

# Hardening homes against wildfires



Architect Michael Kovac, standing outside his Pacific Palisades house Thursday, designed and built his home to be fire-resistant by using fireproof materials and installing a fire suppression system. **DAVID CRANE — STAFF PHOTOGRAPHER**

## Most houses in Palisades, Eaton blazes were built before new safety standards

**By Jeff Collins**  
JEFFCOLLINS@SCNG.COM

A blizzard engulfed Michael Kovac's house as the Palisades fire approached on Jan. 7, "an absolute blizzard of embers," he recalled.

But by the time the smoke cleared, the 2½-level, 3,500-square-foot residence was the only house on the block still standing.

That wasn't by chance. An architect, Kovac designed his ridge-top home with fire in mind.

Outer walls are fashioned from fiber cement that's impervious to fire. The roof is protected by a membrane that's impervious to embers, with one section covered by vegetation in 4 inches of soil. Decks are made from a flame-resistant Brazilian hardwood.

It includes a fire suppression system to spray Phos-Chek retardant over the yard. There are no overhangs to trap embers. And the garden of agave and cacti is covered with lava rock instead of mulch.

"We were aware of the wildfire history in



Kovac's fire-hardened home stands unscathed amid a sea of ash on Thursday. His house was the only one still standing on his block after the Jan. 7 Palisades fire roared through. **DEAN MUSGROVE — STAFF PHOTOGRAPHER**



# HARDENED

From Page 1

California and wildfires having happened right in the immediate area of the Palisades," said Kovac, 62. "When the time came to build a new home, we had twin goals of both being a very environmentally friendly, sustainable home, but also one that was very resilient in the face of what we thought was an inevitable wildfire event."

As thousands of residents in Altadena and the Pacific Palisades prepare to rebuild homes demolished in last month's firestorms, Kovac's house could serve as an example.

Constructing a fire-hardened home is not only within reach for most fire victims, experts say, it's in the building code.

Unless Gov. Gavin Newsom suspends fire-safety rules, all new homes in areas designated as very-high fire risks zones or abutting to wilderness must be built to one of the nation's most stringent set of fire-resistant standards, known as the Wildland Urban Interface code.

Adopted in 2005 and gradually strengthened over the past 17 years, the WUI code requires new homes to include flame-repellent designs and materials.

While studies show fire-hardening improves the odds of a home's survival, some Los Angeles County fire victims are wondering how much extra it will cost them when they rebuild.

The WUI code includes such things as exterior walls that can withstand fire for up to an hour; dual-pane windows with shatter-proof glass; attic vents that block embers and seal off when exposed to heat; roof and deck materials that are hard to ignite; and landscaping designed to buffer homes from an approaching fire.

"It's about building with resilience in mind so that when a fire like this happens again, you have a home that you can come back to and resume life," said Steve Hawks, director of wildfire for the Insurance Institute for Business & Home Safety. "Building with a higher level of resilience is affordable and achievable."

Five days after the firestorms began, Newsom ordered state officials to recommend by March 13 which parts of the building code should be suspended to speed up reconstruction. The goal was to streamline rebuilding in the L.A. County fire zones by cutting red tape.

More than 16,000 homes, businesses and other structures were destroyed in blazes that consumed whole communities in less than two days.

As of Feb. 5, more than 33,700 insurance claims had been filed and \$6.9 billion in claims had been paid, according to the state Department of Insurance. In January, CoreLogic estimated insured losses could total \$35 billion to \$45 billion.

Industry observers doubt the governor will suspend any fire safety standards as part of a building code streamlining. It's more likely Newsom could suspend the 2020 requirement that all new homes have solar power, as he did in Paradise following the Camp fire.

"I really doubt seriously that the fire marshal is going to roll back any of the fire hardening standards, or actually, any fire safety standards for that matter. I just don't see that happening," said Bob Raymer, building code consultant for the California Building Indus-



Louise Hamlin, 51, stands outside her fire-ravaged 100-year-old house in Altadena three weeks after she and her son made a harrowing escape from the Eaton fire. Now she wrestles with her desire to restore her "heavily forested" neighborhood and the need to build back safer. JAE C. HONG — AP



Architect Michael Kovac used high-fire rated fiber cement for siding on his Pacific Palisades home. DAVID CRANE — STAFF PHOTOGRAPHER

try Association and the Eaton blaze early on Jan. 8. Trapped behind an electric gate after her home's power got cut, Hamlin couldn't evacuate until she dismantled the rusted, bulky barrier. By then, it was 5:30 a.m. and flames were licking at houses on either side of her property.

Heavy smoke made it hard to see the road, and winds buffeted the car as she drove. By the time she made it to safety, Hamlin knew her 100-year-old home in the James Village section of Altadena was gone.

