AGENDA

# UNIFORM BUILDING CODE COMMISSION
# ELECTRICAL ADVISORY COMMITTEE

April 9, 2015 1:30
Room 464
160 E 300 S Salt Lake City, UT

*This agenda is subject to change up to 24 hours prior to the meeting.*

1. Approve minutes from March 12, 2015 meeting
2. Review electrical portion of 2015 IRC

Next Scheduled Meeting: as needed

Please call Sharon at 801-530-6163 or email ssmalley@utah.gov if you do not plan on attending this meeting.

In compliance with the Americans with Disabilities Act, individuals needing special accommodations (including auxiliary communicative aids and services) during this meeting should notify Dave Taylor, ADA Coordinator, at least three working days prior to the meeting. Division of Occupational and Professional Licensing, 160 East 300 South, Salt Lake City UT 84115, Phone 530-6628 or toll-free in Utah only 866-275-3675.

UNIFORM BUILDING CODE COMMISSION

ELECTRICAL ADVISORY COMMITTEE
MEETING
March 12, 2015 1:30
Room 464 Heber M Wells Bldg
160 E 300 S Salt Lake City, UT

MINUTES

STAFF
Dan S Jones, Bureau Manager
Sharon Smalley, Board Secretary

ELECTRICAL ADVISORY COMMITTEE MEMBERS

| | |
|---|---|
| Christopher Jensen | David Wesemann (absent) |
| Mike Thomas (excused) | Gary Beckstrand |
| Chris Joyal, Liaison | Rhett Butler |
| David Winger | |

VISITORS

| | |
|---|---|
| MINUTES | A motion was made by Chris Jensen to approve the minutes from the October 30, 2014 meeting as written. The motion was seconded by Rhett Butler and passed unanimously.<br><br>Gary Beckstrand gave an update on the adoption of the 2014 NEC. He met with Ross Ford of the Home Builders Association in connection with the electrical code. |
| REVIEW ELECTRICAL PORTION OF 2015 IRC | Gary Beckstrand passed out a recommendation from the National Association of Home Builders on their recommended state and local amendments to the 2014 edition of the NEC. A motion was made by Chris Joyal to review their recommendations as an agenda item at the next meeting. The motion was seconded by Rhett Butler and passed unanimously.<br><br>The committee reviewed the one current amendment for the electrical portion of the IRC. Chris Jensen volunteer to put together a list of significant changes for the electrical portion of the 2015 IRC. Dave Winger will help with the |

development of the list of changes and also develop a list for the cross references to the NEC.

The meeting adjourned at 2:19.

*Note: These minutes are not intended to be a verbatim transcript but are intended to record the significant features of the business conducted in this meeting. Discussed items are not necessarily shown in the chronological order they occurred.*

| NEC section | IRC Section | Code Text | Summary of Change | Cost |
|---|---|---|---|---|
| 210.8(A)(7) | E3902.7 Sink Receptacles | 125-volt, single-phase, 15- and 20-ampere receptacles that are located within 6 feet of the outside edge of a sink shall have ground fault circuit interrupter protection for personnel. | The exception for kitchen sinks was removed. Now the disposal receptacle, and any other receptacles located with in 6' of the sink require GFCI protection. | |
| 210.8(A)(9) | E3902.8 Bathtub and shower stall receptacles | 125-volt, single phase, 15- and 20-ampere receptacles that are located within 6 feet of the outside edge of a bathtub or shower stall shall have ground fault circuit interruper protection for personnel | The definition of bathroom in the code indicates that a basin is required before an area is designated as a bathrrom. There are rooms that contain a bathtub or shower stall that do not meet the definition of a bathroom but GFCI protection is still needed for safety | |
| 210.8(A)(10) | E3202.9 Laundry areas | 125-volt, single phase, 15- and 20-ampere receptacles installed in laundry areas shall have ground fault circuit interruper protection for personnel | All dwelling unit "laundry areas" are now required to have GFCI protection for 120 volt 15 and 20 amp receptacles regardless of the presence of a sink. Appliances can experience an "end of life" failure and can pose a shock hazard if the leakage current from an aging appliance exceeds 4 milliamps. | |
| 210.8(D) | E3902.10 Kitchen dishwasher branch circuit. | Ground fault circuit interrupter protection shall be provided for outlets that supply dishwashers in dwelling unit locations. | GFCI Protection Is now required for all outlets that supply dishwashers installed in dwelling unit kitchens. This includes both cord and plug connected and hardwired dishwashers. Appliances can experience "end of life" failures that can result in increased risk of electrical shock. | |
| 210.12 | E3902.15 Location of arc-fault circuit interrupter protection | Arc-fault circuit interrupters shall be installed in readily accessible locations | This new change aligns with the "readily accessible" requirements for GFCI devices. There are new provisions for use of AFCI receptacles for replacements and circuit extensions. | |

