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Life-Saving AFCI's Gain Momentum in Electrical Construction

Arlington, Va. — Arc fault circuit interrupters (AFCIs), electrical safety devices designed to prevent fires caused by electrical arcs, may soon find their way into general purpose circuits throughout the home, rather than remain relegated to bedrooms.

The AFCI senses the particular signature of an arc – where electricity has to jump a gap – and acts immediately to shut off the circuit, thus depriving the hazard the opportunity to start a fire. Since many fire-related fatalities are caused by smoke inhalation when people are sleeping, this new protective technology became required for bedrooms in new residential construction in most areas beginning in 2002.

Supporters of AFCIs gained support to expand AFCI protection from residential bedrooms to general purpose circuits throughout entire dwellings in a surprise development at a recent meeting for the 2005 National Electrical Code. During “floor action,” the National Association of State Fire Marshals (NASFM) succeeded in passing a proposal for revision that had been rejected earlier in the Code process.

AFCIs detect dangerous arc faults, a type of electrical hazard that conventional overcurrent devices, which respond to overloads and short circuits, and ground fault circuit interrupters (GFCIs), which respond to shorts or ground faults, generally may not.

“For example, a wire that has come loose from an outlet or switch may create a low-energy electrical arc across the connection,” ESFI Executive Director Michael G. Clendenin explained. “Because current levels are so low, arcing faults do not necessarily create an overload that causes a traditional circuit breaker to trip or a fuse to blow, but

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AFCI EXPANSION IN CODE/ADD ONE

they do represent a serious fire hazard. The GFCI doesn't trip because the energy stays on its intended path through jumping the gap.”

Such low-energy arcs trigger fire hazards and threat to life when flammable materials such as cloth, paper and wood in walls are present. These arcs often occur at the connections in residential electrical systems at outlets and switches, behind walls. Such hidden electrical fires can spread rapidly, undetected by smoke alarms, reducing the chances of survival.

Although most fire deaths occur in bedrooms, statistics from the NASFM indicate that 85 percent of electrical fires originate in other areas of the home. The Consumer Product Safety Commission (CPSC), noted that more than 40,000 fires are attributed to wiring in the home, leading to hundreds of deaths and many more injuries annually. Arcing, CPSC noted, is a leading cause of these tragic, domestic fires. This new action recognizes the necessity of providing protection for the entire home.

Still Procedural Hurdles

The 2002 National Electrical Code first required AFCIs for all branch circuits supplying 125-volt, 15- and 20-ampere outlets in dwelling unit bedrooms. This includes receptacles, lighting, and other devices such as hard-wired smoke detectors. The proposal to require AFCIs on general-purpose circuits must be confirmed by a National Electrical Code panel in July.

For more information on electrical safety, please visit the ESFI web site at www.electrical-safety.org., the CPSC's site, www.cpsc.gov, and the NASFM's site, www.firemarshals.org.

Founded in 1994 through a joint effort between Underwriters Laboratories Inc. (UL), the U.S. Consumer Product Safety Commission (CPSC) and the National Electrical Manufacturers Association (NEMA), the Electrical Safety Foundation International (ESFI) is North America's only non-profit organization dedicated exclusively to promoting electrical safety in the home, school and workplace. ESFI is a 501(c)(3) organization funded by electrical manufacturers and distributors, independent testing laboratories, utilities, safety and consumer groups, and trade and labor associations. ESFI sponsors National Electrical Safety Month each May, and engages in public education campaigns and proactive media relations to help reduce property damage, personal injury and death due to electrical accidents. The Foundation does not engage in code or standard writing or lobbying and does not solicit individuals.

For additional electrical safety information, visit the Foundation's web site at www.electrical-safety.org or call 703-841-3229.

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