Now, as she thinks about rebuilding, Hamlin wrestles with her desire to restore her close-knit, "heavily forested" neighborhood and the need to build back safer.

"It's a real tension between fire hardening and bringing back a livable neighborhood," said Hamlin, 51. "We need trees to cool our houses, to provide wildlife habitat, to provide mental health benefits to all of us. ... It's probably one of my primary worries. How do we build back in a way that's going to work and resist the next disaster?"

Fire survivor Heather Flood shares that concern. As dean of the Woodbury University school of architecture, she considers resilience and fire hardening to be a priority for her family's reconstruction plans.

But the Altadena resident also worries about the cost of building fire-resistant homes for thousands of fellow victims who are struggling with insurance coverage, paying the mortgage on their burnt homes and current living expenses.

"There are so many unknown costs," said Flood, 53, who lost the home she got

married in just over a year ago. " ... I'm all for rebuilding in a sustainable way, in a fire-resistant way, but I'm also keenly empathetic with the thousands of people who cannot afford to wait and concerned the additional regulations will cost the people impacted by this disaster money and time."

How much will the WUI code add to the cost of rebuilding? Researchers say the cost of fire-safety upgrades is relatively small for homes built from scratch — perhaps 2% of the total rebuilding costs, said Kimiko Barrett, a senior wildfire researcher and policy analyst with Headwaters Economics in Bozeman, Montana.

That estimate came from a 2018 study of building costs in the inland portions of the Western U.S.

Building a home that meets the WUI code "does not significantly add to the costs of building a more traditional non-compliant home," Barrett said in an email. "You are effectively swapping out flammable 'combustible' materials with noncombustible products."

In the Northern California community of Paradise, where nearly 19,000 homes and businesses were destroyed in the 2018 Camp fire, residents are familiar with the WUI code.

"Every stick-built home has to have fire sprinklers inside," said Jen Goodlin, executive director of the Rebuild Paradise Foundation. "We all have to have a composite roof or better. ... And then, all the siding has to be (fire-resistant) Hardie board or better. ... It's not cheap."

Paradise fire victim Gary Ledbetter, 61, estimated home hardening adds about \$20,000 to the cost of rebuilding a typical-sized home.

But it's worth it, he said. "Now is not the time to short that fire hardening on a new build," Ledbetter said. "My recommendation is aim up. Go above and beyond the building code. Focus on best practice. (That's) exactly what I did. I went way beyond what was required."

Many customers of Huntington Beach-based Embers Protection Services also go above and beyond the minimum, spending big bucks on the company's patented "automated wildfire defense system," which includes roof-top and landscape sprinklers.

The system uses satellite data to track wildfires near a property. When a fire approaches, sprinklers spray fire retardant across the grounds, and roof-top sprinklers shoot 50-foot streams of water over the house.

It uses swimming pools or water tanks to provide a backup water supply. When the water runs out, the system will coat the roof with firefighting foam. There's also a generator or solar batteries in case the municipal power fails.

"Essentially, we're always having a fail safe in place," said the company founder and owner Chris McDonald.

McDonald's protection systems cost about \$50,000 to \$70,000 for a 2,500-square-foot home. Most of his installations have been on larger, luxury homes, he said.

"We've had several homes in the recent Franklin and Palisades fire that were in direct path of the fire that survived," McDonald said. "We've never lost a home."

Kelly Berkompas believes the WUI code is adequate for protecting homes.

Her Lake Forest company, Brandguard, makes ember-resistant attic, roof-top and foundation vents she says will keep a home from catching on fire.

In one section of Malibu devastated by the Palisades fire, 14 of the 15 homes that did survive had ember-resistant vents, Berkompas said.

"During a wildfire your attic vents are like open windows," Berkompas said. "The embers will blow right through your traditional vents and start the attic on fire. And once the attic is on fire, there's nothing that the firemen can do to save it."

Kovac said he and his wife are having some "survivor's guilt" about their home withstanding the Palisades fire. Sheltering in his West Los Angeles office, Kovac watched the fire's progress on home security cameras, so he knew when to deploy sprinklers that coated his backyard slope with flame-retardant Phos-Chek.

But in the process, he ended up watching as houses on all sides of his home burned.

"We never thought it would be the entire community on fire at once," Kovac said. "Watching that footage, we knew that entire life was gone. ... We're happy the house is there, but there's no good outcome of this at the moment."

The couple was able to stash their art and personal treasures in a fire-safe room downstairs. But smoke impregnated the furniture and coated home electronics with residue than can short out lights, appliances and gadgets.

"All of that stuff is going to ultimately need to be replaced," he said.

"It's still going to be a really sobering experience to be the lone house standing on the hill," Kovac added. "It's not like you're going back to the community you left."

