

# RETROFIT Improvements

## Install Arc Fault Circuit Interrupters

Making  
Homes  
Safer in  
Disasters

### Retrofit Opportunity

- Older homes are particularly susceptible to arcing, so replacement of appropriate circuit breakers with AFCIs should be a project taken on for safety's sake without any other remodeling agenda

### Purpose

- To detect unwanted electrical arcing and disconnect the electric current to that circuit before the arc starts a fire

### Benefits

- Prevent house fires caused by faulty electrical system or electronics

### Hazards

Wind



Rain



Flood



Seismic



Fire



Snow



### Summary

Arc fault circuit interrupters (AFCIs) are circuit breakers designed to detect unwanted arcing in the electrical wiring in a house. In many older homes, arcing faults are common culprits of house fires. Electrical arcing causes temperatures high enough to ignite nearby combustibles such as wood, paper, and carpets.

Arcing faults often occur in damaged or deteriorated wires and cords. Some causes of damaged and deteriorated wiring include puncturing of wire insulation from picture hanging or cable staples, poorly installed outlets or switches, cords caught in doors or under furniture, furniture pushed against plugs in an outlet, natural aging, and cord exposure to heat vents and sunlight.

Conventional circuit breakers only respond to overloads and short circuits; so they do not protect against arcing conditions that produce erratic current flow. An AFCI is selective so that normal arcs do not cause it to trip.

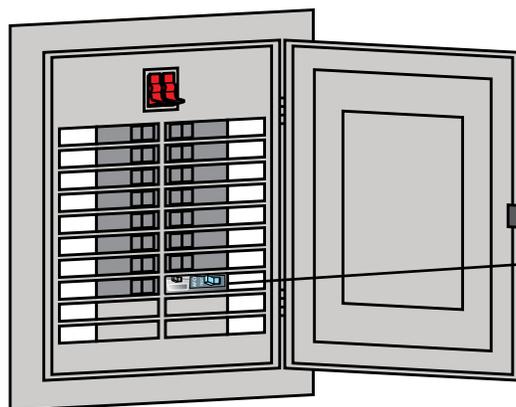
AFCIs cost \$40 for each 20 ampere circuit compared to \$5 for an overload breaker. An electrician unfamiliar with your electrical system will want to verify circuit locations which will increase labor hours and require more manpower; these additions could raise the installation cost of one AFCI from \$40 up to \$200. There will be an economy of scale to the installation cost when several AFCIs are installed in one visit. The number of AFCIs required will vary by house; usually at least one circuit serves each room with common area rooms like kitchens and family rooms often being served by several circuits.

Your contractor will be able to provide information on this retrofit improvement and other safety measures to consider, such as installing whole-house surge protection.

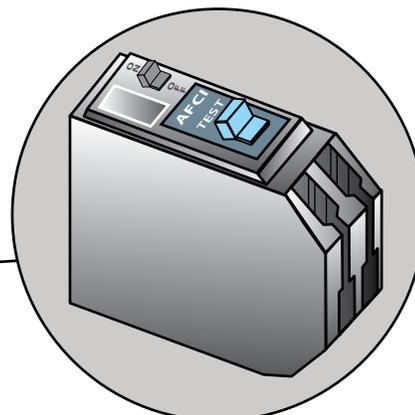
### Illustration

#### Retrofit

Circuit breaker panel box



Arc-fault circuit interrupter (AFCI)



## Potential Damage



Photo: [www.fema.gov](http://www.fema.gov)

## Key Steps

- If your house was built more than five years ago, inspect the circuit breaker panel box in your home.
- Look for circuit breakers labeled “AFCI”.
- If you do not see any circuit breakers labeled “AFCI”, hire a licensed electrician to upgrade the electric panel box with AFCIs.
- Look for places where you regularly use extension cords and install AFCIs on those circuits.
- Your contractor may have additional ideas on how to improve the safety of your home.
- For more details about this retrofit improvement, please refer to the list of Resources in the section below.

## Resources

Consumer Product Safety Commission, *AFCI Fact Sheet*

<http://www.cpsc.gov/cpsc/pub/pubs/afcifac8.pdf>

NAHB Research Center, *Why do I need arc-fault circuit interrupters, and how much do they cost?*

<http://www.toolbase.org/ToolbaseResources/level4FAQ.aspx?ContentDetailID=1427&BucketID=1&CategoryID=4>

NAHB Research Center, *Do electrical switches, connections, receptacles, and wiring need to be replaced after flooding?*

<http://www.toolbase.org/ToolbaseResources/level4FAQ.aspx?ContentDetailID=4084&BucketID=2&CategoryID=42>

