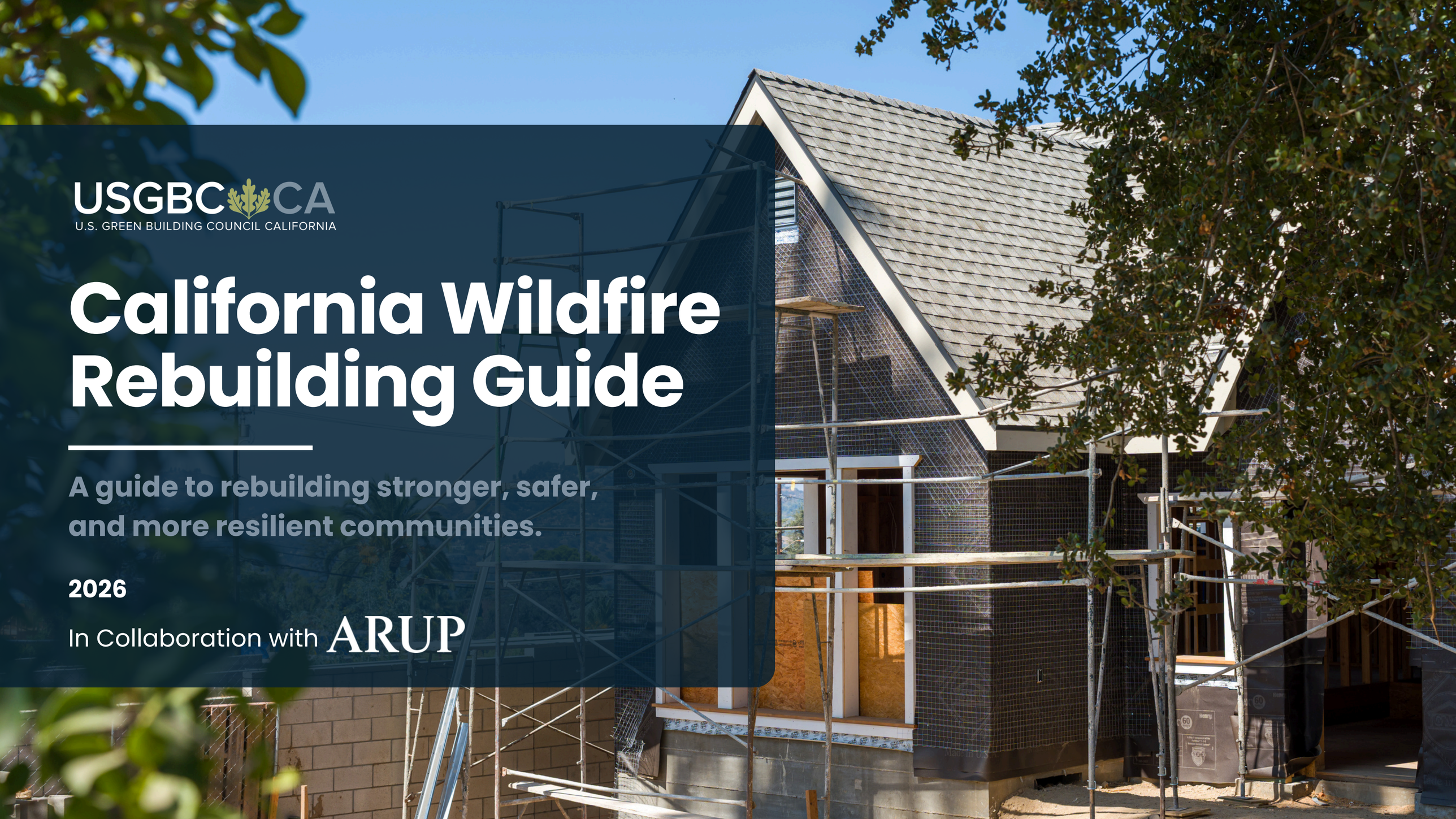


USGBC CA
U.S. GREEN BUILDING COUNCIL CALIFORNIA

California Wildfire Rebuilding Guide

A guide to rebuilding stronger, safer, and more resilient communities.

2026

In Collaboration with ARUP

Rebuilding for Resilience

Onward and Upward: Rebuilding California Together

When the Los Angeles wildfires began in January 2025, our region experienced a level of loss that is still difficult to comprehend. Homes, businesses, schools, gathering places, and entire neighborhoods were changed in a matter of hours. Eighteen months later, the work of recovery continues, and so does the responsibility to learn from what happened and rebuild in ways that better protect our communities.

Since the LA Wildfires, we have been inspired by the way wildfire survivors, community organizations, public agencies, designers, builders, utilities, insurers, and volunteers have come together to meet this challenge. We have seen people explore new approaches to rebuilding, from fire-resistant materials and prefabricated construction to the renewed use of ancient techniques such as rammed earth or adobe. We have also seen how difficult it can be for families to sort through competing information, changing regulations, financial pressures, and the thousands of decisions involved in rebuilding a home.

The USGBC California team has spent countless hours in the field listening to wildfire survivors and working alongside other community-based organizations, government leaders, utilities, insurance representatives, and wildfire mitigation and building professionals. This revised guide reflects what we have learned together.

Developed by USGBC California in collaboration with Arup, our Wildfire Defense Advisory Group, and dozens of building, design, planning, and resilience professionals, this guide is intended to support both homeowners navigating the rebuilding process and the professionals helping bring their homes and communities back to life.

This is not a prescription for one particular way to rebuild. Every family, property, and neighborhood faces different circumstances. Instead, the guide offers practical information to help people make informed choices, manage costs, and prepare for wildfire alongside other hazards and long-term community needs.

In this updated edition, we have expanded the guidance on fire-resistant and sustainable materials, landscape stewardship, and all-electric homes that can provide healthier indoor environments and lower operating costs. We have also added information on stacking available incentives to make resilient and sustainable rebuilding choices more financially attainable.

Most importantly, no homeowner or community should have to navigate this process alone. This guide is one part of USGBC California's broader wildfire recovery and resilience effort. We are also providing home-hardening and wildfire-defense toolkits, training programs, community workshops, resilient home tours, educational resources, and connections to qualified professionals.

As rebuilding continues and new lessons emerge, we will keep listening, learning, and improving these resources. I encourage you to explore our resources, participate in our programs, and share what you are learning so that others can benefit from your experience.

We are incredibly grateful for the wildfire survivors, community leaders, partners, volunteers, and professionals whose experience, generosity, and dedication have helped shape these resources.

The road ahead will not be easy, but it is one we can and will walk together. With thoughtful planning, practical support, and a commitment to caring for both people and place, we can rebuild communities that are safer, healthier, more sustainable, and more resilient for generations to come.

Onward and Upward,



Ben Stapleton
Chief Executive Officer*, USGBC-CA*



Acknowledgements

Thank you to the experts who helped to compile and meticulously review the information in this guide to ensure we are providing accurate and actionable information. We are deeply grateful for your knowledge and contributions to this resource.

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Thank You

Introduction

Note: This guidance document provides an overview of key concepts and design approaches that may be incorporated into the reconstruction of a home in a burn area. This document is to be used to foster discussion with a registered design professional engaged to prepare a complete design. It is an individual owner's responsibility to ensure that their structure complies with all applicable codes and standards. The authors of this document are not providing building design services, and the use of the guidance found herein does not supplant the professional responsibilities of design and construction professionals engaged on specific topics.

What is this guide?

The decision of how - and whether - to rebuild is complex and personal.
For those who do decide to rebuild, this guide is intended to make you aware of design concepts that could **enhance the safety of your home and reduce your future risk.**

This guide aims to clarify resilient, sustainable, and cost-effective options, helping you make informed choices during the rebuilding process.

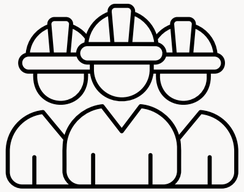
This document is tailored to address the specific challenges faced in Southern California, including recurring droughts, fires, floods, and earthquakes. "Building back better" involves making strategic design choices at the property level and seizing opportunities to collaborate with your community to enhance overall preparedness.

Rebuilding offers a pivotal opportunity to set both your property and community up for long-term safety and livability. Not all upgrades cost more than standard options. Where the enhancement does come at a cost, it's important to consider how choices can be investments. These can pay off over time through benefits like more durable materials, lower operational costs, less risk of water damage, and healthier living environments. Throughout, co-benefits and resources for more green building design guidance are highlighted.

Who is this guide for?



Homeowners working with their neighbors to rebuild their lives and homes with resilience in mind.



Designers and Contractors committed to supporting these homeowners in creating safer, more sustainable living spaces.

How is it different?

While there is a wealth of excellent wildfire guidance available, much of it is geared towards retrofitting existing buildings and focuses solely on wildfires.
This resource, drawing from established sources like the California Department of Forestry and Fire Protection (CALFIRE), National Fire Protection Association (NFPA), and the Insurance Institute for Business & Home Safety (IBHS), **sets itself apart in several critical ways:**



Suburban/Urban Context:

Tailored specifically for suburban and urban settings, where lot lines are set and sites may be constrained.



Rebuild Focus:

Designed for rebuilding rather than retrofitting, offering new insights for existing sites.



Multi-Hazard Safety:

Though it has a primary focus on wildfires, it also addresses a variety of hazards pertinent to Southern California, such as earthquakes and heat.



Cost Efficiency:

Identifies options that are cost-effective when rebuilding and will reduce long-term maintenance expenses.



Sustainability:

Highlights sustainable practices throughout the rebuilding process.

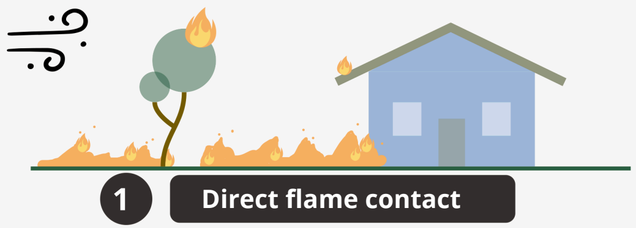


Community Scale:

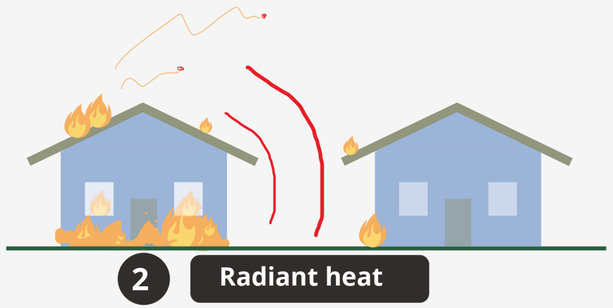
Includes strategies that improve both individual property and community-wide resilience.

Key Concepts

How do houses catch on fire?

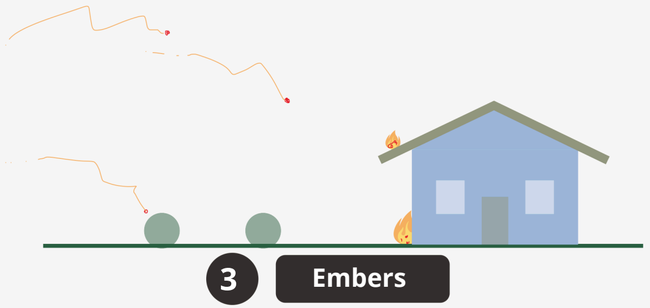


Fire spreads when flames touch materials that can burn (e.g., dry vegetation, wood shingles). Wind, such as the Santa Ana Winds, makes this happen much faster.



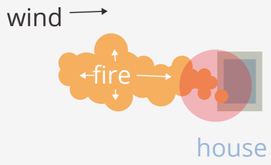
There doesn't have to be a flame for materials to catch fire - just heat can do it. Wildfires can reach over 2,000°F. For comparison, wood ignites at 570°F.

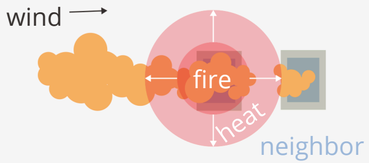
Embers are the most frequent cause of home ignition during a wildfire!



Fires create embers that the wind can blow for long distances. When these embers land on plants, roofs, or walls that can catch fire, they can start new fires far away. That's why this guide will explore many ways to be "ember-resistant."

Bird's eye view:



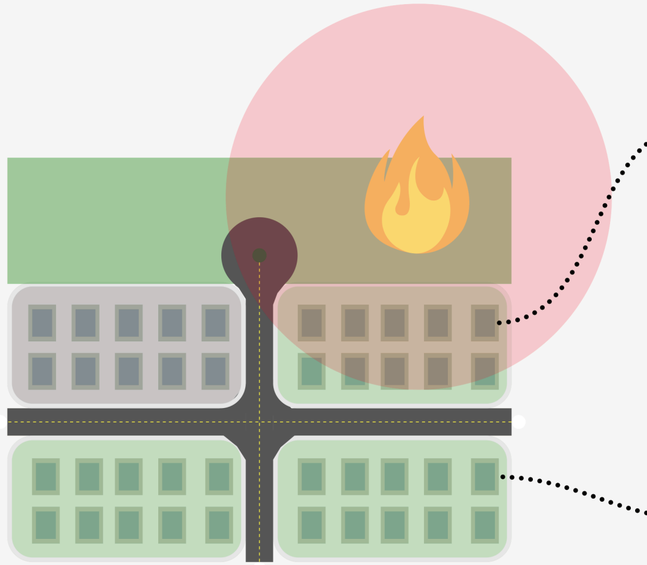




Windblown embers can travel miles, starting new fires, which can then *further* spread through direct flame contact, radiant heat and embers.

Key Concepts

What should my performance goals be when I think about design?



Aerial diagram of neighborhood during an active fire

Fire-ready

What does this mean? **What should we be aiming for?**

In the next fire, if your home is IN an evacuation zone:

1. **You've already taken proactive steps during the fire weather alert** such as moving combustible items like trash cans away from your home, clearing debris like leaves from the roof and gutters, and making sure your car is fueled or fully charged.
2. **Be able to safely and quickly evacuate** meaning you should be able to grab key documents and not be obstructed from physically leaving.
3. **Have a home to return to** because your home and neighborhood were designed and maintained to slow the rate of fire spread, enabling emergency responders to contain the fire quickly.

If outside of an evacuation zone, in addition to 1, 2 and 3 above:

4. **Be able to manage through smoky air conditions,** noting that burn area smoke can travel long distances.
5. **Be able to manage through power outages** like public safety power shut-offs (PSPS).
6. **Be ready for a water service disruption.** For Example: potable water stored in jugs/containers in a cool dark environment.

AND Prepared for other hazards

Wildfires aren't the only danger we need to worry about in Southern California. We need to design homes and neighborhoods to withstand a range of threats, like **earthquakes, extreme heat, and flooding**.

Many of the hazards in California are linked together. For example, drought cycles dry out vegetation, which provides fuel for wildfires. After the fires, bursts of heavy rain can trigger mudslides in the burned areas, where slopes are missing the stabilization provided by the roots of healthy plants. **Fortunately, strategies to boost resilience against one hazard often help with others and enhance everyday performance.**

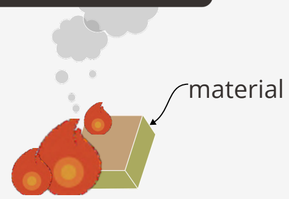
AND High-performing

What is a high-performing, green building? It's all about sustainability and efficiency. These buildings have lower operational costs, lower carbon emissions, and are energy-efficient. They use healthy materials and create indoor environments that **not only benefit human health but also support the health of the surrounding ecosystem**. To achieve this, architects and builders often turn to established rating systems and guidelines, such as Passive House, LEED for Homes, and Enterprise Green Communities. These frameworks help ensure that buildings are designed with both people and the planet in mind.

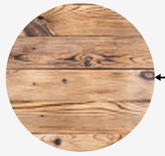
Key Concepts

What do these different material terms mean?

Combustible



Combustible materials can ignite and burn.



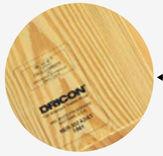
Example: wood

Ignition-resistant

Flame-resistant

Fire-resistant

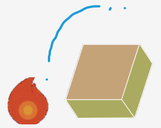
These are similarly-sounding terms that typically mean the fire performance has been tested and meet the requirements for the classification (e.g., fire retardant treated, Class A).



Example: Pre-treated wood

Dricon fire retardant treated (FRT) wood. Image source: Tague Lumber / taguelumber.com

Non-combustible



Non-combustible materials, when exposed to fire or heat, will not ignite, burn, or release flammable vapors. A non-combustible material is, by nature, ignition and flame resistant.



Example: concrete



Rated construction assemblies, such as the "1-hour fire-rated wall assembly," consist of tested materials like fire-resistant drywall (Type X gypsum board), studs, and insulation. These components collectively slow the spread of fire, as indicated by the one-hour rating, providing crucial time for firefighting efforts.

For more information on **materials**, please check out FireWise's guide:

FireWise Construction: Site Design & Building Materials

How to read this guide

What's good?

Reducing wildfire damage risk is the core of what's included in this guide.

While response during an event is important, the building and landscape design should focus on making things safe without requiring much effort from you (i.e., **passive design**).

What improves fire performance

Wild fire risk mitigation strategy types:

- **Passively prevent accumulation of fuel like leaves**
  e.g., roof geometry
- **Actively prevent accumulation of fuel**
  e.g., tree maintenance
  (requires occupant action)
- "Harden" your home's exterior with **non-combustible building materials**
  e.g., non-combustible roof covering
- **Passively prevent a landing place for embers**
  e.g., roof geometry
- **Passively limit ember entry**
  e.g., mesh over vents
- **Actively prevent ember entry**
  e.g., close windows and doors

Reducing wild fire risk **and what?** There's more to high performance design - these tags help distinguish other benefits to consider in how you build back.

Co-benefits to consider

Savings

Tagged **IF** design choice reduces first costs or operational costs:

- **Material costs** (e.g., equipment, products, availability)
- **Labor costs** (e.g., installation)
- **Operational costs** (e.g., energy use, ongoing maintenance)
- **Durability** (e.g., less susceptible to leaks, equipment with longer life spans, etc.)

