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A million California buildings face wildfire risk. ‘Extraordinary steps’ are needed to protect them

DEC. 18, 2018



By **DOUG SMITH** ([HTTPS://WWW.LATIMES.COM/LA-BIO-DOUG-SMITH-STAFF.HTML](https://www.latimes.com/la-bio-doug-smith-staff.html))
AND **BEN WELSH** ([HTTPS://WWW.LATIMES.COM/LA-BIO-BEN-WELSH-STAFF.HTML](https://www.latimes.com/la-bio-ben-welsh-staff.html))

Minutes after fire broke out in Woolsey Canyon, a community 12 miles to the south went into action.

Alerted by 911 calls they were monitoring on a red-flag day, volunteers with the Topanga Coalition for Emergency Preparedness headed to the town’s emergency operations center to open back channels to county sheriff’s and fire officials, answer hotline calls, tweet updates and, if it came to that, help send out the evacuation c

In one sense Topanga is a

by the memory

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/news/mn-54357_1-malibu-fire) that left three people dead and destroyed

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nearly 400 houses.

But there is nothing unusual about the risk of living there.

A Times analysis of wildfire hazard across California found that hundreds of communities from Redding to San Diego are at high risk of deadly wildfires like those in Paradise and Malibu last month.

More than 1.1 million structures, or roughly 1 in 10 buildings in California, lie within the highest-risk fire zones in maps drawn by the Department of Forestry and Fire Protection, the analysis showed.

The findings follow a fire season of unprecedented destruction — nearly 20,000 homes lost (<https://www.latimes.com/local/lanow/la-me-ln-fire-insurance-losses-20181212-story.html>), more than 100 people killed — that showed what damage can be done if Californians fail to address a widespread risk.

“Now that they’ve got these areas mapped out, what’s going to happen?” said Richard Halsey, director of the California Chaparral Institute, a nonprofit that advocates for government and private interventions. “It’s so frustrating. Everybody sees the information, and they sit on their thumbs and talk.”

Where the risk is

At least 1.1 million California buildings are in a very severe hazard zone. Here are the greatest concentrations.

