



Arc-fault Circuit Interrupters

What are Arc-fault Circuit Interrupters (AFCIs)?

The 2008 *National Electrical Code*® (NEC®) requirement for AFCI protection considerably expands this fire prevention technology to the majority of circuits installed in new and renovated homes. The type of AFCI currently available commercially is a next-generation circuit breaker that not only provides the conventional safety functions, but its advanced design also rapidly detects potentially dangerous arcs and disconnects power in the circuit before a fire can start. Fire safety officials endorse AFCIs as a significant step forward in electrical fire safety.

Why should they be installed in homes?

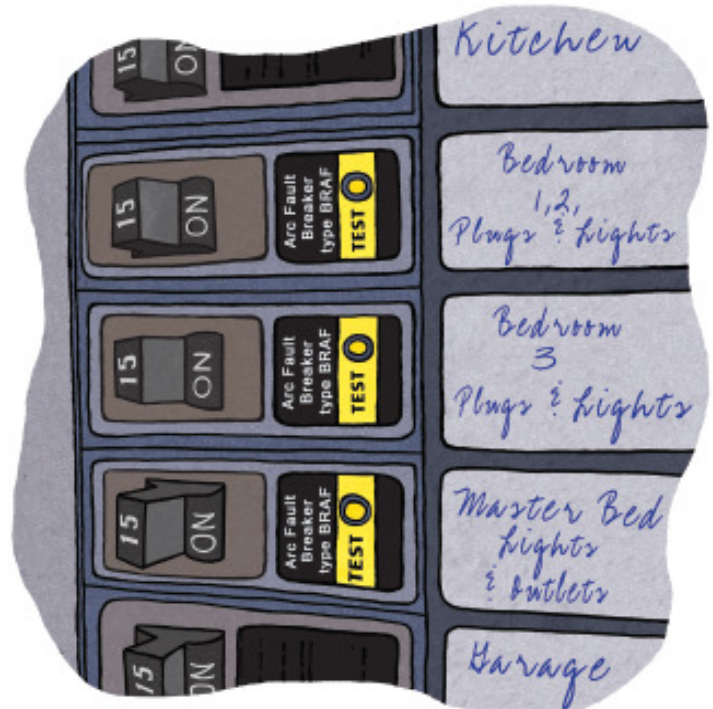
AFCIs will save lives and make homes safer. In 2005, there were an estimated 20,900 home structure fires that involved electrical distribution or lighting equipment and resulted in 500 civilian deaths, 1,100 civilian injuries, and \$862 million in direct property damage. Roughly half of these fires cited arcing as a factor contributing to ignition. Arcing is the principal electrical failure mode resulting in fire.

Why mandate AFCIs for newer homes when statistics show the majority of problems have occurred in older homes?

Fire safety officials recommend the use of AFCIs in all dwellings but recognize that installation is easier and more affordable during original construction. More importantly, every new home will become an older home with time. More years of use mean more opportunities for cords and wires in the house or in its electrical appliances to be damaged. Installation errors can occur at any point. AFCIs prevent such damage or errors from causing fires. Once installed, AFCIs provide protection for the life of the electrical system.

How do you know AFCIs will prevent fires and save lives?

Since 1999, AFCIs have been thoroughly field-tested. Underwriters Laboratories, the National Association of State Fire Marshals (NASFM), the U.S. Consumer Product Safety Commission, and many other experts have found AFCIs to be reliable and effective. By eliminating a significant source of electrically related fires, future statistics will demonstrate a reduction in fires of electrical origin.



Are AFCIs expensive?

The cost of the enhanced protection is directly related to the size of the dwelling and the number of circuits installed. Current retail prices of AFCI-type circuit breakers at several national building supply chains are in the range of \$35 to \$40 per unit. Even for larger homes with more circuits, the cost increase is insignificant compared to the total cost of the home and is mostly offset by the increased level of safety over the life of the equipment.

Do AFCIs interfere with smoke alarms and appliances, or trip unnecessarily?

AFCIs do not interfere with power supply reliability. These state-of-the-art devices identify problems that current circuit breakers are not designed to protect against, which can result in what appears to be an unexplained circuit breaker trip. By actually identifying these problems, residents are safer.

What is the NEC?

The NEC is the *National Electrical Code*. The NEC's mission is to provide practical safeguards from the hazards that arise from using electricity. It is the most widely adopted safety code for the built environment in the United States and the world, and it is the benchmark for safe electrical installations. The NEC is an evolving document, developed through an open consensus process. A new edition is issued every three years.