| | | | |
|---|---|---|---|
| 210.12(A) | E3902.16 Arc-fault circuit interrupter protection | Branch circuits that supply 120-volt, single phase, 15- and 20- ampere outlets installed in Kitchens, family rooms, dining rooms, iving rooms, parlors, libraries, dens, bedrooms, sunrooms, recreation rooms, closets, hallways, laundry areas and similar rooms or areas shall be protected by any of the following: | "Kitchens" and "Laundry areas" were added to the list of areas requiring AFCI protection. There were also several new methods added to provide the required AFCI protection. The expanded list is shown in the IRC and NEC. |
| 210.12(B) Ex. | E3902.17 AFCI protection for branch circuit extensions or modifications. Exception | AFCI protection shall not be required where the extension of the existing conductors is not more than 6 feet in length and does not include any additional outlets or devices. | This new exception will permit branch circuit extensions of up to 6' feet to be done without requiring the branch circuit to be protected by an AFCI device. The 2011 NEC mandated that any modifications of a branch circuit would require AFCI protection of the circuit supplied outlets that were required to be AFCI protected. This is a relaxation of the rules and can be a significant cost savings when doing a panel change or service change. |
| 210.52(G)(1)(2)(3) | E3901.9 Basements, garages and accessory buildings. | Not less than one receptacle outlet, in addition to any provided for specific equipment, shall be installed in each separate unfinished portion of a basement, in each attached garage, and in each detached garge or accessory building that is provided with electric power. The branch circuit supplying the receptacle(s) in a garage shall not supply outlets outside of the garage and not less than one receptacle outlet shall be installed for each motor vehicle space. | The major change to this section is that circuits supplying receptacles in the garage are now no longer permitted to supply other outlets outside of the garage. Also there is now a requirement that there be a receptacle installed for each vehicle space. |

| | | | |
|---|---|---|---|
| 310.15(B)(7) | E3603.1.1 & E3603.1.2 | For services rated at 100 through 400 amperes, the service conductors supplying the entire load associated with a one-family dwelling, or the service conductors supplying the entire load associated with an individual dwelling unit in a two-family dwelling, shall have an ampacity of not less than 83 percent of the service rating. | The residential main power feeder Table that used to be located in this section has been eliminated and replaced with an 83% adjustemnt factor. This change now makes it possible to adjust the ampacity of the main power feeder and service conductors for bundling or ambinet temperature. The 83% factor is what the old Table was based on so if no other ampacity adjustments are necessary the 83% adjustment will yeild the same size conductors as the old table did. So there are 2 sections listed in the IRC one deals with the service conductors and the other the main power feeder conductors. |
| 314.25, 404.10(B), 406.5(A) & (B) | E3906.9 , E4001.10, E4002.6 | Outlet boxes shall be effectively closed with a cover, faceplate or fixture canopy. Screws used for the purpose of attaching covers, or other equipment to the box shall be either machine screws matching the thread gauage or size that is intergral to the box or shall be in accordance with the manufactures instructions. | This code section will now prohibit coarse threaded "drywall" or wood screws from being used to secure the canopy or cover to a box. This change also went into the sections that address switches and receptacles. The use of "drywall" screws into plastic boxes can damage the box and not support the devices and covers correctly. The use of the proper screws in necessary for a good installation. |
| 404.2(c) | E4001.15 Switches Controlling Lighting Loads. | (See IRC Section for exact text) | This section was revised to relax the requirements for having a grounded neutral conductor at all switch locations. There are now 7 specific provisions where a grounded neutral would not be required at a switch location. |

