The mystery behind California's most destructive wildfires: Who is to blame?

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A firefighter burns vegetation to prevent flames from crossing Highway 29 on Oct. 12. (Marcus Yam / Los Angeles Times) (Marcus Yam / Los Angeles Times)

More than two dozen investigators have spent weeks scouring wine country trying to solve the mystery at the heart of the most destructive wildfires in California history: What caused the infernos that killed 43 people and destroyed more than 8,000 buildings?

The answers will have wide-ranging ramifications for the region, which faces staggering losses and a challenging rebuilding effort. Losses from insured properties alone are expected to far exceed $1 billion, and the total bill for the fires will be still higher. Just fighting the fires cost $189 million, according to the California Department of Forestry and Fire Protection.

Cal Fire is likely to take months to determine the official cause. But in wine country, there is already one prime suspect: utility giant Pacific Gas & Electric.

The deep-pocketed company is already the target of numerous lawsuits from homeowners and others claiming that it did not properly maintain power lines and trim the vegetation around them. They hypothesize that heavy winds the night the firestorm started, Oct. 8, downed power lines, sparking the fires.

Utilities have the deep pockets

Downed power lines have caused massive California wildfires in the past, and utilities including PG&E have been on the hook for millions of dollars.

That could end up costing ratepayers in the end. San Diego Gas and Electric is seeking to charge ratepayers $379 million for costs associated with destructive fires that hit that region in 2007. Officials determined that power lines sparked those fires.

Although Northern California was hit by more than a dozen large fires last month, the greatest focus has been on the Tubbs fire, which destroyed swaths of Santa Rosa and killed 21 people.

But PG&E is pushing back in a recent court filing, citing its own evidence that the Tubbs fire may have been started by electrical equipment maintained and operated by a third party. A PG&E spokesman declined to comment further, saying it was cooperating with the various investigations.

Whatever entity is found to have sparked the fires could be compelled to pay the state and local agencies to cover the cost of firefighting expenses, and pay individual residents who were affected. PG&E stock prices plunged during the fires' worst days

and have not completely recovered, as investors try to determine what impact the potential liability would have on the company.

In additional to Cal Fire's probe, another by the California Public Utilities Commission will determine whether PG&E followed protocols leading up to and during the fires, and whether any of their actions contributed to the spread of flames that destroyed thousands of homes and businesses last month.

Lawyers have already filed at least 15 lawsuits representing more than 100 people.

"We believe that their practices in terms of the maintenance of their lines and the maintenance of the vegetation near the lines was a substantial factor in causing these fires," said Bill Robins, an attorney representing about 100 plaintiffs who have experienced at least $250 million in losses, he said.

Both the Cal Fire and utilities commission reports will be important for individual lawsuits, said attorney Mary Alexander, who is representing 22 plaintiffs in a number of lawsuits related to the fires.

Cal Fire is "on the ground from the beginning and they collect evidence, sometimes they even take pieces of evidence away" before outside investigators can come in, Alexander said. "So it is important what they have to say."

What if PG&E didn't cause the fires?

Utilities are often early suspects in wildfires — and sometimes those early hunches turn out to be right. Southern California Edison ended up paying the state $37 million in fines for the 2007 Malibu Canyon fire.

PG&E has also faced blame. After Cal Fire investigators found the utility company responsible for the 70,000-acre Butte fire that killed two people in 2015, the state attorney general sued the company for $87 million in related costs. That case, filed in April of this year, is ongoing.

The CPUC also fined PG&E $8.3 million for creating conditions that allowed an overhead conductor to come into contact with a pine tree and ignite the Butte fire, and for failing to report the connection in a timely manner. Part of the problem is

that the utility company failed to “maintain the minimum required clearance” between the conductor and the tree, according to an April news release.

But sometimes others are found to be at fault. Last year, Cal Fire found that the deadly 2015 Valley fire was ignited because of an incorrectly wired hot tub.

