SOUTH CAROLINA BUILDING CODES COUNCIL
2021 INTERNATIONAL RESIDENTIAL CODE
MEETING MATERIALS
OCTOBER 6, 2021

2021 Code Section: R202 Definitions

Modification: A definition of "Accepted Engineering Practice" was added

The new definition states:

Accepted Engineering Practice – The performance design of structures and/or structural elements that vary from prescriptive design methods of this code. Such design shall be made with accepted design standards by a South Carolina licensed Architect or Engineer as permitted by existing state law.

Reason: To provide a clear definition and uniform interpretation of the phrase

Proponent: Coastal Code Enforcement Association of South Carolina

Previous Code Cycles	Previous Modification Number	Previous Code Section
IRC 2018	IRC 2018 01	R202 Definitions
IRC 2015	IRC 2015 01	R202 Definitions
IRC 2012	IRC 2012 01	R202 Definitions

Comments: No changes in 2021 IRC.

7/27 Study Committee Recommendation: Support approval

South Carolina Department of Labor, Licensing and Regulation
South Carolina Building Codes Council
110 Centerview Dr • Columbia • SC • 29210
P.O. Box 11329 • Columbia • SC • 29211-1329
Phone: 803-896-4688 • contact.bcc@llr.sc.gov • Fax: 803-896-4814
llr.sc.gov/bcc

2021 BUILDING CODE MODIFICATION REQUEST FORM

Requirements:

- All requests must be submitted by September 22, 2021.
- Each request for code modification must be submitted separately.
- A cover letter from the local jurisdiction or professional association stating that the individual is authorized to present the proposed amendment; and verification that the proposed amendment has the support of at least a majority of the members of the board or council governing the local jurisdiction or professional association proposing the modification.
- Sufficient test information, studies, data, or other documentation that would be necessary to fully explain and justify the proposed amendment
- For local modification requests only: the physical or climatological basis for the request and the reason that the suggested change would correct the condition.
- A local jurisdiction or professional association shall not propose a modification which will amend, suspend, eliminate or supersede an existing statute, policy, rule or regulation of any state or federal agency per S.C. Regulation 8-240 (H).
- **A completed modification request must be received with all required documentation before it will be reviewed.**

☒ Statewide Modification

☐ Local Modification: _____

(List all jurisdictions that apply.)

Association/Jurisdiction: Home Builders Association of South Carolina

Address: 625 Taylor Street (Street) Columbia (City) SC (State) 29201 (Zip)

Name: Mark Nix Title/Position: Executive Director

Phone No.: [redacted] Email Address: [redacted]

Please select the applicable code to be modified:

2021 International Residential Code

Please list the exact code section, table, figure, or appendix to be modified, and attach a photocopy of the applicable code section: Chapter 2 Definitions - Crawl Space

Code section as modified:
(Please strike through language being removed, and put language to be added in parentheses. Use additional pages as needed.)

Crawl Space: An underfloor space that is not a basement. *Spaces under decks and porches that do not contain mechanical equipment are not to be considered crawlspaces.*

8/19 Study Committee Recommendation: Support approval

South Carolina Department of Labor, Licensing and Regulation
South Carolina Building Codes Council
110 Centerview Dr • Columbia • SC • 29210
P.O. Box 11329 • Columbia • SC • 29211-1329
Phone: 803-896-4688 • contact.bcc@llr.sc.gov • Fax: 803-896-4814
llr.sc.gov/bcc

IRC 2021-3

2021 BUILDING CODE MODIFICATION REQUEST FORM

Requirements:

- All requests must be submitted by September 22, 2021.
- Each request for code modification must be submitted separately.
- A cover letter from the local jurisdiction or professional association stating that the individual is authorized to present the proposed amendment; and verification that the proposed amendment has the support of at least a majority of the members of the board or council governing the local jurisdiction or professional association proposing the modification.
- Sufficient test information, studies, data, or other documentation that would be necessary to fully explain and justify the proposed amendment
- For local modification requests only: the physical or climatological basis for the request and the reason that the suggested change would correct the condition.
- A local jurisdiction or professional association shall not propose a modification which will amend, suspend, eliminate or supersede an existing statute, policy, rule or regulation of any state or federal agency per S.C. Regulation 8-240 (H).
- **A completed modification request must be received with all required documentation before it will be reviewed.**

☒ Statewide Modification

☐ Local Modification: _____

(List all jurisdictions that apply.)

Association/Jurisdiction: Home Builders Association of South Carolina

Address: 625 Taylor Street (Street) Columbia (City) SC (State) 29201 (Zip)

Name: Mark Nix Title/Position: Executive Director

Phone No.: [redacted] Email Address: [redacted]

Please select the applicable code to be modified:

2021 International Residential Code

Please list the exact code section, table, figure, or appendix to be modified, and attach a photocopy of the applicable code section: Chapter 2 Defintions (Story and Floor)

Code section as modified:
(Please strike through language being removed, and put language to be added in parentheses. Use additional pages as needed.)

STORY, That portion of a building included between the upper surface of a floor and the upper surface of the floor or roof next above. Any area that is used for entry (Foyer) that does not exceed 200 square feet of floor space, exclusive of stairs, or areas used exclusively for garage, parking or storage shall not be considered a Story as long as the building is sealed by a design professional. Habitable Attics shall not be considered a story.

9/28: Withdrawn

In 200 characters or less, please briefly describe the justification for this modification request.

Provides flexibility and consistency between S.C. Statute and regulations.

Per Regulation 8-240(E)(5), please list the persons with their titles and affiliations, known at the time of submittal, who will provide testimony in favor of the amendment. Due to the possibility of virtual hearings, **all information is the table below is required** to ensure proper notification. Use additional pages as needed.

Name	Title	Affiliation	Phone Number	Email Address
Mark Nix	Executive Director	HBA of SC	[redacted]	
Andy Barber	HBASC Codes Chairman	HBA of SC		

Affirmation

I certify that all information in this form, including all supplementary documents submitted with this form, are true and correct to the best of my knowledge after undertaking due diligence to determine their accuracy.

Signature: Mark Nix Digitally signed by Mark Nix Date: 2021.09.02 14:01:18 -04'00' Date: _____

Title: Executive Director

South Carolina Department of Labor, Licensing and Regulation
South Carolina Building Codes Council
110 Centerview Dr • Columbia • SC • 29210
P.O. Box 11329 • Columbia • SC • 29211-1329
Phone: 803-896-4688 • contact.bcc@llr.sc.gov • Fax: 803-896-4814
llr.sc.gov/bcc

IRC 2021-4

2021 BUILDING CODE MODIFICATION REQUEST FORM

Requirements:

- All requests must be submitted by September 22, 2021.
- Each request for code modification must be submitted separately.
- A cover letter from the local jurisdiction or professional association stating that the individual is authorized to present the proposed amendment; and verification that the proposed amendment has the support of at least a majority of the members of the board or council governing the local jurisdiction or professional association proposing the modification.
- Sufficient test information, studies, data, or other documentation that would be necessary to fully explain and justify the proposed amendment
- For local modification requests only: the physical or climatological basis for the request and the reason that the suggested change would correct the condition.
- A local jurisdiction or professional association shall not propose a modification which will amend, suspend, eliminate or supersede an existing statute, policy, rule or regulation of any state or federal agency per S.C. Regulation 8-240 (H).
- **A completed modification request must be received with all required documentation before it will be reviewed.**

☒ Statewide Modification

☐ Local Modification: _____

(List all jurisdictions that apply.)