| | | | |
|---|---|---|---|
| 406.9(B)(1) | E4002.9 15- and 20- ampere receptacles located in wet locations. | Where installed in a wet location, 15- and 20-ampere, 125- and 250- volt receptacles shall have an enclosure that is weatherproof whether or not the attachement plug cap is inserted. An outlet box hood installed for this purpose shall be listed and identified as "extra-duty". 15- and 20 ampere, 125- and 250- volt nonlocking receptacles installed in wet locations shall be listed as weather resistant type. | This code section will now require that "Bubble" covers or in-use covers be listed as extra duty. The extra duty standard will make the "Bubble" covers stronger and more resistant to breakage. |

# National Association of Home Builders
# Recommended State & Local Amendments to the
# 2014 Edition of the National Electrical Code (NEC)

**Issue:** Tamper-resistant Receptacles

**2014 NEC Section:** Section 406.12 Tamper-resistant Receptacles

**Recommended Amendment:** Delete text as follows

~~**406.12 Tamper-Resistant Receptacles.** Tamper-resistant receptacles shall be installed as specified in 406.12(A) through (C).~~
~~**(A) Dwelling Units.** In all areas specified in 210.52, all nonlocking-type 125-volt, 15- and 20-ampere receptacles shall be listed tamper-resistant receptacles.~~
~~**(B) Guest Rooms and Guest Suites of Hotels and Motels.** All nonlocking-type 125-volt, 15- and 20-ampere receptacles located in guest rooms and guest suites of hotels and motels shall be listed tamper-resistant receptacles.~~
~~**(C) Child Care Facilities.** In all child care facilities, all nonlocking-type 125-volt, 15- and 20-ampere receptacles shall be listed tamper-resistant receptacles.~~
~~*Exception to (A), (B), and (C): Receptacles in the following locations shall not be required to be tamper-resistant:*~~
~~*(1) Receptacles located more than 1.7 m (5 1/2 ft) above the floor.*~~
~~*(2) Receptacles that are part of a luminaire or appliance.*~~
~~*(3) A single receptacle or a duplex receptacle for two appliances located within dedicated space for each appliance that, in normal use, is not easily moved from one place to another and that is cord-and-plug-connected in accordance with 400.7(A)(6), (A)(7), or (A)(8).*~~
~~*(4) Nongrounding receptacles used for replacements as permitted in 406.4(D)(2)(a).*~~

**Reason:**

This new requirement is not based on sound technical information that adequately substantiates that such a requirement will result in protecting small children from burns or injury. During the previous code revision cycle to the *National Electrical Code*, the supporting documentation for the proposal was based on the summarization of several National Electronic Injury Surveillance System reports from 1991-2001. The NEISS system gathers its data by sampling a group of monitored hospitals for the total number of injuries treated. They then take these figures and calculate the estimated national average. The NEISS reports do not provide any supporting information of where the child was located at the time the injury occurred, much less that that all

incidents occurred in dwelling units or if any child safety devices were present at the time the injury occurred.There is no scientific research available which has proven tamper-resistant receptacles are more effective than other safety devices that are currently available on the market. The fact sheet, produced by the National Fire Protection Association, states that TR receptacles are preferred over plastic safety caps for the reason that the caps **may** be lost and **may** be a choking hazard for some ages.

Based on the supporting information given at the time of the proposal, it is still unclear why dwellings were singled out among all other related occupancies were children are found and often left unattended. In the substantiation it was noted that these devices are designed to protect children when their parents or guardians turn away for that split moment when a tragedy could occur. This type of tragedy could occur in any number of occupancies that children are present, not just in one- and two-family dwellings. As written the proposal is too broad in scope and requires tamper-resistant receptacles in areas of the home that should not pose a threat to unattended children. Receptacles that are not readily accessible or that are dedicated for equipment should not be required to be tamper resistant. Examples of these areas that tamper-resistant receptacles should not be required are those found in attics, crawlspaces, mechanical rooms, behind equipment such as dishwasher, stoves, refrigerators, countertops, etc. To require tamper-resistant receptacles in these and other areas, not accessible to children under the age 4, shows a complete lack of forethought of the code requirement and a lack of common sense on the part of the committee that approved the proposal. To arbitrarily require without any supporting statistics or data linking these areas to any recorded instance of an injury, shows a complete lack of due process.

