Valley Fire Department</b> <a href="http://www.cityofmillvalley.org/fire">www.cityofmillvalley.org/fire</a> Service Area: City of Mill Valley	1 Hamilton Drive Mill Valley, CA 94941 (415) 389-4130 <a href="mailto:fire@cityofmillvalley.org">fire@cityofmillvalley.org</a>
	<b>Novato Fire Protection District</b> <a href="http://www.novatofire.org">www.novatofire.org</a> Service Area: Incorporated and unincorporated Novato	95 Rowland Way Novato, CA 94945 (415) 878-2690 <a href="mailto:info@novatofire.org">info@novatofire.org</a>
	<b>Ross Valley Fire Department</b> <a href="http://www.rossvalleyfire.org">www.rossvalleyfire.org</a> Service Area: Ross, San Anselmo, Fairfax, Sleepy Hollow	777 San Anselmo Ave. San Anselmo, CA 94960 (415) 258-4686 <a href="mailto:info@rossvalleyfire.org">info@rossvalleyfire.org</a>
	<b>San Rafael Fire Department</b> <a href="http://www.cityofsanrafael.org/departments/fire">www.cityofsanrafael.org/departments/fire</a> Service Area: San Rafael	1600 Los Gamos Drive, Suite 345 San Rafael, CA 94901 (415) 485-3304 <a href="http://www.cityofsanrafael.org/contact">www.cityofsanrafael.org/contact</a>
	<b>Southern Marin Fire District</b> <a href="http://www.smfd.org">www.smfd.org</a> Service Area: Sausalito, Tam Valley, Homestead Valley, Strawberry, parts of unincorporated Tiburon and Mill Valley	308 Reed Blvd. Mill Valley, CA 94941 (415) 388-8182 <a href="mailto:info@smfd.org">info@smfd.org</a>
	<b>Stinson Beach Fire Department</b> <a href="http://www.stinsonbeachfire.org">www.stinsonbeachfire.org</a> Service Area: Stinson Beach	PO Box 308 Stinson Beach, CA 94970 (415) 868-0622
	<b>Tiburon Fire Protection District</b> <a href="http://www.tiburonfire.org">www.tiburonfire.org</a> Service Area: Tiburon	1679 Tiburon Blvd. Tiburon, CA 94920 (415) 435-7200 <a href="http://www.tiburonfire.org/contact-us">www.tiburonfire.org/contact-us</a>



# Homeowners & Renters

## FIRE INSURANCE

During the North Bay fires of 2017, nearly 9,000 homes were destroyed. As many a 74% of the homeowners were under-insured.

### Check Your Coverage Annually

Your home is your largest asset. Protect it. Insurance is the critical back-up plan enabling you to rebuild your home and protect your family after a wildfire. Follow these insurance tips as part of your wildfire preparedness plan:

#### Tip 1: Conduct an Annual Insurance Check Up

Call your agent or insurance company annually to discuss your policy limits and coverage. Make sure your policy reflects the correct square footage and features in your home.

- Get an estimate of the cost of re-building after a wildfire from a local contractor. In Marin, most rebuilding estimates should start at \$400 per square foot or more depending on construction quality and home features.
- Purchase building code upgrade coverage.
- Save money with a higher deductible, not lower coverage.
- Don't underestimate to save money.
- Don't rely on the purchase price or appraised value of your home.

#### Tip 2: Know What Your Policy Covers

Details matter. Ask for a full replacement cost policy that pays to replace all your items at current market price. Ensure that valuables like jewelry, antiques, artwork, firearms and collections are covered.

#### Tip 3: Update Your Policy to Cover Home Improvements

If you make home improvements, be sure to call your agent to update your coverage.

#### Tip 4: Maintain Insurance

If your home is paid off, be sure to maintain homeowner insurance. Without insurance, do you have the money to rebuild your home?

#### Tip 5: Get Renter's Insurance

Renters are just as likely to lose everything in a fire, and are often uninsured. Many insurers bundle renter's insurance coverage with an auto insurance policy at affordable prices.

#### Tip 6: Get 2 years of Living Expense Coverage

Get at least two years of "additional living expenses" coverage, because that's how long it may take to rebuild after a fire.

#### Tip 7: If Your Policy is Cancelled, Act Quickly

If your insurance company notifies you that they will not be renewing your policy, don't panic. Start shopping for a new policy ASAP. By law they have to give you 45-days notice, and you may need that much time to find a replacement policy you can afford.

See [www.uphelp.org](http://www.uphelp.org) for additional insurance information and tips.



#### Tip 8: Make a Home Inventory

Use a smartphone to photograph and video your belongings. Document the contents of your home before a fire occurs. Keep your inventory & photos stored off-site or online in the "cloud."

- Video or photograph each room of your home.
- Remember to document drawers and closets.
- Describe your home's contents in your video.
- Mention the price you paid, where and when you bought the item.
- Remember to note important or expensive items.
- Video your electronics, appliances, sports equipment, TVs, computers, tablets.
- "Schedule" valuable items with your insurer before a fire strikes!
- Save receipts for major purchases.
- Store key documents and your home inventory off site or in the cloud. "Fireproof" safes often do not survive the intense heat of a wildfire.
- Don't forget to inventory what's inside your garage.

# Defensible Space Technicians

## FIND A CONTRACTOR



FIRESafe MARIN provides basic training on fire-safe practices and materials to green industry and building contractors. Contractors and service providers who attend our

workshops are listed on our website, and are searchable by their specialty and services at:

[www.firesafemarin.org/contractors](http://www.firesafemarin.org/contractors)

### Hiring a Contractor

FIRESafe MARIN does not make guarantees about an individual business, their capabilities, insurance or licensing.