Association/Jurisdiction: Home Builders Association of South Carolina

Address: 625 Taylor Street (Street) Columbia (City) SC (State) 29201 (Zip)

Name: Mark Nix Title/Position: Executive Director

Phone No.: [redacted] Email Address: [redacted]

Please select the applicable code to be modified:

2021 International Residential Code

Please list the exact code section, table, figure, or appendix to be modified, and attach a photocopy of the applicable code section: R301.2.1 Wind design criteria

Code section as modified:
(Please strike through language being removed, and put language to be added in parentheses. Use additional pages as needed.)

R301.2.1 Wind design criteria. Buildings and portions thereof shall be constructed in accordance with the wind provisions of this code using the ultimate design wind speed in Table R301.2 as determined from Figure R301.2(2). The local building official may delineate the wind design category within their jurisdiction, as long as, it does not surpass those provided on the Applied Technology Council (ATC) website. The structural provisions of this code for wind loads are not permitted where wind design is required as specified in Section R301.2.1.1. Where different construction methods and structural materials are used for various portions of a building, the applicable require- ments of this section for each portion shall apply. Where not otherwise specified, the wind loads listed in Table R301.2.1(1) adjusted for height and exposure using Table R301.2.1(2) shall be used to determine design load performance requirements for wall coverings, curtain walls, roof coverings, exterior windows, skylights, garage doors and exterior doors. Asphalt shingles shall be designed for wind speeds in accordance with Section R905.2.4. Metal roof shingles shall be designed for wind speeds in accordance with Section R905.4.4. A continuous load path shall be provided to transmit the applicable uplift forces in Section R802.11 from the roof assembly to the foundation. Where ultimate design wind speeds in Figure R301.2(2) are less than the lowest wind speed indicated in the prescriptive provisions of this code, the lowest wind speed indicated in the prescriptive provisions of this code shall be used.

9/28 Study Committee Recommendation: Support approval as modified below. Council staff seeking clarification.

R301.2.1 Wind design criteria. Buildings and portions thereof shall be constructed in accordance with ~~the wind provisions of this code using the ultimate design wind speed in Table R301.2 as determined from Figure R301.2(2)~~ the previously published maps by the S.C. Building Codes Council. The local building official may delineate the wind design category within their jurisdiction, as long as, it does not surpass those provided on the Applied Technology Council (ATC) website. The structural provisions of this code for wind loads are not permitted where wind design is required as specified in Section R301.2.1.1. Where different construction methods and structural materials are used for various portions of a building, the applicable requirements of this section for each portion shall apply. Where not otherwise specified, the wind loads listed in Table R301.2.1(1) adjusted for height and exposure using Table R301.2.1(2) shall be used to determine design load performance requirements for wall coverings, curtain walls, roof coverings, exterior windows, skylights, garage doors and exterior doors. Asphalt shingles shall be designed for wind speeds in accordance with Section R905.2.4. Metal roof shingles shall be designed for wind speeds in accordance with Section R905.4.4. A continuous load path shall be provided to transmit the applicable uplift forces in Section R802.11 from the roof assembly to the foundation. Where ultimate design wind speeds in Figure R301.2(2) are less than the lowest wind speed indicated in the prescriptive provisions of this code, the lowest wind speed indicated in the prescriptive provisions of this code shall be used.

In 200 characters or less, please briefly describe the justification for this modification request.

Provides added consistency and ease.

Per Regulation 8-240(E)(5), please list the persons with their titles and affiliations, known at the time of submittal, who will provide testimony in favor of the amendment. Due to the possibility of virtual hearings, **all information is the table below is required** to ensure proper notification. Use additional pages as needed.

Name	Title	Affiliation	Phone Number	Email Address
Mark Nix	Executive Director	HBA of SC	[redacted]	
Andy Barber	HBASC Codes Chairman	HBA of SC		

Affirmation

I certify that all information in this form, including all supplementary documents submitted with this form, are true and correct to the best of my knowledge after undertaking due diligence to determine their accuracy.

Signature: Mark Nix Digitally signed by Mark Nix Date: 2021.09.02 14:01:18 -04'00' Date: _____

Title: Executive Director

South Carolina Department of Labor, Licensing and Regulation
South Carolina Building Codes Council
110 Centerview Dr • Columbia • SC • 29210
P.O. Box 11329 • Columbia • SC • 29211-1329
Phone: 803-896-4688 • contact.bcc@llr.sc.gov • Fax: 803-896-4814
llr.sc.gov/bcc

2021 BUILDING CODE MODIFICATION REQUEST FORM

Requirements:

- All requests must be submitted by September 22, 2021.
- Each request for code modification must be submitted separately.
- A cover letter from the local jurisdiction or professional association stating that the individual is authorized to present the proposed amendment; and verification that the proposed amendment has the support of at least a majority of the members of the board or council governing the local jurisdiction or professional association proposing the modification.
- Sufficient test information, studies, data, or other documentation that would be necessary to fully explain and justify the proposed amendment
- For local modification requests only: the physical or climatological basis for the request and the reason that the suggested change would correct the condition.
- A local jurisdiction or professional association shall not propose a modification which will amend, suspend, eliminate or supersede an existing statute, policy, rule or regulation of any state or federal agency per S.C. Regulation 8-240 (H).
- **A completed modification request must be received with all required documentation before it will be reviewed.**

☒ Statewide Modification
☐ Local Modification: _____
(List all jurisdictions that apply.)

Association/Jurisdiction: Home Builders Association of South Carolina

Address: 625 Taylor Street (Street) Columbia (City) SC (State) 29201 (Zip)

Name: Mark Nix Title/Position: Executive Director

Phone No.: [redacted] Email Address: [redacted]

Please select the applicable code to be modified:

2021 International Residential Code

Please list the exact code section, table, figure, or appendix to be modified, and attach a photocopy of the applicable code section: R301.2.2.1 Determination of seismic design category.

Code section as modified:
(Please strike through language being removed, and put language to be added in parentheses. Use additional pages as needed.)

R301.2.2.1 Determination of seismic design category. Buildings shall be assigned a seismic design category in accordance with Figures R301.2.2.1(1) through R301.2.2.1(6). The local building official may delineate the seismic design category within their jurisdiction, as long as, it does not surpass those provided on the Applied Technology Council (ATC) website.

9/28 Study Committee Recommendation: Support approval as modified below. Council staff seeking clarification.

R301.2.2.1 Determination of seismic design category. Buildings shall be assigned a seismic design category in accordance with the previously published maps by the S.C. Building Codes Council. ~~Figures R301.2.2.1(1) through R301.2.2.1(6).~~ The local building official may delineate the seismic design category within their jurisdiction, as long as, it does not surpass those provided on the Applied Technology Council (ATC) website.

In 200 characters or less, please briefly describe the justification for this modification request.

Provides added consistency and ease.

Per Regulation 8-240(E)(5), please list the persons with their titles and affiliations, known at the time of submittal, who will provide testimony in favor of the amendment. Due to the possibility of virtual hearings, **all information is the table below is required** to ensure proper notification. Use additional pages as needed.

Name	Title	Affiliation	Phone Number	Email Address
Mark Nix	Executive Director	HBA of SC	[redacted]	
Andy Barber	HBASC Codes Chairman	HBA of SC		

Affirmation

I certify that all information in this form, including all supplementary documents submitted with this form, are true and correct to the best of my knowledge after undertaking due diligence to determine their accuracy.

Signature: Mark Nix Digitally signed by Mark Nix Date: 2021.09.02 14:01:18 -04'00' Date: _____

Title: Executive Director

2021 Code Section: R302.1 Exterior Walls

Modification: An additional exception was added to the section.