Another concern that was shared by many on the technical review committee was the amount of force that must be applied to insert cords into the tamper-resistant device and how it will affect the elderly community. The devices are designed in a way that the springs will not open unless the prongs are properly aligned with the shutters and are receiving equal amounts of pressure. Many on the panel voiced their opinions that there was a lack of product testing showing whether there will be an impact to the aging community's ability to use the new devices.

NAHB urges all jurisdictions that will be adopting the 2014 edition of the National Electrical Code to amend by deleting Article 406.11.

**Notes/additional background:**

During the 2008 revision Cycle, the National Electrical Manufacturers Association submitted the proposal to require tamper-resistant receptacles in all areas of a dwelling as indicated in Article 210.52 of the NEC©. Over 29 negative comments were submitted in response to the proposal and all 29 comments were rejected by the technical committee. The negative comments were submitted by electrical contractors, electrical inspectors, and some manufactures. Below is a list concerns that were raised by negative comments:

1. The required force to insert cords into the device may prove too much for the elderly or disabled.

2. There is no scientific data directly comparing current available safety devices to tamper-resistant receptacles to support the claim that TR are more effective and will reduce the number of accidents.
3. That the proponent should provide data listing the areas of the dwelling where injuries have occurred, thereby proving the need for tamper receptacle in areas such as attics, crawlspaces, mechanical rooms, countertops and other areas where the receptacles are normally out of reach of children.
4. At the time the proposal was approved, it was unknown whether any manufacturers were producing tamper-resistant devices that were compatible or integrated with arc-fault and ground-fault circuit interrupters.
5. The supporting documentation submitted by the proponent clearly stated "the results of these incidents are rarely fatal", and that further research should be conducted along with more product development before any such mandate should be implemented.
6. That the technical committee should remember, the code is not able to protect each person, in every situations, from every conceivable harm and should not be used as a tool to differ the responsibilities of the parent or caregiver who should be monitoring the children.
7. That the substantiation lacked any credible justification for disallowing the use of plastic safety caps other than claiming that they could be lost or become a choking hazard.
8. Why limit tamper-resistant receptacles to dwellings? There are several other occupancies that do not require these devices, yet children are present and the receptacles are accessible.
9. Tamper-resistant receptacles should be an option for dwellings that children occupy and not mandatory for dwellings where children are not present.

**Staff Contact:** Steven Orlowski - sorlowski@nahb.com - 800-368-5242, ext. 8303

# National Association of Home Builders Recommended State & Local Amendments to the 2014 Edition of the National Electrical Code (NEC)

**Issue:** Foyers

**2014 NEC Section:** Section 210.52(I)

**Recommended Amendment:** Delete text as follows

~~**(I) Foyers.** Foyers that are not part of a hallway in accordance with 210.52(H) and that have an area that is greater than 5.6 m2 (60 ft2) shall have a receptacle(s) located in each wall space 900 mm (3 ft) or more in width. Doorways, door-side windows that extend to the floor, and similar openings shall not be considered wall space.~~

**Reason:** During the code revision cycle to the 2011 *National Electrical Code,* the requirement for additional receptacles in foyers, were brought into the code under the auspice that this would reduce the number of homeowners who run extensions cords under rugs to power lamps in foyers. The proposal remains in the 2014 NECThe proponent failed to provide any statistics on the number of incidents that had resulted in harm to the occupants or the number of fires that are caused by such actions. In addition, the proponent at no time offered any information to determine what the size limitations or receptacle spacing requirements would be for foyers. The technical committee established an arbitrary minimum size of 60 sf and receptacle wall spacing requirement without referencing any empirical data, studies, or common house design plans.