Brandguard's ember-resistant vents have overlapping baffles and a 1/16th-inch mesh that prevent embers from penetrating a home. PHOTO COURTESY OF BRANDGUARD

Brandguard's ember-resistant vents have overlapping baffles and a 1/16th-inch mesh that prevent embers from penetrating a home. PHOTO COURTESY OF BRANDGUARD

Brandguard's ember-resistant vents have overlapping baffles and a 1/16th-inch mesh that prevent embers from penetrating a home. PHOTO COURTESY OF BRANDGUARD

Brandguard's ember-resistant vents have overlapping baffles and a 1/16th-inch mesh that prevent embers from penetrating a home. PHOTO COURTESY OF BRANDGUARD

Brandguard's ember-resistant vents have overlapping baffles and a 1/16th-inch mesh that prevent embers from penetrating a home. PHOTO COURTESY OF BRANDGUARD

Brandguard's ember-resistant vents have overlapping baffles and a 1/16th-inch mesh that prevent embers from penetrating a home. PHOTO COURTESY OF BRANDGUARD

Brandguard's ember-resistant vents have overlapping baffles and a 1/16th-inch mesh that prevent embers from penetrating a home. PHOTO COURTESY OF BRANDGUARD

Brandguard's ember-resistant vents have overlapping baffles and a 1/16th-inch mesh that prevent embers from penetrating a home. PHOTO COURTESY OF BRANDGUARD

Brandguard's ember-resistant vents have overlapping baffles and a 1/16th-inch mesh that prevent embers from penetrating a home. PHOTO COURTESY OF BRANDGUARD

Brandguard's ember-resistant vents have overlapping baffles and a 1/16th-inch mesh that prevent embers from penetrating a home. PHOTO COURTESY OF BRANDGUARD

Brandguard's ember-resistant vents have overlapping baffles and a 1/16th-inch mesh that prevent embers from penetrating a home. PHOTO COURTESY OF BRANDGUARD

Brandguard's ember-resistant vents have overlapping baffles and a 1/16th-inch mesh that prevent embers from penetrating a home. PHOTO COURTESY OF BRANDGUARD

Brandguard's ember-resistant vents have overlapping baffles and a 1/16th-inch mesh that prevent embers from penetrating a home. PHOTO COURTESY OF BRANDGUARD



## FIRE PREPAREDNESS

# How residents can complete home-hardening

By Jeff Collins

JEFFCOLLINS@SCNG.COM

Home hardening means using fire-resistant building materials and landscaping to protect buildings from heat, flames and a blast of embers during a firestorm.

Here's a brief overview of what that involves:

**Roofs:** "Class A" roofing, which provides the best fire protection, includes asphalt fiberglass composition shingles, concrete or clay tiles and some metal roofing materials. Gaps and ends

need to be plugged.

**Rain gutters:** Fire-resistant gutters are made from metal or another non-combustible material. A non-combustible gutter cover also reduces debris. A metal drip edge covers the space between the roof and the gutter.

**Exterior walls:** Siding needs to be able to withstand flames and heat for up to an hour. Noncombustible siding includes stucco, steel, fiber cement and specially treated wood.

**Windows:** Dual-pane windows with one pane

using tempered glass that won't shatter during a fire. Screens can catch embers and reduce heat.

**Vents:** Ember and flame-resistant vents come equipped with mesh enclosures of  $\frac{1}{16}$  to  $\frac{1}{8}$  of an inch. Some vents use "intumescent" material or paint that expands when exposed to high heat and seals off the opening.

**Eaves:** Boxed in eaves using ignition-resistant or noncombustible materials eliminate space where embers can collect.

**Decks:** Use fire-resistant

material and enclosed openings around the perimeter to keep embers from collecting underneath.

**Landscaping:** Reduce flammable materials and vegetation within 100 feet of the home. Defensible space is divided into three zones:

■ The ember-free zone, or Zone 0 (within 5 feet of the home): Use non-combustible material like stone, pavers or concrete around the home's perimeter. Replace flammable fences, plants and furniture next buildings with

non-flammable materials.

■ The green zone (from 5 to 30 feet of the home): Plant just a small amount of vegetation in separate islands and keep it green. Remove dead vegetation and flammable materials.

■ The reduced fuel zone (from 30 to 100 feet of the home): Remove dead plants, shrubs, small trees, lower tree branches and other "ladder fuels." Locate storage buildings, sheds and propane tanks at least 30 feet from the home and create an ember-resistant zones

around them.

For more information, see the state Fire Marshall's products handbook.

*Sources: CalFire's home-hardening websites; the Insurance Institute for Business and Home Safety; the Wildfire Home Retrofit Guide; Bob Raymer, building code consultant for the California Building Industry Association and the California Apartment Association; and Kelly Berkompas of Brandguard.*