How Climate Prediction Tech is Reshaping the Insurance Industry

KQED

Nevada County sits in the Sierra foothills in the heart of Gold Country. Narrow roads snake through towering old-growth pine trees and cedars. Cal Fire has designated the county seat, Nevada City, and nearby Grass Valley as “very high fire hazard severity zones.”

Right in that zone, in Grass Valley, Kathy Lafayette and her mother live in the home their family built almost four decades ago. For 35 years, the Hartford Company insured the house — until it canceled the policy on the grounds that the homeowners hadn’t done enough to fire-proof the 6.25-acre property. But Lafayette’s mother says she spent more than $3,000 this year on fire-proofing, and she sent the company receipts and photos to prove it.

Lafayette believes The Hartford Company made their decision based not just on her family’s land but they took into account the vacant lot next door too. She says those property’s owners next door have neglected the place to the point that it’s become a fire hazard. And she’s heard that insurance companies use satellite images of properties and what’s nearby when assessing a homeowners’ risk scores.

Risk scores, according to a local agent, are based on proximity to water sources, fire services and vegetation. The scores then inform renewal decisions and premium rate setting.

Michael Soller, a spokesman for the state’s Department of Insurance, says Lafayette’s concern is valid. “There’s been a change in the past couple decades from the way that risk is even established. Previously, insurance companies had evaluated a home almost based on its own characteristics. And increasingly, they’re using the satellite imagery,” he says, which bases the risk on many characteristics besides just the home itself.

More and more, insurance companies are using this kind of assessment — available through predictive technologies — to determine their policyholders’ wildfire risks. However, critics say these tools are making it even harder for homeowners to get insurance coverage in an already unstable market.

What insurers are not doing, both Soller and Lafayette say, is giving homeowners credit for the work

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they've done toward keeping their properties safe. Legally, the insurance companies don't have to take that into account, Soller says. California doesn't require insurers to reflect mitigation efforts when they decide how much a homeowner's premium will cost.

Lafayette has also reported the property next door to the fire department and called her district supervisor to express concern. "All they can tell me is they send a letter every month, and every month that [the owners] don't take action on their property, the fine goes up. But I'm sure it's still much cheaper to pay the fine than it would be to clear the property," she says.

Unfortunately for Lafayette, city and county regulations don't require the property owner next door to address the issue. According to Nevada County emergency services manager Jeff Pettitt, local code only requires 100 feet of cleared defensible space around structures. That means if it's a vacant property, like this one, and there's no structure within 100 feet, then there's no way for the city to force them to clear the property. For Lafayette and her mother, the neighbor's vegetation would have to creep a lot closer to their property line before the county could intervene.

Yet, meanwhile, they continue to be penalized for fire fuel growth beyond their control.

As satellite and other predictive risk data becomes more sophisticated, homeowners are grappling with this bird's-eye view approach from their insurers. At the same time, a California-based climate startup is striving to democratize this developing assessment model.

'A Realistic Animation of Armageddon'

Market projections anticipate this. By 2026, the global climate change consulting market is forecast to be worth $8 billion.

The budding industry already has critics. Right now, private firms, like Jupiter Intelligence, distribute assessment and risk data for a fee. It's not peer-reviewed or offered to the public. So while insurance companies and investment funds can take advantage of the forecasting models, homeowners and municipalities don't have the same access.

Some of these renderings and models are so realistic, says Amy Bach, they're simply terrifying for the companies attempting to insure against the inevitable. Bach is executive director of United Policyholders, an advocacy group for people wrangling with insurance issues.

"Think about an insurance company looking at a realistic animation of Armageddon, you know, burning down the entire state," she says. "Now insurers can see so much more vividly the extensive losses that they may be facing. And it's just scaring them out of wanting to insure the homes that they traditionally have always insured."

A Berkeley Labs Startup Seeks to Flip the Script

But there are startups now looking to make versions of this new technology available to the public as

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well.

“We want to make this kind of science and the information available widely accessible not just to the insurance companies who have the money and pockets to pay for it, but also to all the other stakeholders such as the private consumers as well as municipalities that would benefit from this view of the risk,” says Adrian Albert, chief executive at Terrafuse, a weather and climate prediction startup out of the Cyclotron Road fellowship, a program of Lawrence Berkeley National Laboratory in partnership with Activate.

Terrafuse uses data that comes from weather shifts they create inside a small physical model, says Albert and chief scientist Brian White — kind of like a snowglobe.

“Think of [our] technology as recreating climate physics inside AI in the same way one can create a storm in a snowglobe: individual predictions are snapshots of the climate at a specific location and what they look like when we introduce new elements — or shake the globe,” they wrote, after an interview in their office at the Berkeley Labs.

They’re working to make a tool that can generate projections more quickly than their peers in the industry, “because if you had to wait many months or spend millions of dollars to get these kinds of predictions in place, that leaves them out of the reach of a lot of organizations that would need them,” Albert says.

He says Terrafuse has discussed with the California Department of Insurance and other state groups ways they could work together and support a more equitable insurance market for fire risk.

One example would be if the Cal Office of Emergency Services or local fire departments could incorporate Terrafuse projections into where they decide to place new firebreaks.

Right now, he acknowledges, insurance companies are able to use the data out there to make rate determinations that people can’t afford or to cancel policies. But if Terrafuse has its way, he hopes that when insurance policies for people like Kathy Lafayette and her mother are up for renewal, they will have the same information that their insurer does.

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