Structures in very high severity zones



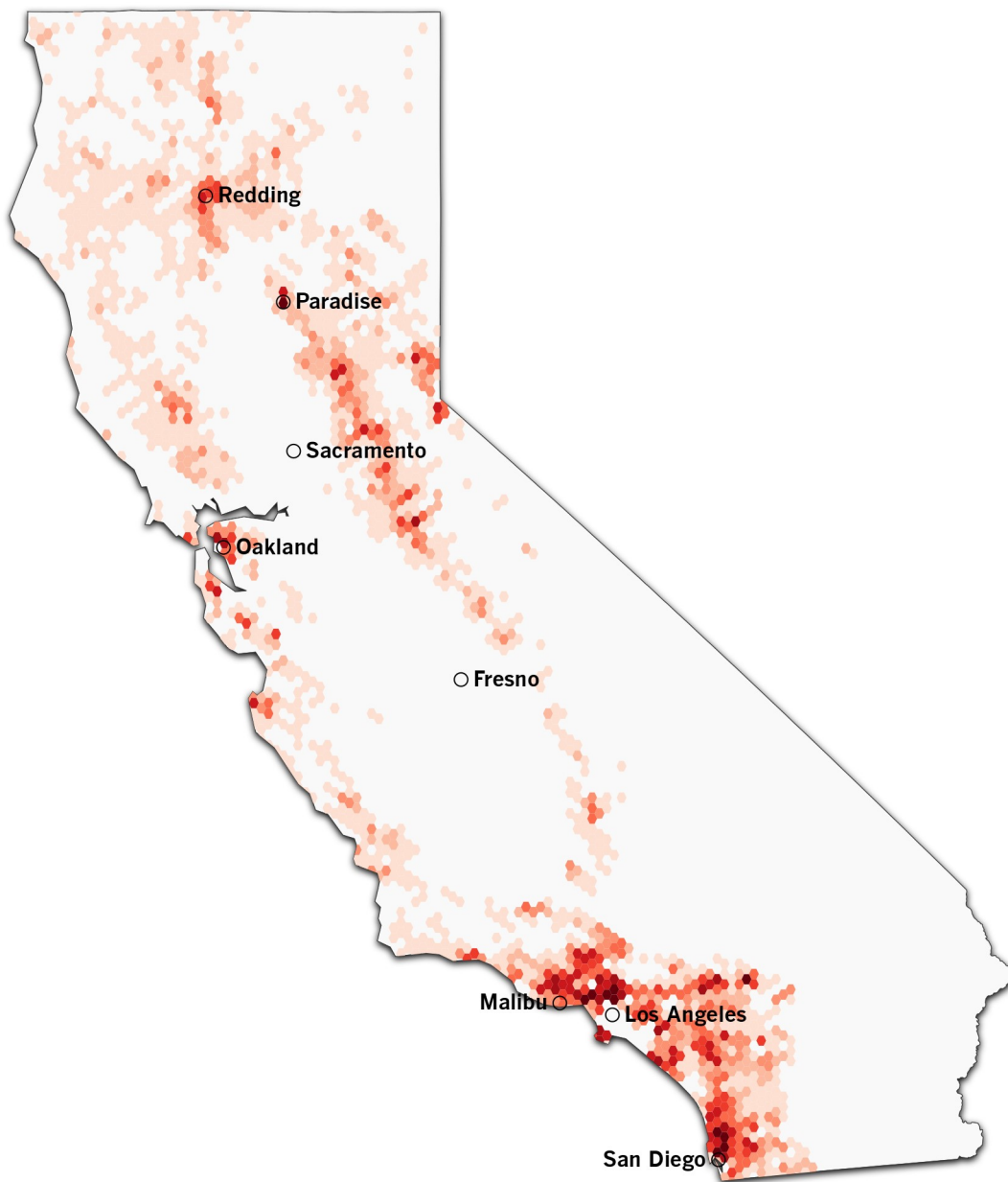
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Ben Welsh / Los Angeles Times
Sources: Microsoft, CalFire, Times analysis

Los Angeles tops the list with at least 114,000 structures in the highest hazard zone, including tens of thousands of Westside and San Fernando Valley houses in the Santa Monica, Santa Susana and San Gabriel mountains. Those include houses, businesses, factories and other buildings, such as barns.

San Diego is second with
are Santa Clarita, Thousand
four cities of the Palos Verdes
nearly all in the highest-severity zone.