Exception 6 Fire Separation Distance

a. The minimum fire separation distance for improvement constructed on a lot shown on:[i] a recorded bonded or final subdivision plat, or [ii] a sketch plan, site plan, plan of phased development or preliminary plat approved by the local governing authority which was recorded or approved prior to the implementation of IRC 2012 which shows or describes lesser setbacks than the fire separation distances provided in Table R302.1(1) shall be equal to the lesser setbacks, but in no event less than 3 feet.

b. The minimum fire separation distance for improvements constructed on a lot where the local governing authority has prior to the implementation of IRC 2012: [i] accepted exactions or issued conditions, [ii] granted a special exception, [iii] entered into a development agreement, [iv] approved a variance, [v] approved a planned development district, or [vi] otherwise approved a specific development plan which contemplated or provided for setbacks less than the fire separation distances provided in Table R302.1(1) shall be equal to the lesser setback, but in no event less than 3 feet.

Reason: To provide a clear definition and uniform interpretation of the phrase

Proponent: Coastal Code Enforcement Association of South Carolina

Previous Code Cycles	Previous Modification Number	Previous Code Section
IRC 2018	IRC 2018 04	R302.1
IRC 2015	IRC 2015 01	R302.1
IRC 2012	IRC 2012 02	R302.1

Comments: Wording above should be added as a clerical fix, but no changes in 2021 section.

7/27 Study Committee Recommendation: Support approval with clerical correction.

Building Officials Association of SC

[redacted]

September 8, 2021

South Carolina Building Codes Council
PO Box 11329
Columbia, SC 29211-1329

CC: Molly Price - Administrator
Teresa Martin - Board Staff, Building Codes

To Whom It May Concern,

This cover letter is providing verification that the following code modification for the 2021 International Residential code section R302 exemption (6) is supported by the Building Official's Association of South Carolina. This action has been approved and authorized by the BOASC Code Study Committee to be presented by Buddy Skinner, Building Official, City of Greenville.

Respectfully,

Chris Stover
Chairman BOASC Code Committee
Building Official's Association of South Carolina

South Carolina Department of Labor, Licensing and Regulation
South Carolina Building Codes Council
110 Centerview Dr • Columbia • SC • 29210
P.O. Box 11329 • Columbia • SC • 29211-1329
Phone: 803-896-4688 • contact.bcc@llr.sc.gov • Fax: 803-896-4814
llr.sc.gov/bcc

2021 BUILDING CODE MODIFICATION REQUEST FORM

Requirements:

- All requests must be submitted by September 22, 2021.
- Each request for code modification must be submitted separately.
- A cover letter from the local jurisdiction or professional association stating that the individual is authorized to present the proposed amendment; and verification that the proposed amendment has the support of at least a majority of the members of the board or council governing the local jurisdiction or professional association proposing the modification.
- Sufficient test information, studies, data, or other documentation that would be necessary to fully explain and justify the proposed amendment
- For local modification requests only: the physical or climatological basis for the request and the reason that the suggested change would correct the condition.
- A local jurisdiction or professional association shall not propose a modification which will amend, suspend, eliminate or supersede an existing statute, policy, rule or regulation of any state or federal agency per S.C. Regulation 8-240 (H).
- **A completed modification request must be received with all required documentation before it will be reviewed.**

□ Statewide Modification

□ Local Modification:_____

(List all jurisdictions that apply.)

Association/Jurisdiction: _____

Address: _____

Street City State Zip

Name: _____ Title/Position: _____

Phone No.: [redacted] Email Address: [redacted]

Please select the applicable code to be modified:

Please list the exact code section, table, figure, or appendix to be modified, and attach a photocopy of the applicable code section: _____

Code section as modified:
(Please strike through language being removed, and put language to be added in parentheses. Use additional pages as needed.)

In 200 characters or less, please briefly describe the justification for this modification request.

Per Regulation 8-240(E)(5), please list the persons with their titles and affiliations, known at the time of submittal, who will provide testimony in favor of the amendment. Due to the possibility of virtual hearings, **all information is the table below is required** to ensure proper notification. Use additional pages as needed.

Name	Title	Affiliation	Phone Number	Email Address
			[redacted]	

Affirmation

I certify that all information in this form, including all supplementary documents submitted with this form, are true and correct to the best of my knowledge after undertaking due diligence to determine their accuracy.

Signature:_____ Date: _____

Title: _____

South Carolina Department of Labor, Licensing and Regulation
South Carolina Building Codes Council
110 Centerview Dr • Columbia • SC • 29210
P.O. Box 11329 • Columbia • SC • 29211-1329
Phone: 803-896-4688 • contact.bcc@llr.sc.gov • Fax: 803-896-4814
llr.sc.gov/bcc

IRC 2021-8

2021 BUILDING CODE MODIFICATION REQUEST FORM

Requirements:

- All requests must be submitted by September 22, 2021.
- Each request for code modification must be submitted separately.
- A cover letter from the local jurisdiction or professional association stating that the individual is authorized to present the proposed amendment; and verification that the proposed amendment has the support of at least a majority of the members of the board or council governing the local jurisdiction or professional association proposing the modification.
- Sufficient test information, studies, data, or other documentation that would be necessary to fully explain and justify the proposed amendment
- For local modification requests only: the physical or climatological basis for the request and the reason that the suggested change would correct the condition.
- A local jurisdiction or professional association shall not propose a modification which will amend, suspend, eliminate or supersede an existing statute, policy, rule or regulation of any state or federal agency per S.C. Regulation 8-240 (H).
- **A completed modification request must be received with all required documentation before it will be reviewed.**

☒ Statewide Modification

☐ Local Modification: _____

(List all jurisdictions that apply.)

Association/Jurisdiction: Home Builders Association of South Carolina

Address: 625 Taylor Street (Street) Columbia (City) SC (State) 29201 (Zip)

Name: Mark Nix Title/Position: Executive Director

Phone No.: [redacted] Email Address: [redacted]

Please select the applicable code to be modified:

2021 International Residential Code

Please list the exact code section, table, figure, or appendix to be modified, and attach a photocopy of the applicable code section: R302.2.7 Townhouse Eave Projections

Code section as modified:
(Please strike through language being removed, and put language to be added in parentheses. Use additional pages as needed.)

R302.2.7 Townhouse Eave Projections
Overhang projections not exceeding 12 inches (305 mm) shall be allowed to extend beyond the property line in townhouse buildings provided all the following conditions are met:

1. Required fire-resistant-rated wall assembly is tight to roof deck;
2. Eaves shall be protected with roof decking and fascia of noncombustible materials or approved fire-retardant-treated wood; and
3. Eaves shall have not less than one layer of 5/8-inch (15.9 mm) Type X gypsum board or equivalent fire-resistive construction on the underside.

9/28: Withdrawn

In 200 characters or less, please briefly describe the justification for this modification request.

See Attached

Per Regulation 8-240(E)(5), please list the persons with their titles and affiliations, known at the time of submittal, who will provide testimony in favor of the amendment. Due to the possibility of virtual hearings, **all information is the table below is required** to ensure proper notification. Use additional pages as needed.

Name	Title	Affiliation	Phone Number	Email Address
Mark Nix	Executive Director	HBA of SC	[redacted]	
Andy Barber	HBASC Codes Chairman	HBA of SC		

Affirmation

I certify that all information in this form, including all supplementary documents submitted with this form, are true and correct to the best of my knowledge after undertaking due diligence to determine their accuracy.

Signature: Mark Nix Digitally signed by Mark Nix Date: 2021.09.17 11:54:37 -04'00' Date: _____

Title: Executive Director

Justification: This modification would provide flexibility and reduce the current restriction to architectural design when the design calls for fluid transition visually between townhome units. The 12” eave projection limit requested represents a minimal convergence on the adjacent unit.

