



Lessons Learned from Lahaina and Other Similar Wildfires

Three of the deadliest fires in the U.S., the most recent occurring just last month, share three common factors that contributed to the loss of life and destruction of property.



Inadequate evacuation plans/routes



Failure in the emergency alert systems/warnings



Faulty or damaged electric transmission lines

In this article, we will look at the Lahaina, Tubbs and Camp fires; the contributing factors of each; and what is and can be done to help prevent such widespread and heartbreaking loss.

CONTACT

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The Lahaina Fire

The Lahaina fire on Maui started on August 8, 2023, burning 2,200 acres and damaging or destroying more than 2,200 structures.

Property losses are approaching \$3 billion, and the fire has claimed at least 115 lives (with an estimated 66 still missing at the time of publication), making the blaze the deadliest U.S. wildfire in more than a century.

Catastrophe modelers attributed the fast-moving wildfire to dry conditions, low humidity and up to 81 mph winds created by Hurricane Dora. The winds likely pushed embers and flames into the built environment, with the buildings themselves becoming the primary source of fuel for the expansion of the fire. Reports also indicated that the fire spread a horrifying one mile every minute.

According to CoreLogic, a high percentage of wood structures contributed to the wildfire spread. In large part due to the fact that many of the residential properties in Lahaina had wood siding, wood roofs and elevated porches with a lattice underneath – all characteristics that make structures vulnerable to both ember and direct flame ignition.

The Tubbs Fire

On the night of October 8, 2017, the “Tubbs” fire rushed 12 miles from Calistoga, CA, across a six-lane highway, to Santa Rosa in just five hours. The fire resulted in 22 deaths and the destruction of more than 5,640 structures. The insured loss was \$10 billion.

Drought, dry weather and strong winds with sustained gusts of 68 mph, fueled by the area’s shrubs, brush and dry grass, played a huge part in the rapid spread of the fire. The wind cast embers a mile ahead of the actual fire.

Nearly 95% of the 1,300 homes in Coffey Park, Santa Rosa, were destroyed. Because it was outside the officially mapped “very severe” hazard zone, Coffey Park was exempt from regulations designed to make buildings fire resistant in high-risk areas.

The Camp Fire

The Camp Fire, also in Northern California, killed 85 people in November 2018 and was the deadliest wildfire in the United States since 1918 until the Lahaina fire in Hawaii.

More than 18,800 structures destroyed, surpassing the Tubbs Fire as most destructive wildfire in California history. The towns of Paradise and Concow were destroyed, each losing about 95% of their structures. The insured loss was more than \$16 billion.

Approximately 86% of the single-family homes in Paradise were built before 1990. Wood frame homes of this age fared poorly, with only 11% surviving the fire.

Intense winds, low humidity, dry vegetation and less than 5% of the normal rainfall in the month preceding the fire contributed to the devastation at an astonishing equivalent of a football field every second.



What Did These Fires Have in Common?

Inadequate Evacuation Plans/Routes

In all three wildfires, there was a common theme of poor road conditions, road closures, traffic jams, victims who died in their cars or homes while trying to escape and victims not having evacuation plans. There were also desperate stories of residents not knowing whether to shelter in place in a pool, river or lake, or take their chances and leave.

For example, in Lahaina, there are only two ways in and out of town: a narrow mountainous road to the north that was closed during the disaster and a path to the south that was closed for at least part of the peak disaster period because of falling power poles. This left residents with no choice but to jump into the ocean, treading water and dodging flaming debris. Many also suffered from smoke inhalation.

Failure in the Emergency Alert Systems/Warnings

Hawaii has one of the largest outdoor public safety warning systems in the world, with alarms that blare across the islands in cases of danger. However, while the Hawaii Emergency Management Agency confirmed that the sirens were not activated, the team stressed that even had they been activated, the sirens alone would have been a sign for residents to seek more information – not a directive to evacuate.

Other alert systems were activated — including cellphone, radio and television alerts — but power had been shut off for much of the day in Lahaina and many residents stated they never received any warning. It's important to note here that the power company serving Maui does not have a program to preemptively shut down electrical lines during times of high fire risk.

When the Tubbs fire started, overwhelmed emergency operators gave 911 callers conflicting information. In some instances, operators told residents to shelter in place until law enforcement officers came to them. Others told callers to evacuate when and if they felt unsafe. In more than one case, dispatchers asked to send out evacuation calls did not know what to do. The dispatch center itself was impacted by the fire, losing power and becoming filled with smoke.

The first hours of the Camp Fire saw multiple failures in the emergency alert system, rooted in its patchwork, opt-in nature, and compounded by a loss of 17 cell towers. Thousands of 911 calls inundated the two emergency dispatchers on duty. Technical errors resulted in emergency alerts failing to reach 94% of residents in some areas and an alarming 25% of residents who were signed up for the alerts.

New laws requiring counties to automatically enroll residents in a uniform cell phone alert



system are being considered and/or passed. Many states are also:

- Funding a standardized system equipped to push out alerts on all forms of media – radio, television, electronic highway billboards and landlines
- Requiring county emergency managers to undergo annual training on the latest alert technology



Faulty or Damaged Electric Transmission Lines

All three fires were caused by faulty “overhead” power equipment.

- According to Hawaiian Electric, the Lahaina fire could have been caused by power lines that fell in high winds.
- The Tubbs fire began when a spark from an electrical current from a high-tension wire arced to the ground.
- The Camp fire ignited when a pine tree fell, damaging a 93-year-old transmission line.

Minimizing Damage Done by Overhead Transmission Lines

To combat potential damage done by overhead transmission lines, utility companies are spending millions replacing old utility lines and equipment. There are also community wildfire mitigation programs such as “Firewise Communities” and State and Federal funding for robust tree-trimming and vegetation management programs in wildfire-prone communities. Some companies are even putting power transmission lines underground. Called “undergrounding,” it can help reduce the risk of high winds igniting a fire – but it’s very expensive.

The cost to install overhead utilities is estimated at \$500,000 per mile, while underground utilities are \$5 million per mile. At the same time, underground wires often do not last as long as their above-ground counterparts because of corrosion and there is the potential to unintentionally sever an underground cable, which carries a similar risk to damaging underground gas lines. Routine maintenance on underground lines is also difficult, with service restoration often taking far longer as it can be hard to pinpoint the exact location of the interruption and the area in need of repair will need to be excavated.

What Can Be Done to Help Prevent Fires Like the Lahaina, Tubbs, and Camp Wildfires?

Most states have implemented regulations and building codes requiring:

- Fire hardening features in new home construction
- Fire resistive materials in replacement roofs
- Defensible space (as defined by the National Fire Protection Agency) on all properties
- Expansion restrictions on new communities in the Wildland Urban Interface

Many states also have proposed or passed laws requiring improved emergency communications, automatic power line shutoffs during windy conditions and more robust forecast warnings.

Conclusion

We can all work together to help reduce property damage and loss of life caused by wildfire. Utility companies can work in partnership with Federal, State and Local governments. You can encourage clients to:

- Harden their property against wildfire
- Build out defensible space around their property
- Take care when visiting wildlands and forests

Talk to your local Amwins underwriter. They can help provide more information about how to prevent potential wildfire damage and ensuring that your clients have the appropriate coverage in place.

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Resources

CalFire, Corelogic, Department of Homeland Security/FEMA, National Fire Protection Association (NFPA), U.S. Department of Energy, U.S. Department of Agriculture (USDA), Wildfiretoday.com