Safer

Tagged **IF** design choice either helps protect occupants from other hazards (direct and indirect) and/or reduce damage:

- **Airborne contaminants** (e.g., smoke, dust, fumes, etc.)
- **Earthquakes**
- **High winds**
- **Heat waves**
- **Mudslides**
- **Heavy rain & flooding**
- **Power outages**
- **Utility water disruptions**

**for example having back-up water stored during a utility disruption.

Sustainable

Tagged **IF** design choice simultaneously achieves any of the following:

- **Healthy indoor environments** (e.g., through materials and system choices, protecting your family's health)
- **Energy efficient, high-performance buildings**
- **Reduce greenhouse gas (GHG) emissions** (e.g., support solar panels)
- **Low embodied carbon**
- **Support biodiversity and ecological health**
- **Sustainable water use** (i.e., capture, conservation, efficiency, re-use)

Some Things to Consider Along your Recovery Journey

Rebuilding a home after it has been destroyed by wildfire requires many decision points along the way. This section presents some key questions that people have along the journey. Some things to consider as you use this guide:

Southern California evolved with wildfire, and wildfires are becoming more frequent and intense. The suggestions in this guide will help you make better decisions about protecting your home, but there is no guarantee your community won't burn again.

Fire is not the only hazard. Properties located along the coast or on unstable slopes will face additional challenges in the rebuilding process and a greater risk of being impacted by future events.

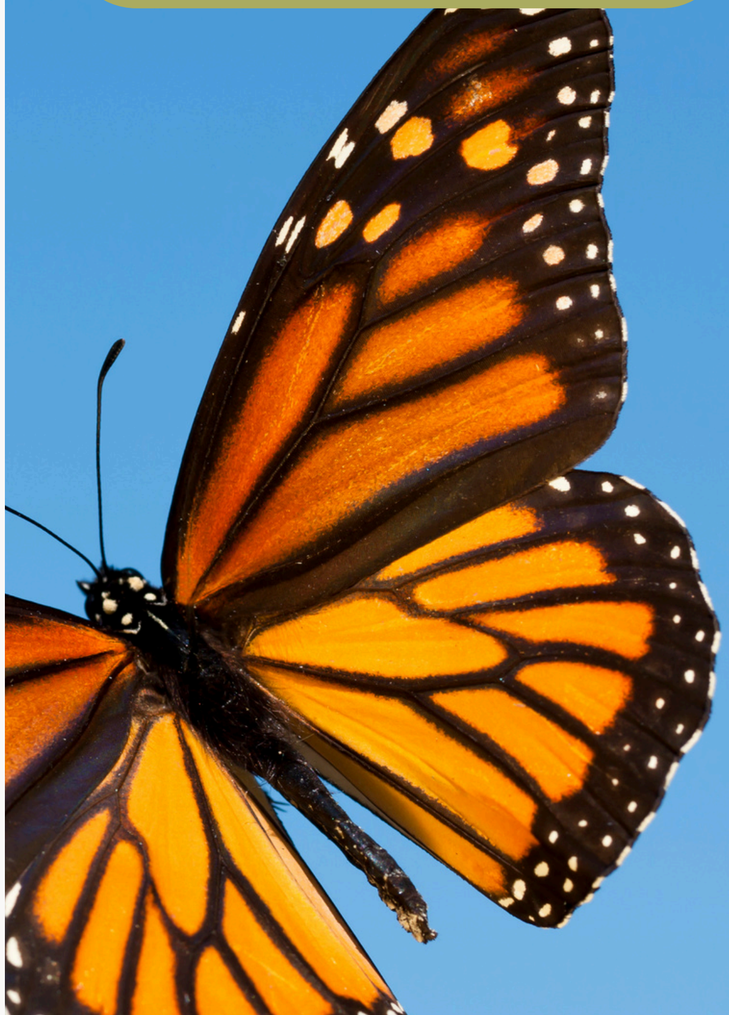
Communities are foundational to resilience. Wildfire is a shared risk—what one neighbor does can increase or reduce risk for others. By working together, neighbors can lower their collective vulnerability, share resources, and help preserve the things they love most about where they live.

Rebuilding takes time. Even in the best of circumstances, building a home from the ground up takes time. Local agencies are working to remove barriers, but the design and construction of new homes are processes. Take the time to consider your priorities and investments and work with your neighbors so that you have a healthy, resilient, and efficient home and community to return to.

Small is beautiful. While market pressures might push you to consider increasing the size of your home, the County has expedited zoning for buildings that are no more than 10% bigger than their original size. See this as an opportunity to keep it the same size or even downsize. Smaller homes take less material to build and less energy to condition. Small ADUs also increase affordable housing options within your community. Importantly, smaller homes also help maximize spacing between structures and neighbors, thereby reducing the risk of fire spread.

It will never be the same, but it can be better.

For many people, disasters provide an opportunity to take stock and see what is most important. Thinking about what you need from your home and how you connect to your community can inform your journey of recovery and help you build back better.



FAQs
To Guide Your Way Back Home

Should I go all-electric?

When rebuilding, homeowners face a fundamental decision: re-install natural gas or use this moment to go all-electric? Advancements in electric technology like heat pumps (efficient units that provide both heating and cooling) and induction stoves make the switch easier than ever, and there are many incentives to help support this process, but there are multiple key factors to consider:

- **Weather & Climate:** In warmer climates like California, heat pumps may be less costly to operate, especially when part of an energy-efficient new home. In cold climates, modern cold-climate heat pumps can still provide reliable heating, though capacity and efficiency drop as temperatures fall. Some installations use supplemental heat (e.g., electric resistance or dual-fuel) sized to cover the coldest hours.
- **Local Energy Costs:** Electricity and natural gas prices vary by region, so it's important to compare utility rates, including during peak demand periods.
- **Indoor Air Quality & Health**: Gas appliances produce pollutants that can affect respiratory health. Electric alternatives improve indoor air quality and reduce the risk of asthma and other lung conditions.
- **Environmental Concerns:** If reducing your carbon footprint is a priority, all-electric homes powered by renewable energy are the best option. California's ambitious goal of 100% renewable electricity by 2045 is also a factor to keep in mind.
- **Code Compliance:** California's building codes are increasingly favoring all-electric for energy efficiency and lower emissions. The California Energy Code (Title 24), for instance, requires new single-family homes to be "all-electric ready". Thinking ahead, embracing this trend could help avoid future retrofit costs when selling your home and ensure you're aligned with evolving energy standards.

For more information on going all-electric, check out this easy-to-use guide from Rewiring America:

Electrify Everything in Your Home

FAQs
To Guide Your Way Back Home

Building back a home in your original footprint is the best way to expedite your rebuild, but what exactly does that mean?

Permitting requirements and building rules differ by municipality. Check the official resource for your area for exact guidance. Here are some of the regions impacted by the 2025 LA Wildfires:

- LA County
- LA City
- Pasadena
- Sierra Madre
- Malibu

Note: references linked here are specific to the LA County code. Various cities will have different municipal Title Sections.

What is "like-for-like" rebuild, and what does 100% + 10% guidance mean?

"Like-for-like" is a zoning code term set by LA County (defined in Chapter 22.256 - Disaster Recovery). Building owners are permitted to rebuild a like-for-like structure to replace their destroyed home so long as it is the same size, in the same location, and for the same purpose as the previous building. Such structures should be modified to be built to current Building Code (Title 26) and Fire Code (Title 32), and can also have a different internal layout (or be rebuilt smaller than the original structure) but cannot increase the overall floor area, size, or height by more than **+10%** or **+200 sqft** (whichever is greater) of the original building.

To be clear, "like-for-like" is related to planning and zoning approvals - *not* building code compliance. For larger homes, a 10% increase in area could have a notable impact on Building and Fire Code requirements.

Example: At most, your building plan can be the same amount of square feet as your home was previously *plus* no more than 10%. If your house was 2000 square feet, you could rebuild it to 2,200 square feet without requiring additional permitting.

Does rebuilding my home all-electric have additional permitting considerations? If I had gas before does this go against the 1-for-1 guidance?

If you had gas before, going all-electric does not conflict with "like-for-like" rebuilding guidelines, primarily because like-for-like focuses on maintaining size, footprint, and height of a home, rather than requiring an identical fuel source.

With Mayor Karen Bass's Emergency Executive Order No. 5, the City of Los Angeles is working on streamlining approvals for all-electric rebuilds. LADWP offers incentives for building all-electric and purchases and installation of electric equipment. Homeowners should check with LA Department of Building and Safety and LADWP for the latest permitting guidelines.

If transitioning from gas, you may need to upgrade your electrical infrastructure and coordinate with utilities to cap and decommission gas lines. While this requires planning, it may also make you eligible for additional rebates and incentives to offset costs. Be sure to consult with the appropriate agencies and professionals to navigate the process smoothly.

FAQs
To Guide Your Way Back Home

Can I change the position and/or placement of my home within my property?

Yes, but if you plan to do so, your project may no longer qualify as a “like-for-like” rebuild. Like-for-like rebuilds only allow minor relocations for circumstances like changes in topography (for example, post-disaster mudslides reshaping drainage flows), the original structure’s placement was already nonconforming with current code, or to reduce impacts to biodiversity and local natural resources.

Aside from that, in both the City of Los Angeles and unincorporated areas of Los Angeles County, "like-for-like" rebuilding typically requires reconstructing the home in its original location to qualify for expedited permitting. It's essential to consult with local building and planning departments to understand the specific regulations and obtain necessary approvals before altering the placement of your home during the rebuilding process.

Can I change the layout of my home while keeping the same square footage (+10%)?

Yes, if you plan to keep the same square footage +10%, you are free to change the interior layout of your home without requiring additional planning and zoning permitting approvals (so long as your changes don’t alter the original purpose of the building as described in “like-for-like” rebuild projects).

Can I update the materials on my original plans?

Yes, updating materials in your original plans is generally permissible, and likely a good idea given improvements in materials over the years, so long as they comply with the current Building Code (Title 26), Fire Code (Title 32), and Health and Safety Code requirements. This guide provides a selection of resilient and sustainable materials to help you select the best materials to help you build back better. All recommendations provided by this guide are compliant with the CA WUI Code (formerly called “Chapter 7a standards”).

These standards were developed by the Office of the State Fire Marshall to ensure structures built in wildfire-prone areas are more resilient to fires, and are good practices to adopt regardless of which Severity Zone a home falls under in CalFire maps.

Note that codes are typically updated every three years and the 2025 CBC was published in July 2025 and became law in January 2026. Therefore, plan submissions after January 1, 2026 will need to follow the updated code.

FAQs
To Guide Your Way Back Home

Will codes be waived for rebuilds?

For LA County, "like-for-like" rebuilds do not need to comply with current Zoning Code requirements, but they **will** need to comply with current Building Code (Title 26), Fire Code (Title 32), and Health and Safety Code requirements. When you apply to LA County to rebuild, please check with your land use planner for the most up-to-date information. For the City of LA, all eligible rebuilding projects are no longer required to follow the all-electric building ordinance (Ordinance No. 187,714), though participants may still opt into the provisions described. There are some state-level incentives and LADWP incentives to help support electrification. Please note that Title 24, (California's Building Standards Code, covering safety, energy efficiency, and sustainability statewide) was updated on January 1st, 2026. We recommend working with your contractor, who can help you plan your building to appropriate code based on location and timeline.

Will fire sprinklers be required for fire rebuilds?

Yes, all new homes in California must have fire sprinklers installed, no matter where they are located (according to CRC R313).

What if I want to add solar to my rebuild, but it is not required?

Adding solar to your rebuild is a great investment, even if it's not required. While California's Title 24 energy code mandates solar installations on new residential construction, some rebuilds—especially "like-for-like" projects—may be exempt. However, incorporating solar and potentially even energy storage can reduce long-term energy costs, increase resilience, and qualify you for financial incentives. The California Solar Consumer Protection Guide, created by the California Public Utilities Commission, offers homeowners a step-by-step process for going solar. There are also incentives for pursuing solar and storage (e.g., from your utility or regional energy network, depending on your location).

Can I update the landscaping on my property?

Yes, updating your landscaping is generally allowed, and rebuilding offers a great opportunity to incorporate **drought-tolerant, fire-resistant, and native plants** to improve the resiliency of your property. However, there are a few important considerations:

- Local Regulations & Permits: Some cities and counties have landscaping requirements, especially in fire-prone areas, which may dictate defensible space zones, tree placement, or the types of plants allowed. If you are in a designated Very High Fire Hazard Severity Zone (VHFHSZ), you may need to follow brush clearance and defensible space regulations.
- Water-Efficient Landscaping: The California Department of Water Resources has a statewide ordinance for water-efficient landscapes, which includes restrictions on high-water-use plants and requirements for efficient irrigation systems.
- Rebuilding may also present a good opportunity to look at innovative water reuse, bioswales, and water capture at your home.

FAQs
To Guide Your Way Back Home

Can I build and live in an ADU (Accessory Dwelling Unit) on my property while rebuilding my home?

If you are rebuilding in LA County, a new ADU can also be built on a property if a household wants to temporarily occupy it while they wait for a replacement primary dwelling unit to be built on the same property. This will not be considered a temporary structure and will not need to be removed from the property at a future time.

LA County will require an application and permits for the new ADU, which will be expedited. The new ADU will need to comply with the current Zoning Code and State law requirements. If you are rebuilding in the City of LA, according to Emergency Executive Order No. 1, passed by Mayor Karen Bass on January 13, 2025, the use of recreational vehicles, tiny homes, modular structures, and mobile homes will be permitted for up to three years, or while an active building permit applies to the property (whichever is longer).

What will trigger additional permitting reviews, and what additions can go through expedited permitting?

Rebuilding projects that deviate from "like-for-like" requirements, such as significant design changes, size increases beyond 10%, or altering the original footprint, may trigger additional reviews. It's advisable to consult with your county's one-stop permit center or your city planning department, your architect, or general contractor, to determine the specific requirements for your project.

What is CA WUI Code (formerly "Chapter 7a")?

Homes in areas with State-flagged risk for wildfires (Fire Hazard Zones; these maps were updated in March 2025) must follow extra building codes. In general, this guide applies those requirements outside the Fire Hazard Zones, given how other areas can benefit. Always consult with your contractor or your local planning department if you have any questions about code requirements.

Placement

Building Placement on Existing Site



Placement

Legend Savings Safer Sustainable

Design decisions	What improves fire performance	What your options are	Co-benefits to consider

Building(s)' placement on existing site

Where on my site should the building go?

Place the home **at least 30 ft** from the closest building (best case)

IF your neighbor is also rebuilding

Place the home **at least 15 ft** from the property line (plan with neighbor to do the same)

IF NEITHER IS POSSIBLE because of limited space

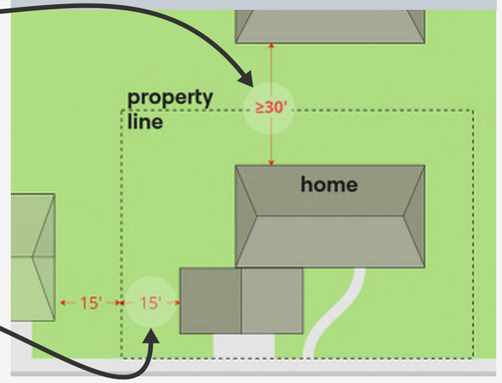
Make the **abutting exterior wall** more robust against fire spread

Select a **1-hour fire-resistant wall assembly** and try to avoid placing window(s) where they will be close to a neighboring structure.

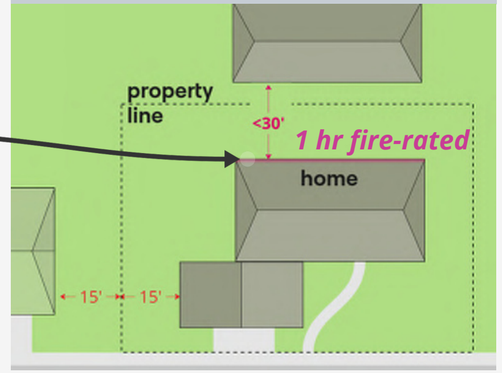
A **1-hour fire-resistant wall assembly** is an exterior wall build-up designed to resist direct fire for up to one hour. This helps slow down the fire's spread. It usually includes fire-resistant drywall and insulation.

(Non-combustible exterior wall materials are recommended in all cases in a wildfire-prone zone; a 1-hour rating is a step above that.)

Best: at least 30' between structures



Okay: to be closer IF 1-hr fire-rated



Building orientation should also consider solar heat gain, daylight access, and natural ventilation to improve energy efficiency and comfort.

This can help you save money - using passive design principles can lead to needing less heating, cooling, and lighting to keep your home comfortable.

This can also keep your home cooler during power outages that often come with heatwaves.

Passive solar design is a building design approach that maximizes the use of natural sunlight, heat, and air flow to maintain comfortable indoor temperatures without relying on mechanical heating or cooling systems. For more info, check out:

Passive Solar Homes | DOE

Placement

Legend Savings Safer Sustainable

Design decisions	What improves fire performance	What your options are	Co-benefits to consider

Detached structures

Do you want a **shed, detached garage, ADU**, or other structure?

Provide at least **30 ft of separation distance** between structures on your property

A shed (e.g., < 64 sqft) can be closer - 15 ft rather than 30 ft.

OR

Harden the detached structure

Where a buffer distance is not possible, enhance the exterior wall from non-combustible to **1-hour fire-resistant.** This helps lower the chance of the detached structure catching fire and endangering your home.

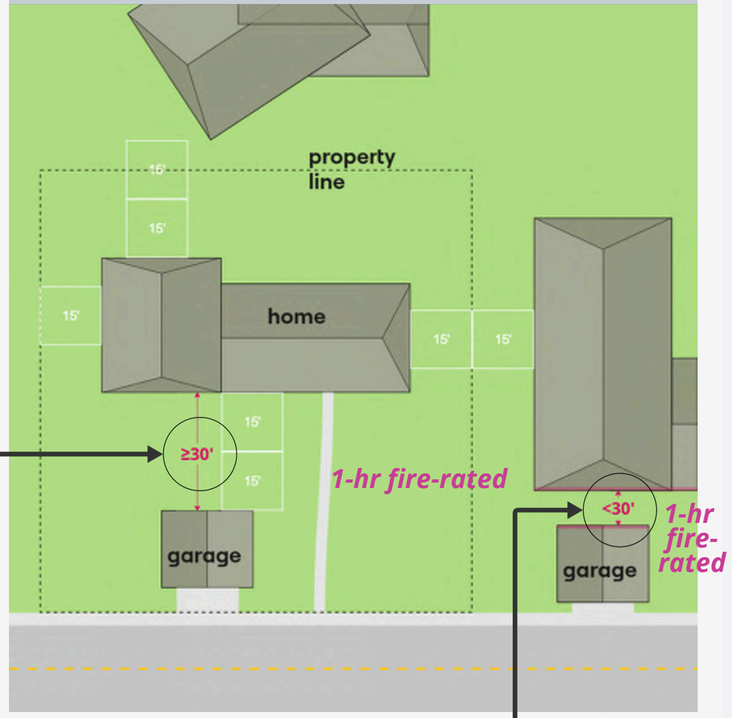
Note that the guidance on 15 ft placement will not achieve the IBHS Wildfire Prepared Home Enhanced designation.