As illustrated below the green highlights represent sample overhangs that would be allowed per this modification. Blue highlights have no eave projections to the adjacent property.

This modification has already been adopted in other jurisdictions most notable North Carolina.

Building Officials Association of SC

[redacted]

September 16, 2021

South Carolina Building Codes Council
PO Box 11329
Columbia, SC 29211-1329

CC: Molly Price - Administrator
Teresa Martin - Board Staff, Building Codes

To Whom It May Concern,

This cover letter is providing verification that the following code modification for the 2021 International Residential code section R302.4.1 is supported by the Building Official's Association of South Carolina. This action has been approved and authorized by the BOASC Code Study Committee to be presented by Chris Stover, Permit Coordinator, City of Greenville.

Respectfully,

Shawn Brashear
President BOASC
Building Official's Association of South Carolina

South Carolina Department of Labor, Licensing and Regulation
South Carolina Building Codes Council
110 Centerview Dr • Columbia • SC • 29210
P.O. Box 11329 • Columbia • SC • 29211-1329
Phone: 803-896-4688 • contact.bcc@llr.sc.gov • Fax: 803-896-4814
llr.sc.gov/bcc

IRC 2021-9

2021 BUILDING CODE MODIFICATION REQUEST FORM

Requirements:

- All requests must be submitted by September 22, 2021.
- Each request for code modification must be submitted separately.
- A cover letter from the local jurisdiction or professional association stating that the individual is authorized to present the proposed amendment; and verification that the proposed amendment has the support of at least a majority of the members of the board or council governing the local jurisdiction or professional association proposing the modification.
- Sufficient test information, studies, data, or other documentation that would be necessary to fully explain and justify the proposed amendment
- For local modification requests only: the physical or climatological basis for the request and the reason that the suggested change would correct the condition.
- A local jurisdiction or professional association shall not propose a modification which will amend, suspend, eliminate or supersede an existing statute, policy, rule or regulation of any state or federal agency per S.C. Regulation 8-240 (H).
- **A completed modification request must be received with all required documentation before it will be reviewed.**

☒ Statewide Modification
☐ Local Modification: _____
(List all jurisdictions that apply.)

Association/Jurisdiction: City of Greenville

Address: 206 S. Main St. (Street) Greenville (City) SC (State) 29602 (Zip)

Name: Chris Stover Title/Position: Permit Coordinator

Phone No.: [redacted] Email Address: [redacted]

Please select the applicable code to be modified:

2021 International Residential Code

Please list the exact code section, table, figure, or appendix to be modified, and attach a photocopy of the applicable code section: 302.4.1 Add additional language

Code section as modified:
(Please strike through language being removed, and put language to be added in parentheses. Use additional pages as needed.)

R302.4.1 Through penetrations. Through penetrations of fire- resistance-rated wall or floor assemblies shall comply with Section R302.4.1.1 or 302.4.1.2 (No penetrations shall pass completely through the fire rated assembly separating townhouse units.)

9/28 Study Committee Recommendation: Support approval

In 200 characters or less, please briefly describe the justification for this modification request.

The common wall between townhouses is essentially a property line between adjacent owners. Any utilities or services of any-kind should not pass through one property line to another.

Per Regulation 8-240(E)(5), please list the persons with their titles and affiliations, known at the time of submittal, who will provide testimony in favor of the amendment. Due to the possibility of virtual hearings, **all information is the table below is required** to ensure proper notification. Use additional pages as needed.

Name	Title	Affiliation	Phone Number	Email Address
Chris Stover	Permit Cooridinator	City of Greenville	[redacted]	

Affirmation

I certify that all information in this form, including all supplementary documents submitted with this form, are true and correct to the best of my knowledge after undertaking due diligence to determine their accuracy.

Signature: Chris Stover Digitally signed by Chris Stover DN: C=US, E=cstover@greenvillesc.gov, O=City of Greenville, CN=Chris Stover Date: 2021.09.17 15:33:24-04'00' Date: 9/17/2021

Title: Permit Coordinator

2021 International Residential Code
South Carolina Building Codes Council
Modification Continuations from 2018

2021 Code Section: R 302.5.1 Opening protection

2018 Modification: The existing text was modified to remove the self-closing device.

The section now states:

Openings from a private garage directly into a room used for sleeping purposes shall not be permitted. Other openings between the garage and residence shall be equipped with solid wood doors not less than 1 3/8 inches (35 mm) in thickness, solid or honeycomb core steel doors not less than 1 3/8 inches (35 mm) thick, or 20-minute fire-rated doors.

Reason: Lack of supporting documentation proving that self-closing devices contribute to fire or carbon monoxide safety

Proponent: Home Builders Association of South Carolina

Previous Code Cycles	Previous Modification Number	Previous Code Section
IRC 2018	IRC 2018 05	R302.5.1
IRC 2015	IRC 2015 05	R302.5.1

Comments: Wording changes some in the 2021 code. If modification is carried over, we will need to just delete the last sentence.

2021 IRC
R302.5.1 Opening protection. Openings from a private garage directly into a room used for sleeping purposes shall not be permitted. Other openings between the garage and residence shall be equipped with solid wood doors not less than 1 3/8 inches (35 mm) in thickness, solid or honeycomb-core steel doors not less than 1 3/8 inches (35 mm) thick, or 20-minute fire-rated doors. Doors shall be self-latching and equipped with a self-closing or automatic-closing device.

7/27 Study Committee Recommendation: Support approval

2021 International Residential Code
South Carolina Building Codes Council
Modification Continuations from 2018

2021 Code Section: R302.13 Fire Protection of floors

Modification: The existing text was modified to not require floor protection over a crawl space.

Exception 2 now reads:

2. Floor assemblies located directly over a crawl space.

Reason: Requirements are unwarranted and unnecessary

Proponent: Home Builders Association of South Carolina

Previous Code Cycles	Previous Modification Number	Previous Code Section
IRC 2018	IRC 2018 06	R302.13
IRC 2015	IRC 2015 06	R302.13

Comments: No changes in 2021 IRC.

7/27 Study Committee Recommendation: Support approval

2021 International Residential Code
South Carolina Building Codes Council
Modification Continuations from 2018

2021 Code Section: R303.4 Mechanical ventilation

Modification: The section was deleted without substitution

Reason: The blower door test is not required with the current State Energy Standard (2009 International Energy Conservation Code) and is not applicable.

Proponent: Coastal Code Enforcement Association of South Carolina

Previous Code Cycles	Previous Modification Number	Previous Code Section
IRC 2018	IRC 2018 07	R303.4
IRC 2015	IRC 2015 07	R303.4
IRC 2012	IRC 2012 05	R303.4

Comments: language changed in 2021 code.

2021 IRC
R303.4 Mechanical ventilation. Buildings and *dwelling units* complying with Section N1102.4.1 shall be provided with mechanical ventilation in accordance with Section M1505, or with other *approved* means of ventilation.

7/27 Study Committee Recommendation: Support approval

2021 International Residential Code
South Carolina Building Codes Council
Modification Continuations from 2018

2021 Code Section: Figure R307.1 Minimum Fixture Clearances

Modification: Change the minimum dimension for the side clearance between bathtubs and water closets and bidets from 15 inches to 12 inches.

