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Experts say electrical panels in Dallas-area homes may be a fire waiting to happen

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By CHRISTINA ROSALES / The Dallas Morning News
crosales@dallasnews.com

Karen and Floyd Clardy remember hearing a giant pop from the garage. The lights in their [Lake Highlands](#) home went out, and suddenly there were flames.

They watched as fire spread from the garage to the attic and two rooms in the house, causing \$160,000 worth of structural damage.

"The breaker box was shooting flames, and there were sparks," Karen Clardy said.

Dallas Fire-Rescue determined that the fire in March started in the electrical panel in the garage. The Clardys' home was equipped with a Federal Pacific Stab-Lok, a type of circuit breaker in thousands of North Texas homes that is now widely thought by engineers, electricians and house inspectors to be defective – and dangerous.

Experts first began saying in 1980 that a high percentage of the circuit breakers failed to trip. After testing the devices for about two years, the [Consumer Product Safety Commission](#) said the government lacked sufficient data to warrant a recall. No warning was ever issued.

But in recent years, engineers studying them independently have found that the circuit breakers can overload and cause fires. Many have been replaced in the decades since they were manufactured, but one expert estimates they are still used in 20 million homes nationwide.

"They're everywhere," said Bob Charvoz, chief home inspector for the American Association of Professional Inspectors in [Plano](#).

"If your house was built during the '60s, '70s or '80s, it probably has one of these breakers. About 90 percent of houses we see from that time have them."

New York engineer Jesse Aronstein said he has been writing to the Consumer Product Safety Commission for six years, urging that a clear warning be issued.

Aronstein met with the commission most recently in February, saying that fires could be prevented if the commission would update its 1983 statement. The commission now says it is working on a way to make its stance clearer, spokesman Scott Wolfson said.

"If homeowners have been experiencing these incidents, we want them to report them to our agency," Wolfson said. But he added, "We need to recognize that there was no final conclusion."

Federal Pacific is no longer in business.

Used by Fox & Jacobs

Although the suspect breakers were used in homes constructed by many builders, Fox & Jacobs installed them exclusively in the Southwest up until the mid- to late 1960s, according to a spokeswoman from [Pulte Homes](#), which now owns the company. Fox & Jacobs homes accounted for about 80 percent of homes built in the Dallas-Fort Worth area during most of the 1970s.

No one can say how many house fires can be traced back to faults the experts see in the boxes, although fire departments and insurance inspectors say they regularly see fires start there, or start elsewhere in a home because a circuit breaker fails to do its job.

Several engineering experts who have tested the boxes under laboratory conditions have found them to be defective. Potential problems with the Federal Pacific circuit breakers are such that many Texas home inspectors regularly advise home buyers to remove them before a purchase.

But not always. The Clardys' house, built in 1978, had two previous owners. After the fire, they were surprised to learn the history of the type of circuit breaker that was in their house.

"We had no idea we had a problem" Floyd Clardy said. "No one ever said, 'Replace the breaker box. This is dangerous.' "

"If they had, we would have done it in a flash," his wife said.

Many found in closets

The suspect Stab-Lok circuit breakers were manufactured beginning in 1960 and used through the 1980s by Federal Pacific Electric. Most – but not all – were installed in closets.

The standards set for breakers can be compared to those for automobile brakes.

Brakes should be able to stop a car within a set distance; Circuit breakers should interrupt the electrical current when circuits become overloaded and overheated. This can prevent hazards such as overheating and shocks and at worst a fire.

Aronstein said his two decades of testing showed that more than 25 percent of Federal Pacific circuit breakers are defective in lab settings. The rate could be higher in non-lab settings, engineers say.

Denton engineer Mark Goodson's consulting firm investigates fires for insurance companies, including the company that insured the Clardys.

"I think they're dangerous," Goodson said. "They don't timely trip. I've seen fires caused by these breakers. I've seen wires overheat where a Federal Pacific breaker did not trip. If left unchecked the wires can combust and spread to cardboard, paper, clothing."

For more than 100 years, standards for circuit breakers has been unofficially set by [Underwriters Laboratories](#), a nonprofit groups that tests appliances and sets standards used by the federal Consumer Product Safety Commission.

UL electrical engineer John Drengenberg said companies can sell products that don't have the UL mark, but building inspectors will not pass a new home if something like a circuit breaker doesn't bear the seal.

The Federal Pacific circuit breakers carried the UL seal, but there have long been questions about whether some or all were properly certified.

A Federal Pacific engineer who resigned in 1978 later wrote the company president with his claim that internal testing found certain breakers defective.

"We found that they would only perform for approximately 1,200 operations of 3,000 required by Underwriters," he wrote, according to documents that were part of several lawsuits related to the faulty breakers. "At this point, the contacts would become badly burned and excessive temperatures would occur."

The engineer, J.F. Meacham, cited several other cases where circuit breakers were "cheated" through the Underwriters Laboratories approval process, and he alleged that UL inspectors were paid to "turn their heads," the document says.

The engineer wrote that the cheating would hurt the company, but no mention was made of possible safety consequences.

"I think you know me well enough to know that I could not turn my back or take part in what I have described in this letter, so I left," he wrote.

Drengenberg said UL couldn't comment on the 32-year-old allegations because records do not extend that far back.

Call for notification

If an inspector has heard of the potential hazards of a Federal Pacific circuit breaker, it's through experience, Charvoz said, not through the federal government.

"There's a good chance that things will fail later," even if they've worked properly for decades, said Charvoz. "There are electricians out there who say, 'Don't change them, it's OK.' That's something that needs to be changed."

Dallas electricians and home inspectors almost always flag Federal Pacific breakers during inspections because they might be dangerous, home inspector Rudy Ringel said.

Whether people decide to replace the breakers is an issue for the home buyer and seller to determine; it's not mandatory.

Todd Holmes, a father of two, was remodeling his bathroom when the contractor redoing his electrical system suggested he replace his Federal Pacific electrical box, including the breaker.

"It's going to be \$2,000 or so, but we're getting it changed to be on the safe side," Holmes said. "It's the smartest thing to do."

IN THE KNOW: IS YOUR CIRCUIT BREAKER A FEDERAL PACIFIC STAB-LOK?

How can you tell if your home has a Federal Pacific Stab-Lok circuit breaker?

The faulty breakers would be inside a box in a wall of your home, probably in a closet or in the garage. Inside the panel door would be a label that says "Federal Pacific" or the letters "FPE." The flaws in the breaker are not visually apparent.

What should you do about it?

Experts say any Federal Pacific Stab-Lok breaker should be replaced. Breakers that have a white dot on the handle were manufactured after a redesign by Federal Pacific. Testing shows they are statistically less likely to fail, but experts still recommend replacement.

How much will this cost?

About \$2,000. Replacement should be made only by a qualified electrician.

SOURCE: Dallas Morning News research