Consider building an ADU first and then, over time, rebuilding your primary home. Your overall site plan should include 30 ft of separation between structures if pursuing an IBHS Wildfire Prepared Home Enhanced designation.

Note: As a baseline, detached garages and ADUs should have **non-combustible exterior walls** and **Class A roofs**.

For more information, refer to the Envelope Chapter.

Best: 30 ft between structures on site



There are advantages to building smaller. It not only creates more space around your buildings but also allows you to use higher-quality materials while managing overall costs. Plus, it results in less floor area to condition, saving energy costs.

Zone Zero In California:

"Zone 0" refers to the state-mandated wildfire safety regulation that creates an Ember-Resistant Zone extending 0–5 feet from the exterior walls. The rulemaking for Zone 0 has been finalized. The regulation requires the removal of combustible materials from this area to prevent ignition from wind-blown embers. The regulation is applied in designated State Responsibility Areas and Fire Hazard Severity zones.

See the Landscape section for detailed guidance on how to manage your home's immediate surroundings to meet the California Public Resource Code 4291 requirements.

IBHS Wildfire Prepared Home Basic and Enhanced designations require no vegetation, ground cover, over hanging tree branches, and combustible materials within 0-5 ft of structures.

Placement

Legend Savings Safer Sustainable

Design decisions	What improves fire performance	What your options are	Co-benefits to consider

Wildland Urban Interface (WUI)

What if my site is **close to open land?**

“Open land" refers to undeveloped land, which could include grasslands and shrubs.

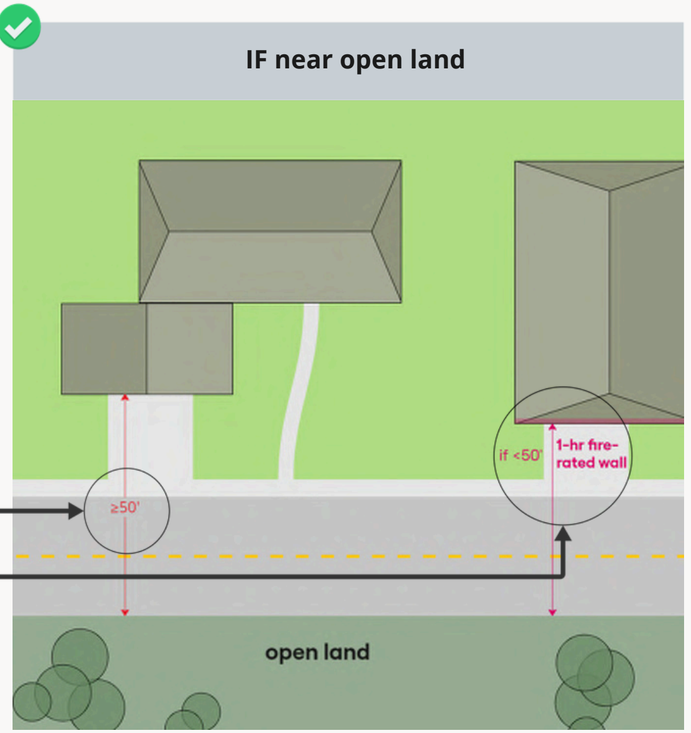
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See the Landscape section for detailed guidance on how to manage your home’s immediate surroundings to meet the California Public Resource Code 4291 requirements.

Provide at least **50 ft separation distance** between any on-site structures and the open land

IF NOT POSSIBLE

Make wall(s) closest to open-land **1-hr fire-rated**



Local jurisdictions may have fire separation distance requirements beyond state code.

***Confirm with the adopted California Building Code and local fire authority.**

"Fuel Break - If your property borders public open land, you may need to obtain permission to clear portions of that land—such as creating a wide dirt path—to establish a fuel break." --> but find the source to ground/reinforce the recommendation

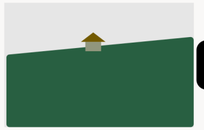
Placement

Legend Savings Safer Sustainable

Design decisions	What improves fire performance	What your options are	Co-benefits to consider

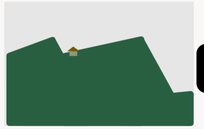
Topographic considerations

Does your **site or neighborhood** have any of the following characteristics?



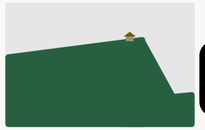
Up on a **slope**?

OR



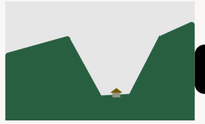
In a **saddle**?

OR



On a **hilltop / ridgetop**?

OR



In a **canyon**?

The steeper the hill, the quicker the fire climbs. Some land shapes can also direct the wind, making the flames spread more quickly.

Your site is at an elevated fire risk, given wind exposure and how flames climb slopes. Limited access routes and narrow, curved roads make it more difficult to evacuate and for emergency vehicles to get through.

Provide increased defensible space distances

Harden your home with additional protection measures (see **Envelope Design** chapter)

Evacuate early

Approaches



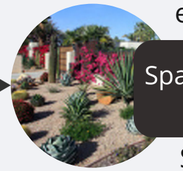
Increase vegetation management distances beyond 100 feet

Note: this may require a permit if next to open land.



Terraced garden walls

Creating terraces on slopes can also give firefighters easier access points.



Spaced out shrubs with deep root systems

See the **Landscaping** section for more information.



If slope is too steep to manage vegetation, provide noncombustible wall(s)

Like a fire-resistant retaining wall

On a slope, make sure to manage **stormwater drainage** from the site to prevent soil erosion.

Consider flood risk reduction simultaneously in site grading and drainage design - places like saddles or canyons often have higher flood risks.

Improve drainage simultaneously - Slope stability improvements and landslide prevention efforts are a chance to consider and include drainage in natural hillsides. This helps water flow better, supports plant growth, and reduces dry brush that can catch fire.

Address erosion control by stabilizing the slope (think avoiding mudslides).

Consider prevailing wind directions early in design, as they shape decisions about building orientation and landscape. These resources can help understand local wind patterns.

For more info, see apps:
Ventusky
Windy.com

See the Outdoors chapter for more tips on landscaping, deck, and patio design.

Placement

Notes

1 **Re: at least 30 ft distance between structures, and if neighbor hasn't rebuilt, 15 ft to the property line**

FEMA guidance (2023)
To minimize the risk of fire spreading from building to building, it's best to maintain as much space as possible between structures. Ideally, ensure a 30-foot buffer between your proposed design and any neighboring buildings. This is aligned with FEMA's *Marshall Fire Mitigation Assessment Team: Decreasing Risk of Structure-to-Structure Fire Spread in a Wildfire*: "Provide a minimum spacing of 30 feet between structures when possible."

If a neighboring property does not yet have a building, a 15-foot clearance from the property line is advisable. If both you and your neighbors maintain a 15-foot buffer, this effectively creates the recommended 30-foot separation to decrease the risk of fire spread.

Marshall Fire MAT: Decreasing Risk of Structure-to-Structure Fire Spread in a Wildfire

2 **Re: 1-hour fire resistance of abutting home wall(s)**

California Residential Code (2022)
For enhanced protection for a wildfire event, FEMA recommends 30ft between structures and 50ft from open land. To protect buildings that are less than the recommended separation distance, we turn to CRC Table R302.1(1) and CBC Table 705.5, which would require a 1-hour fire-resistance rating for increased protection from radiant heat exposure.

3 **Re: reduced buffer (15 ft) around smaller structures like sheds**

NIST research (2023)
The 15 ft recommended distance comes from NIST's research on testing fire performance of sheds: "wooden and steel storage sheds up to 64 square feet (5.9 square meters) in size should be at least 10 or 15 feet (3 or 4.5 meters) away from homes depending on their size."
For Sheds in Wildfire Zones, NIST Researchers Determine How Close Is Too Close to Home | NIST

4 **Re: 1-hour re resistance of abutting detached structure wall(s) if less than 30 ft from other structures OR less than 50 ft from open land**

This is to follow the same logic charted for the home: if separation is not possible to mitigate radiant heat exposure, then make wall assemblies fire-resistant.

5 **Re: placing ALL structures at least 50 ft from open land IF possible**

FEMA (2023)
This is an application of FEMA's guidance on siting in the *Marshall Fire Mitigation Assessment Team: Best Practices for Wildfire Resilient Subdivision Planning*: "Avoid constructing a new development adjacent to an unmanaged open or wildland space where 50 to 100 feet of defensible space cannot be provided on the proposed site."

Through rebuilding structures away from that contiguous vegetation where possible, a defensible space can be created.
https://www.fema.gov/sites/default/files/documents/fema_marshall-fire-mat-best-practices-wildfire-resilient-subdivision-planning.pdf

6 **Re: topographic impacts on fire spread**

FEMA (2008)
FEMA's Technical Fact Sheet 3 in *P-737 Home Builder's Guide to Construction in Wildfire Zones* describes how sloped terrain, saddles, ridgetops, hilltops, and canyons accelerate frame spread, given how flames ascend quickly and the wind behavior caused by these topographic features.
FEMA's Technical Fact Sheet 3

Envelope Design

Roofs, Screens/Vents, Exterior Walls, Windows



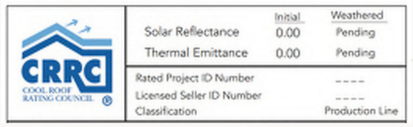
Roofs

Legend Savings Safer Sustainable

Design decisions	What improves fire performance	What your options are	Co-benefits to consider

Roof material selection

What **materials** should I use for the roof?



Example of cool roof label

Choose a "cool roof," which reflects more sun and absorbs less heat. **Note:** for some climate zones, this is a prescriptive requirement (T24 Part 6).

- **Cool roofs** reduce the energy needed to cool your home, which reduces greenhouse gas emissions.
- **Less energy used means spending less money** on energy each year.

Key action

Choose a **non-combustible roof assembly**

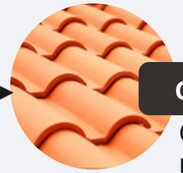
Choosing a Class A-rated roof (and Class 1 assembly), which has an ignition resistant covering and underlayment, greatly **reduces the risk of fire by making it less likely for windblown embers to ignite it.** This type of roofing is required in Fire Hazard Severity Zones according to building codes, but it is also helpful in other areas.



Class 1roof assemblies follow the standards set by UL 790 or ASTM E108. For example, on a major supplier's website, you can find roofing products by selecting "Fire Rating (UL 790: Class A."

See additional considerations on the next page

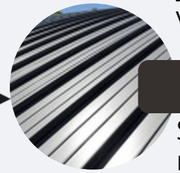
Common Class A roof options



Clay and concrete tiles

Choose light-colored, reflective tiles and ensure secure attachment due to the heavier material in a seismic zone. Consider that you will need additional venting options!

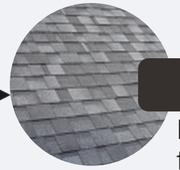
- **Lower carbon emissions in manufacturing** (terracota/ceramic tiles) compared to metal roofing or asphalt shingles.



Metal roofing

Select a lighter-colored metal or paint with a reflective coating.

- **Good performance in strong winds**, long-lasting, and durable. **Note:** good wind performance is important because high winds can help spread fires - staying on helps protect the roof.
- **Metal does not allow moss growth**, which can cause damage to materials over time.



Asphalt shingles

Look for "cool" products - for asphalt, including solar-reflecting granules.

- **Renewable energy -** easiest to mount solar panels, no special attachment system needed.
- **Typically, the lowest cost option** and easiest to install.

Roofs

Legend Savings Safer Sustainable

Design decisions	What improves fire performance	What your options are	Co-benefits to consider



Avoid expanded foam (e.g., expanded polystyrene) insulation



Metal drip edge

Choose a **Class A roofing material** and **Class 1 roof assembly**

INCLUDING

Choose **non-combustible or pre-treated insulation**

AND

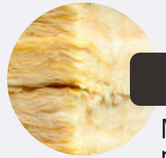
Install **non-combustible metal drip edges** and **flashing around penetrations and roof valleys**

Non-combustible and **corrosion-resistant metal drip edges** help protect roofing layers. Flashing around penetrations (like skylights) help divert debris and water (useful during heavy rains to reduce the risk of leaks).

Choose insulation with:

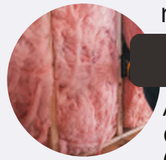
- **High performance** (the higher the R-value the more insulating)
- **Low or no toxic substances** like formaldehyde, isocyanates, and VOCs
- **High recycled content** (e.g., at least 30%)
- **Nearby manufacturing** (shortening the travel distance - i.e., locally sourced)

Green insulation options



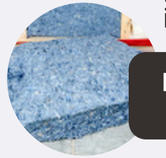
Mineral wool

Made from natural rock materials. Also available in rolls and loose-fill.



Fiber glass

Available in rolls (most common, batt) and loose-fill (blown-in,helpful if applying in a hard-to-reach area).



Fire-treated natural fibers or denim

Made from recycled materials such as cotton, sheep's wool, and straw, but require chemical treatment because not naturally resistant to fire, insects, and moisture.

A well-insulated roof helps keep your home warm in winter and cool in summer, which reduces the energy needed for heating and cooling.

Less energy used means spending less money on energy each year.

During very hot or cold weather, a well-insulated roof helps thermally protect your indoor space, keeping it tolerable indoor temperatures for a longer time even if the power goes out.

Better for your health - formaldehyde and isocyanates can be harmful when breathed in, and VOCs can off-gas from building materials like insulation.

Typically most affordable and widely available option.

Lowest carbon emissions in manufacturing and the highest percentage of recycled material option.

Important note: Unvented roofs must be carefully detailed to manage moisture because, unlike traditionally vented attics, which rely on airflow to remove moisture, the hot roof depends on the airtight construction and insulation layer to keep moisture from building up inside the roof assembly.

Roofs

Legend Savings Safer Sustainable

Design decisions	What improves fire performance	What your options are	Co-benefits to consider

Roof geometry

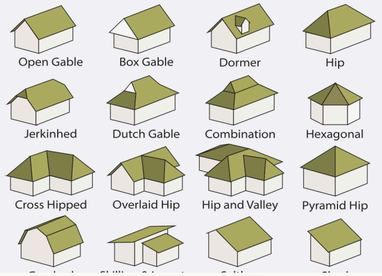
What **shape** should my roof be?

Choose **simple**

Limit the eaves and valleys that can accumulate debris and/or embers



Simple roof geometry options



Skylights

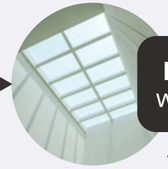
What if I want a **skylight**?

Choose a **fire-resistant** option

Skylights can be a weak point in roofs and allow ember entry. Make sure the design won't accumulate debris (like leaves) and avoid skylights composed of combustible materials like plastic.

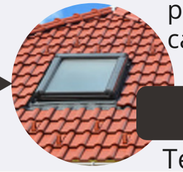


Skylight options



Insulated glass skylight with tempered outer pane

And a laminated inner pane for containment in case of breakage.



Fire-rated product

Tested product

Consider where you place features and elements like skylights, gables, and vents when planning for PV, so you don't unintentionally reduce the number of panels you can install.

Generally less expensive to build than more complex roof designs.

Reduced water damage risk - better for drainage, less risk of pooling.

Rainwater collection opportunity - sloped, streamlined surfaces of simple roofs facilitate more direct and efficient rainwater drainage.

Renewable energy - A simple geometry can provide more space for and an easier installation of solar panels. Think about the slope direction and sunlight access to boost the energy output of the panels.

Skylights can bring more natural light into the house.

Operable skylights can help exhaust rising heat from inside the home. **BUT, if operable,** provide a non-combustible 1/8" mesh screen or smaller (CBC 708A.2.2) and ensure it can be quickly and easily closed during fire weather so as not to allow in embers.

Roofs

Legend Savings Safer Sustainable

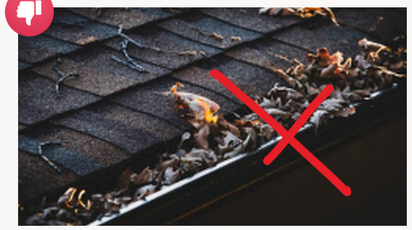
Design decisions	What improves fire performance	What your options are	Co-benefits to consider

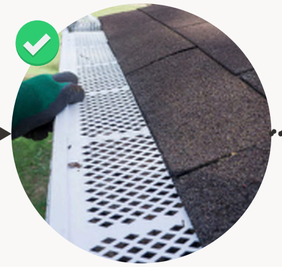
What should I do about **gutters** to improve fire performance?

Enclose or protect the underside of eaves and soffits with noncombustible or 1-hr rated materials.

Add metal **gutter guard**

Install non-combustible guards on your gutters to block debris like leaves from building up.





Metal mesh gutter guard

Note: these will still need to be checked and cleaned regularly. See **Maintenance** section.

- **Reduced maintenance and extended lifespan** - while blocking leaves, twigs, and other debris, gutter guards require less frequent cleanings and last longer.
- **Pest reduction** - the guard also helps prevent insects, small rodents, and other pests from nesting in the gutter system.
- **Less wasted water** for seasonal cleaning, spraying, and flushing out gutter debris.

Choose **non-combustible gutter material**

Install non-combustible gutters made of **metal**, instead of vinyl or PVC gutters (which can catch fire).





Aluminum gutter

- **Longer lifespan** - aluminum gutters are more durable and can last twice as long or more as vinyl gutters.
- **Water retention on the property** with a direct gutter to planter irrigation strategy will help reduce runo into the street.

Fireplace

Legend Savings Safer Sustainable

Design decisions	What improves fire performance	What your options are	Co-benefits to consider

Fireplace

What if I want a **fireplace**?