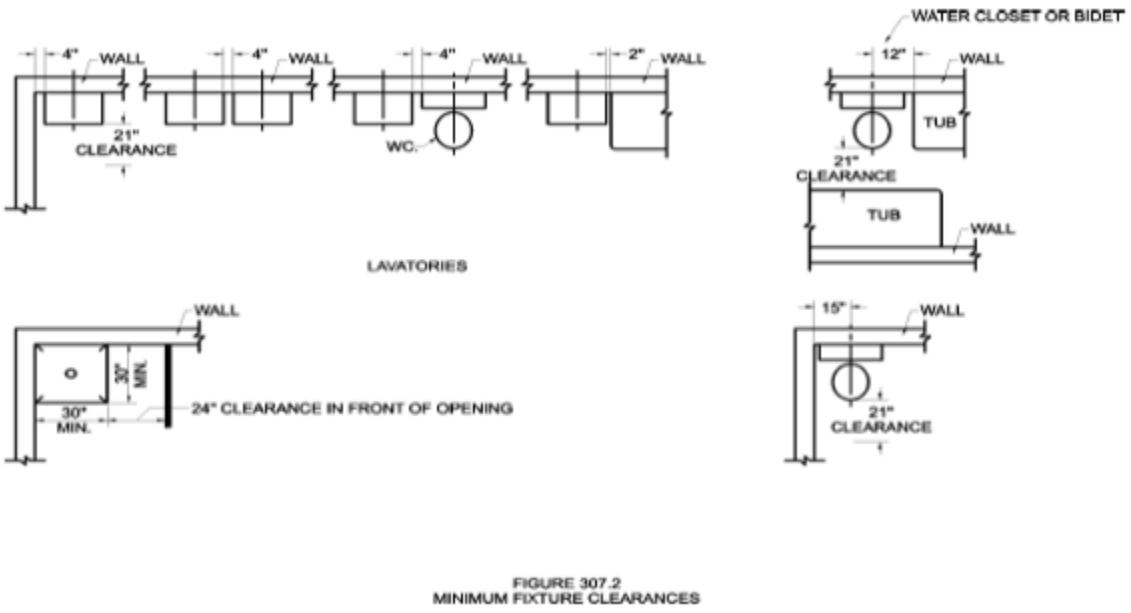


FIGURE 307.2
MINIMUM FIXTURE CLEARANCES

Reason: No valid reason exists to justify a minimum clearance of 15 inches

Proponent: Home Builders Association of South Carolina

Previous Code Cycles	Previous Modification Number	Previous Code Section
IRC 2018	IRC 2018 08	R307.1
IRC 2015	IRC 2015 08	R307.1
IRC 2012	IRC 2012 06	R307.2
IRC 2006	IRC 2006 09	R307.2
IRC 2003	IRC 2003 05	R307.2

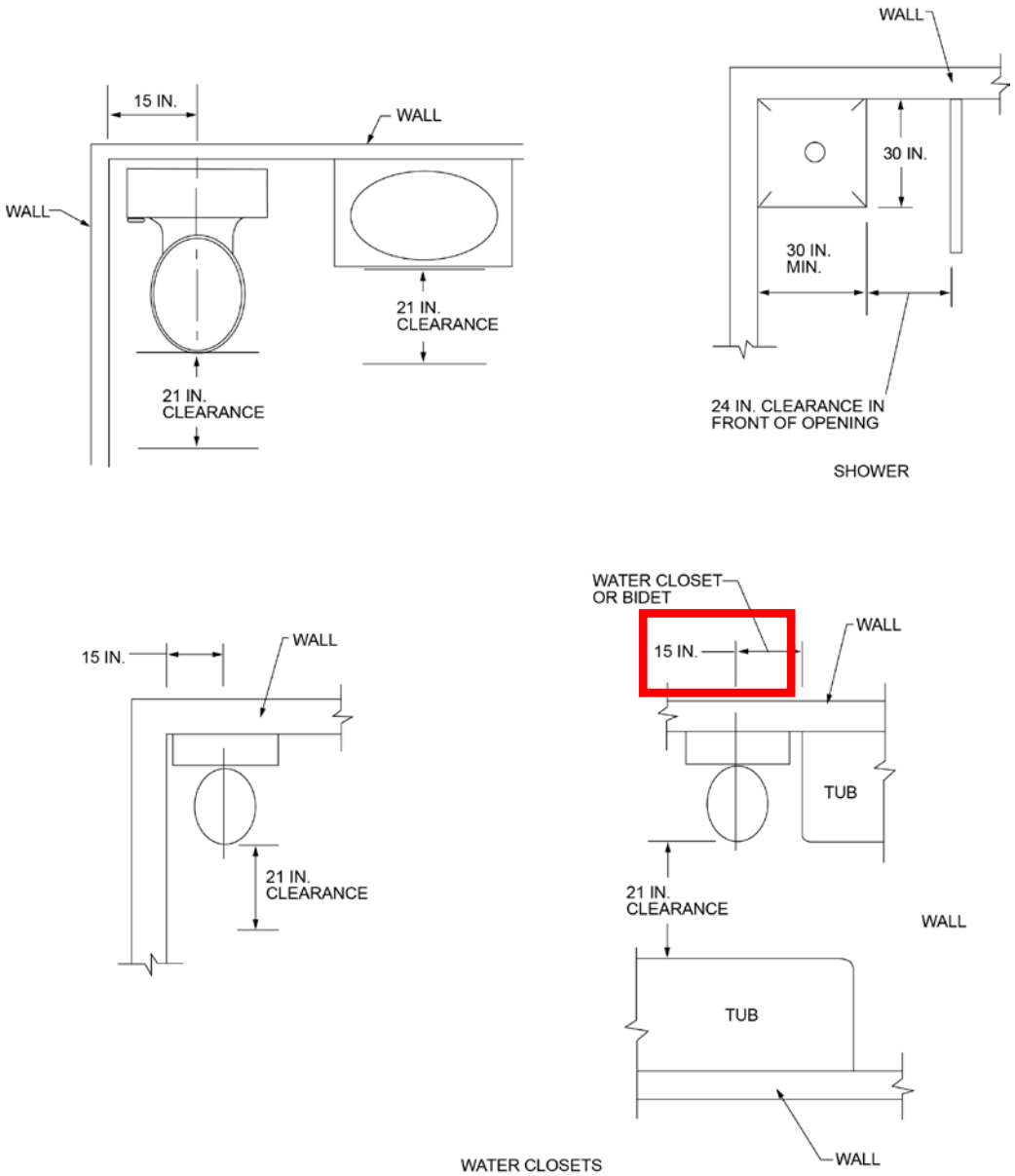
Comments: See clerical correction above. Also, this is a very old chart. Newer chart should be easier to use and just change 15 inches to 12 inches. Figure is also 307.1, not 307.2

7/27 Study Committee Recommendation: Support approval with use of updated drawing (next page) with adding part in red to 12 inches. Clerical error noted above about "Figure" also approved.

2021 International Residential Code
South Carolina Building Codes Council
Modification Continuations from 2018

R307.1 Continued (2021 IRC Chart is below)

FIGURE R307.1
MINIMUM FIXTURE CLEARANCES



South Carolina Department of Labor, Licensing and Regulation
South Carolina Building Codes Council
110 Centerview Dr • Columbia • SC • 29210
P.O. Box 11329 • Columbia • SC • 29211-1329
Phone: 803-896-4688 • contact.bcc@llr.sc.gov • Fax: 803-896-4814
llr.sc.gov/bcc

IRC 2021-14

2021 BUILDING CODE MODIFICATION REQUEST FORM

Requirements:

- All requests must be submitted by September 22, 2021.
- Each request for code modification must be submitted separately.
- A cover letter from the local jurisdiction or professional association stating that the individual is authorized to present the proposed amendment; and verification that the proposed amendment has the support of at least a majority of the members of the board or council governing the local jurisdiction or professional association proposing the modification.
- Sufficient test information, studies, data, or other documentation that would be necessary to fully explain and justify the proposed amendment
- For local modification requests only: the physical or climatological basis for the request and the reason that the suggested change would correct the condition.
- A local jurisdiction or professional association shall not propose a modification which will amend, suspend, eliminate or supersede an existing statute, policy, rule or regulation of any state or federal agency per S.C. Regulation 8-240 (H).
- **A completed modification request must be received with all required documentation before it will be reviewed.**

☒ Statewide Modification

☐ Local Modification: _____

(List all jurisdictions that apply.)