In addition, the National Electrical Code does not define what a foyer entails nor does it differentiate a foyer from an entrance hallway. By lacking a definition, this will lead to many disputes in the field as inspectors will now have to determine whether or not the area around the main entrance is a foyer or a hallway, leading to inconsistency and disruption in the building process.

**Notes/additional background:**

**Staff Contact:** Steven Orlowski - sorlowski@nahb.com - 800-368-5242, ext. 8303

# National Association of Home Builders
# Recommended State & Local Amendments to the
# 2014 Edition of the National Electrical Code (NEC)

**Issue:** Arc-Fault Circuit-Interrupter Receptacles

**2014 NEC Section:** Section 406.4 (D)(4) Arc-Fault Circuit-Interrupter Protection

**Recommended Amendment:** Delete text as follows

~~**406.4(D) (4) Arc-Fault Circuit-Interrupter Protection.** Where a receptacle outlet is supplied by a branch circuit that requires arc-fault circuit-interrupter protection as specified elsewhere in this *Code*, a replacement receptacle at this outlet shall be one of the following:~~
~~(1) A listed outlet branch-circuit type arc-fault circuit interrupter receptacle~~
~~(2) A receptacle protected by a listed outlet branch-circuit type arc-fault circuit-interrupter type receptacle~~
~~(3) A receptacle protected by a listed combination-type arc-fault circuit-interrupter type circuit breaker~~
~~This requirement becomes effective January 1, 2014.~~

**Reason:**

There was a time when manufacturers would have been called out on using the national model code to promote a product or give them a market advantage on a technology that they had the sole capability to produce, sadly this is becoming the norm. This new provision will require anytime an existing receptacle becomes damaged or needs to be replaced, the replacement receptacle must either be protected by an AFCI breaker or be a listed AFCI receptacle. At this time only one manufacturer is rumored to have produced, but it is not commercially available. Several comments were submitted requesting the technical committee to reject this proposal based on the fact that the technology for these devices did not exist, much less were there any devices that had been listed by any testing agency meeting this requirement.

Other reasons given by well respected members of several other technical committees included the fact that many common and acceptable wiring techniques in existing homes could create problems and would be incompatible with an AFCI receptacle or AFCI breakers. For example many existing panelboards cannot accommodate an AFCI breaker. This means if a homeowner needed to replace a single broken receptacle in the home and the AFCI receptacle are still not available, they would then have to replace the entire panelboard and all the associated breakers within the dwelling. Another problem would arise with existing homes that were wired using multiwire branch circuits throughout which cannot be feed by a typical AFCI Breaker. A huge expense to meet a requirement that was not based on any significant technical

substation regarding the number of fires or injuries would be diverted. Until these devices and similar technology which are underdevelopment are available, listed by a nationally recognized testing agency and proven to perform in accordance with the claims made by manufactures, we urge the removal of this requirement from the 2014 National Electrical Code.

**Staff Contact:** Steven Orlowski - sorlowski@nahb.com - 800-368-5242, ext. 8303

# National Association of Home Builders
# Recommended State & Local Amendments to the
# 2014 Edition of the National Electrical Code (NEC)

