

CALIFORNIA WILDFIRES

In disaster-prone California, emergency sirens get high-tech makeover

Mallory Moench_ December 30, 2019



Mill Valley Fire Department Battalion Chief, Scott Barnes, shows a microphone and battery backup inside one of Mill Valley's five new LRAD satellite-based siren notification emergency systems in Mill Valley, California, Saturday, December 7th, 2019.

Photos by Michael Short / Special to The Chronicle



One of Mill Valley's five new LRAD satellite-based siren notification emergency systems in Mill Valley, California, Saturday, December 7th, 2019. Photo: Michael Short



Mill Valley Fire Department Battalion Chief, Scott Barnes, uses an app to control one of Mill Valley's five new LRAD satellite-based siren notification emergency systems in Mill Valley, California, Saturday, December 7th, 2019. Photo: Michael Short

It was blustery on the first Saturday in December. Wind and rain drove most residents of a quiet neighborhood in Mill Valley's hills into their homes, except for a few brave dog-walkers. Then suddenly, at noon sharp, a siren pierced through the canyon on Vasco Court.

"This is only a test," a robotic voice recording blared. It was a routine monthly check of a new siren system, activated with a tap on a cell phone app by Mill Valley Fire Battalion Chief Scott Barnes. In a wildfire, it could save lives.

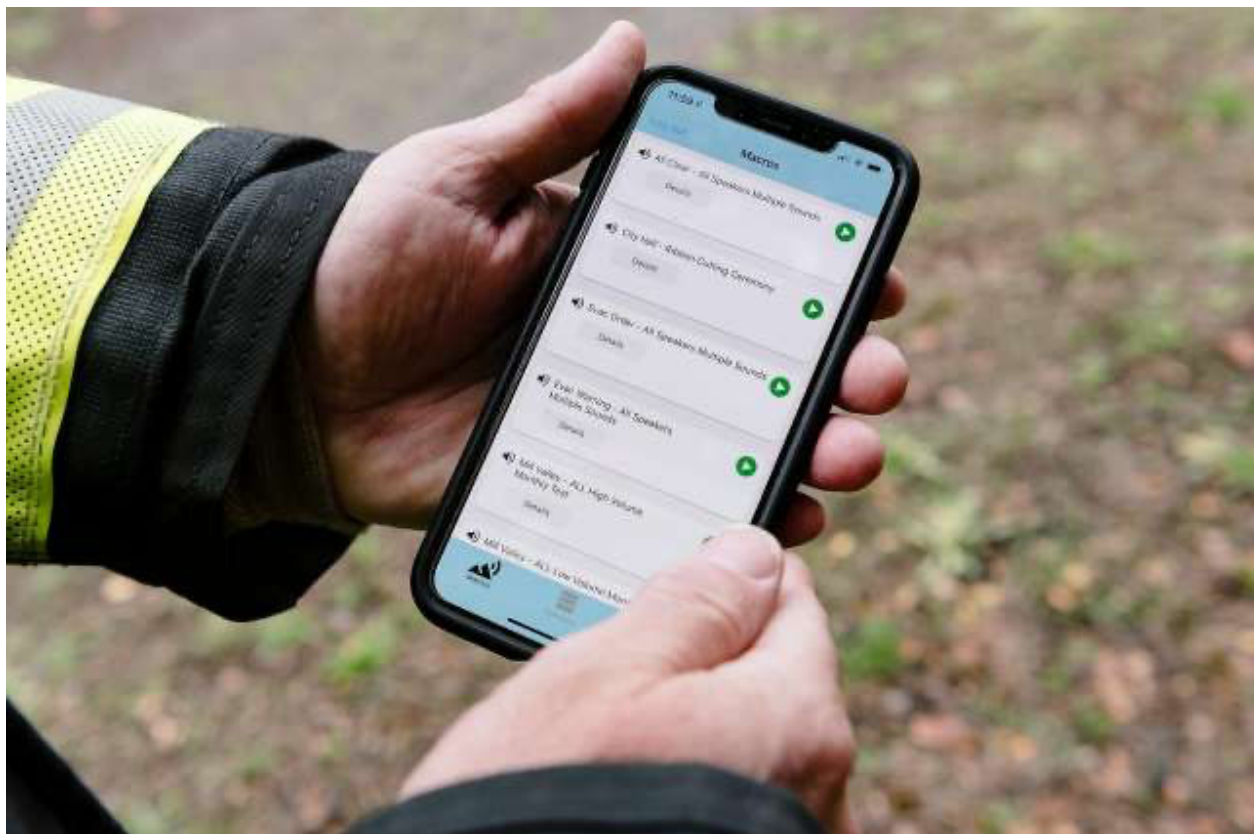
"It seems that every large fire we've had in the past ... some of the negatives we hear are 'I wasn't notified. I didn't get an emergency notification,'" said Barnes, who's been with the fire district for 29 years. "This system is one more tool to provide that notification."

This year Mill Valley was one of the first California cities to install this new siren system, called Long Range Acoustic Device, or LRAD. Mill Valley's previous, 2-decades-old siren emitted a generic alarm for all emergencies. The new system can blare messages with specific instructions about what to do or where to go. It has battery backup that can survive PG&E power shut-offs and backup activation methods for when cell phone networks fail.

Long before text messages, Bay Area residents learned of impending disasters via sirens. But worsening wildfires, power shut-offs and wireless outages have raised the profile of alert systems.