Choose **electric**, because there's no chimney needed (potential entry point for embers)

Best option: electric



Electric fireplace

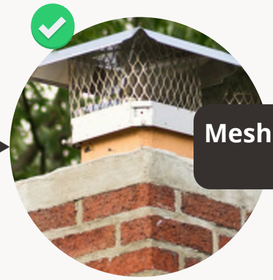
An electric fireplace is a heater that looks and feels like a real fireplace. It uses electricity to create heat with coils and LED lights to make flame effects.

- **Electric fireplaces don't produce smoke, ash, or soot** - which means healthier indoor environments and less pollution leaving your home.
- **No chimney means no heat loss through the chimney -** otherwise, chimneys can be where desirable heat is lost or undesirable heat from outside can enter the home.
- **Easier** to clean, doesn't require fire wood or gas connection.
- **Much safer** given no open flames, smoke, or risk of carbon monoxide poisoning.

IF gas **OR** wood (not preferred)

Add a **spark arrestor screen**

Spark arrestor screens are mesh barriers that stop embers from a fireplace fire from getting out. Adding one here is to have a layer of defense against embers getting in, but note that the mesh isn't as fine as you'd really want for ember resistance.



Mesh between 3/8- inch to 1/2- inch

This mesh is **coarser** than what is used elsewhere to protect against embers (meaning it offers **less protection** against them) to ensure proper ventilation from your fireplace. Close the damper during fire weather or after each use to protect against ember entry.

Screens & Vents

Legend Savings Safer Sustainable

Design decisions	What improves fire performance	What your options are	Co-benefits to consider

Attic ventilation

What should I consider about **attic ventilation**?

Design **soffit intake vents** to resist embers and flames



For inlet vents, soffit vents are better at keeping windblown embers out compared to gable end vents.

AND

Select **roof exhaust vents** that are flame and ember-resistant

OR

Select **roof intake and exhaust** vents to be flame & ember-resistant

Attach **1/16 to 1/8-inch mesh** to the roof sheathing at the opening as an extra layer of protection. **Seal joints** around vents.

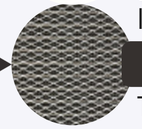
In all cases, vents should be made of non-combustible materials, facilitate sufficient air flow (make sure airflow is not blocked), and be corrosion-resistant.

Intake-only options



California-approved vent

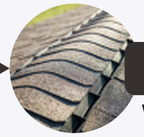
Pick a CA State Fire Marshall-listed product.



WUI vent

Tested to ASTM E2886

Exhaust-only options



Ridge or off-ridge vents

With mesh 1/8 to 1/16- inch in diameter

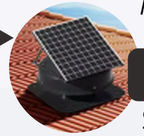
Combo options



Vulcan vent

Patented intumescent honey-comb matrix that expands under extreme heat to seal the vent

Image: Vulcan Vents / vulcanvents.com



Solar vent

Solar-powered

VEVOR solar roof vent. Image Source: Lowes / lowes.com

Consider a "hot roof": an unvented attic commonly used in high-performance buildings. Insulation and air-sealing directly at the roof deck bring the attic inside the home's insulated building envelope.

When designed and built correctly, a hot roof can **improve energy efficiency,** and it can **reduce wildfire risk by eliminating traditional attic vents, which are a common entry point for wind-blown embers.**

*Please see the second slide in the Roof section for more on this

Solar vent drives attic ventilation when the roof heats up in the sun, to lower air-conditioning costs and reduce indoor residual heat.

Screens & Vents

Legend Savings Safer Sustainable

Design decisions	What improves fire performance	What your options are	Co-benefits to consider

Wall vents

What about **wall vents**?

i.e., foundation/crawl space vents at the lower section of walls, dryer vents, garage vents, etc.

Add **ember-resistant metal mesh** over vents

Use materials that resist corrosion and avoid fiberglass or plastic, as they can melt. Don't store flammable items near vents inside, in case embers do get in.

Forced air vents, such as dryer and central vacs, should have a functional noncombustible louver or flap instead of mesh.

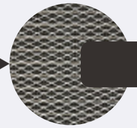
Wall vent mesh options



California-approved vent

Pick a CA State Fire Marshall-listed product.

Vulcan Foundation Vent. Image Source: Vulcan Vents / vulcanvents.com



WUI vent

Tested to ASTM E2886

For the California Office of the State Fire Marshal approved building materials list, see:

2022 WUI Listed Products Handbook

AND

Keep area in front of and adjacent to vent(s) **clear of vegetation and debris**

See the **Outdoors** chapter for more information on the first 5 ft around your home.

AND, IF POSSIBLE

Locate vents **away from prevailing wind direction**

To help reduce the likelihood of embers being blown into the vents.

It's better for air circulation and quality if vents are not directly in the path of strong winds. Prevailing winds can create higher air pressure and bring in more dust every day.

Exterior Walls

Legend Savings Safer Sustainable

Design decisions	What improves fire performance	What your options are	Co-benefits to consider

Siding

How can the **exterior walls** protect my home?

Select **non-combustible wall materials**

The weep screed is also very important for FIRE mitigation!
- Made of non-combustible material (like metal!)
- The lower edge of the wood behind the siding should be painted to help preserve its integrity over time.

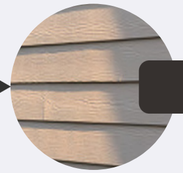
Non combustable L Joints!

Minimum 6 inches of noncombustible material at the base of all exterior walls (where embers would collect)

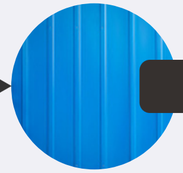
IF NOT, AT LEAST

See additional considerations on the next page

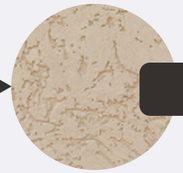
Common non-combustible walls



Fiber cement siding



Metal siding



Three-coat stucco

Make sure there is a weep screed (a special metal flashing) at the bottom of the stucco wall. This is critical for letting water escape that will otherwise cause damage.

What about materials like adobe and strawbale? See **Green Innovations** chapter.

Low maintenance - resistant to pests and rot.

Robust - good performance in high winds and heavy rain.

Recyclable

Typically, the lowest cost option is widely available in Southern California.

Exterior Walls

Legend Savings Safer Sustainable

Design decisions	What improves fire performance	What your options are	Co-benefits to consider

Minimum 6-in non-combustible material at the base of all exterior walls.

Non-combustible material is preferred for its fire performance.

Ignition-resistant material and fire-retardant-treated wood need to be labeled for exterior use and meet other building code requirements listed in CBC Section 707A.3. However, fire-retardant treated wood is not permissable for IBHS Wildfire Prepared Home designations.

Choose **non-combustible wall materials**

IF NOT, AT LEAST

Select **ignition-resistant** or **fire- retardant-treated wood** and take other steps, like treating the wood to reduce the risk of embers collecting by the exterior walls igniting a fire

AND

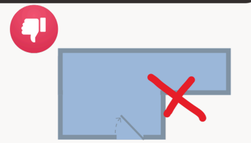
Choose simple geometry

Limit re-entrant corners and projections that can accumulate debris and/or embers.

1 **Avoid re-entrant corners** that can collect debris



Simple floorplate (e.g., rectangular)

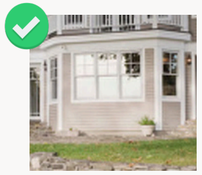


Corners where debris and embers can collect

Helpful for earthquakes - Simpler building shapes (without inside corners) have more straightforward load paths, reducing chances of structural failure during an earthquake.

AND

2 **Avoid projections** with space below



Bay window built down to the ground



Space below bay window where debris can collect

Avoids creating a space where pests could nest.

Exterior Walls

Legend Savings Safer Sustainable

Design decisions	What improves fire performance	What your options are	Co-benefits to consider

Exterior wall insulation

What type of **insulation** should I use?

Choose **non-combustible insulation** or **re-treated insulation**

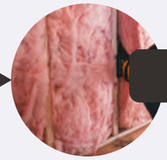
Choose insulation with:

- **High performance** (the higher the R-value, the more insulating)
- **Low or no toxic substances** like formaldehyde, isocyanates, and VOCs
- **High recycled content** (e.g., at least 30%)
- **Nearby manufacturing** (shortening the travel distance - i.e., locally sourced)



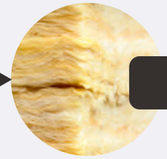
Avoid expanded foam (e.g., expanded polystyrene) insulation

Green insulation options



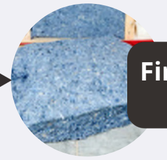
Fiber glass

Available in rolls (most common, ba) and in rigid panels (typically for placement on the outside of the exterior wall).



Mineral wool

Also available in rolls and panels.



Fire-treated natural bers or denim

Made from recycled materials such as cotton, sheep's wool, hemp wool, or straw, but they require chemical treatment because they are not naturally resistant to fire, insects, and moisture.

A well-insulated wall means less mechanical cooling and heated needed.

Less energy used means spending less money on energy.

During very hot or cold weather, high performing walls will help your home be thermally safe for longer.

Improves acoustic performance of exterior walls, which is useful for privacy, especially when neighbors are close together.

Typically, most affordable and widely available.

Lowest carbon emissions in manufacturing and the highest percentage of recycled material.

Windows

Legend Savings Safer Sustainable

Design decisions	What improves fire performance	What your options are	Co-benefits to consider

Glass selection

What kind of **windows** should I get?

There's a risk of windows breaking as a result of direct flame contact or radiant heat from nearby flames.

Once broken, there's a clear path for embers and flames to enter the home.

Double Paned is a requirement!

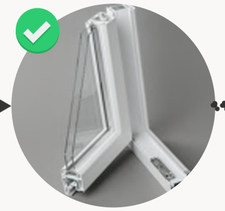
Choose **insulated glass units (IGU)** with a solar control low-e coating

Glass is the most vulnerable part of the window, so you can improve the fire performance by selecting **insulated glass units (IGU) (at least double-pane) with at least the inner pane being tempered** (a particular type of heat treatment that strengthens glass).

Note: single-pane windows would be virtually impossible for prescriptive energy code compliance anyway. IBHS Wildfire Prepared Home Enhanced requires two panes of tempered glass.

AND

See additional considerations on the next page



IGU with low-emissivity (low-e) coating



Example of etched label on the corner of tempered glass

- **High-performing glass helps overall building performance** (both heating and cooling). The air space and low-e aspect of the coating help insulate the window, slowing heat from entering or leaving. The solar control aspect of the coating helps reflect some of the solar radiation.
- **Less energy needed, less money spent on energy.**
- **Solar control coatings also help cut down UV damage** by blocking some UV rays. This protects things like curtains, carpets, and furniture, making them last longer.
- **During a heatwave**, solar control low-e IGUs help keep indoor temperatures tolerable for longer.
- **Tempered glass is safer and stronger.**
- **Insulated glass has better acoustic performance too**, giving you and your neighbors more privacy.

Windows

Legend Savings Safer Sustainable

Design decisions	What improves fire performance	What your options are	Co-benefits to consider

Frame selection

What about the **window frames?**

Select a robust **frame material**

The aim is to create a frame that won't quickly melt when exposed to flames or high heat. This will prevent it from deforming and causing the glass to break or fall out, which could allow fire to spread into the home.

Window frame options



Thermally-broken metal

e.g., aluminum

- **Less conductive frames help lower unwanted heat loss or gain** and **decrease the chance of condensation** (and risk of mold growth).
- **All of these options won't rot or get damaged by termites** (unlike wood).
- **Less prone to damange.**
- **Lasts longer** - less likely to change color or become brittle over time.
- **More sustainable to manufacture** compared to vinyl frames (in terms of chemical hazards during the process)



Fiber cement board

Mix of cement, sand, and cellulose fibers



Reinforced vinyl

Strengthened by metal insert

- **Typically, less expensive** than aluminum, steel-framed, or fiber cement board windows.

Embodied Carbon

“The most sustainable building is the one already built.”

New construction uses a lot of resources that result in carbon emissions.

What is Embodied Carbon?

Embodied carbon is a measure of emissions associated with the supply chain, starting from extraction and manufacturing, and sometimes accounts for later phases of life including construction, demolition and waste processing.

What can you do?

Embodied carbon is a measure of emissions associated with the supply chain, starting from extraction and manufacturing, and sometimes accounts for later phases of life including construction, demolition and waste processing.

Certified raw materials

Ask your general contractor to choose building products such as steel, concrete, wood that have 3rd party certifications such as UL Certified, Eoniq Zero Carbon Steel, and Forest Stewardship Council.

Choosing locally sourced raw materials can also reduce the carbon emissions of transportation.

Manufactured products

Products you will need for your home such as flooring, lighting, and paint may have an Environmental Product Certification (EPD).

EPDs are a fact sheet for the environmental impacts associated with a product. Look up a product here: www.environdec.com/library

Deep Dive: Check out the EC3 building transparency tool to understand the carbon footprint of your home.

www.buildingtransparency.org/tools/ec3/

Envelope
Notes

1 More on Class A roof assemblies

It's important to **make sure that the underlayment meets the manufacturer's specifications** to ensure the entire roof assembly meets the classification (e.g., felt is a typical choice but combustible).

2 More on cool roofs

California Energy Commission

Note to meet the energy code (Title 24), most new single-family homes in California are required to have cool roofs (the requirement applies to climate zones 4, 8-16, which roughly translates to non-coastal California). Look for a CRRC cool roof label to check code compliance.

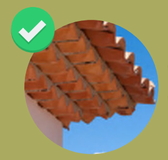
https://www.energy.ca.gov/sites/default/files/2023-08/2022_Res_SF_Cool_Roof_ada.pdf

For more information on **cool roofs,** check out Cool Roof Rating Council's (CRRC) website:

Resources

3 More on barrel tile roofs

If barrel-design tile, a **block gap at roof edge** that could catch embers with a "bird stop" (aka "eave closure"). This is also helpful in preventing nesting of birds, wasps, or other pests. Note that it is not uncommon for bird stopping to be skipped, installed incorrectly, or dislodged by birds, and flat tile roofs don't have the same vulnerability.



"bird stop" aka "eave closure"

4 Re: carbon emissions in manufacturing, what's embodied carbon?

Carbon Leadership Forum (CLF)

As the Carbon Leadership Forum clarifies, "embodied carbon refers to the greenhouse gas emissions arising from the manufacturing, transportation, installation, maintenance, and disposal of building and infrastructure materials. Embodied carbon is a significant percentage of global emissions and requires urgent action to address it."

Their website has a helpful Embodied Carbon 101.



Envelope
Notes

5 Re: choosing green insulation

Environmental Protection Agency (2024)
The EPA outlined the following sustainability considerations in choosing insulation:

- "Greater thermal insulation values (R-value)
- Reduction/elimination of toxics (e.g., formaldehyde, isocyanates, some flame retardants) and volatile organic compounds (VOCs)
- Recycled-content
- Low embodied energy & greenhouse gas emissions
- Sustainable material sourcing (e.g., agricultural impacts or other natural resource use)
- End-of- life recycling or disposal options"

Many products have **Health Product Declaration (HPD)** documents, which may be especially helpful if your family is concerned about certain allergens.

Identifying Greener Insulation | US EPA

See Habitable's **guidance on insulation selection** to help find products that are safer for you, fenceline communities, and workers:

Insulation Product Guidance

6 Re: vent requirements

CA WUI Code (formerly "Chapter 7A") (2022)
The suggestions in this guide for choosing vents match the rules in CA WUI Code, formerly "Chapter 7a" of the California Building Code (CBC). CA WUI Code is only necessary for buildings in the Wildland Urban Interface (WUI). However, since fires and embers can travel far, it is recommended that all homes being rebuilt due to fires in the Los Angeles area follow the advice in CA WUI Code. In simple terms: it's not mandatory for everyone, but it can help everyone lower the risk of wild fires.

7 Re: exterior wall covering guidance

CA WUI Code (formerly "Chapter 7A") (2022)
This guidance is consistent with CBC Section 707A.3: "The exterior wall covering shall comply with one or more of the following requirements, except as permitted for exterior wall assemblies complying with Section 707A.4:

1. Noncombustible material.
2. Ignition-resistant material. The ignition-resistant material shall be labeled for exterior use and shall meet the requirements of Section 704A.2.
3. Fire-retardant-treated wood. The fire-retardant-treated wood shall be labeled for exterior use and shall meet the requirements of Section 2303.2."

8 Re: vinyl window frames

IBHS (2021)
Vinyl window frames melt and are not recommended. See additional guidance from IBHS (2021): "While glass has typically been found to be the most vulnerable part of a window, one exception is vinyl frame windows without metal reinforcement, where the vinyl frame can deform prior to the glass failing... Any window whose manufacturer produces an American Architectural Manufacturers Association (AAMA) certified window will have metal reinforcement that mitigates this risk as part of their certification."
https://ibhs.org/wp-content/uploads/member_docs/ibhs- suburban-wild re-adaptation-roadmaps.pdf

Outdoors

Landscaping, Irrigation, Decks/Patios, Fences, Driveways/Gates, Maintenance



Soil Contamination and Remediation

The environmental health risks created by wildfires extend far beyond the burn itself, as chemicals and heavy metals settle into the soil and indoors, complicating rebuilding. The only way to know if your soil is contaminated is by lab testing.

Here are steps to follow:

Step 1 - Take soil samples or request testing from CONSORTIUM

Step 2 - If you DIY, drop off samples or send them directly to a lab. Lab results can take up to 3 months.

Step 3 - If your soil sample exceeds the official guidelines for heavy metal, PFAS and HAS, consider your and your family's (and pet's) risk factors and likely exposure.

Step 4 - Decide on your plan of action. There are several ways to remediate soil that vary in cost, time and effectiveness. Contact a Certified Industrial Hygienist, Certified Engineering Geologist, or Professional Geologist for advice. Work should be done by a licensed contractor with OSHA HAZWOPER training or equivalent.

Soil should be remediated before or during construction.

Check with your neighbors! If you do not have contaminated soil but your neighbor does, your soil may become contaminated during construction, high winds, erosion or storm runoff. Have your soil retested before you move in.

