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State spent $32 million on fuel breaks, but will it help?

Such projects offer little defense from wind-borne embers

SANTA ANA WINDS snapped power lines in December 2017, igniting the Thomas fire in Ventura County. The blaze spread quickly despite a fuel break 13 miles long and 300 feet wide in Los Padres National Forest. (Brian van der Brug Los Angeles Times)

By Bettina Boxall

Four months after the town of Paradise was incinerated in the most destructive wildfire in California history, Gov. Gavin Newsom issued an

emergency proclamation, ordering agencies to thin trees and clear shrubs near some of the state's most fire-threatened communities.

Saying the $32 million in projects was vital "to protect the lives and property of Californians," he swept aside environmental reviews and competitive bidding requirements to speed the work.

But the state's recent fire chronicles are riddled with examples of how such fuel break projects don't guard against the wind-driven infernos that have laid waste to communities the length of California.

Consider the case of Paradise. Officials there spent years doing exactly what Cal Fire contractors have been doing this summer — thinning vegetation along roads and near development where firefighters can take a stand.

It didn't work. The wind-whipped Camp fire hurtled over the fuel breaks and destroyed the town, killing 86 people and burning nearly 19,000 homes, businesses and other structures.

Chopping down trees and shrubs is "an easy approach because people think 'Oh, the thing we can change is vegetation' … and people want the problem to be fixed," research scientist Alexandra Syphard said. "But unfortunately, it's more complex than that."

Syphard — who conducted one of the few scientific assessments of the effectiveness of fuel breaks in California — worries that the state's focus on fuel reduction gives "people a false sense of security."

"Time and time again in my research," she said, "I find that fuel is one of the least important factors when it comes to protecting the home."

To stem the escalating loss of life and property, Syphard and other experts argue the state needs to curb development in high fire-hazard zones, help homeowners ember-proof their houses and do a better job of enforcing defensible space regulations.

The hot, dry winds that howl down California mountainsides every year go by different names: Santa Anas in much of the Southland, sundowners in Santa Barbara, Diablos in the Bay Area.

They are a function of the state's dramatic topography. And they are unstoppable — the predictable protagonists in California's lengthening narrative of wildfire catastrophes.

The state's 10 most destructive wildfires on record have all been wind driven. They have destroyed a total of 39,440 structures and claimed 170 lives. Seven of the 10 have occurred since 2015, including the Tubbs fire in Northern California's wine country, and the Thomas and Woolsey fires in Southern California.

Paradise officials knew they were in dangerous wildfire country. The Sierra Nevada foothill community sits on a windy ridge amid pine and oak trees, grass and shrubs that have burned before and would inevitably burn again.

So beginning in 2001, they obtained roughly $2 million in mostly state and federal grants to remove underbrush and young trees on the edge of town and nearby communities. The 100-foot wide strips were partially thinned, creating miles of what are called shaded fuel breaks — the same approach California Department of Forestry and Fire Protection is using in many of this year's projects.

But when the Camp fire broke out the morning of Nov. 8, winds rocketing out of the Jarbo Gap launched firebrands and glowing embers over the fuel breaks as if they didn't exist.

"It jumped over anything that we had done by a long range," said Jim Broshears, the former Paradise fire chief who oversaw some of the fuel reduction projects. "By the time the main fire hit Paradise, we had fire all over the place from spot fires."

One, he noted, started "at least five miles from the front of the fire" and burned backward into town.

In the deadly Tubbs fire, Santa Rosa's Coffey Park neighborhood was set ablaze by blowing embers that soared over the 101 Freeway, a de facto fire break. The Thomas fire — the state's second largest wildfire on record — burned over a number of fuel breaks around Ojai, including one that runs atop a mountain ridge for 13 miles.

Santa Ana winds sent embers flying over a river and a reservoir in the massive 2003 Cedar fire, which left 15 dead in San Diego County. Four years later, fierce Santa Anas drove the Witch fire over some of the same scrublands, tossing firebrands over Interstate 15.

Cal Fire director Thom Porter nonetheless defends the state's fuel break projects, saying they can be helpful even in wind-driven fires.

He pointed to thinning that reduced the Camp fire's intensity as it burned along the lower portion of Skyway, Paradise's main evacuation route.

"It did save lives," Porter said.

The fast-moving front of a fire that spews embers across the landscape is just one part of a blaze, he added. When a fire's flanks and heel hit a fuel break, they will slow — "and that is why we continue to do them," Porter said. "They help us get people out of the way."

