



Photo courtesy of John Watson

ESFI Addresses Hazards in Older Homes during National Electrical Safety Month

The National Fire Protection Association estimates that an average of 47,820 home electrical fires occur each year. These fires result in 455 civilian deaths, 1,518 civilian injuries and \$1.5 billion in property damage.

Many of these fires occur in homes built before 1970, which account to more than half of the nation's housing stock. These homes were built before many of the electronics and appliances we use today were invented. Today, the average home has more televisions than people and our growing dependence on energy heightens the risk of overburdening an older home's electrical system leading to fires or electrocutions.

ESFI recommends all homes over 40 years old undergo an electrical inspection by a licensed electrician to ensure the home's electrical system can handle modern demands. The inspector can also recommend updates to comply with the latest *National*

Electrical Code (NEC)[®] to make sure that the home takes advantage of the latest and greatest home safety technologies.

Although the requirements for home safety devices in the *NEC* only apply to new homes and renovations, these technologies can easily be retrofitted by a qualified electrician into any existing home electrical system to improve safety. These devices include arc-fault circuit interrupters (AFCIs), ground-fault circuit interrupters (GFCIs) and tamper-resistant receptacles (TRRs). In addition to installing these life-saving devices, there are safety precautions that should be taken for homes with aluminum wiring.

Arc-Fault Circuit Interrupters (AFCIs)

The U.S. Consumer Product Safety Commission estimates that AFCIs could prevent roughly 50% of the electrical fires that occur every year. An arc fault

Evolution of the American Home

Homes built today are dramatically different than they were 40 years ago. Not only are they larger, but they have more amenities that can severely stress your electrical system. The Electrical Safety Foundation International recommends all homes over 40 years old undergo an electrical inspection to ensure your home's electrical system can handle modern demands.

In 1973, 17% of U.S. homes had central A/C and 30% contained window units. Today about 65% of homes have central A/C and another 21% have window units.



The residential energy sector accounted for 25% of the total energy consumption in 2010, yet remained the least energy efficient largely due to the use of incandescent lamps.

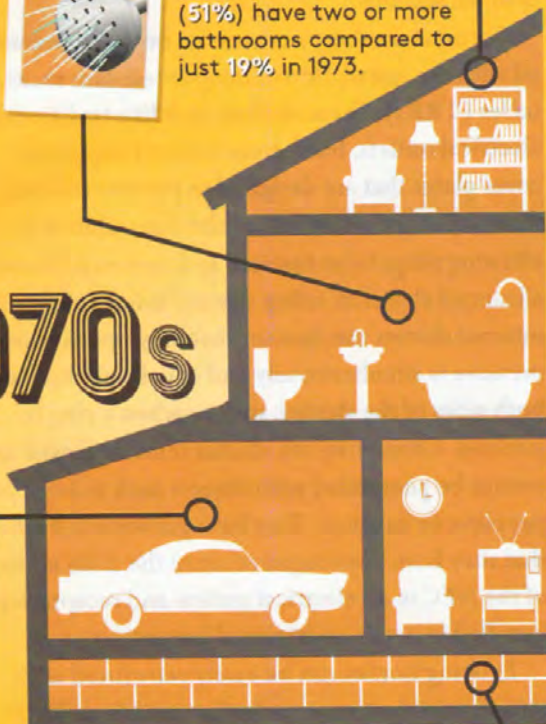


Over half of U.S. homes (51%) have two or more bathrooms compared to just 19% in 1973.



The median square footage of single-family homes built between 2005-2009 is 2,200. The median in the 1970s or earlier was 1,700 ft².

1970s



2010s



In 1973 48% of new homes had garages for 2 or more cars compared to 80% in 2008.



54% of homes in the U.S. had 3 or more TVs in 2009.

More than four in ten (44%) of the nation's housing stock was built before 1970.



A 2009 study found 26% of homes had a second refrigerator and that number is growing 1% per year.



is a dangerous electrical hazard caused by damaged, overheated, or stressed electrical wiring or devices. AFCIs provide a higher level of protection than a standard circuit breaker by detecting and removing the hazardous arcing condition before it becomes a fire hazard.

First introduced to the *NEC* in 1999, AFCIs were only required to be installed in bedrooms. Since then, the *NEC* has further expanded the use of AFCIs by encouraging their protection in every room of the house. The 2014 *NEC* provides a variety of options through which consumers can provide AFCI protection in accordance with requirements.

Since the probability of electrical fires increases with the age of the home, older homes with aging and deteriorating wiring systems can especially benefit from the added protection offered by these devices.

Ground-Fault Circuit Interrupters (GFCIs)

A ground fault is an unintentional electrical path between a power source and a grounded surface. This leakage in current usually occurs when an electrical appliance is damaged or wet, causing electrical current to flow outside of the circuit conductors.

Ground-fault circuit interrupters (GFCIs) are electrical safety devices that are designed to protect people from electric shock and electrocution by quickly shutting off power to the circuit if the electricity flowing into the circuit differs, even slightly, from that returning, indicating a loss of current.