Testing and Remediation Resources

CONSORTIUM: A comprehensive resource on soil contamination, testing, and remediation. Members include USC Public Exchange, LMU Center for the Study of Los Angeles, CAP.LA, Department of Angels, Altadena Recovery and Rebuild Corporation, LA Fire HEALTH Study, and Centre for Applied Ecological Remediation.

https://consortium-science.com/ and **www.consortium-science.com/soil-guide.com**

EPA **https://www.epa.gov/california-wildfires**

Department of Toxic Substances Control **https://dtsc.ca.gov/**

LA County Post Fire Soil Assessment Dashboard **https://storymaps.arcgis.com/stories/667412ef37ee4392bddb5c90da3480f1?cover=false**

Altadena Soil Remediation Program

Up to $3 million remediation assistance for households with standing homes where pregnant women or children under 6 live. Administered by the California Community Foundation and CONSORTIUM.

Community Support for Soil Remediation

Resilient Palisades
resilientpalisades.org

Eaton Fire Residents United
https://www.efru.la/

Landscaping

Legend Savings Safer Sustainable

Design decisions	What improves fire performance	What your options are	Co-benefits to consider

Immediate space around building(s)

How should I design the **first 5 ft** around the home?

Refer to the Placement section for more information on the Zones:

Zone 0 = 0 to 5 feet

Zone 1 = 5 to 30 feet

Zone 2 = 30 to 100 feet

Key action

Keep area **clear of combustible items**

It's common to have combustible items near buildings, such as wooden furniture, propane tanks, garbage, recycling, plastic garden sheds, or lumber. Make sure your design accounts for these items to be placed somewhere else.

Key action

Hardscaping around structures - no vegetation

Set fire-resistant vegetation at least 5 ft away from all structures.

AND, IF more than 5 ft available

See additional considerations on the next page

Hardscaping options

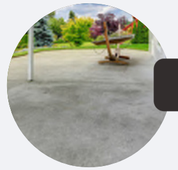


Gravel

e.g., river rock, decomposed granite



Pervious pavers



Concrete

For all options, **choose light-colored or cool surfaces** to prevent heat gain.

Look for options with **high levels of recycled content**.

Avoid artificial turf.

Affordable and widely available option.

Lower embodied carbon compared to concrete given less energy- intensive to produce.

Pervious surfaces allow stormwater to infiltrate, supporting irrigation and reducing flooding.

The City of Santa Monica provides a list of approved permeable paving products. Check out:

UR_Permeable(1).pdf

Board of Forestry

Affordable and widely available option.

Helpful on hot days to have light-colored or "cool" surfaces because they reflect heat from the sun instead of absorbing and releasing it.

Recycled content means less waste and more resource conservation.

Zones 0 - 5

Legend Savings Safer Sustainable

Design decisions	What improves fire performance	What your options are	Co-benefits to consider

Selecting what to plant

And, what about **5 to 30 ft** around the home?

AND how do I plant them?

Shade trees help reduce ambient temperatures.

Distance from buildings:

- Zone 0 (0–5 ft): Do not plant new trees.
- Zone 1 (5–30 ft): If you plant, keep mature canopy and dripline clear of eaves/roofs; remove limbs within 10 ft of chimneys; prune lower branches 6–10 ft above ground (or 1/3 of tree height for small trees) to reduce ladder fuels.
- Zone 2 (30–100 ft): Maintain crown spacing between trees (about 10 ft on flat ground; increase on slopes).

Key action

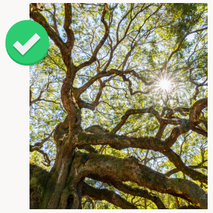
Plant **low-flammability vegetation**, spaced widely

WHAT IF I have salvageable trees already in this zone or want to plant trees?

Be careful with tree selection and trim low-hanging branches



DON'T select trees that are high in waxes, oils or resins (e.g. Eucalyptus).



DO preserve and encourage fire-resistant native tree species (e.g., some oaks), which reduce wildfire risk by providing natural firebreaks, improving soil stability, and retaining water.

Low- flammability vegetation options

1.  **Fire-smart plants**

AND

2.  **Widely spaced shrubs**

AND

3.  **Compost or heavy mulch**

Keep mulch 10 ft or further from structures to be safe.

Work with a **native plant nursery** to select diverse fire-adapted species for the right zones and the right spacing.



Choose drought-tolerant plants.
WUCOLS - Water Use Classification of Landscape Series

Plan to regularly irrigate and maintain landscapes. Well-hydrated native California plants are the best because they have adapted to handle fire, and their roots stay hydrated.

For a great **resource on plant selection** (including selecting native plants), see defensiblespace.org:

Sustainable Defensible Space

Gardens provide habitat, shade, groundwater infiltration, urban heat-island reduction, and many other benefits.

Small mixed organics mulch helps build healthy, living soil and retain water. Avoid wood chips.

Native options help support biodiversity and local ecosystem health (e.g., butterflies).

The California Native Plant Society provides an excellent guide for **fire recovery landscaping:**

CNPS Fire Recovery Guide

Certain ground cover can support soil and reduce the risk of erosion.

Lower the chance of wind-blown debris (like flying branches) by keeping trees healthy and well-maintained.

Theodore Payne Foundation

Landscaping

Legend Savings Safer Sustainable

Design decisions	What improves fire performance	What your options are	Co-benefits to consider

Deciding where to plant

How should I **space** trees and shrubs?

Beyond the 5 ft from the home.

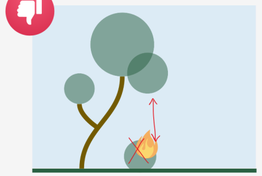
In general, design the landscape **for an amount of maintenance effort that is practical** for your household over time.

IF at site

- **10 ft** between **tree** canopies
- shrubs spaced **2x their height**

IF sloped site

- **30 ft** between **tree** canopies
- shrubs spaced **3x their height**



DON'T create fuel ladders by planting shorter trees or shrubs under taller ones

Refer to LA County's Plant Selection Guidelines for placement do's and don'ts related to fire:

Plant-Selection-Guidelines.pdf

For more information - including balancing benefits and fire safety of shade trees - see CAL FIRE'S guidance:

Fire-Smart Landscaping For Enhanced Wildfire Safety | CAL FIRE

For more helpful images, including how to **avoid fuel ladders**, see the LA County Fire resource:

Forestry Fuel Modification - FireDepartment

Altadena Green will check the health of your trees post-fire. **Altadena Green - Tree Assessment Program**

LADWP's Residential SoCal Water $mart Water Rebate Program offers water saving rebates and free trees through City Plants **www.ladwp.com**

Promote hydrated, fire-resistant landscapes with maintenance and soil health practices that enhance moisture retention and reduce fire risk. **Healthy, water-rich soils and plants are less likely to burn.**

Shade trees help reduce ambient temperatures.

Consider hiring one landscape designer to look at your community to help supportively design the whole ecosystem.

Check the tree's mature height and canopy spread to make sure both fit the site. Also, match species to sun, soil, wind, and water availability.

Promote hydrated, well maintained fire-resistant landscapes and soil health practices that enhance moisture retention and reduce fire risk. Healthy, water-rich soils and plants are less likely to burn.

AltadenaWILD offers free trees to Eaton Fire-impacted residents through its ReGreen Altadena initiative **www.altadenawild.org**

Irrigation

Legend Savings Safer Sustainable

Design decisions	What improves fire performance	What your options are	Co-benefits to consider

Fire-safe and low-water

How should I **irrigate** my outdoor space?

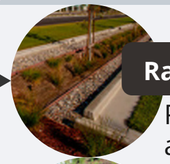
What about sprinklers inside my home? All new homes in California must have fire sprinklers installed (per CRC R313).

In general, landscape irrigation will reduce dried out vegetation and potential fire spread. These are sustainable irrigation options.

Infiltrate stormwater

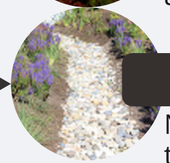
Allowing stormwater to soak into the ground reduces reliance on street drainage systems and can help prevent flooding.

Stormwater infiltration options



Rain gardens & bioswales

Planted depressions that absorb rainwater



Infiltration trenches

Narrow, gravel-filled trenches

Infiltration supports plant health, reduces stormwater runoff, and can contribute to recharging the groundwater supply.

Reducing stormwater runoff can help reduce flood risk at your property and in the neighborhood.

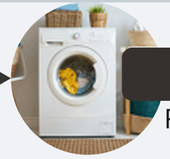
Helps reduce debris flows by increasing groundwater absorption, supporting healthy root systems.

AND

Reuse gray water

Reusing water from sinks, showers, and laundry for watering plants means using less water from the water district. Graywater is not approved for root crops or edible portions of food crops.

Gray water example



Clothes washer

Reuse lightly used water

Reduces water bills because less water is needed for irrigation.

Gray water lessens the demand for water supply and wastewater systems.

California law allows simple gray water systems from **laundry and shower** to be directed to underground garden irrigation.

see LADWP website

AND

High efficiency irrigation

In selecting an irrigation system, look to reduce evaporative losses to keep your plants healthy with less water.

High efficiency irrigation



Drip irrigation

Drip or sub-surface irrigation helps reduce evaporation



Smart controls

Weather-based on timed

Rain Bird ESP-TM2 irrigation controller. Image source: Rain Bird / rainbird.com

Reduces water bills because less water is needed for irrigation.

Reduces water loss from evaporation and overshoot onto sidewalks and streets pavement.

Irrigation

Legend Savings Safer Sustainable

Design decisions	What improves fire performance	What your options are	Co-benefits to consider

Water source

What are the options for readily available **water storage** to include in design?

Consider leveraging **water storage** when there is a fire alert to hydrate your property at fire notice

Do not stop evacuating if you receive a notice for your area. If the alert is to be ready for evacuation or a red-flag wind day, **use the water you have stored on-site** to soak your yard and possibly wet your roof.

Remember, this is about **using your stored water** so you don't pull from the larger water supply, which is needed for fighting fires.

LA County (Public Works or Public Health) greywater regulations link **Alternate Water Sources: Indoor and Outdoor Non-potable Uses Guidelines**

Pasadena Water and Power information on grey water systems and rebates and applications for L2L greywater systems. Can receive rebate of up to $200 on permit fees.

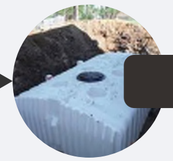
For non-permitted systems - Laundry-to-Landscape Greywater Systems: PWP customers are eligible for a no-cost L2L Greywater System Installation. To participate, complete a **Greywater Application** and email it to: greywater@cityofpasadena.net

Water storage options



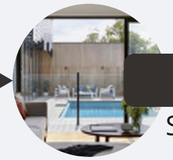
Rain barrel

Rain barrels are simple systems that collect and store rainwater from your roof. Given placement near the building (e.g., first 5 ft), ensure the barrel is not a combustible material.



Buried cistern

An underground storage tank that can be pre-filled with rainwater or municipal water.



Pool

Swimming pool

Many of these will require a hose hook-up to the pool pump or a portable pump to leverage as a fire prevention resource.

Consider: All water storage options come with additional maintenance requirements to ensure water quality and reduce biological- and mosquito-supportive environments.

Can help irrigate your yard day-to-day, not just an emergency resource.

Incentives for Water Savings

When designing your home and landscape, consider using water-saving indoor and outdoor fixtures and drought-tolerant landscaping. Water utilities offer incentive and rebate programs.

Faucets
LADWP offers free water-saving faucets and aerators.

Apply here. **https://www.ladwp.com/commercial-services/programs-and-rebates-commercial/free-water-conservation-items**

Clothes Washers & Toilets
Rebates on high-efficiency washing machines and low-flow toilets are available through SoCalWaterSmart.

SoCalWaterSmart:
https://socalwatersmart.com/en/residential/rebates/available-rebates/clothes-washers/

Smart Water Monitoring
Water monitoring programs like My Water Insights can help you stay on top of your water use to save money and spot leaks as they happen. LADWP has partnered with Flume to offer a rebate on smart home water monitors.

https://www.ladwp.com/residential-services/my-water-insights-program

https://flumewater.com/rebate/ca/ladwp/

Outdoor Watering
The Residential SoCal Water $mart Water Rebate Program offers LADWP and SoCal Metropolitan District customers rebates on outdoor water-saving fixtures and products including irrigation controllers, soil moisture sensors, rotating nozzles, smart hose bibs, rain barrels, and cisterns.

Landscaping Support
Funded by the Urban Community Drought Relief Grant through the CA Department of Water Resources, the Landscape Efficiency Assistance Program (LEAP) offers qualifying residents free services to replace lawns with drought-tolerant and native plant landscaping, rain water capture, and water-efficient irrigation.

https://www.ladwp.com/residential-services/programs-and-rebates-residential/landscape-efficiency-assistance-program

https://flumewater.com/rebate/ca/ladwp/

Turf Replacement Programs
Replacing lawns with native landscapes may qualify for rebates through LADWP and the Foothill Water District.

https://www.ladwp.com/who-we-are/water-system/water-conservation/turf-replacement-rebate

https://socalwatersmart.com/en/residential/

Foothill Water District Rebates
https://www.fmwd.com/conservation-rebates

Decks, Porches & Patios

Legend Savings Safer Sustainable

Design decisions

Outdoor space planning

Do I want a deck, porch, patio, or balcony?

IF YES

Material

What are my **material** options?

The danger with all these options is that falling **embers from above** can land on surfaces and start a fire that could endanger the home. Raised platforms like decks and balconies face an extra threat because **flames from below** can reach them.

AND, **IF** elevated (e.g., deck)

What improves fire performance

It's tricky to tell these terms apart! A **deck** is an outdoor platform that sticks out from a house, usually raised and not covered. A **balcony** is like a deck, but smaller and usually on an upper floor. A **porch** and **patio** are generally at ground level. Porches are usually covered, which is what makes them different.

Choose a **metal structure** with a non-combustible walking surface

For example, aluminum or steel framing

Or, if not elevated (i.e., porch, patio), consider non-combustible materials

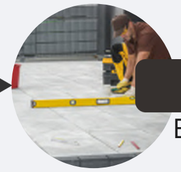
For example, concrete, stone or brick

Have an **ember-resistant area below** any decks and balconies

The area below could be enclosed or everything below should be non-combustible (building materials and furnishings) with access for periodic weed management.

What your options are

Common non-combustible walking surface options



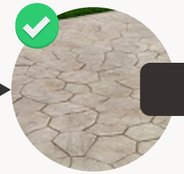
Tile

E.g., concrete, ceramic

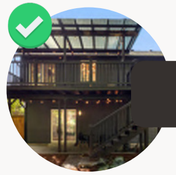


Metal

In all cases, choose **lighter colors** for your built outdoor spaces to help keep the area cooler and **avoid combustible shade structures.**



Lightweight concrete



Ember-resistant area under deck

Co-benefits to consider

Accessible outdoor space can be good for mental health

Note: any **shade structures** should also be non-combustible.

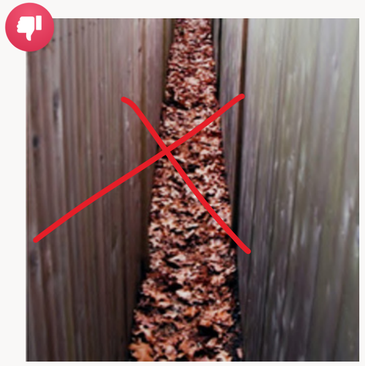
Fences

Legend Savings Safer Sustainable

Design decisions	What improves fire performance	What your options are	Co-benefits to consider

Outdoor space planning

Do I want a **fence**?



If your neighbor also has a fence, avoid doubling up — this is an area that can accumulate leaves and other debris.

Choose a **non-combustible material**

OR

At least make any fencing within the first 5 ft of a building **non-combustible**

Note: this is less desirable from a fire standpoint. Better to select a non-combustible fence everywhere.



Fire resistant fence connection

Image source: City of Ashland / ashlandoregon.gov.

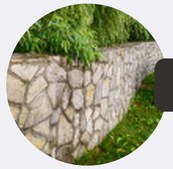
Common non-combustible fence materials



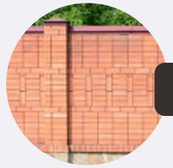
Metal — **Can be recycled**



Concrete



Stone



Brick



Fiber cement

Lower embodied carbon

In all cases, pick **local materials** as much as possible to reduce transportation-related emissions and support the local economy.

Driveways & Gates

Legend Savings Safer Sustainable

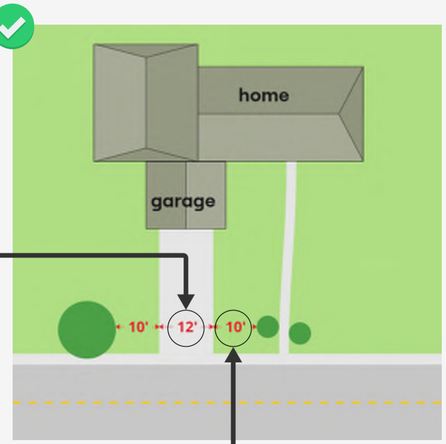
Design decisions	What improves fire performance	What your options are	Co-benefits to consider

Emergency access

How can I help emergency responders **access my home**?

Design driveway with clearance of at least **12 ft in width** and **15 ft in height**

To help fire-fighting access.



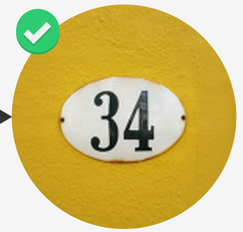
Create **buffer** around driveways and access roads

Don't plant or keep any combustible materials bordering the driveways or access roads.

For material selection, follow recommendations in the **Landscaping** section.

Make **identifying** your home easy

Make sure address numbers are easy to see from the street (like size, color contrast, and where they are placed) so emergency responders can find them quickly.



Driveways & Gates

Legend Savings Safer Sustainable

Design decisions	What improves fire performance	What your options are	Co-benefits to consider

Gated homes

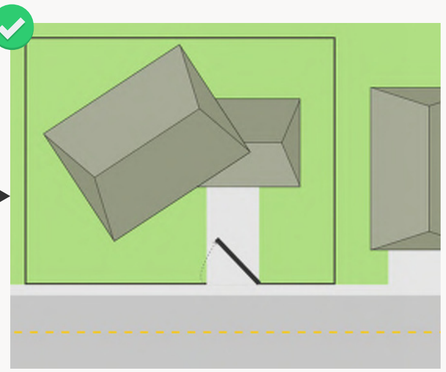
What if I want my **home gated**?

Gated communities

What if my **neighborhood is gated**?

Design gates to **open inward** (toward the property/away from the access road)

This helps prevent the gate from being blocked by debris, such as fallen trees on the street, ensuring clear access for both entering and evacuating the property.