“PG&E owns the big lines but once it gets onto private property … this is rural California, so people often wire their own stuff,” said Bill Stewart, a forestry specialist at UC Berkeley.

In a filing with the Judicial Council of California earlier this month, PG&E lawyers argued that the company may not be to blame for October’s Tubbs fire, the most destructive of the wine country firestorms. Preliminary investigations of that fire, which was responsible for at least 21 deaths, “suggest that this fire might have been caused by electrical equipment that was owned, installed and maintained by a third party,” the utility’s attorneys wrote in the filing.

The Cal Fire investigation has not come to any conclusions, and outside investigators — for individual lawyers or for PG&E — are not allowed into active investigation sites, Cal Fire spokesman Scott McLean said.

“We’re not going to let anybody in there when we’re doing an investigation,” McLean said.

In an email, PG&E spokesman Donald Cutler said the company knows that investigators have not determined what ignited the flames.

“CAL FIRE’s and the CPUC’s investigations are still ongoing and they have not determined a cause to any of the recent fires,” Cutler wrote. “PG&E will continue to comply with requests … to preserve evidence.”

Even if no power lines started the fires, PG&E could still be found to have contributed to their spread. While Cal Fire investigators try to figure out what set off the flames, the CPUC investigation will examine potential issues like line clearance and PG&E’s response to the fires, said Elizaveta Malashenko, director of the agency’s safety and enforcement division.

“We may find violations … even if the utility lines did not directly cause the fire,” Malashenko said.

On the flip side, Cal Fire could find that a downed power line ignited flames, and the utilities commission could find that PG&E followed protocols perfectly and is not to blame, she said.

Potential sanctions against PG&E, if any, could range from a letter of warning to millions of dollars in fines, she said.

A complicated investigation

There's no way to know how long the investigations will take. The investigation into the Valley fire near wine country took just under a year, McLean said.

This is a much bigger job by comparison, as more than two dozen investigators comb through the burn areas looking for clues.

"There's no set time frame … when we got it, we got it," McLean said. "You have to look at the big picture. You have to look at all the evidence."

Figuring out who's culpable for the Northern California fires could be especially difficult because more than 100 fires were ignited throughout the week and a half — some were put out immediately while others merged, McLean said.

A downed power line in a burn area does not mean it caused the fire, McLean said. Flames could have knocked it down.

Investigators for wildfires typically use interviews with first responders and the people who reported the fires to figure out where the "general origin area" is for a fire — that can be a few acres in size, said Brenda Rice, a retired wild-land fire investigator for the U.S. Forest Service.

Then, armed with hindsight on the wind conditions and humidity at the time the fire ignited, they look for clues that will direct them to the exact place where the fire started, breadcrumbs hidden in the marks on tree trunks and the side of pebbles, Rice said. That can mean looking at the "angle of char" on a tree trunk, to see which directions a flame traveled. They might bend down to examine grass leaves for those same signs, or examine small rocks just a few inches high to see which side has soo t — that side is probably where the fire came from, she said.

The investigators are then able to narrow down their search to an ignition area that's much smaller — investigators are able to get to this point more than 90% of the time, Rice said.

"The ignition area is the smallest area you can locate and identify" for where the fire started, Rice said. If you dropped a match, the ignition area would be the spot where the match hit the ground.

It's harder to find the ignition source itself, which actually answers the question of how the fire began, she said.

Investigators break up their small ignition area, which could be as small as 5 by 10 feet, into small squares and sift through "on hands and knees with magnifying glasses, magnets, dental picks," Rice said, trying to find anything that could have caused a fire.

Then there are the clues within the potential ignition sources, she said: Was the match they found snuffed out before it was tossed? Metallurgists will examine heat indicators on pieces of metal that may have fallen from a power line.

There's no guarantee that investigators will find the source of every fire, though, Rice said.

"The ignition source could have been burned up in the fire after it started," Rice said. "It could be literally a carbon particle … out of the exhaust of a truck."