Local and state agencies have been cutting fuel breaks across California's chaparral and forest landscapes for more than half a century.

They take different forms and sizes, but generally consist of a strip of wild land where the vegetation has been completely or partly removed. They are not designed to stop wildfires on their own, but to give firefighters a place to establish control lines and set backfires.

The breaks can be effective under the right conditions: If high winds aren't spitting red-hot embers over them like a fire-breathing dragon, if fire behavior isn't extreme and firefighting crews can get to them.

But by their very nature, catastrophic wildfires rarely obey those strictures.

"Why don't you address the fires that are killing all the people?" saidRichard Halsey, director of the nonprofit California Chaparral Institute and a fuel break critic. "Would you tell me how any of [the thinning projects] would have saved Coffey Park?"

The state, he says, is focusing on the wrong thing.

Use the money to retrofit houses with fire-resistant features, such as ember-proof vents, and "you would save more structures than any fuel treatments," Halsey says.

There has long been controversy over the usefulness of fuel breaks and their effect on the landscape. Their snaking lines have scarred mountainsides, destroyed wildlife habitat and are fertile ground for invasive grasses that ignite more easily than the shrubs or trees they replace.

They need to be maintained but often aren't. There is no guarantee that a wildfire will ever burn near them. Most of the evidence of their effectiveness is anecdotal and based on firefighters' accounts.

In a research paper published in 2011, Syphard and her co-authors analyzed 30 years of data on fuel breaks and wildfires in Southern California's four national forests.

Many of the fires never hit a fuel break. When they did, the percentage that stopped ranged from 22% on the San Bernardino forest to 47% on the Cleveland forest. In every instance that a break halted a fire's progress, Syphard found it was because firefighters were on it.

"The only reason a fire ever stops at a fuel break, regardless of the weather conditions, is that a firefighter is there, using the fuel break to fight the fire," said Syphard, who is affiliated with the Conservation Biology Institute and is chief scientist at Sage Underwriters, a homeowners insurance company.

It is typically too dangerous or logistically impossible to station crews on breaks in wind-whipped fires, which during peak runs can race across several hundred acres a minute.

A few miles north of Ojai, the Nordhoff fuel break zigzags along a prominent ridgetop in the fire-prone Los Padres National Forest.

Part of a decades-old network of breaks established to protect the town that sits in a picturesque bowl on the forest's southern boundary, the Nordhoff was widened in 2009.

Crews used heavy equipment to clear a 13-mile-long, roughly 300-foot-wide strip that was easily visible in Google Earth photos — a twisting band of brown amid the rich green of the forest's robe of chaparral.

In environmental documents, the U.S. Forest Service said improving Nordhoff and other breaks would lessen the wildfire threat to the Ojai Valley and also help prevent fires from burning deeper into the Los Padres, destroying sensitive wildlife habitat.

That's not the way it worked in late 2017. The evening of Dec. 4, powerful Santa Ana winds snapped power lines in the Ventura County hills north of Santa Paula, igniting the explosive Thomas fire.

In the first 24 hours, the Thomas fire blasted across 86 square miles, unimpeded by several controlled burns that Ventura County had previously conducted near the city of Ventura. The town lost several hundred homes.

"Nothing was slowing that thing down," said John McNeil, assistant chief of the Ventura County Fire Department.

John Smith, a Los Padres forest district ranger, spent the first night of the Thomas in the burning hills, checking on fire crews. He watched as a sheet of wind-flattened flames "just reached out across" the two paved lanes of Highway 150, "picked up on the other side and kept going."

At one point he drove off a dirt road to a spot that felt safe enough to use his radio. It was bare earth flanked by trees and an orchard. When he returned later that night, the trees were gone and a fence was in flames. The fire "had leaned across and burned across bare ground."

By day three, a branch of the Thomas hit parts of the Nordhoff break — and ran right over it.

Post-fire images from Google Earth show the Nordhoff ridge embedded in an ashen landscape extending several miles north into the Rose Valley, where the fire licked the edges of a gun club and scattered private inholdings.

"Everything we see was burned in the Thomas fire,"Bryant Baker, conservation director of the nonprofit Los Padres ForestWatch, said as he walked along the ridge this spring.

The winter's rains had washed away ashes and sprinkled the slopes with the fresh green of new growth sprouting beneath the charred limbs of chaparral.

Initially, firefighters didn't even try to use the Nordhoff. They were too busy defending homes in Ventura and Ojai and frantically knocking on doors, telling residents to get out.