Inward opening gate

Place gates **30 ft** from roadway [6]

This could allow a fire truck to reach the gate without stopping traffic while it waits for the gate to open.

Outdoors
Notes

1 **Re: what to do within the first 5 ft around buildings**
CAL FIRE
Aligned with many resources, CAL FIRE suggests: “use hardscape like gravel, pavers, or concrete. No combustible bark or mulch…limit combustible items (like outdoor furniture and planters) on top of decks. Relocate firewood and lumber to Zone 2.” Not mentioned in the decision tree but worth noting: “Consider relocating boats, RVs, vehicles, and other combustible items outside this zone.” **https://www.fire.ca.gov/dspace**

2 **Re: vegetation spacing**
CAL FIRE describes the spacing of trees and shrubs on flat and sloped sites with helpful diagrams.
https://www.fire.ca.gov/dspace

For a clear and beautiful guide as you're thinking about your outdoor space, check out Sustainable Defensible Space's **Wildland Urban Interface Wildfire Resilience Homeowner Handbook: Defensible_Space_Booklet.pdf**

See TreePeople's guide to mulch: Mulch & Protect & Grow. Report - TreePeople

For native plant garden inspiration, see the visual resource from California Native Plant Society: Calscape | California's Native Plant Gardening Destination

For more on soil and graywater, check out TreePeople's research and resources: Policy & Research - TreePeople



Outdoors
Notes

3 **Re: driveway clearance**
NFPA Firewise These dimensions are per the Firewise Communities guidance listed on the Los Angeles Fire Department's website: "Make your driveway at least 12 feet wide with a vertical clearance of 15 feet and a slope of less than 5 percent to provide access to emergency vehicles." **https://lafd.org/safety/fire-safety/fire-what-to-do/how-have-firewise-home**

4 **Re: buffer around driveways and access roads**
CAL FIRE "Driveways and access roads: Clearance maintenance: Keep a minimum of 10 feet of vegetation clearance on either side of driveways and access roads." **https://readyforwildfire.org/prepare-for-wildfire/hardening-your-home/**

5 **Re: making identifying your address easier for first responders**
IBHS Per IBHS guidance: "9. Improve fire-fighting capabilities: Provide proper address identification. Choose numbers that are 4 inches on a contrasting background and/or reflective or illuminated. Place address numbers so that they are visible from the street and from both directions of travel." **https://ibhs.org/wildfirereadyhomeupgrades_old/**

6 **Re: gates opening**
IBHS Per IBHS guidance: "9. Improve fire-fighting capabilities... If the property is gated, gates should open inward and be placed at least 30 feet from the roadway." If an individual property has a very long driveway, it is worth applying the 30 ft setback of the gate from the access road. This is less typical in a more urban/suburban context, so we've linked that recommendation more to gated communities. **https://ibhs.org/wildfirereadyhomeupgrades_old/**

7 **Re: avoiding artificial turf**
Although artificial turf can be attractive to reduce water use, it can get very hot in sunny environments (it doesn't cool like natural landscaping), its made from plastic (non-biodegradable), and can lead to chemical run- off.

? **FAQs: What about back-up power for my garage door so I can evacuate when the power goes out?**

Senate Bill 969 In 2019, a law passed in CA to address exactly this issue. Now, all automatic garage doors sold and installed within the state are required to have a back-up battery. **https://leginfo.legislature.ca.gov/faces/billTextClie nt.xhtml?bill_id=201720180SB969**

? **You didn't mention sealing around the garage door. Is that important?**

CBC 708A.4 Garage Door Perimeter Gap Absolutely. Preventing gaps around the garage door to block the entry of embers is even mentioned in CA WUI Code (formerly "Chapter 7A" of the California Building Code). We didn't spell it out here because the seal (a.k.a. door sweep) is pretty standard in new garage doors. Note that a well-sealed garage has other benefits like air tightness (helping reduce energy use) and keeping pests out (like mice).



Building Systems

HVAC, Back-up Power, Solar



HVAC

Legend Savings Safer Sustainable

Design decisions	What improves fire performance	What your options are	Co-benefits to consider

Indoor air quality

What should I look for in my new **HVAC**?

Consider taking a neighborhood approach in electrifying and/or equipment purchasing to reduce costs. See Community chapter for more ideas.

Going all-electric should be cost neutral versus gas, though many contractors price it as a premium. Equipment costs can run higher upfront, but incentives often offset that, and operating costs should be lower long term. Electrical rates have been rising but are less volatile than gas, and should ease as grid integration improves.

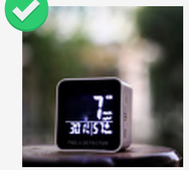
Integrate or add **air filters**

Choose higher-performance air filters to integrate into HVAC system and/or have standalone air purifiers.

AND

Consider an indoor or outdoor **air quality monitor**

So you know when to run purifiers or change filters.

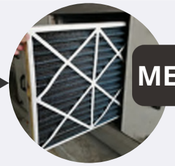


AND

Pick a **heat pump** for 2-for-1 heating and cooling

When you need to keep windows closed on smoky days, heat pumps can help you stay cool if it's hot outside. If it's cold, you can use them without adding pollutants to the indoor air.

Air purification options



MERV 13 or better air filters



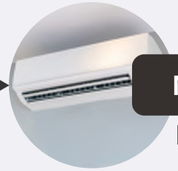
Standalone HEPA air **purifiers**

Heat pump options



Air source heat pump

Image: Cora Wyent



Mini-split heat pump

Ductless heat pump

Wait, what about geothermal heat pumps? See p63 for an explanation of why geothermal heat pumps are not listed here.

Both help make the indoor air better every day, even when there are no smoke events, creating a healthier indoor space.

Heat pumps are more energy efficient than traditional gas heating systems because they use heat from the air around them instead of burning gas to create heat.

Better for your indoor air quality and better for the environment to use electricity rather than burn gas in your home (reduced greenhouse gas emissions).

Cooling can keep you safe during escalating heat waves. Heat pumps provide both heating and cooling.

Operational consideration: one system to maintain over time (versus a furnace *and* air conditioner).

Note: By code, your new home must have heat pump connections (T24 Part 6: 150.0(t) requires heat pump space heater ready), so building all-electric is a way to save on gas connections.

Building Systems

Legend Savings Safer Sustainable

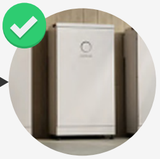
Design decisions	What improves fire performance	What your options are	Co-benefits to consider

Prepare for Public Safety Power Shut offs (PSPS)

How can I be **ready for power outages**?

Add a battery

Like a panel battery system, so you have power available if the utility power gets disrupted. (By energy code, you need to be battery-ready anyway.)



There are multiple small residential battery systems on the market like Sonnen eco, LG Chem RESU, and Tesla Powerwall.③

The sonnenEvo, an all- in-one, AC-coupled solar battery storage system.
Image source: sonnen / sonnen.usa.com

AND

Install solar

To charge that battery and extend its use. Note that most new homes will be required to add solar to comply with the energy code.

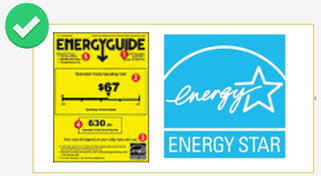


Solar panels can be installed on carports, on the ground, or most commonly on roofs due to cost, space use considerations, and best solar access.

AND

Pair with efficient, all-electric appliances

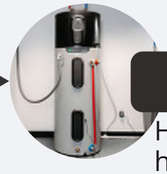
High-performing, energy-efficient buildings reduce the amount of solar and backup power you need (as does a high-performing envelope). In terms of efficiency, at a minimum, choose ENERGY STAR-rated appliances and systems.



Efficient, all-electric appliances



Induction cooking



Water heater

Heat pump or solar water heater

A heat pump water heater by A.O. Smith.
Image source: A.O. Smith / lowes.com

- **Keep food in your fridge/freezer from spoiling** by connecting to back-up power.
- **Keep lights on** (injuries during power outages are common) and/or air conditioning going.
- **Battery and solar** enable you to shift your energy use to times when energy is cheaper.
- **Solar energy is a renewable** energy resource.
- **There's no risk of a gas leak with an all-electric home.** Plus, post-earthquake, it will take time for the gas service to be restored (automatic shut-offs need to be reset at each home by the utility).
- **Efficient appliances save money.**
- **Improves indoor air quality** day-to-day compared to gas combustion alternatives; this can reduce asthma symptoms and asthma development in children.
- **No open flame cooking,** which is the number one cause of home fires.
- **Increased heat production efficiency,** up to 3 times, as compared to burning gas.

Electrification

Legend Savings Safer Sustainable

Design decisions	What improves fire performance	What your options are	Co-benefits to consider
Whole Home Design & Infrastructure			
Service panel sizing (225A solar-ready); wiring upgrades to support higher loads and future technologies; outlet placement; solar + battery readiness	Removes gas piping avoids leaks/explosions	Upgraded panel; smart load center; solar PV; battery storage; backup circuits	Future-proofing; resilience; lower bills with solar; safer backup
⭐ **Induction Cooktop / Range**			
Cooktop vs. range; ventilation type	No open flames; instant shut-off eliminates ignition risks	Portable units, full-size ranges, commercial-style	Faster, precise cooking; greater responsiveness; cleaner indoor air; easy cleanup
Heat Pump Water Heater (HPWH)			
Location (garage/basement); tank size; condensate drain	No gas lines; no combustion source; no additional vents	Hybrid models (with electric resistance); integrated or split systems	2-4x efficiency; dehumidifies/cools space; rebates
⭐ **Heat Pump HVAC (Heating & Cooling)**			
Ducted vs. ductless; sizing	Removes gas furnace fire hazards; eliminates flues; no gas piping hazards	Cold-climate units	Year-round comfort; high efficiency; works with solar + battery
Heat Pump Clothes Dryer			
240V or 120V models; ventless install; condensate drainage	Lower drying temps reduce lint ignition; no gas lines	Compact vs full-size; washer-dryer combos	Gentler on clothes; interior install; 40-50% more energy efficient

Electrification

Legend Savings Safer Sustainable

Design decisions	What improves fire performance	What your options are	Co-benefits to consider
Dishwasher			
Energy Star; water-efficient models; quiet models	No gas ignition risks	Standard; high-efficiency; smart models	Sanitization; water savings; quieter operation
Electric Oven			
Size; configuration; features (convection, steam)	No combustion source	Wall oven; range-integrate; steam ovens	Even cooking; multiple modes; contained heat (less excess heat escapes than gas ovens); no combustion byproduct (no water vapor or odors)
EV Charger			
install location(s); receptacle-only or hardwired EVSE.	No combustion or gas hazards	Level 2; Bidirectional or smart chargers	Clean transport; solar integration; backup potential

Electrification

Why Rebuild All-Electric in California?

Improve your family's health, lower your long-term bills, increase your home value, and get ahead of future regulations. There are many reasons all-electric is safer, cleaner, and financially smarter:

Health & Safety Benefits

- No gas leaks → Avoid explosion risk and carbon monoxide poisoning.
- Better indoor air → Gas appliances expose your family to harmful pollutants, increasing respiratory risks and contributing to long-term health issues, including cancer, cardiovascular disease, and cognitive decline. Children who grow up in houses with gas stoves are over 40% more likely to have asthma. Ventilation helps, but does not eliminate exposure.
- Drier air → Gas burning produces water vapor. Drier homes reduce cooling demand, protect finishes, and limit allergens such as dust mites and mold.
- No gas shut-offs in emergencies → During earthquakes, wildfires, or evacuations, no need to worry about leaving gas on, or waiting days or weeks for restored service.

Financial & Practical Advantages

- Lower operating costs → Modern heat pumps heat and cool efficiently, often saving money, especially in high-performance homes like Passive House.
- Backup power → Battery storage can drive down your usage of high-priced peak grid electricity, reducing operating costs; and provides backup power during outages, keeping lights, refrigerators, and other essential systems running.
- Easy access→ For small retrofit installations, accessing wires hidden in walls is typically the most expensive part of any project. But since rebuilds usually involve building new walls, they are a perfect time to run wires for electric systems and appliances without the disruption and mess of a retrofit.
- Rebates and tax credits → Federal, state, and local programs can cover thousands in incentives, offsetting initial investment.
- Higher resale value → Buyers increasingly prefer all-electric homes for improved indoor air quality and health, lower utility bills, and greater benefit from solar and batteries.
- Simpler and faster construction → With all-electric, there is no need to install vents or gas piping. Fewer utilities means faster permitting to speed up the build. Fewer vents mean more fire resiliency.

Future-Proofing

- The clean energy transition is well underway → the US and global economies are shifting rapidly to electric appliances powered by low carbon electricity. Any gas appliances purchased today are likely to become stranded assets - or very expensive to operate - well before the end of their expected service lives.
- Control your costs → Electric homes with rooftop solar and storage give you more control over your energy use and costs.
- Save more with automation→ Pairing electric appliances and systems with smart thermostats and smartphone apps makes saving energy even easier.

Climate & Carbon Benefits

- Lower carbon footprint → Your all-electric rebuild immediately produces fewer greenhouse gas emissions, and gets cleaner every year as California's grid integrates more renewable energy.
- Cleaner air → Every all-electric rebuild reduces neighborhood pollution, including nitrogen oxides and other respiratory hazards.
- Neighborhood empowerment → All-electric neighborhoods cut the need for gas infrastructure and maintenance, removing highly flammable fuel from their community.

Electrification

High-Performance Buildings

High performance buildings are not only energy efficient and all-electric, they have onsite renewable energy with battery backup.

Look for certifications like Passive House, LEED, WELL, and Living Building Challenge.

What they all have in common is low energy demand, good indoor air quality, sustainable building products and methods, and climate resilience to weather the next disaster.

Next steps:

- Ask your architecture firm if they have green building certifications and their experience with high performance buildings.
- Ask your builder if they have experience and are willing to support your rebuild project's high performance goals. It helps if your builder has built this way before.
- Unlock incentives - check out our list of incentive and rebates that make high performance buildings more affordable

Homeowner Action Checklist

- ☐ Contact local permitting offices & utilities → Ask about timelines, requirements, and ways to speed permit approval.
- ☐ Tell your architect/designer - early on in conversations with designers, include all-electric as a requirement in your project scope.
- ☐ Apply for rebates & incentives to stack on even more savings.
- ☐ Organize documentation → Keep property documents, permits, contractor warranties, invoices, and rebate confirmations in one place for tax credits, resale purposes, and/or insurance.
- ☐ Get multiple contractor quotes → Compare all-electric vs. gas options, factoring in rebates, incentives, and long-term energy savings. Request line-item pricing for labor and equipment for each of the following:
  - heat pump (with ductwork modifications)
  - heat pump water heater
  - induction stove
  - panel upgrade (only necessary for a small percentage of homes)
  - permits
- ☐ Plan ahead for solar & EV charging → If you might add panels, a home battery, or EV charging later, size your electrical panel and service now—it's cheaper during a rebuild.

Passive House California is a network of professionals and owners working to build healthier, more comfortable and resilient buildings.

Passive House Network

Passive House California

Building Systems
Notes

1 **Wait, what about geothermal heat pumps?**
Geothermal heat pumps use buried loops to exchange heat and are *very* efficient. However, they are expensive, and in Southern California's mild climate, they would take a long time to pay back. Additionally, there's a risk of damage during their long lifespan because of the area's seismic activity. Air source heat pumps (ASHPs) or mini-split systems are likely a better, more cost-effective approach for single family homes in this area.

2 **Re: Solar to meet energy code**
California Solar Mandate As of January 1, 2020, new single family homes are required to add solar PV systems (with a few exceptions—like if your property is too shaded). EnergySage lays this out in their great overview of the mandate: **https://www.energysage.com/blog/an-overview- of-the-california-solar-mandate/**

For more information:

Check out Rewiring America's heat pump guidance for homeowners, which includes **rebates, credits,** and a **contractor network**: **Rewiring America**

For a well-laid-out explanation of how electrified homes are **healthier**, check out the Building Decarbonization Coalition's resource: **switchison.org**

3 **Re: back-up battery options**
Note that there are also **smaller portable batteries**—like **Goal Zero**, **Ecoflow**, and **Jackery**—that could be used to power small appliances or to charge devices. Depending on the power draw of **medical equipment**, a battery can be a safe option. Unlike gas-powered generators, batteries don't require being run at a distance from your home due to pollution, noise, etc. Also, **vehicle-to-home charging** is an emerging technology to watch. More electric cars are gaining the capability to power homes directly.

4 **Re: adding solar without compromising re-resistance**
Department of Energy The DOE has recommendations around PV hardening, including choosing a Class A-rated PV module system and placing inverters and batteries inside resistant containers. **Solar Photovoltaic Hardening for Resilience – Wildfire | Department of Energy**



Green Innovation

Innovative Building Techniques



Natural Materials

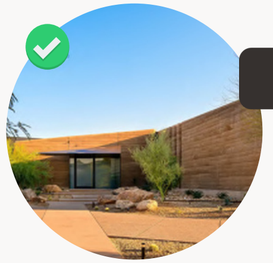
Legend Savings Safer Sustainable

Design decisions	What your options are	Co-benefits to consider

Consider using traditional, natural, and locally found materials for construction. Rammed Earth and Super Adobe, made from non-combustible materials, and Straw Bale, through being tightly packed and coated in plaster, can achieve a high level of re-resistance.

Note: These techniques are considered alternatives to standard practice. It may take longer to gain approval from cities, insurers or lenders, and it may be difficult to find knowledgeable local contractors who can provide quality design for local conditions.

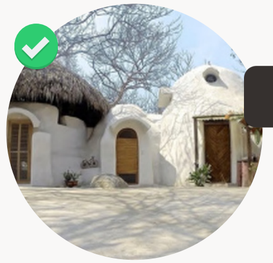
These materials may also be heavier than modern building materials. Make sure to work with a **structural engineer** to reinforce systems to make them seismically sound.