Association/Jurisdiction: Home Builders Association of South Carolina

Address: 625 Taylor Street (Street) Columbia (City) SC (State) 29201 (Zip)

Name: Mark Nix Title/Position: Executive Director

Phone No.: [redacted] Email Address: [redacted]

Please select the applicable code to be modified:

2021 International Residential Code

Please list the exact code section, table, figure, or appendix to be modified, and attach a photocopy of the applicable code section: R307.1 Space required and R2705.1 (5) Installation

Code section as modified:
(Please strike through language being removed, and put language to be added in parentheses. Use additional pages as needed.)

R307.1 Space required - Fixtures shall be spaced in accordance with Figure R307.1 and in accordance with the requirements of Section P2705.1.

"In Figure 307.1 change the distance from a wall, tub, shower or vanity to 12” from either side of a toilet but with an aggregate of no less than 27”. "

R2705.1 (5) Water closets, lavatories and bidets. A water closet, lavatory or bidet shall not be set closer than 15 inches (381 mm) from its center to any side wall, partition or vanity or closer than ~~30 inches (762 mm)~~ 27 inches

center- to-center between adjacent fixtures. There shall be a clearance of not less than 21 inches (533 mm) in front of a water closet, lavatory or bidet to any wall, fixture or door.

8/19 Study Committee Recommendation: Support denial of 307.1 and support approval of R2705.1(5) as written above.

In 200 characters or less, please briefly describe the justification for this modification request.

Reason: Places language in congruence with an existing modification and allows for greater flexibility.

Per Regulation 8-240(E)(5), please list the persons with their titles and affiliations, known at the time of submittal, who will provide testimony in favor of the amendment. Due to the possibility of virtual hearings, **all information is the table below is required** to ensure proper notification. Use additional pages as needed.

Name	Title	Affiliation	Phone Number	Email Address
Mark Nix	Executive Director	HBA of SC	[redacted]	
Andy Barber	HBASC Codes Chairman	HBA of SC		

Affirmation

I certify that all information in this form, including all supplementary documents submitted with this form, are true and correct to the best of my knowledge after undertaking due diligence to determine their accuracy.

Signature:_____ Date: _____

Title: Executive Director

2021 International Residential Code
South Carolina Building Codes Council
Modification Continuations from 2018

2021 Code Section: R311.7.5.1 Risers

Modification: The existing text was modified to add riser height for masonry stairs.

The section now states:

The maximum riser height shall be 7¾ inches (196 mm). *The maximum riser height for masonry stairs shall be 8 inches (203 mm).* The riser height shall be measured vertically between leading edges of the adjacent treads. The greatest riser height within any flight of stairs shall not exceed the smallest by more than 3/8 inch (9.5 mm). Risers shall be vertical or sloped from the underside of the nosing of the tread above at an angle not more than 30 degrees (0.51 rad) from the vertical. Open risers are permitted provided that the opening between treads does not permit the passage of a 4- inch-diameter (102 mm) sphere.

Exception: The opening between adjacent treads is not limited on stairs with a total rise of 30 inches (762 mm) or less.

Reason: To establish a maximum height for masonry risers

Proponent: Structural Engineers Association of South Carolina

Previous Code Cycles	Previous Modification Number	Previous Code Section
IRC 2018	IRC 2018 09	R311.7.5.1
IRC 2015	IRC 2015 09	R311.7.5.1
IRC 2012	IRC 2012 07	R311.7.5.1

Comments: Word “height” added to first sentence of 2021 code. Also, language in last sentence is written different since 2015 – change to updated language? Are exceptions about spiral stairways supposed to still be in code or removed?

2021 IRC
R311.7.5.1 Risers. The *riser* height shall be not more than 7¾ inches (196 mm). The *riser* height shall be measured vertically between leading edges of the adjacent treads. The greatest *riser* height within any flight of stairs shall not exceed the smallest by more than ⅜ inch (9.5 mm). *Risers* shall be vertical or sloped from the underside of the *nosing* of the tread above at an angle not more than 30 degrees (0.51 rad) from the vertical. At open *risers*, openings located more than 30 inches (762 mm), as measured vertically, to the floor or *grade* below shall not permit the passage of a 4-inch-diameter (102 mm) sphere.

Exceptions:
1. The opening between adjacent treads is not limited on *spiral stairways*.
2. The *riser* height of *spiral stairways* shall be in accordance with Section R311.7.10.1

7/27 Study Committee Recommendation: Supoort approval with "height" from 2021 code and exceptions added back (clerical error from 2018).

2021 International Residential Code
South Carolina Building Codes Council
Modification Continuations from 2018

2021 Code Section: R312.1.1 Where required

Modification: The existing text was modified to create a downward slope ratio.

The section now states:

Guards shall be located along-open sided walking surfaces of all decks, porches, balconies, stairs, ramps and landings that are located more than 30 inches measured vertically to the floor or grade below and at any point where a downward slope exceeds 3V:12H within 36 inches (914 mm) horizontally to the edge of the open side. Insect screening shall not be considered as a guard.

Reason: No technical justification to substantiate a 36 inch measurement away from the leading edge of the walking surface or tread to determine when a guard should be required

Proponent: Home Builders Association of South Carolina

Previous Code Cycles	Previous Modification Number	Previous Code Section
IRC 2018	IRC 2018 10	R312.1.1
IRC 2015	IRC 2015 10	R312.1.1
IRC 2012	IRC 2012 08	R312.1.1

Comments: Word “floors” added in the 2021 code to first sentence.

2021 IRC
R312.1.1 Where required. *Guards* shall be provided for those portions of open-sided walking surfaces, including floors, stairs, *ramps* and landings that are located more than 30 inches (762 mm) measured vertically to the floor or *grade* below at any point within 36 inches (914 mm) horizontally to the edge of the open side. Insect screening shall not be considered as a *guard*.

7/27: Tabled to fully review 2021 change.

8/19 Study Committee Recommendation: Support approval with addition of word "floors" added into existing modification text after the word "balconies."

2021 International Residential Code
South Carolina Building Codes Council
Modification Continuations from 2018

2021 Code Section: R312.2 Window fall protection

Modification: The existing text for window fall protection was deleted. The section is deleted without substitution

Reason: Unusually restrictive

Proponent: Home Builders Association of South Carolina

Previous Code Cycles	Previous Modification Number	Previous Code Section
IRC 2018	IRC 2018 11	R312.2
IRC 2015	IRC 2015 11	R312.2
IRC 2012	IRC 2012 09	R312.2

Comments: 2021 IRC has several changes in language to 312.2.1 and 312.2.2.

2021 IRC

R312.2 Window fall protection. Window fall protection shall be provided in accordance with Sections R312.2.1 and R312.2.2.