A few days later, incident commanders sent bulldozers to another portion of the break to clear space for engine crews to set backfires.

"It didn't happen because the forecasted weather was so extreme," and the winds were carrying spot fires more than a half mile from the flame front, McNeil said. "We never did get engines up there."

Several other fuel breaks to the west of Ojai, near Lake Casitas, also proved ineffective in the face of long-range spotting. "We weren't able to contain the fires at any of those," he said.

Firefighters had more luck at another break, called the Shelf, that hugs the northern edge of Ojai. There they were able to station engines and set backfires that steered the flames away from neighborhoods.

But when asked what saved the town where he has lived most of his 53 years, McNeil doesn't point to the miles of fuel breaks that embrace the Ojai Valley. He cites the roughly 200 fire trucks that descended on Ojai, as well as a favorable wind alignment that blew arms of the Thomas fire to the north and south of town, rather than into it.

About a year later, Santa Ana winds pushed the Woolsey fire — the most destructive wildfire in Los Angeles County history — over eight lanes of the 101 Freeway. As it rushed to the sea, it inevitably burned over old fuel breaks in the Santa Monica Mountains, said John Todd, deputy chief for prevention in the county fire department.

Todd, like other fire officials, says fuel breaks can be useful in battling wildfires under certain conditions. But the county — where 10 million people live amid one of the Earth's most flammable landscapes — has stopped clearing big strips of chaparral from its rugged mountainsides.

Of the 35 fuel reduction projects that Newsom greenlighted this year, only one is in L.A. County — a 25-acre break next to homes on Big Rock Mesa in Malibu. And the county decided not to exempt it from environmental reviews, as Newsom's emergency order allows.

"Going back to the '60s and '70s, L.A. County maintained a very extensive network of fuel breaks that covered ridge lines," Todd said. "Our goal used to be, the more vegetation clearance the better."

At one point the county employed a brush crusher — a large, toothed roller that crews attached to cables and lowered down hillsides. When the smashed shrubs dried out, they were burned.

But the back country breaks, often the width of 10 bulldozer blades, or 120 feet, "were frankly causing tremendous damage to the resources, tremendous erosion and habitat loss," Todd said. What's more, no one could be sure they were in the right places to ever be used.

There is more bang for the buck, he said, in making houses resistant to the glowing ember blizzards that set buildings ablaze in firestorms.

"Vegetation clearance is an expensive proposition and it needs to be addressed often times on an annual basis," he said. "You can change a vent and protect an attic space for 30 years instead of clearing miles of weeds [every summer]."

But home hardening is not the state's current priority. Vegetation management is. The $32 million earmarked for the Cal Fire projects is part of $1 billion — primarily from the proceeds of California's cap-and-trade greenhouse gas program — which the state plans to mostly spend on fuel reduction projects over the next five years.

Meanwhile, the Legislature this year stripped the funding from a proposal to establish a $1 billion low-interest loan and rebate program that would help homeowners pay for fire-resistant retrofits.

Porter, the Cal Fire director, said state agencies are committed to finding programs that would help disadvantaged communities make residences more fire resistant — but most homeowners can undertake the work on their own.

“In California every acre that can burn, will burn someday — and we all need to recognize that,” he said.

Calli-Jane DeAnda, executive director of the Butte County Fire Safe Council, which coordinated much of the Paradise fuel break work, said both thinning and home hardening deserve funding.

During the Camp fire, “it wasn’t the flames of the wildfire approaching” that ignited the urban firestorm that left much of Paradise in ruins, she said. “It was embers landing on homes and eaves and vents.”

She tells of one family that had followed all the defensible space rules. “Their property was as clean as anybody could have asked for. They had been using herbicides and maintaining grass …Their home was good construction,” she said. But “as the fire started to pick up its pace, they saw embers get sucked into their vents and come into their attic — and the house was on fire.”

Post-conflagration photos of Paradise reveal row after row of houses reduced to heaps of ash, while nearby trees and vegetation stand green and largely untouched by flame. In the Camp fire, the primary fuel was houses, not vegetation.

Jack Cohen, a retired Forest Service research scientist who studied ignitions and wildfire spread, said he’s been asked to explain the “unusual pattern of destruction” in Paradise.

His response: “It’s not strange and unusual — it’s typical. Every investigation I’ve done comes up with that pattern.”

“We do fuel breaks because the premise is we’ve got a wildfire containment problem” when in fact, Cohen argues, we have a home ignition problem.

Until firefighting agencies recognize that, he said, their efforts are doomed to “further failure at ever-increasing cost.”