Rammed Earth

Building method using local clay, sand and gravel mixed with stabilizers and cured in formwork to form walls or other components

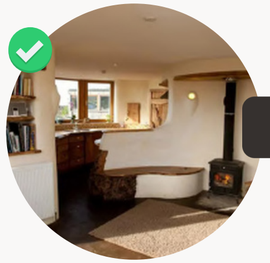
Dancing Light House in Paradise Valley, Arizona. Image source: Alexander Vertikoff / dwell.com



Super Adobe

The building method developed by Nader Khalili using earth-filled long sandbags and stabilizers coiled and sculpted into structures

A SuperAdobe home at the New Ruins permaculture project. Image source: New Ruins / newruinsbeach.club



Straw Bale

Building method using bales of waste straw to form walls, structural systems or both

A straw bale home in Sligo, Ireland. Image source: Steve Rogers / smallhouseswoon.com

Rammed-earth structures are durable. Structures exist that are 1000s of years old.

Relevant to all three:

Buildings made from local natural materials like mud and straw have **less embodied carbon** from manufacturing and transportation.

Local materials can be cheaper and more accessible than other materials.

Fewer toxic materials

Resistant to moisture, mold, and pests

All offer great insulation to reduce energy costs (less heating or cooling needed)

Straw bale is an excellent insulator, protecting from extreme temperatures and increasing thermal comfort.

Straw bale is rapidly renewable, low embodied carbon, made from agricultural waste, and is biodegradable.

Pre-fab

Legend Savings Safer Sustainable

Design decisions	What your options are	Co-benefits to consider

Pre-made Buildings

What if I **don't want to start from scratch?**

Pre-fab buildings or components can speed up construction and lower costs

Everything in this guide about flammability, placement, and other attributes applies to these buildings. Steel and concrete are better options than wood—avoid kits that include wood siding, porches, or exterior features.

Select models that meet **Passive House** or **LEED Zero standards** and/or those that are all electric and high-performance.

Look for models with **low VOCs** (volatile organic compounds) to protect indoor air quality.



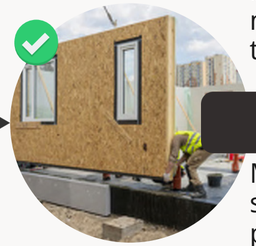
Manufactured homes

Similar to traditional trailer homes, but higher quality than in the past. Housing and the Urban Development (HUD) federal standards apply that are less stringent than most state codes. These might be set up as a temporary home during construction, as a permanent ADU or as a main house.



Modular homes

Modular homes are built in sections away from the main site and can be arranged in various ways (unlike manufactured homes, which come as one complete unit). They are regulated by states and have stricter rules than manufactured homes. The approach typically allows for more customization.



Modular panels

Modular can also refer to components, such as prefabricated insulated wall panels.

Relevant to all three:

Prefabrication can be cheaper and faster than conventional buildings, potentially allowing a quicker return home in the context of a rebuild.

On-site manufacturing in a factory setting **produces less waste** and can result in better construction quality (due to better-controlled conditions).

High-performance models can save money on energy bills.

Models that are manufactured locally **reduce the impacts of transportation and support local jobs.**

Note: Mobile homes built before 1976 are at a higher risk of fire than conventional homes and should not be reused.

Alternative Building Materials and Techniques
Notes

1 **Re: history of Super Adobe**
CalEarth's website has a great description of Super Adobe's history and how it works.
SuperAdobe: Powerful Simplicity

Many wildfire-impacted homeowners are experimenting with new building products and building techniques. A few considerations:

- **Do your research.** Talk to manufacturers of alternative products and tour factories of pre-fabricated homes. Make sure you understand the quality and fire resistance of the materials they are proposing and ask if they have built in the City or County of Los Angeles before. Ask to tour existing buildings using the proposed techniques or products. Ask to speak to previous customers.
- **Check with your city or county building and safety department**. Some products will need further testing, review, and approval before the building department will issue a permit. This review process will add time to your building project.
- **Ask your general contractor**. Has your general contractor built this way before? Is your general contractor comfortable with learning a new building product or technique? Does the manufacturer offer training courses or specialist installers?
- **Review your insurance policy.** Will your insurance company recognize the new building material or technique? If the proposed products offer wildfire protection, you may be able to negotiate an insurance premium discount.

For more information:

For another resource on **Straw Bale,** see: **Ecological Building Network – The art and science of building well**

For a helpful resource on Super Adobe, check out CalEarth: **SuperAdobe: Powerful Simplicity**

LA County Public Works Building & Safety
Research: (626) 945-7593

City of LA Department of Building & Safety
https://dbs.lacity.gov/services/core-services/plan-check-permit/product-approval



Community

Resilient Communities, Trauma-informed Approach, Managing Fire Together, Shared Purchasing Power, Shared Energy Resilience



Resilient Communities

Communities are foundational to resilience. Wildfire is a shared risk — what one neighbor does can increase or reduce risk for others. By working together, neighbors can lower their collective vulnerability, share resources, and help preserve the things they love most about where they live.

Getting started

Start with your neighbors and people you know. See what they are doing.

- Reach out to local community, social, environmental, or other groups that do work in your area to see how they are organizing and how you can help.
- Reach out to your local jurisdiction to see what programs and events are happening in your area.
- Keep a shared contact list of people, organizations and resources. Don't assume it's already being done or that it is too late to start ! You might just be what your community is waiting for.

Check out **Firewise USA** for community-scale toolkits.

See if you have a local **Fire Safe Council.**



Neighbors are key to disaster preparedness and response.

- They are close by and can be the first to arrive and provide assistance in an emergency.
- They know who will need help and who can provide it.



Communities are also key to building back better through recovery. They can:

- Support each other and heal.
- Share experiences, stories, and culture
- Amplify each other's voices to demand action,
- Create economies of scale
- Manage fire risk
- Build local resources
- Innovate and create



Community organizing can be a source of strength. That doesn't mean it's easy. Working with your community can take work.



The best solutions come from **strong, sustained and intentional commitment to a common vision**, enabled via clear, transparent, and equitable frameworks for participation.



There are many guidelines and resources for how to do **equitable engagement**.

Other great resources include:

LA County Public Health Emergency Preparedness Response Program

LA City's LA Strong wildfire relief FEMA's Community Engagement Toolkit for Emergency Managers

Trauma-Informed Approach

Trauma is an event or series of events experienced as harmful or life-threatening that has persistent adverse effects on individual "functioning and mental, physical, social, emotional, or spiritual well-being."

Trauma is **normal** and common after disasters. Trauma isn't limited to those who were directly impacted – it can also impact those who respond, support, and engage.

Trauma has a range of symptoms, from anxiety, anger or jumpiness to upset stomach and trouble sleeping. Left untreated, it can lead to PTSD. (see Common Reactions After Trauma - PTSD: National Center for PTSD)

Few of the professionals involved with disaster recovery—such as government staff, engineers, architects, contractors, and others—receive any training in recognizing or dealing with trauma.

Mental health providers can offer support at both the individual and community level.

Having an **awareness** of trauma can help people make sense of what they are feeling and observing in others.

Community facilitators can help design **trauma-informed approaches to recovery.**

Allowing space for **collective storytelling** and experiences can allow for both individual and collective healing.

Community processes can enable collective visioning and set a foundation for a **more resilient and sustainable recovery.**

For more information **about a trauma-informed approach,** check out:

Working with Disaster-Affected Communities to Envision Healthier Futures: A Trauma-Informed Approach to Post-Disaster Recovery Planning - PMC

Managing Fire Together



1 Work together to create **buyer zones and physical fire breaks** around the community.



2 **Help neighbors learn** about and use fire resistant design and construction.

California Wildfire Prevention + Preparation Transdisciplinary Studio course taught by Guillaume Wolf. Image source: Juan Pasado / artcenter.edu



3 **Work together to actively maintain** vegetation, gutters, roofs, and other spaces to limit fuel. Try a ***community clearing day*** and helping those who don't have ability or resources to do it themselves.

Wildfire risk affects not just one property but the whole neighborhood. This means everyone needs to work together to manage it.

For more information about **banding together as a community** to reduce wildfire risk, see:

NFPA - Firewise USA®

Shared Purchasing Power

After the fires, many people will be rebuilding at the same time. That puts demand on local supplies and workforces and drives up prices. Working together to leverage economies of scale to help reduce overall costs.

Hire architects and contractors together to "mass produce" design and construction.

Share designs to streamline local permitting, especially for alternative approaches like rammed earth, super adobe and straw bale.

Maximize spacing between buildings to reduce the risk of building-to-building re-spread.

Purchase materials together, including building materials, fixtures, systems, and finishes.

Work with the same modular housing companies to enable the establishment of local manufacturing and local jobs.

Consider sharing solar and battery installers. This can help you vet options and may lower costs.

Work with local native nurseries to bulk purchase plant material in advance.

Include diverse, fire resistant plants to support local biodiversity and climate resilience.

Use Pre-Approved Plans to speed permitting.

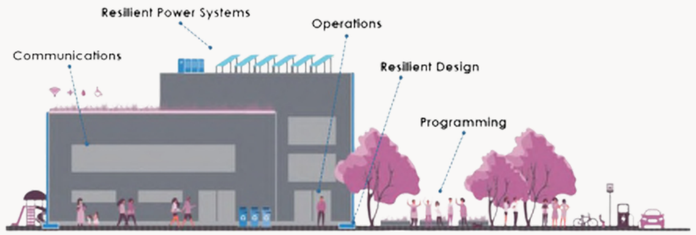
Community Resources:
BuildNotes.LA
Foothill Catalog Foundation
Altadena Collective

Rebuild Marketplace



Shared Energy Resilience

Increases in extreme weather will put pressure on the energy grid.
Community-scale energy approaches can keep carbon emissions low while helping communities keep power on when the grid goes down!



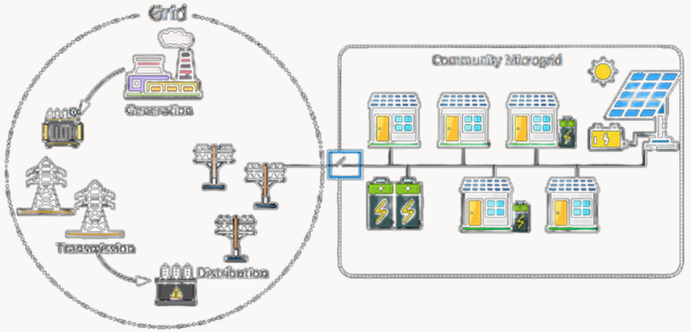
An example of a community resilience hub. Image source: Department of Energy and Environment / doee.dc.gov/

Community Resilience Hubs are facilities that provide resources to communities during emergencies. They can be equipped with backup power for things like heating and cooling during extreme conditions, device and vehicle charging or refrigeration during power outages. Good candidates are community centers, libraries, or local community non-profits.

See resources from Urban Sustainability Directors Network: Resilience Hubs



Zonal decarbonization refers to neighborhoods that together agree not to use natural gas, limiting the need for the utility to extend or maintain the gas infrastructure. Gas is highly flammable and contributes significantly to climate change. Communities on the outer edge of gas service can be expensive for utilities to maintain. California SB 1221 requires the establishment of zonal decarbonization pilot projects across the state.



A community microgrid.
Image source: RMIT University / communitymicrogrid.net

Community-scale microgrids allow communities to make the most of local clean power resources and disconnect from the grid to maintain power during outages. They can be paired with local solar and zonal decarbonization approaches to create clean and energy-resilient neighborhoods.

Note: These approaches require working closely with the utilities.

During Construction

Before you begin construction, speak with your general contractor about how the construction site will be maintained to avoid unnecessary runoff, dust, pollution, waste, and noise. Here is a checklist to lower the environmental impact of new construction.

Energy use

- [ ] On-site metering and sub-metering for field offices, big pieces of equipment, lighting, etc.
- [ ] LED lamps in all light fixtures
- [ ] Circuiting to allow most construction lighting to be off at night
- [ ] Electrifying construction equipment (cranes, backhoes, etc.)

Water use

- [ ] Use grey water for truck washdown and dust suppression.
- [ ] Fix leaks immediately and survey fixture leakage periodically.
- [ ] When cleaning, use brooms, squeegees, and vacuum first. If water is necessary, use trigger guns attached to hoses.

Waste

- [ ] Reduce waste generation, in addition to diverting waste from the landfill.
- [ ] Ask your contractor to use an RCI certified facility. They'll do the measuring and you just review the reports from the hauler.
- [ ] Separate recyclables
- [ ] Explore ways to compost organic materials
- [ ] Reduce the Waste Intensity of the project (how much waste the project produces)
- [ ] Landfill Diversion through recycling and reusing materials (or donation materials for reuse)
- [ ] Use portable composting toilets to reduce water use (also easy to maintain)

Air Pollution

- [ ] Use electric construction equipment
- [ ] If using fuel-based equipment:
  - Minimize vehicle idling time
  - Ensure frequent tuning of equipment
  - Only use ultra-low sulfur diesel fuel

Noise pollution

- [ ] Ensure equipment noise does not exceed OSHA limits
- [ ] Use electric generators and construction equipment
- [ ] Place noisy equipment far from neighbors and work crew
- [ ] Provide earplugs to workers
- [ ] Maintain well-functioning mufflers on generators

Preparing for Wildfires

Los Angeles Fire Department
https://lafd.org/ready-set-go

LA County Wildfire Preparedness
https://ready.lacounty.gov/fire/

During a wildfire alert, store trash bins, grills, outdoor toys and equipment inside. These can easily catch on fire by embers.

Ensure your house number is clearly marked to help emergency responders and firefighters locate your home and your driveway is accessible to responders.

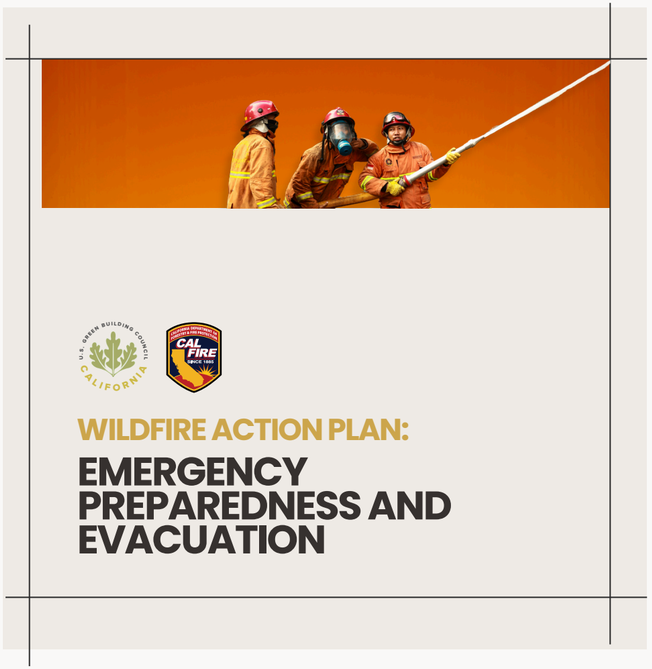
After a Wildfire
Only return to your property after officials have said it's safe to do so.

Wear PPE if your property is within the burn zone or impacted by wildfire smoke. Properties within a 7 mile radius of the LA Wildfires were found with smoke and lead contamination.

If your home is still standing CalFIRE advises to:

- Look for hot spots, smoldering areas, and vegetation on your property.
- Inspect the roof and outer parts of your house for any sparks or embers.
- Search the attic and all rooms for hidden sparks or embers.
- Examine your home for fire damage. Ensure all appliances are off and the main circuit breaker is safe to turn on.
- Check your water supply system, like wells or pump-houses, to make sure they're working.
- If you spot any danger, call 911 immediately.

More guidance can be found at
www.readyforwildfire.org/post-wildfire/after-a-wildfire



Download the Wildfire Defense Toolkit:
https://usgbc-ca.org/wp-content/uploads/2025/08/USGBC-CA-Wildfire-Defense-Toolkit-2025.pdf

Home Hardening Maintenance

Checklist	Frequency	Cost
Inspect and maintain 0-5 ft of non-combustable space around your home, garage and other structures	**Weekly**	**Low**
Regularly clean your roof, gutters, decks, and the base of walls to avoid the accumulation of fallen leaves, needles, and other flammable materials	**Biweekly**	**Low**
Caulk and plug gaps greater than 1/8-inch around exposed rafters and blocking to prevent ember intrusion into the attic or other enclosed spaces.	**Inspect 1-4 times/year, replace when necessary**	**Low**
Keep gutters and downspouts clear of all debris.	**Weekly**	**Low**
When it's time to replace your siding or deck, use noncombustible materials (including for deck railings) with no gaps on walking surfaces.	**20-50 years**	**Low**
Inspect and install weather-stripping to gaps greater than 1/8-inch between garage doors and door frames to prevent ember intrusion. (compliant with UL Standard 10C).	**1-4 times/year**	**Low**
Cover your chimney and stovepipe outlets with a noncombustible corrosion-resistant metal mesh screen (spark arrestor), with 3/8-inch to 1/2-inch openings	**20 years**	**Low to Medium**

Home Hardening Maintenance

Checklist	Frequency	Cost
Check barrel tile and corrugated metal roofs with open gaps for bird nests and debris; install bird stops at the edges	**Check weekly Replace bird stops every 15 years**	**Low to Medium**
Inspect exterior siding for dry rot, gaps, cracks, and warping. Caulk or plug gaps greater than 1/8-inch in siding and replace any damaged boards, including those with dry rot.	**Inspect 1-4 times/year, replace when necessary**	**Low to Medium**
Prune bushes and shrubs into “islands” to avoid creating fuel ladders.	**Weekly or monthly depending on season**	**Low to Medium**
Install metal gutter covers	**15-20 years**	**Medium**
Prune tree limbs within 5-30 ft: Maintain at least 6 feet between the ground and the lowest branches (or 1/3 of tree height for trees under 18 feet).	**Regularly as needed**	**Medium (if arborist or landscaper is required)**
Maintain at least 10 feet of clearance between continuous vegetation (trees or tree/hedge combinations) and the home.	**Yearly**	**Medium (if arborist or landscaper is required)**
Prune branches at least 10 ft away from chimneys or stovepipe outlets.	**Once to Twice Annually**	**Medium (if arborist or landscaper is required)**

Home Hardening Maintenance

Checklist	Frequency	Cost
Install flame- and ember-resistant vents with proper sealing around them.	**20 years**	**Medium**
Cover existing vents with 1/8-inch (3.18 mm) corrosion-resistant metal mesh. Mesh rolls are available at most hardware stores or online retailers.	**10-15 years**	**Medium**
Replace gutters and downspouts with noncombustible material (e.g., metal).	**5-10 years**	**Medium**
Install a minimum 6-inch metal flashing, applied vertically on the exterior of the wall at the deck-to-wall intersection to protect the combustible siding material.	**5-25 years**	**Medium to High**
When it's time to replace your windows, replace them with double-paned, tempered glass with non-combustable frame (e.g. aluminum)	**20-100 years**	**High**
When it's time to replace your roof, replace it with a Class A fire-rated roof. OSFM Wildland Urban Interface (WUI) Products	**15-25 years**	**High**

Resources

Resilience also has logisitics. Find Insurance information, Rebates, Professional Development, Incentives & Toolkits.