**Issue:** Arc-Fault Receptacles

**2014 NEC Section:** Section 210.12 (B)

**Recommended Amendment:** Delete text as follows

~~**210.12 Arc-Fault Circuit-Interrupter Protection.** Arc-fault circuit-interrupter protection shall be provided as required in 210.12(A) (B), and (C). The arc-fault circuit interrupter shall be installed in a readily accessible location.~~
~~**(A) Dwelling Units.** All 120-volt, single-phase, 15- and 20-ampere branch circuits supplying outlets or devices installed in dwelling unit kitchens, family rooms, dining rooms, living rooms, parlors, libraries, dens, bedrooms, sunrooms, recreation rooms, closets, hallways, laundry areas, or similar rooms or areas shall be protected by any of the means described in 210.12(A)(1) through (6):~~
~~(1) A listed combination-type arc-fault circuit interrupter, installed to provide protection of the entire branch circuit~~
~~*(2)* A listed branch/feeder-type AFCI installed at the origin of the branch-circuit in combination with a listed outlet branch-circuit type arc-fault circuit interrupter installed at the first outlet box on the branch circuit. The first outlet box in the branch circuit shall be marked to indicate that it is the first outlet of the circuit.~~
~~(3) A listed supplemental arc-protection circuit breaker installed at the origin of the branch circuit in combination with a listed outlet branch-circuit type arc-fault circuit interrupter installed at the first outlet box on the branch circuit where all of the following conditions are met:~~
~~a. The branch-circuit wiring shall be continuous from the branch-circuit overcurrent device to the outlet branch-circuit arc-fault circuit interrupter.~~
~~b. The maximum length of the branch-circuit wiring from the branch-circuit overcurrent device to the first outlet shall not exceed 15.2 m (50 ft) for a 14 AWG conductor or 21.3 m (70 ft) for a 12 AWG conductor.~~
~~c. The first outlet box in the branch circuit shall be marked to indicate that it is the first outlet of the circuit.~~

(4) A listed outlet branch-circuit type arc-fault circuit interrupter installed at the first outlet on the branch circuit in combination with a listed branch-circuit overcurrent protective device where all of the following conditions are met:

a. The branch-circuit wiring shall be continuous from the branch-circuit overcurrent device to the outlet branch-circuit arc-fault circuit interrupter.

b. The maximum length of the branch-circuit wiring from the branch-circuit overcurrent device to the first outlet shall not exceed 15.2 m (50 ft) for a 14 AWG conductor or 21.3 m (70 ft) for a 12 AWG conductor.

c. The first outlet box in the branch circuit shall be marked to indicate that it is the first outlet of the circuit.

d. The combination of the branch-circuit overcurrent device and outlet branch-circuit AFCI shall be identified as meeting the requirements for a system combination–type AFCI and shall be listed as such.

(5) If RMC, IMC, EMT, Type MC, or steel-armored Type AC cables meeting the requirements of 250.118, metal wireways, metal auxiliary gutters, and metal outlet and junction boxes are installed for the portion of the branch circuit between the branch-circuit overcurrent device and the first outlet, it shall be permitted to install a listed outlet branch-circuit type AFCI at the first outlet to provide protection for the remaining portion of the branch circuit.

(6) Where a listed metal or nonmetallic conduit or tubing or Type MC cable is encased in not less than 50 mm (2 in.) of concrete for the portion of the branch circuit between the branch-circuit overcurrent device and the first outlet, it shall be permitted to install a listed outlet branch-circuit type AFCI at the first outlet to provide protection for the remaining portion of the branch circuit.

*Exception: Where an individual branch circuit to a fire alarm system installed in accordance with 760.41(B) or 760.121(B) is installed in RMC, IMC, EMT, or steelsheathed cable, Type AC or Type MC, meeting the requirements of 250.118, with metal outlet and junction boxes, AFCI protection shall be permitted to be omitted.*

Informational Note No. 1: For information on combination-type and branch/feeder-type arc-fault circuit interrupters, see UL 1699-2011, *Standard for Arc-Fault*

~~*Circuit Interrupters.* For information on outlet branchcircuit type arc-fault circuit interupters, see UL Subject 1699A, *Outline of Investigation for Outlet Branch Circuit Arc-Fault Circuit Interrupters*. For information on system combination AFCIs, see UL Subject 1699C, *Outline of Investigation for System Combination Arc-Fault Circuit Interrupters*.~~

~~Informational Note No. 2: See 29.6.3(5) of *NFPA 72* 2013, *National Fire Alarm and Signaling Code*, for information related to secondary power supply requirements for smoke alarms installed in dwelling units.~~

~~Informational Note No. 3: See 760.41(B) and 760.121(B) for power-supply requirements for fire alarm systems.~~

~~**(B) Branch Circuit Extensions or Modifications — Dwelling Units.** In any of the areas specified in 210.12(A), where branch-circuit wiring is modified, replaced, or extended, the branch circuit shall be protected by one of the following:~~