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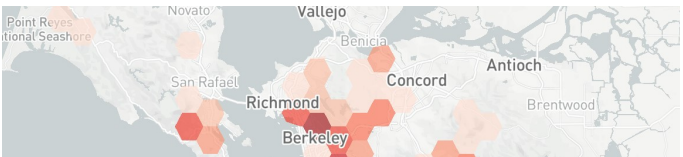
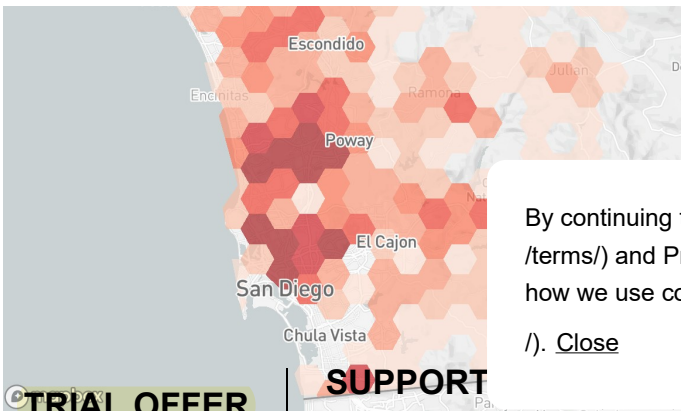
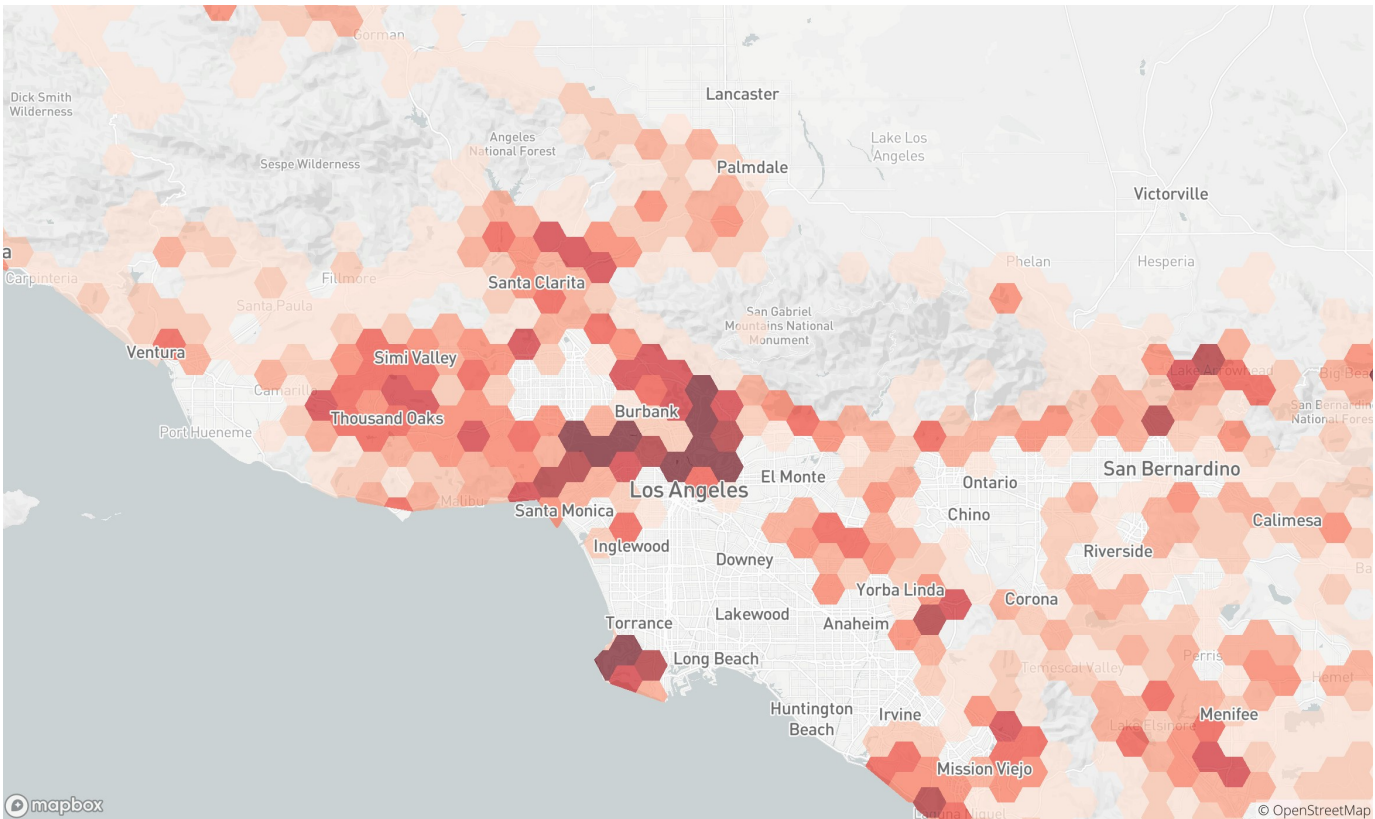
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The total number at risk is probably higher, because the Microsoft database of building footprints (https://blogs.bing.com/maps/2018-06/microsoft-releases-125-million-building-footprints-in-the-us-as-open-data) employed in the analysis, among the most complete lists available, is not comprehensive.

The top spots

Large clusters are found where cities run up against rocky terrain, such as where the Santa Monica Mountains bisect Los Angeles.

Structures in very high severity zones



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Ben Welsh / Los Angeles Times
Sources: Microsoft, CalFire, Times analysis

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Topanga is one of 174 communities that are nearly entirely at risk, with 90% or more of its buildings in the red zone. Paradise (<https://www.latimes.com/local/lanow/la-me-ln-paradise-fire-dead-map-20181213-story.html>) and Malibu (<https://www.latimes.com/local/california/la-me-california-fires-woolsey-hill-camp-woolsey-fire-destroyed-1-643-structures-1543186614-htmlstory.html>) were both among them.