First mandated in the 1971 edition, the *National Electrical Code (NEC)* has continually expanded its GFCI requirements to all kitchens, bathrooms, garages, basements, crawlspaces, and outdoors. Since their inclusion in the *NEC*, ground-fault circuit interrupters (GFCIs) have saved thousands of lives and have helped cut the number of home electrocutions in half.

If GFCIs were installed in older homes, experts suggest that 70 percent of the approximately 400 electrocutions that occur each year in the home could be prevented. Owners of older houses can retrofit their electrical system with \$15 GFCI outlets or have GFCI breakers, which cost about \$50, installed in the main breaker

panel. Portable GFCI adapters, which plug into regular wall receptacles, are also available for \$20 to \$40 and require no tools to install.

Tamper-Resistant Receptacles (TRRs)

Every year, more than 2,400 children—seven children a day—are treated at hospital emergency rooms for injuries caused by inserting foreign objects into electrical outlets. Statistics have confirmed that devices such as plastic outlet caps provide inadequate protection for young children, and can even pose a choking hazard. One study conducted by Temple University's Biokinetics Laboratory reported that 100% of children ages 2 to 4 years old were able to remove plastic outlet covers from the sockets in less than ten seconds.

Fortunately, these injuries can be easily prevented with the installation of tamper-resistant receptacles (TRRs). These devices look like traditional electrical outlets, but feature internal receptacle cover plates that are designed to prevent children from sticking objects into outlet slots while still allowing plugs to be inserted and removed. These advanced electrical safety devices feature an internal shutter mechanism that only opens when pressure is simultaneously and equally applied to both sides of the shutter, such as when a plug is inserted. Otherwise, the shutter remains closed and cannot be penetrated with objects such as keys, paper clips, or hairpins. They have proven so effective that they have been required since the 2008 edition of the *NEC* in all electrical outlets and receptacles installed in newly constructed homes.

Existing homes can be easily retrofitted with tamper-resistant receptacles for as little as \$2.00 per outlet. And just like AFCIs and GFCIs, they should be installed by a qualified electrician.

Aluminum Wiring

According to the CPSC, an estimated 2 million homes were built or remodeled between the late 1960s and mid-1970s with aluminum wiring due to a surge in copper prices. A national survey conducted by Franklin Research Institute for the U.S. Consumer Product Safety Commission showed that homes built before 1972, and wired with aluminum,

are 55 times more likely to have one or more wire connections at outlets reach "Fire Hazard Conditions" than homes wired with copper. There are a variety of options to help mitigate the risk of fire caused by aluminum wiring such as complete replacement to repairs at connections, and a qualified electrician should inspect the home to determine the home's unique risks and needs.

About ESFI

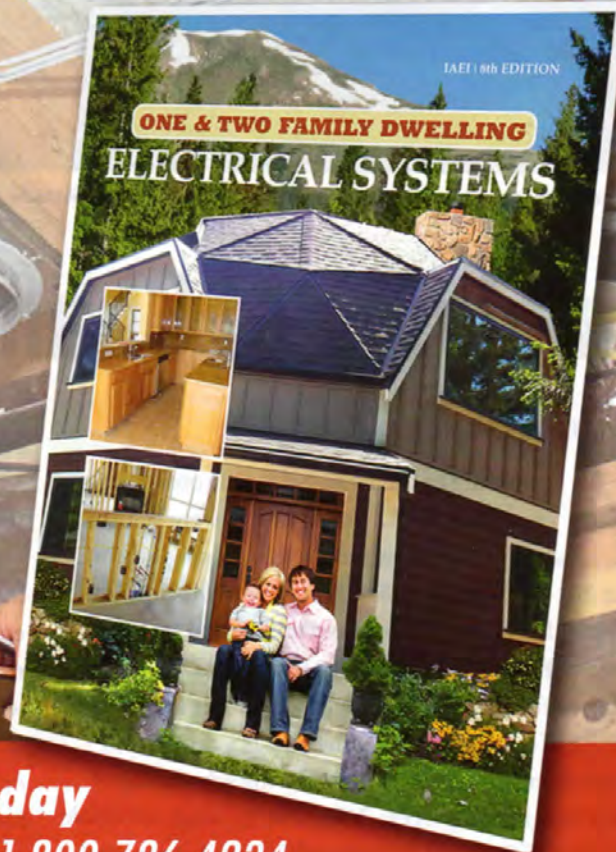
The Electrical Safety Foundation International

(ESFI) is a non-profit organization dedicated exclusively to promoting electrical safety in the home, school, and workplace. To commemorate National Electrical Safety Month, ESFI spearheads an annual campaign each May to educate key audiences about the steps that can be taken in order to reduce the number of electrically-related fires, fatalities, injuries, and property loss.

For more information about ESFI and National Electrical Safety Month, visit www.esfi.org.

One- & Two-Family Dwelling book is always useful at any job site inspection.

It's a must-have comprehensive guide updated to the 2011 NEC that explains the inspection, installation, and design of electrical systems in new and existing one-and two-family dwellings.



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