~~(1) A listed combination-type AFCI located at the origin of the branch circuit~~

~~(2) A listed outlet branch-circuit type AFCI located at the first receptacle outlet of the existing branch circuit~~

~~*Exception: AFCI protection shall not be required where the extension of the existing conductors is not more than 1.8 m (6 ft) and does not include any additional outlets or devices.*~~

~~**(C) Dormitory Units.** All 120-volt, single-phase, 15- and 20-ampere branch circuits supplying outlets installed in dormitory unit bedrooms, living rooms, hallways, closets, and similar rooms shall be protected by a listed arc-fault circuit interrupter meeting the requirements of 210.12(A)(1) through (6) as appropriate.~~

**Reason:** According to the May 2010 Home Electrical Fires Report (John R. Hall, jr.), annually there are an estimated 15,790 home structure fires were the result of wiring and related equipment. For the past decade NAHB has argued that the mandatory requirement for Arc-fault Circuit Interrupters has been fraught with invalidated research study and testing procedures that has yet been able to justify any effectiveness of these devices preventing fires originated by an arc fault. NAHB has continuously attempted to remove the AFCI requirement from the National Electrical Code, repeatedly showing that these devices do not pass the litmus test when you consider the annual installation cost compared to the estimated direct and societal cost associated with fires in the branch circuit wiring. The Code Panel 2 has continuously dismissed NAHB and other AFCI opponent's arguments without providing any justified technical or statistical evidence that there have been any fires that were prevented by the inclusion of these devices. The panel continues to stand by the requirements and expanded their use in one- and two- family dwellings, arguing that even though they know these devices may only prevent 50% of fires that

are the result of arcing, that they need to remain in the code for fire safety even if they cannot validate that there have been any fires averted by these devices.

The purpose of the National Electrical Code is to provide practical safeguarding of persons and property from hazards arising from the use of electricity, not to be used as a tool to promote products that have not been proven to be an effective safeguard against a perceived problem. It's extremely easy for the committee to continuously reject these proposals and snub off the technical arguments presented by NAHB and others saying "the proposal lacks sufficient data" or "the substantiation presented is unjustified". The simple fact is there are no statistics that support the effectiveness of AFCI's, because there are no organizations out there trying to prove they work.

Under the new NFIRS version 5.0 which has changed data classification, definitions and rules for reporting, you will see the number of fire reported as being associated with branch wiring is approximately 9,070 fires annually, where the AFCI presumably could prevent the fire. These fire resulted in approximately $293million dollars. In previous versions of the NFIRS and NFPA reports, these types of fires were lumped together, giving larger numbers that were used in previous cost benefit analysis and were showing negligible benefits over cost. Using the same cost benefit formula from the 2003 CPSC cost model analysis and using the numbers from the 2010 NFPA report, the estimated cost to society for these types of residential fires is $913 million dollars, less than half of what was previously estimated by CPSC. There are typically 20 (twenty) 120-volt, single phase, 15- and 20-ampere branch circuits in each one- & two-family dwelling unit, and 10 in each multifamily dwelling unit. Using these numbers, there will be approximately 33,128,260 AFCI's in one- and two- family dwellings and 4,136,640 for multifamily units, for a total of 37,264,900 AFCI's. Using a wholesale cost of $41.20 per breaker, marked-up the industry standard percentage of 66%, produces a cost per breaker of $68.32 to the home owner. In all, the average annual total cost to the public for the mandatory installation of AFCI's will be $2,548,621,040 ($1,535,313,880 wholesale). That is 2 BILLION, 548 MILLION, 621 THOUSAND, and 40 DOLLARS. Using current fire loss data society will be spending $2,548,621,040 per year to cover losses of only $913,000,000. That means spending 2.8 times the amount of money that would be loss if the devices were not installed, and that is if the devices work 100% of the time. These figures are just the cost for new construction, not taking into account the million of devices that are now required to be installed in existing housing stock in accordance with Section 406.3(D)(4).

**Staff Contact:** Steven Orlowski - sorlowski@nahb.com - 800-368-5242, ext. 8303