R312.2.1 Window opening height. In *dwelling units*, where the bottom of the clear opening of an operable window opening is located less than 24 inches (610 mm) above the finished floor and greater than 72 inches (1829 mm) above the finished *grade* or other surface below on the exterior of the building, the operable window shall comply with one of the following:

1. Operable window openings will not allow a 4-inch-diameter (102 mm) sphere to pass through where the openings are in their largest opened position.
2. Operable windows are provided with window opening control devices or fall prevention devices that comply with ASTM F2090.

R312.2.2 Emergency escape and rescue openings. Where an operable window serves as an *emergency escape and rescue opening*, a window opening control device or fall prevention device, after operation to release the control device or fall prevention device allowing the window to fully open, shall not reduce the net clear opening area of the window unit to less than the area required by Sections R310.2.1 and R310.2.2.

7/27 Study Committee Recommendation: Support Approval

2021 International Residential Code
South Carolina Building Codes Council
Modification Continuations from 2018

2021 Code Section: R313

Modification: Delete and substitute.

Section R313 now reads:

R313.1 Townhouse automatic fire sprinkler systems. An automatic residential fire sprinkler system shall not be required to be installed in townhouses when constructed in accordance with R302.2.

Exception: An automatic residential fire sprinkler system shall not be required where additions or alterations are made to existing townhouses that do not have an automatic residential fire sprinkler system installed.

R313.1.1 Design and installation. Automatic residential fire sprinkler systems for townhouses when installed shall be designed and installed in accordance with Section P2904 or NFPA 13D.

R313.2 One- and two- family dwellings automatic fire systems. An automatic residential fire sprinkler system shall not be required to be installed in one- and two-family dwellings.

Exception: An automatic residential fire sprinkler system shall not be required for additions or alterations to existing buildings that are not already provided with an automatic residential fire sprinkler system.

R313.2.1 Design and installation. Automatic residential fire sprinkler systems when installed shall be designed and installed in accordance with Section P2904 or NFPA 13D.

Reason: Unusually restrictive

Proponent: Home Builders Association of South Carolina

Previous Code Cycles	Previous Modification Number	Previous Code Section
IRC 2018	IRC 2018 12	R313
IRC 2015	IRC 2015 12	R313
IRC 2012	IRC 2012 10	R313.1
IRC 2012	IRC 2012 11	R313.2

Comments: No changes in 2021 IRC code section.

7/27 Study Committee Recommendation: Support approval

THE SOUTH CAROLINA MASTER PLUMBERS ASSOCIATION

[redacted]

September 20, 2021

South Carolina Building Codes Council
PO Box 11329
Columbia, SC 29211-1329

CC: Molly Price - Administrator
Teresa Martin Board Staff, Building Codes

Subject: 2021 Code Modification Association Cover Letter

To Whom It May Concern:

This cover letter is providing verification that SC MPA Code Committee, as represented by Committee Member Charles Stewart and President Anthony Zazaca offers the attached submissions and provides supporting testimony for the proposed modification to the 2021 International Residential Code, as well as the 2021 International Building Code. This action has been approved and authorized by the S.C. Master Plumbers Association.

Respectfully Yours,

Anthony Zazaca
President
S. C. Master Plumbers Association

"The Plumber Protects the Health and Safety of the Nation"

From: Charles Stewart
To: Maggie Smith
Cc: Molly Price
Subject: Re: 2021 IRC and IBC proposed Modifications
Date: Wednesday, September 22, 2021 10:59:58 PM
Attachments: image003.png

Greetings
Please use the form we submitted for the cover letter for all the proposals
Please be aware that the code committee, who serves at the will of the majority of the voting membership, has proffered the aforementioned proposals as a result of the majority vote of the membership of the S C MPA..
Thank you
Charles Stewart

On Wed, Sep 22, 2021 at 11:36 AM Maggie Smith <maggie.smith@llr.sc.gov> wrote:

> Thank you Mr. Stewart. These requests will be placed on the agenda for the 9/28 Study Committee Meeting. Should I use the cover letter that you submitted in person for each of these requests? Also, can you also confirm that these modification requests have the support of the majority of your members? Please let me know if you have any questions.
>
> Maggie Smith, CBO
>
> SC Building Codes Council
>
> SC Manufactured Housing Board
>
> 110 Centerview Dr, Columbia SC 29210 (physical)
>
> PO Box 11329, Columbia SC 29211 (mailing)
>
> Ph: 803-896-4688
>
> Fx: 803-896-4814
>
> Twitter: @SCDLLR
>
> Facebook: @SCLLR
>
> Website: www.llr.sc.gov

LABOR
LICENSING
REGULATION

Making South Carolina a Safe Place to Work and Live

Please click on the link below to complete the Customer Service Satisfaction Survey. It only takes a minute to complete. This will let my supervisor know if you were satisfied or dissatisfied with the service you received from me.
https://eservice.llr.sc.gov/OnlineSurvey/Home/Index/75

From: Charles Stewart [redacted]
Sent: Wednesday, September 22, 2021 11:30 AM
To: Molly Price <Molly.Price@llr.sc.gov>; Maggie Smith <maggie.smith@llr.sc.gov>
Subject: 2021 IRC and IBC proposed Modifications

---- SCDLLR NOTICE (M365) ----

· **This email is from an external email address. Please use caution when deciding whether to open any attachments or when clicking links.**

· **Personally Identifiable Information (PII) should not be included in e-mail text or attachments. Do not save or transmit PII unencrypted.**

Greetings

Please dispose of the previous submissions I dropped off yesterday and replace then with these corrected copies

Thanks for your service to the people of SC

Charles Stewart

[redacted]

--

"The Plumber Protects the Health and Safety of the Nation."

SC Master Plumbers Association

--

"The Plumber Protects the Health and Safety of the Nation."
SC Master Plumbers Association

South Carolina Department of Labor, Licensing and Regulation
South Carolina Building Codes Council
110 Centerview Dr • Columbia • SC • 29210
P.O. Box 11329 • Columbia • SC • 29211-1329
Phone: 803-896-4688 • contact.bcc@llr.sc.gov • Fax: 803-896-4814
llr.sc.gov/bcc

2021 BUILDING CODE MODIFICATION REQUEST FORM

Requirements:

- All requests must be submitted by September 22, 2021.
- Each request for code modification must be submitted separately.
- A cover letter from the local jurisdiction or professional association stating that the individual is authorized to present the proposed amendment; and verification that the proposed amendment has the support of at least a majority of the members of the board or council governing the local jurisdiction or professional association proposing the modification.
- Sufficient test information, studies, data, or other documentation that would be necessary to fully explain and justify the proposed amendment
- For local modification requests only: the physical or climatological basis for the request and the reason that the suggested change would correct the condition.
- A local jurisdiction or professional association shall not propose a modification which will amend, suspend, eliminate or supersede an existing statute, policy, rule or regulation of any state or federal agency per S.C. Regulation 8-240 (H).
- **A completed modification request must be received with all required documentation before it will be reviewed.**

☒ Statewide Modification

☐ Local Modification: _____
(List all jurisdictions that apply.)

Association/Jurisdiction: South Carolina Master Plumbers Association

Address: [redacted] [redacted] [redacted]
Street City State Zip

Name: Charles Stewart Title/Position: Code Committee Member

Phone No. [redacted] Email Address: [redacted]

Please select the applicable code to be modified:

2021 International Residential Code

Please list the exact code section, table, figure, or appendix to be modified, and attach a photocopy of the applicable code section: IRC 313.1

Code section as modified:
(Please strike through language being removed, and put language to be added in parentheses. Use additional pages as needed.)

Current Language IRC
IRC313.1
R313.1 Townhouse automatic fire sprinkler systems. An automatic residential fire sprinkler system shall be installed in townhouses.