Before signing a contract, get multiple bids and check for license and adequate insurance with the Contractor's State License Board at:

[www.cslb.ca.gov](http://www.cslb.ca.gov)

FIRESafe MARIN recommends these steps for choosing the right building, landscaping, or tree-care professional.

- Check for a permanent place of business, phone number, tax I.D. number, and a business license.
- Request verification of current professional liability insurance.
- Look for a company with a proven track record; ask for and check client references and request a list of completed projects.
- Verify whether the contractor is properly licensed and bonded.
- Insist on a written proposal. The proposal should include complete descriptions of the work and specifications, including approximate start and completion dates and payment procedures.
- Check to see if the contractor is a member of any regional or national industry associations, such as NRCA.
- Call the local Better Business Bureau to check for any complaints that have been filed.
- Have the contractor explain his project supervision and quality control procedures.
- Carefully read and make sure you understand any warranty offered; watch for provisions that would void the warranty.
- Remember, price is only one criteria for selecting a contractor. Professionalism and quality workmanship also should weigh heavily on your decision.







## PUBLIC SAFETY POWER SHUTOFF

PG&E is expanding and enhancing their programs to reduce wildfire risk by adopting a "Public Safety Power Shutoff" program. Beginning in 2019, electric lines that pass through certain high fire-threat areas in Marin and California may be shut down during extreme fire-weather event to prevent ignition of new fires.

### Multiple factors inform Public Safety Power Shutoff decisions:



**A RED FLAG WARNING**  
declared by the National  
Weather Service



**LOW HUMIDITY  
LEVELS** generally 20%  
and below



**FORECASTED SUSTAINED WINDS GENERALLY ABOVE 25  
MPH AND WIND GUSTS IN EXCESS OF APPROXIMATELY 45  
MPH**, depending on location and site-specific conditions

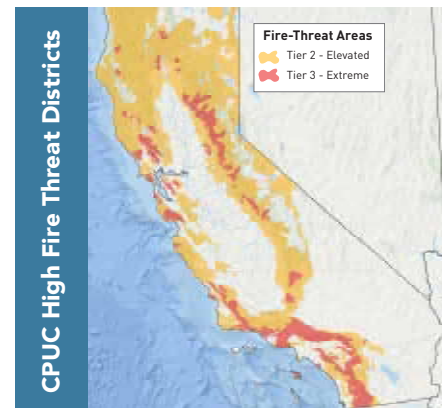


**CONDITION OF DRY  
FUEL** on the ground and  
live vegetation



**ON-THE-GROUND,  
REAL-TIME  
OBSERVATIONS**

### Potentially Impacted Areas



## PSPS Event Notifications

Extreme weather threats can change quickly. When possible, PG&E will provide customers with advance notice prior to turning off the power. They will also provide updates until power is restored.

### TIMING OF NOTIFICATIONS (when possible)

- **~48 HOURS** before power is turned off
- **~24 HOURS** before power is turned off
- **JUST BEFORE** power is turned off
- **DURING THE PUBLIC SAFETY OUTAGE**
- **ONCE POWER HAS BEEN RESTORED**



### HOW PG&E WILL NOTIFY CUSTOMERS

**PG&E** will attempt to reach customers through **calls, texts and emails** using the contact information they have on file. They will also use **pge.com** and **social media** channels, and will keep **local news** and **radio outlets** informed and updated.

## Work With PG&E To Prepare

PG&E is reaching out to customers and communities about wildfire safety and steps they can take to prepare their homes, families and businesses.

- **Update your contact info** by visiting **pge.com/mywildfirealerts** today to make sure they have your current contact information.
- **Identify backup charging methods** for phones and keep hard copies of emergency numbers.
- **Plan for any medical needs** like medications that need to be refrigerated or devices that require power.
- **Build or restock your wildfire "Go Kit"** and monitor alternate information sources for wildfire information during power outages.

## Learn More about PG&E's Community Wildfire Safety Program.



Call PG&E at  
**1-866-743-6589**



Email  
**wildfiresafety@pge.com**



Visit  
**pge.com/wildfiresafety**

## THANK YOU TO OUR SPONSORS!

FIRESafe MARIN depends on the generous support of sponsors, individual donors, grants, and local funding to support our programs. Thank you to these sponsors for helping make our programs possible.

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Scott Sherman, Ph.D.  
Landscape Contractor,  
Certified Arborist

336 Bon Air Center  
#224  
Greenbrae, CA 94904

(415) 461.8477  
[scott@avidgreen.com](mailto:scott@avidgreen.com)





FIRESafe MARIN  
PO Box 2831  
San Anselmo, CA 94979  
[www.firesafemarin.org](http://www.firesafemarin.org)

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**LIVING WITH FIRE IN MARIN COUNTY**

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## ARE YOU READY?

Learn more about wildfire evacuation preparedness: Pages 7-16



### Prepare to Evacuate

Take responsibility and prepare long before a wildfire strikes. Create Defensible Space and use fire-resistant landscaping and construction. Register for Alert Marin, assemble an emergency "Go Kit" (pg. 10), and complete a Family Communications Plan (pg. 13). Plan escape routes and practice with your whole family.



### During a Wildfire

Place your emergency Go Kit in your car and monitor radio and phones. Gather your pets in carriers, and prepare your home by following the Evacuation Checklist (pg. 12) if time allows. Follow evacuation instructions and leave immediately if ordered.

**Learn More Inside and Online**

**[www.firesafemarin.org/evacuation](http://www.firesafemarin.org/evacuation)**

## [www.AlertMarin.org](http://www.AlertMarin.org)



### Sign up to receive emergency alerts!

Marin residents must register to receive emergency alerts by call, text, email, or app. Notifications are sent when action is required at your home address.

You can register multiple addresses. Be sure to sign-up each family member so they'll receive warning when emergencies threaten your home.