“It’s not a good feeling to look back on how we mapped Paradise — it’s almost all red — and then having this event come through that validates the map,” said Dave Sapsis, researcher with the state’s Fire and Resource Assessment Program. “We’ve really got to address this trend. These are unacceptable outcomes.”

The risk maps, drawn by state scientists in 2007, are created by a computerized model that considers terrain, vegetation and the location of past fires.

Although they identify areas where stricter building standards and brush clearance are required, the maps do not directly trigger land-use restrictions or funds to make communities less vulnerable. They do give notice to local agencies, insurance companies and residents, and they support requests for fire planning and mitigation grants.

The devastation of the last two fire seasons has raised calls (<http://www.capradio.org/articles/2018/12/11/retiring-cal-fire-director-california-must-mull-home-ban-in-fire-prone-areas/>) for new development to be restricted in fire-prone areas — and even for prohibitions on rebuilding destroyed homes — but The Times’ analysis highlights the scale of the threat that already exists.

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Recent wildfires have destroyed homes across the state, including Ventura, Malibu and Paradise. (Wally Skali, Al Seib, Carolyn Cole / Los Angeles Times)

As persistent drought and the warming climate are making wildfire a more frequent and severe threat, the vast extent of vulnerable communities shows the need for action by state and local governments, and the communities themselves, to reduce the risk.

Nearly 60% of the state's at-risk structures are within the jurisdiction of incorporated cities or counties, placing the burden of preparing them on local fire departments, overwhelmingly in Southern California.

The maps should put communities on notice that they need to adapt to the certainty of fire, said Scott Ferguson, chairman of Topanga's emergency response group.

"It keeps driving home that you have to take some extraordinary steps," Ferguson said. "T your daily life to make yo

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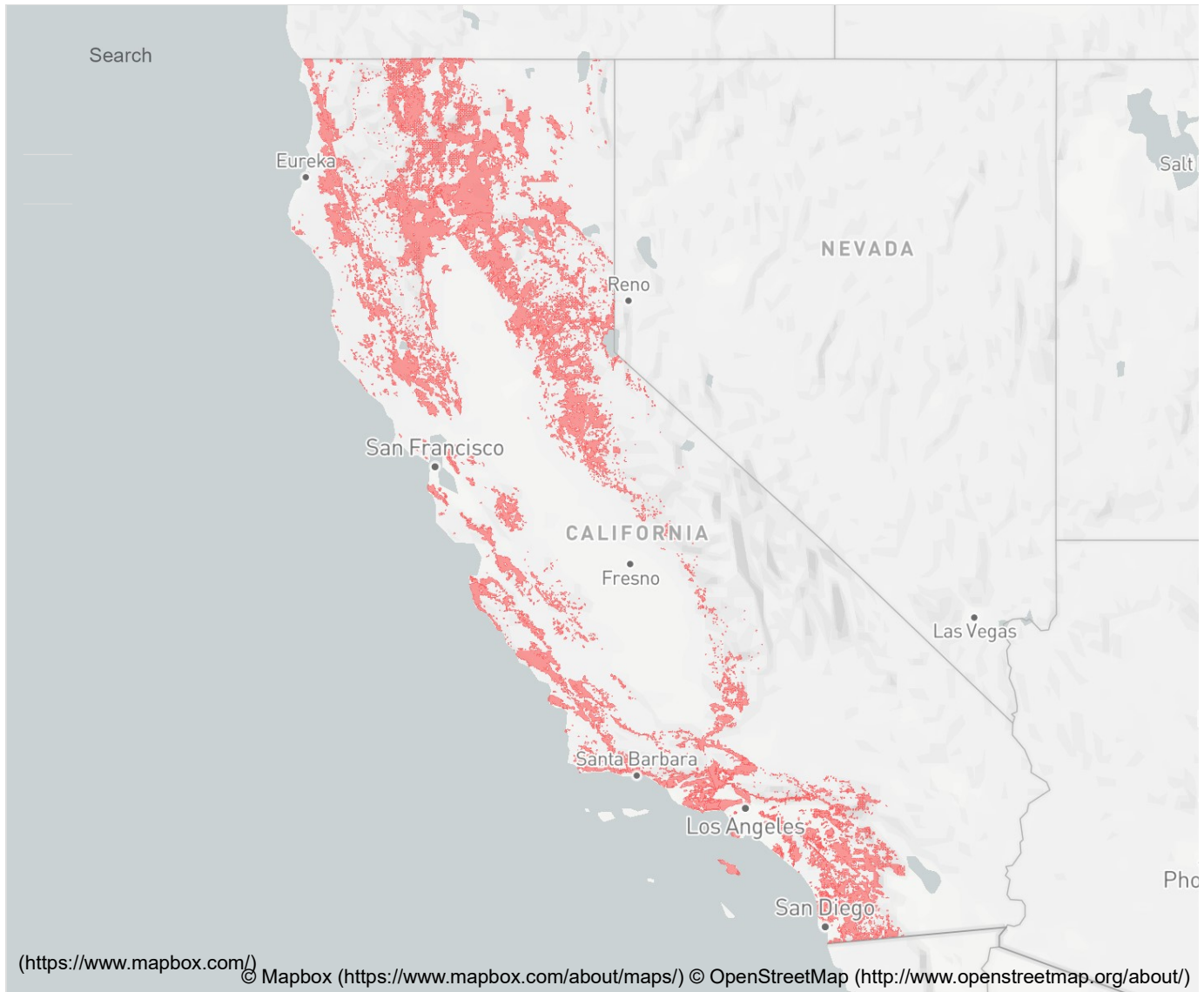
Are you at risk?