During the 2017 Tubbs Fire, Sonoma County officials faced criticism for failing to send alerts until residents had to flee for their lives. A year later, Butte County didn't activate a phone-takeover emergency system during the Camp Fire, the state's deadliest. And this year, with mass electrical shut-offs during the Kincadee Fire, some cell towers also went down, especially in Marin.

Faced with these communication problems, some local governments are improving their sirens.



Mill Valley Fire Department Battalion Chief Scott Barnes, uses the an app to control one of Mill Valley's five new LRAD satellite-based siren notification emergency systems in Mill Valley, California, Saturday, December 7th, 2019. Photo: Michael Short

In San Francisco, 119 sirens have broadcast a test every Tuesday at noon for more than half a century but will now go silent for two years of upgrades. The system is powered by commercial, battery and solar power, said Lauren Jones with the city's Department of

Technology. A control center uses a radio frequency like a walkie-talkie to send out voice messages and tones.

The city is replacing hardware and upgrading software to address security vulnerabilities. It hasn't decided on specific features for the new system, Jones said.

Last year, Sonoma, Napa and Solano county sheriffs installed sirens that emit two tones — high and low — from emergency vehicles that drive around and alert neighborhoods. Another siren system, along the San Mateo coast, alerts residents to tsunamis. It has solar power and battery backup but can't send specific messages.

For its siren upgrade, Mill Valley bought five Long Range Acoustic Devices in September from San Diego company Genasys. The fire district recorded verbal messages for wildfire, flooding and mudslide evacuations. During a crisis, Barnes can also record a unique message directly from his phone or computer to broadcast through the siren.

In an emergency, the Marin County Emergency Operations Center will activate the siren through the internet, with a satellite backup in case of a blackout. Barnes can also use a satellite radio to call Genasys to remotely trigger the system, or he can manually broadcast instructions using loudspeakers in the siren boxes mounted on utility poles.

"We're really thrilled with it," Barnes said. The five sirens each can be heard for half a mile, covering most of the 4.8-square-mile city, but he said the sirens "aren't designed for everybody," like in rural areas where homes are spread out.



Mill Valley Fire Department Battalion Chief, Scott Barnes, stands in front of one of Mill Valley's five new LRAD satellite-based siren notification emergency systems in Mill Valley, California, Saturday, December 7th, 2019. Photo: Michael Short

The battery lasts about 72 hours — not long enough to get through some shut-offs that occurred this year. During a three-day shut-off in Mill Valley, Barnes said, Genasys warned that the batteries were running out and sent generators to recharge them. Barnes hopes to get funding next year for backup batteries.

Genasys also offers solar-powered options, used currently in the Orange County communities of Laguna Beach and Newport Beach, but they cost \$2,500 to \$7,000 more per system. Barnes is looking at purchasing one for Edgewood Reservoir, a more remote area.

Mill Valley's new sirens cost \$500,000 total. "These aren't cheap systems. You get what you pay for," Barnes said.

Not everyone can afford it. Fred Hilliard, division chief fire marshal with the Southern Marin Fire Protection District, which includes areas east and south of Mill Valley, said he wants a similar system but needs to find \$750,000 to \$800,000 to buy it. Hilliard finds it appealing because "one particular notification system is not going to reach out to every single person; you need to have redundancy."

The fire district learned it could not rely on phone service during the recent PG&E shut-offs, which took out emergency communications at all the district's fire stations, leaving first responders with only radio and satellite phones.

"It definitely made a huge impact on the fire prevention side, because we had no communication," he said. "As far as the public goes, they had no power and no communications. So many people rely on cell phones."

Mill Valley resident Clifford McGuire, 71, lost cell phone and Comcast landline service during the shut-offs. He lives around the corner from one of Mill Valley's new sirens that cut through the rainy-day quiet and the college football game on his TV on the first Saturday in December.

"I don't mind if they err on the too-loud side. The noise of it didn't offend me," McGuire said.

McGuire, who has lived in the house for 37 years, said he isn't very worried about fire risks or evacuating in a fire — but he wonders why fire officials hadn't used the siren to inform residents about shut-offs when he and many other residents lost connectivity.

Barnes said he prefers to use it for true emergencies. Woody Baker-Cohn, assistant emergency manager at the Marin County Sheriff's Office of Emergency Services, said "one of the big dangers in alerting is over-alerting." If you start to cry wolf, he said, people will turn them off — and might not get them when they need them most.

Emergency experts say the best way to reach people is multipronged. "Thinking about just replacing sirens as an adequate means for communication is just flat wrong. You need to have voice communication — you need messaging," including texts, Genasys CEO Richard Danforth said.

Marin County's methods of reaching people include text-message-like alerts from more than a dozen agencies about issues such as road closures or fire smoke. For more extreme emergencies, the county triggers Alert Marin, a 5-year-old text, email and call alert program. The system has 56,435 registered accounts in a county of 261,000 people, and some accounts may represent households, so Baker-Cohn said he believes it covers more than half the county.

In the most dire crisis, Marin County can activate wireless alerts that take over phones to tell residents to take action, like evacuation or sheltering in place, a method employed before PG&E's last shut-off, in which the entire county unexpectedly lost power.

When power and cell service go down, though, that's when a more traditional siren comes in handy. *Mallory Moench is a San Francisco Chronicle staff writer.*