

# California fire damage to homes is less 'random' than it seems

December 8 2017, by Faith Kearns

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In the midst of the many [wildfire emergencies](#) that have [faced California](#) this year, it can often seem that the way houses burn, or don't, is random.

The thing is, though, it's not. Firefighters and researchers alike have a pretty solid understanding of why some houses are more vulnerable to wildfire than others. The real challenge ultimately lies in whether those with the power to act on that knowledge will do so.

## Available science

It is commonly thought that it takes direct flame to spread a fire, but this isn't always the case. Small embers are instead often the [culprits that begin house fires](#) during wildfires. These small bits of burning debris can be lofted long distances by the [wind](#). They can then end up igniting landscaping materials like combustible mulch, or enter homes through vulnerable spots – gutters teeming with debris, unscreened attic [vents](#), open or broken [windows](#), old [roofs](#) with missing shingles. Once there, the embers smolder and can ultimately catch a [house](#) on fire.

In California, [iconic winds](#) work to create ideal ember-driven ignition conditions. The Santa Ana winds in Southern California – known as the Diablo winds in northern part of the state – have generally followed fairly predictable seasonal and spatial patterns. ["Red flag" fire warnings](#) are often issued on dry days when the winds will be particularly fierce.

While humans [can't really control](#) as much as we'd like to believe when it comes to disasters, we do have the ability to control where and how we build. For decades, most wildfire education and enforcement campaigns have focused on creating so-called [defensible space](#) where landscaping vegetation is carefully selected and located on the property, as well as routinely maintained.

This is not enough, however. Officials in California – as in other fire-prone states – need to help [homeowners](#), [local governments](#) and [builders](#) to understand there are also specific, science-based steps that can be taken to make [structures themselves less vulnerable to fire](#).

Researchers recommend what is known as a "coupled approach" to home and building survival. This means the development and maintenance of an effective defensible space, as well as the careful selection of [construction materials](#) and correct installation to ensure that, for example, there are not gaps in siding or roofing that would allow embers to penetrate.

Decision-makers also need to be willing to take on the most taboo topic of them all: recognizing that there are places houses simply shouldn't be built, or rebuilt, at all.

## **(Not) too urban to burn**

Earlier this year, California had the [first strong winter rains](#) after many years of drought. Now, after a typically dry summer, the state is experiencing a [dry start to the rainy season](#), particularly in the south. At the same time, people have continued to build into places known to burn regularly. The result of this confluence of events has been fires deeply affecting many thousands of people up and down the state.

California residents are largely aware that not all fire is bad, and that

many of our ecosystems thrive on regular fire. It's not something that we should, or ever could, hope to fully contain. Our only chance is learning, really and truly and finally learning, to live with it.

In that vein, the state must look long and hard at some of the steps that have been the hardest to take – not building in places that are particularly fire-prone and matching building codes with a modern understanding of [wildfire risk](#) – if there is to be any hope of alleviating the human suffering these fires cause.

We are being invited to free ourselves from the notion that [wildfire](#) destruction is random and unpredictable, and that therefore there is nothing to be done about it. As the [fire](#) season in California [gets longer](#), the [winds worsen](#) and wildfires move into areas once deemed too urbanized to burn, maybe the knowledge about what makes houses burn can finally be put to good use.

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