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Search your address. The state's 8,900 very severe hazard zones are

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mapped below.



Ben Welsh / Los Angeles Times
Source: CalFire

Beyond mapping the hazardous areas, the state does too little to address the causes of the risk, Halsey said.

What's needed, he said, is legislation requiring a comprehensive plan for every high-severity hazard zone, including “a retrofit plan, mitigation plan, evacuation plans, planning in terms of how to keep more dangerous houses from being built there.”

Current state law provide
prone communities beyo

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homes. The state building code requires new homes in those areas to use
fire-adapted materials and designs such as ember-resistant attic vents and

fire-rated siding and roofs.

But it has no provision for upgrading existing homes, often built decades before the threat was identified and new standards were enacted.

“This is the part that is hard about all of this,” said Michael Jarred, policy consultant with the California Senate Office of Research. “We’re adding a lot of requirements for new developments, but more time must be spent on figuring out what can be done for existing structures.”

New laws adopted after last year’s fires will require the state fire marshal to publish a catalog of low-cost retrofits and conduct a survey to identify communities like Paradise where evacuation routes would be inadequate in a disaster, Jarred said.

Like the hazard maps, though, those laws will provide information but not require it to be acted upon.

Given the limitations, the onus for fire prevention largely falls on communities and the local fire agencies that serve them.

“Get the communities involved,” Halsey said. “It’s not that difficult.”

An aggressive town’s approach

Topanga Canyon is at the forefront of community self-help.

Besides the emergency preparedness group, it has a volunteer Arson Watch, a Community Emergency Response Team of volunteers trained to assist the fire and sheriff’s departments and a Fire Safe Council that over the years has obtained \$350,000 in grants to improve fire preparedness.

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Flames race toward a home during the 1993 Topanga fire (Ken Lubas / Los Angeles Times)

“Imagine what would happen when a storm of embers hits, just thousands of matches being thrown at your house,” Beth Burnam, co-director of the North Topanga Canyon Fire Safe Council, told an audience of 100 Topangans gathered at the community library. “What’s going to light? What’s not going to light?”

The council called the meeting shortly after the Woolsey fire, hoping to take advantage of the heightened state of alertness to promote its ember ignition assessment program.

“Everybody has a broom on their deck,” Burnam said. “We talk to people [about] how to be prepared on a red-flag day: Get cushions off outdoor furniture, take doormats away. That’s just like a broom. It just wants to ignite.”

