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# These houses survived one of the country's worst wildfires. Here's how

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Lauren Sommer

2-Minute Listen

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TRANSCRIPT



Despite extreme winds and fast-moving flames, researchers say some houses in Lahaina, Hawaii, on the island of Maui, survived the wildfire last August thanks to precautions taken ahead of time.

*Patrick T. Fallon/AFP via Getty Images*

The wildfire that hit the town of Lahaina, Hawaii, was the definition of extreme. Wind gusts of over 50 miles per hour drove the flames with alarming speed, eventually destroying more than 2,000 homes and buildings.

But even in those catastrophic conditions, some homes survived.

Amid the blackened rubble, small pockets of houses were left standing, a pattern that's common even within the most destructive wildfires. In the wake of Lahaina's fire in August 2023, the surviving structures were assessed by a team from the Insurance Institute for Business & Home Safety (IBHS), a nonprofit research group funded by the insurance industry. They study why buildings burn, even by setting some they've constructed on fire.

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The team found many surviving homes in Lahaina, on the island of Maui, had features that made them more resistant to burning, including certain building materials and the surrounding vegetation in their yards. Research shows that cost-effective projects to reduce flammable brush and build homes with fire-resistant materials can reduce the chances that a house will burn.

Surviving a wildfire still involves an element of luck, since even the best-prepared houses can succumb in extreme conditions. But IBHS researchers say building with wildfire in mind can make a difference, especially in places like Lahaina where the community is surrounded by flammable grass and sees plenty of dry, windy days. Using some of these techniques to rebuild Lahaina will be key to preventing future disasters, they say.

"There is no guarantee in natural disasters," says Faraz Hedayati, research engineer at IBHS who worked on the report. "But the available science can go a long way to reduce the risk."

#### **House No. 1 — Backyard cleared of brush**

BEFORE  
March 21, 2023

AFTER  
Aug. 10, 2023



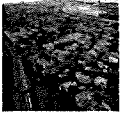
On the outskirts of Lahaina, the land is packed with dense vegetation that grows quickly during the rainy winters and dries out during the hot summers. Among many destroyed homes at the edge of town, IBHS researchers found one that was still standing.

The house's backyard separates it from an open hillside by about 75 feet. Prior to the fire, it was relatively clear of vegetation, containing only short grasses and shrubs. That means there was little "connective fuel" — the dense shrubs and trees that can carry a fire directly to a house. Fire experts recommend that homeowners create defensible space, reducing the vegetation, particularly within 30 feet of a house.

"We saw in many cases that the grass was scorched, but because there was no other vegetation there to sustain longer ignition durations, the fire just stopped there," Hedayati says.

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**Lahaina's deadly wildfire could be a chance to rebuild safer. But will it?**



Being the lone surviving house in a neighborhood still comes with hardship, since structures can experience smoke damage and owners typically must move out until the area is made safe from dust and contaminants. IBHS researchers say, ideally, all the homes at the edge of a community would have defensible space in their yards.

Just beyond them where there's open grassland, there should also be a fuel break – a buffer zone cleared of vegetation. Those precautions can reduce the risk that a fire spreads into a community at all. Another analysis by the Fire Safety Research Institute found that little work had been done around Lahaina to reduce vegetation before the fire and that the state lacks regulations and personnel to enforce it.

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**House No. 2 — A fence that doesn't burn**

BEFORE  
March 21, 2023

AFTER  
Aug. 10, 2023



Many homeowners gravitate toward wood fencing, but wood comes with an obvious downside. The flammable material can act like a conduit for fire, carrying the flames directly to a house from neighboring homes. It's an even greater risk if the fence directly touches a house via a side gate or deck.

In Lahaina, one of the homes that survived was surrounded by a concrete wall instead of wood fencing. It also had little vegetation within 30 feet of the house, meaning there was no easy pathway for the heat and flames to reach it. Around Lahaina, several other homes that survived also used rock walls as fences.

“Those kinds of fences can limit radiation from the surrounding burning structures,” Hedayati says. “The home is surrounded by that heat shield. The fire is now compartmentalized so the fire doesn't rapidly jump to the next building.”

### House No. 3 — A metal roof



After the fire, images of one particular house made the headlines. Standing alone among the ashes, a house with a bright red roof was dubbed the “miracle house.”

A year before the fire, the owners had completed a renovation of the historic home. Having battled termites, they replaced an old roof with commercial-grade metal. They also got rid of the vegetation directly around the exterior walls of the home, replacing it with a buffer of river rocks. Research shows that the vegetation within 5 feet of a house is one of the most important things for homeowners to focus on.



#### CLIMATE

**A year after Maui's deadly fires, the hills are still filled with flammable grass**

The metal roof likely helped impede one of the main ways that a fire spreads: from embers. In wildfires, winds carry small bits of burning debris in the air, casting them far away from the fire itself.

When embers land on a wood shingle roof, they can ignite the house, spreading the fire to new neighborhoods. A metal roof resists embers, as does any other type of "class A" roof material, which includes tiles or asphalt shingles.

"I think it's a combination of a commercial-grade corrugated metal roof, the stone [area] around the house, the palms around the house that absorb the heat – and a lot of divine intervention," owner Trip Millikin told NPR.

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#### **House No. 4 — Fire-resistant building materials**

BEFORE  
March 21, 2023

AFTER  
Aug. 10, 2023



Like many communities, homes in Lahaina are densely packed, the smaller lots allowing for little space between the houses. That can help spread a wildfire, when the radiating heat from one burning house is powerful enough to ignite its neighbors.

Still, one Lahaina house survived despite being only 10 feet from its neighbor. The home was constructed with fire-resistant building materials that aren't as susceptible to sparks and heat.

Its siding is noncombustible, which can be achieved with many commonly used materials like stucco or fiber cement. The roof was made with asphalt shingles. The windows are also double-paned with tempered glass. That helps prevent them from shattering under intense thermal stress, which provides an entry point for fire. (Check out more tips on building materials [here](#).)

Using fire-resistant buildings materials doesn't mean a house is fireproof, especially if high winds are pushing the flames directly onto it. But a combination of building materials and defensible space can resist a wildfire under the right

conditions and, importantly, break the chain of fire spreading from house to house.

“If you don’t have connective fuel and use noncombustible materials, we can give a chance for a building to survive,” Hedayati says. “And the chain of conflagration or building-to-building fire spread will break after we see the first few homes resisting the high-intensity exposure from the other buildings.”

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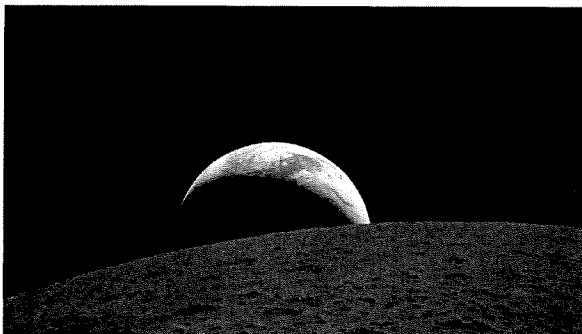
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