Resources for a Deeper Dive

The following references, which will continually be updated, reflect deeper guidance and additional resources on topics we touch on in this guide, as well as resources from local municipalities and utilities.

Resources around Wildfire Resilience

- 2022 California Fire Code, Title 24, Part 9
- National Fire Protection Association: Firewise USA
- The Governor's Wildfire and Forest Resilience Task Force 2025 Key Deliverables
- Fire Safe Council Business Directory
- Fire Safe Council Vendor List

Project Recovery

A report by **Urban Land Institute Los Angeles**, **UCLA Ziman Center**, and **USC Lusk Center**, serving as a resource for policymakers, industry leaders, and communities, offering adaptable strategies for strengthening LA's long-term resilience.

Wildfire Defense Toolkit

- Home Hardening & Defensible Space Toolkit

Defensible Space Resources

- USGBC-CA Wildfire Defense for Landscape Professionals

High-Performance and Sustainable Home Certifications

- LEED Homes
- LEED Resources
- Passive House Institute
- Enterprise Green Communities
- Menu of Eficiency and Electrification

Preparedness & Guidelines

- Guideline to Understanding Wildfires
- Protecting Your Home Against Wildfire
- Emergency Preparedness Toolkit
- Case Study on Home Hardening: How home defenses save homes from wildfires

Disaster Resource Links for Each Municipality

- City of Los Angeles Emergency Management Department
- Mayor Karen Bass Emergency Executive Orders
- LA County Recovers
- Malibu Rebuilds
- City of Pasadena Disaster Recovery Resources

Live Fire & Safety Information

- CAL FIRE Active Fire Tracking
- Watch Duty App
- Air Quality Monitoring
- Wildfire Smoke & Ash Health & Safety Tips
- Teladoc Virtual Medical Service

Financial Help

- CalAssist Mortgage Fund
- U.S. Small Business Administration (SBA)
- LA County Office of the Assessor
- Resilient LA – Delta Fund
- LA County Emergency Rent Relief Program
- City of Malibu Fee Waiver Program

Resources for a Deeper Dive

The following references, which will continually be updated, reflect deeper guidance and additional resources on topics we touch on in this guide, as well as resources from local municipalities and utilities.

Financing

- Resilient Delta Fund
- Build with Pillar
- Electrification Pathways

Insurance Assistance

- Los Angeles County Insurance Commission
- California Department of Insurance (CDI)
- United Policyholders

City & Government Disaster Recovery

- Federal Emergency Management Agency (FEMA)
- California Governor's Office of Emergency Services (Cal OES)
- LA County Recovers
- City of Los Angeles Emergency Management Department
- City of Los Angeles Palisades Fire Recovery

Help with Mortgage Assistance and Property Tax

- LA County Office of the Assessor
- LA County Consumer & Business Affairs
- CA Housing Finance Agency
- Cal Assist Mortgage Fund

Mental Health Resources

- LA County Department of Mental Health
- Eaton Fire Collaborative

Multifamily Properties and Commercial Buildings

- California Building Performance Hub
- Green Homes Incentives
- LADWP Commercial Incentives and Programs
- SCE Commercial Incentives and Programs

Architectural and Design Support

- American Institute of Architects (AIA)
- Foothill Catalog Foundation
- Altadena Collective

Resources by the American Institute of Architects (AIA)

- AIA Roadmap to Rebuilding and Ask an Architect
  AIA Rebuilding After a Fire - extended guidance

City and County Rebuilding & Permitting Support

- City of LA Department of Building and Safety
- LA County Department of Public Works, Building & Safety
- LA County Department of Regional Planning
- Permit Fee Refunds & Deferrals
- City of Pasadena Permit Fee Waiver
- City of Malibu Permit Fee Waiver
- City of Sierra Madre Building & Safety

Incentives and Rebates

- HOME LA (for LADWP customers)
- LADWP Residential Rebates
- RISE HOMES California (for SCE or SoCalGas customers)
- SCE Residential Rebates
- SCE The Switch
- California Electric Homes
- Clean Power Alliance Sun Storage Rebate

Resources for a Deeper Dive

The following references, which will continually be updated, reflect deeper guidance and additional resources on topics we touch on in this guide, as well as resources from local municipalities and utilities.

Community & Non-Profit Support

- PostFire LA
- Eaton Fire Collaboratory
- Eaton Fire Survivors Network
- American Red Cross
- 211LA
- CORE: Community Organized Relief Effort
- Day One
- LA Disaster Relief Navigator
- Resilient Palisades
- Pali Strong
- PaliBu

Housing Assistance

- Greenline Housing Foundation
- Neighborhood Housing Services LA
- Habitat for Humanity SGV
- Habitat for Humanity LA
- Altadena Rapid Housing Solution
- City of Pasadena Housing Department
- Hope Crisis Response Network
- HPP Cares

Remediation Support

- Consortium Science
- Center For Applied Ecological Remediation
- Eaton Fire Residents United
- Fire Poppy

Incentives for Building Back Better - LA County + CA-wide

RISE Homes (Rebuilding Incentives for Sustainable Electric Homes) is a California program offering financial incentives and support to help residents rebuild energy-efficient, all-electric homes after a natural disaster.

California Energy Commission's California Electric Homes program incentivizes all-electric building construction and the installation of energy storage systems for single family, multifamily, and manufactured homes.

	Min. requirements	RISE	CalEHP
All-Electric Home	No gas meter, no propane, no gas appliances	✓	✓
Title 24 Compliance	Must meet CA building energy efficiency standards	✓	✓
Heat Pump HVAC	Space heating via heat pump — not electric resistance	✓	✓
Induction Cooktop	Permanent induction cooking appliance required	✓	✓
Electric Clothes Dryer	Required for RISE; heat pump or combo dryer preferred	✓	
Smart Thermostat	Communicating, demand-response capable		✓
Segregated Circuits	Circuits separated for energy monitoring purposes		✓
Passive House	SFH, ADU must be Certified Passive House	✓	
Solar + Battery (CPA only)	Only required for the Clean Power Alliance rebate		

Incentives for Building Back Better

	Single Family Home	ADU
RISE Base	$10,000	$10,000
RISE Battery Bonus	$5,000	$5,000
CalHP Base	$2,500	$2,500
CalEHP Smart Panel	$1,500	$1,500
CalEHP HPWH Controller	$600	$600
CalEHP Battery (20kWh)	$5,000	$5,000
CalEHP Load Mgmt. Bonus	$3,500	$3,500
CPA Sun Storage	$750	
CPA PSPS Bonus	$1,250	
	SFH Total $30,100	ADU Total $24,000

$

Potential Combined Total

$54,100

SFH + ADU combined

Incentives for Building All-Electric and Solar

- California Electric Homes (CalEHP) → Incentivizes all-electric new construction.
- Cal ENERGY-SMART HOMES → For standing homes converting from gas to all-electric. (PG&E, SDG&E, or SCE customers).
- LADWP HOME-LA / Consumer Rebate Program (LADWP customers).
  - Who qualifies: HOME LA is currently limited to property owners rebuilding homes substantially damaged or destroyed by the January 2025 Palisades, Hurst, Kenneth, Archer and Sunset Wildfires
- SCE Marketplace rebates (SCE customers).
- RISE Homes - California program offering financial incentives and support to help residents with total loss rebuild energy-efficient, all-electric homes after a natural disaster. Additional incentives for Passive House Certified home or ADU.
- Clean Power Alliance - incentives for solar battery backup systems (CPA customers).
- SCE SWITCH Program - incentives to rebuild or repair using energy-efficient electric heating, cooling, hot water, and cooking.
- TECH Clean California → Monitor for availability of rebates.
- DSIRE → The Database of State Incentives for Renewables & Efficiency® is the most comprehensive source of information on incentives and policies that support renewables and energy efficiency in the United States.
- The Switch is On → Electrification advocates that teach about how heat pumps and electric appliances work, and the positive role they play in improving health, comfort, efficiency, and the climate
- Quit Carbon → Experts that guide homeowners through the electrification process

For multi-family and commercial buildings, see the Electrification **Pathways for incentive programs. https://usgbc-ca.org/pathways/**

Incentives for Building Back Better - LADWP

LADWP's High-performance, Optimized, Modern Electrification for Los Angeles (HOME LA) pilot program to provide residential and multifamily low-rise property owners financial incentives for building all-electric.

Whole Home

Receive bundled incentives for building all-electric, must include electric only space heating and cooling (HVAC), water heating, cooking and clothes drying. All-electric is defined as electric-only systems – no natural gas.

Whole Home Electrification Measure Packages and Incentives

Unit Type	Standard Description	Incentive per Housing Unit
Single-Family	T24 all-electric	**$10,000**
Modular Housing	T24 all-electric	**$8,000**
Accessory Dwelling Units (ADUs)	T24 all-electric	**$7,000**
Multifamily Low-rise*	T24 all-electric	**$5,000**
Manufactured Housing	ENERGY STAR® 2.0 all-electric	**$7,000**

*Multifamily Low-rise is defined as buildings with three stories or fewer.

Bonus Measures

Property owners and developers applying for the Whole Home Electrification Measure Package may also be eligible for additional incentives to enhance home resiliency.

Customers completing all required whole home electrification measures through HOME LA's Express path may also qualify if all end use measures (i.e., water heating, space heating, cooking, and laundry) are completed.

Bonus Measures and Incentives

Technology	Incentive
Whole-Home Battery	**$5,000**
Ultra-Low GWP Refrigerant Heat Pump Water Heater	**$3,000**

Incentives for Building Back Better - LADWP

Express

Still on the fence about going electric or have additional equipment needs? HOME LA Express provides incentives for the purchase and installation of all-electric new equipment individually or in combination.



Express Prescriptive Measures and Incentives

Measure	Rebate Amount
Heat Pump Heating Ventilation and Air Conditioning (HP HVAC) System Central, Ducted, Split & Packaged	**$1,000 to $1,250 per ton**
Heat Pump Heating Ventilation and Air Conditioning (HP HVAC) System Central, Ductless, Mini-split/Multi-split	**$1,500 to $2,500 per ton**
ENERGY STAR® Qualified Heat Pump Water Heater	**$1,500 to $2,500 per unit**
Multifunctional Heat Pump for Combined Space and Water Heating	**Coming Soon**
Electric Heat Pump Pool/Spa Heater	**Coming Soon**
Electric Heat Pump Clothes Dryer - Standard	**$500**
Electric Heat Pump Clothes Dryer - Compact	**$80**
Electric Induction Cooktops	**$225**
Electric In Wall Oven	**$475**
Electric Induction Range	**$1,000**

Insurance and Financing Wildfire Prepared Homes

Insurance Moratorium & Resources

- After a non-renewal notice, contact your insurer to discuss actions that may help you retain coverage.
- File a complaint with CDI if you believe your non-renewal was unfair.
- Mitigate fire risk on your property and promptly begin searching for new coverage.
- Use CDI's Residential Insurance Company Contact List to find licensed insurers and obtain quotes.
- Find agents who speak your preferred language using CDI's Find an Agent or Broker tool.
- Compare premiums and coverages with CDI's Homeowner Premium Comparison and Coverage Comparison tools.
- If your agent can't find coverage beyond the FAIR Plan, contact other agents using CDI's Home Insurance Finder tool.
- Understand that the FAIR Plan is a last-resort option with limited coverage; consider supplementing it with a Difference in Conditions policy.
- Explore the non-admitted/surplus lines market if other options fail.

When your property is damaged or destroyed by wildfire, alert your insurance company and file your claim as soon as possible. Ask your insurance rep or broker to send you your entire policy. Insurance policies and renewals typically come with a cover sheet and a SAMPLE policy attached. You will need to understand your actual policy's coverages and limitations.

CA Department of Insurance

Visit the CA Department of Insurance Wildfire Resources for the latest information on non-renewals, guidance on filing claims, and insurance complaints. Contact: 1-800-927-4357 or visit insurance.ca.gov

United Policyholders

United Policyholders is a non-profit organization providing consumers with educational resources on navigating insurance claims following a disaster. Visit https://uphelp.org/.

Building a (more) Insurable Home

IBHS

The Institute of Business and Home Safety is the non-profit research center of the insurance industry that conducts rigorous testing to mitigate weather and wildfire disasters. The IBHS Wildfire Prepared Home and Prepared Home Plus are designations that may unlock insurance premium discounts. Check with your insurance company for available discounts.

While there are no guarantees, building to IBHS Wildfire Prepared Home or Prepared Home Plus designation, may allow you to keep your homeowner's insurance or move off the CA Fair Plan.

Resiliency Company

To help offset rebuilding costs, the Resiliency Company's Delta Fund can help homeowners fill in the insurance gap to meet the IBHS Wildfire Prepared Home Plus designation. Estimates have shown the gap between building to Part 7 of Title 24 of the CA Wildland Urban Interface Code to IBHS Wildfire Prepared Home Plus, the gap is about $3000. From the CA Building Code to IBHS Wildfire Prepared Home Plus standard, the gap is estimated to be $15,000.

Homeowners can apply for financing at: buildwithpillar.com

FireWise

Forming a FireWise community with your neighbors will not only make your community safer, but may unlock additional insurance discounts. Visit https://www.readyforwildfire.org/prepare-for-wildfire/firewise-communities

Professionals Directory

Find a certified professional

Connect with trusted sustainability and wildfire resilience experts across California. Explore the directory, find the right support for your project, or showcase your expertise by joining our growing professional community today.

Discover our new directory connecting you with top sustainable professionals in California. Filter through diverse experts by designation, credentials, business type, location, and services offered.

Find support for wildfire rebuilding projects, home hardening, defensible space maintenance and land surveying!



Wildfire Defense & Rebuilding Hub

For homeowners, businesses, and communities actively rebuilding after the fires.

Visit our Wildfire Defense & Rebuilding Hub for:

- Wildfire Defense Training Classes
- Wildfire Defense Property Tours
- Wildfire Defense Toolkits
- Wildfire Rebuilding Guide
- Rebuild Marketplace
- Professionals Directory
- Community Resources

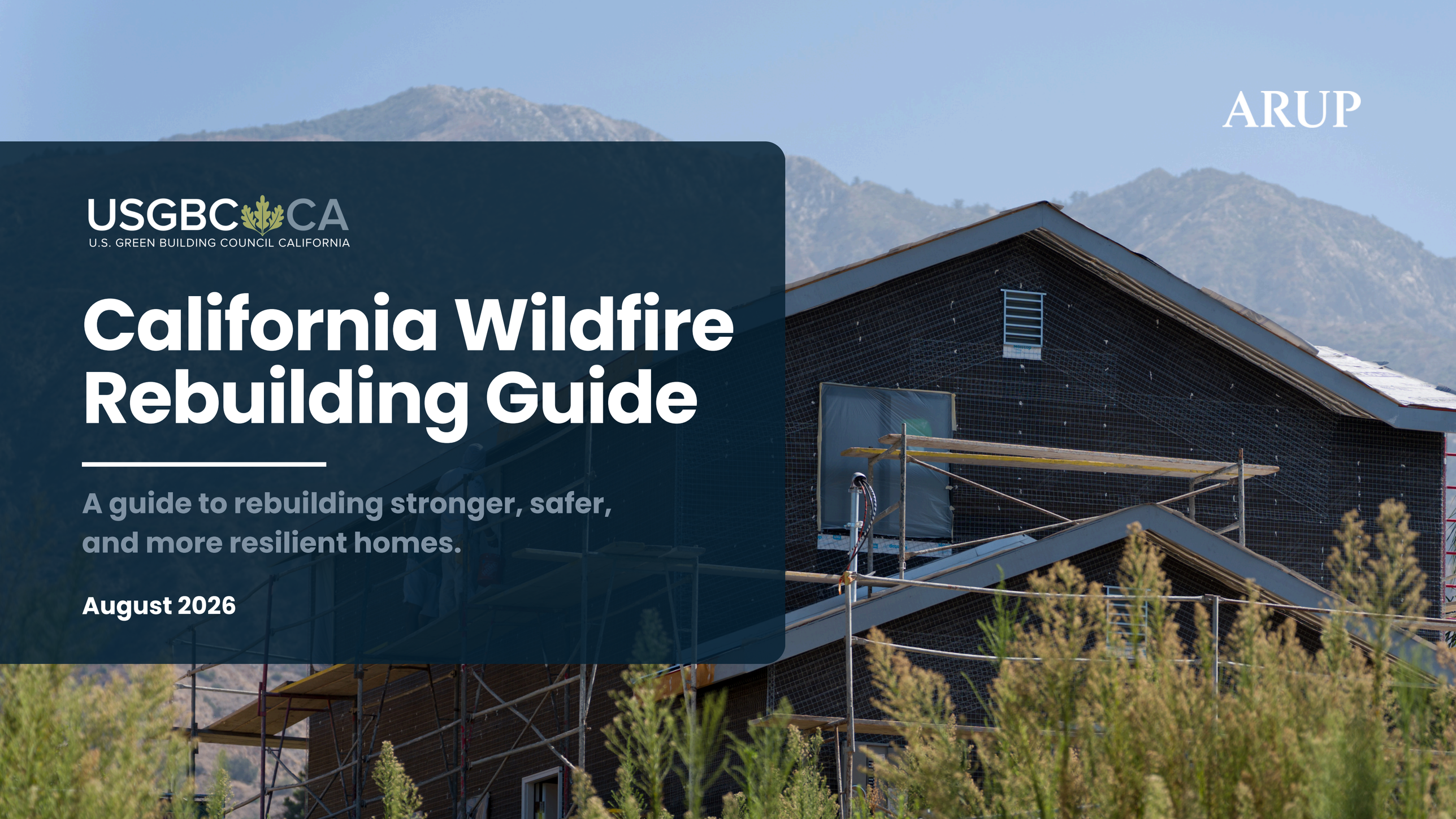


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California Wildfire Rebuilding Guide

A guide to rebuilding stronger, safer, and more resilient homes.

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