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The L.A. way

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In Los Angeles County, communities that want to confront their fire risk receive support through the Fire Department’s Forestry Division.

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Assistant Chief J. Lopez works with city governments and resident groups in unincorporated areas, guiding them in the process of establishing fire safe councils, applying for fire prevention grants and learning how to recognize risk factors.

In Topanga, Lopez worked with residents on grant programs to identify and cut down trees that could impede evacuation if they caught fire.

“We spent a lot of time driving up and down our roads with J. Lopez, learned about what makes trees hazardous,” Burnam said.

The county also has foresters who teach vegetation management.

“It has to be the right plant in the right place,” Lopez said. “Palm trees are highly flammable. Same with eucalyptus and pine. We encourage the removal of that vegetation, but it also can be the overgrown bougainvillea on the deck.”



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Will Buckley tries to extinguish flames and

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To date, there are 25 fire safe councils in the county, some more active than others, Lopez said.

Despite having 30 neighborhoods with 1,000 or more structures in the highest fire risk zone — led by Pacific Palisades with 9,300 and the Hollywood Hills with 6,100 — the city of L.A. has no counterpart to the county's Forestry Division.

Los Angeles Fire Department spokesman Peter Sanders said the department holds numerous community meetings to discuss wildfire safety (<https://www.lafd.org/fire-prevention/brush>), brush clearance requirements and evacuation plans. In conjunction with the Los Angeles Police Department, it has recently conducted evacuation exercises in Brentwood and the Hollywood Hills.

None of the more than 150 local councils organized under the California Fire Safe Council are in the city, however.

Sanders said the agency does not participate in the program “as it is primarily designed for more rural and often low-income communities and is usually paid for via grant funding.”

Measured results

Because the Woolsey fire spared Topanga, there's no way of knowing how well its defenses would have performed in a fire.

As it was, the community had to adapt to the unexpected when the fire knocked out power several hours before the Sheriff's Department ordered a mandatory evacuation, meaning few residents would receive electronic notifications.

“That’s a little scary,” said
Coalition for Emergency

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Ferguson said sheriff’s deputies responded by going “old school,” driving the canyons with loudspeakers and knocking on doors.

The effectiveness of community preparedness programs like Topanga’s has yet to be quantified through research, said Michele Steinberg, director of the National Fire Protection Assn.’s Wildland Fire Division.

But “saves” (<https://community.nfpa.org/community/fire-break/blog/2018/10/30/does-wildfire-mitigation-work-fire-adapted-communities-learning-network-documents-successes>) have been documented anecdotally around the country, she said.

In Los Angeles County, one such save was credited to the Fire Safe Council that cleared 18 acres above the Altadena community of Meadows. The buffer allowed firefighters to deflect the 2009 Station fire and later protected the community from mudslides, Lopez said.

“None of those homes were affected by the rains,” Lopez said, “because there were 18 acres that didn’t burn.”

Contact the reporters

(<mailto:doug.smith@latimes.com>, ben.welsh@latimes.com)

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Methodology: The Times downloaded electronic map files of the California Department of Forestry and Fire Protection’s fire hazard severity zones file with maps for 30 counties with ve To determine the number of at-risk st Bureau map of California places and l ([By continuing to use our site, you agree to our Terms of Service \(<http://www.latimes.com/terms/>\) and Privacy Policy \(<http://www.latimes.com/privacy/>\). You can learn more about how we use cookies by reviewing our Privacy Policy \(<http://www.latimes.com/privacy/>\). \[Close\]\(#\)](https://blogs.bing.com/maps/2018-(data) from aerial and satellite photos. responsibility)</p>
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The computer code that we used to analyze is available as free and open-source software at github.com/datadesk/california-fire-zone-analysis (<http://www.github.com/datadesk/california-fire-zone->

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analysis).
Graphics by Ben Welsh
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More data analysis from the Los Angeles Times



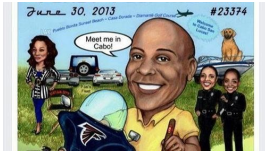
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