Exception: An automatic residential fire sprinkler system shall ~~not~~ be required when additions or alterations are made to existing townhouses that do not have an automatic residential fire sprinkler system installed.

R313.1.1 Design and installation. Automatic residential fire sprinkler systems for townhouses shall be designed and installed in accordance with Section P2904.

Proposed Language SC IRC 313.1
R313.1 Townhouse automatic fire sprinkler systems. An automatic residential fire sprinkler system shall be installed in townhouses (where the townhomes are constructed in a single building of attached one-family and two-family residences of three or more units in any single building.)

Exception: An automatic residential fire sprinkler system shall not be required when additions or alterations are made to existing townhouses that do not have an automatic residential fire sprinkler system installed.

R313.1.1 Design and installation. Automatic residential fire sprinkler systems for townhouses shall be designed and installed in accordance with Section P2904.

Note IBC 310.4 Residential Group R-3
Residential Group R-3 occupancies where the occupants are primarily permanent in nature and not classified as Group R-1, R-2, R-4 or I, including:
Buildings that do not contain more than two dwelling units

9/28 Study Committee Recommendation: Do not support approval

In 200 characters or less, please briefly describe the justification for this modification request.

Reason for Modification
1) Fire Fighting Water Demand Load is more like an apartment IBC building up to 3 stories
2) Occupancy is the same as an IBC apartment
3) Furniture and fixtures are residential in nature like an IBC apartment
4) Relaxed IRC code for affordability should not also result in reduced life safety
5) Renters in TH have little to no ability to control fire safety habits of neighbors

Per Regulation 8-240(E)(5), please list the persons with their titles and affiliations, known at the time of submittal, who will provide testimony in favor of the amendment. Due to the possibility of virtual hearings, **all information is the table below is required** to ensure proper notification. Use additional pages as needed.

Name	Title	Affiliation	Phone Number	Email Address
Charles Stewart	Code Committee Member	SC MPA	[redacted]	
Anthony Zazaca	President	SC MPA		

Affirmation
I certify that all information in this form, including all supplementary documents submitted with this form, are true and correct to the best of my knowledge after undertaking due diligence to determine their accuracy.

Signature: _____ Date: 9/20/2021

Title: Code Committee Member

South Carolina Department of Labor, Licensing and Regulation
South Carolina Building Codes Council
110 Centerview Dr • Columbia • SC • 29210
P.O. Box 11329 • Columbia • SC • 29211-1329
Phone: 803-896-4688 • contact.bcc@llr.sc.gov • Fax: 803-896-4814
llr.sc.gov/bcc

IRC 2021-20

2021 BUILDING CODE MODIFICATION REQUEST FORM

Requirements:

- All requests must be submitted by September 22, 2021.
- Each request for code modification must be submitted separately.
- A cover letter from the local jurisdiction or professional association stating that the individual is authorized to present the proposed amendment; and verification that the proposed amendment has the support of at least a majority of the members of the board or council governing the local jurisdiction or professional association proposing the modification.
- Sufficient test information, studies, data, or other documentation that would be necessary to fully explain and justify the proposed amendment
- For local modification requests only: the physical or climatological basis for the request and the reason that the suggested change would correct the condition.
- A local jurisdiction or professional association shall not propose a modification which will amend, suspend, eliminate or supersede an existing statute, policy, rule or regulation of any state or federal agency per S.C. Regulation 8-240 (H).
- **A completed modification request must be received with all required documentation before it will be reviewed.**

☒ Statewide Modification
☐ Local Modification: _____
(List all jurisdictions that apply.)

Association/Jurisdiction: Home Builders Association of South Carolina

Address: 625 Taylor Street (Street) Columbia (City) SC (State) 29201 (Zip)

Name: Mark Nix Title/Position: Executive Director

Phone No.: [redacted] Email Address: [redacted]

Please select the applicable code to be modified:

2021 International Residential Code

Please list the exact code section, table, figure, or appendix to be modified, and attach a photocopy of the applicable code section: R314.3.2 Location

Code section as modified:
(Please strike through language being removed, and put language to be added in parentheses. Use additional pages as needed.)

R314.3.2 Location- Outside each separate sleeping area ~~in the immediate vicinity of the~~ *no further than 25' from any* bedrooms~~.~~ *or as required by the devices installation instructions.*

8/19 Study Committee Recommendation: Support approval as written below:

R314.3(2) Location. Outside each separate sleeping area, within 21 ft (6.4 m) of any door to a sleeping room, with the distance measured along a path of travel.

In 200 characters or less, please briefly describe the justification for this modification request.

Reason: Clarification to reflect as noted in NFPA 72.

Per Regulation 8-240(E)(5), please list the persons with their titles and affiliations, known at the time of submittal, who will provide testimony in favor of the amendment. Due to the possibility of virtual hearings, **all information is the table below is required** to ensure proper notification. Use additional pages as needed.

Name	Title	Affiliation	Phone Number	Email Address
Mark Nix	Executive Director	HBA of SC	[redacted]	
Andy Barber	HBASC Codes Chairman	HBA of SC		

Affirmation

I certify that all information in this form, including all supplementary documents submitted with this form, are true and correct to the best of my knowledge after undertaking due diligence to determine their accuracy.

Signature: Mark Nix Digitally signed by Mark Nix Date: 2021.08.10 16:01:22 -04'00' Date: _____

Title: Executive Director

2021 International Residential Code
South Carolina Building Codes Council
Modification Continuations from 2018

2021 Code Section: 315.2.2 Alterations, Repairs and Additions

Modification: Add Language to Exception Number 2.

Exception 2. Installation, alteration or repairs of plumbing or mechanical systems other than installation or alteration of fuel fired systems and appliances are exempt from the requirements of this section.

Reason: N/A

Proponent: BOASC

Previous Code Cycles	Previous Modification Number	Previous Code Section
IRC 2018	IRC 2018 13	315.2.2

Comments: 2021 IRC added exception 3 below. No need to continue modification.

2021 IRC
R315.2.2 Alterations, repairs and additions. Where *alterations*, *repairs* or *additions* requiring a *permit* occur, the individual *dwelling unit* shall be equipped with carbon monoxide alarms located as required for new *dwellings*.
Exceptions:
1. Work involving the exterior surfaces of *dwellings*, such as the replacement of roofing or siding, or the addition or replacement of windows or doors, or the addition of a porch or deck.
2. Installation, *alteration* or repairs of plumbing systems.
3. Installation, alteration or repairs of mechanical systems that are not fuel fired.

7/27: Modification dropped. 2021 code addresses issue.

2021 International Residential Code
South Carolina Building Codes Council
Modification Continuations from 2018

2021 Code Section: R317.1.1 Field treatment

Modification: Add text to the end of the existing section.

The section now reads:

Field-cut ends, notches and drilled holes of preservative-treated wood shall be treated in the field in accordance with AWPA M4 *or in accordance with the preservative-treated wood product manufacturer's recommendations.*

Reason: To add the preservative-treated wood product manufacturer's field treatment recommendations as a method of compliance.

Proponent: Structural Engineers Association of South Carolina

Previous Code Cycles	Previous Modification Number	Previous Code Section
IRC 2018	IRC 2018 14	R317.1.1
IRC 2015	IRC 2015 13	R317.1.1
IRC 2012	IRC 2012 12	R317.1.1

Comments: No changes in 2021 IRC.

7/27 Study Committee Recommendation: Support approval

2021 International Residential Code
South Carolina Building Codes Council
Modification Continuations from 2018

2021 Code Section: 318.1 Protection against Subterranean Termites

Modification: Add Language.

7. Treatments may be conducted as outlined in Section 27-1085 of the Rules and Regulations for the Enforcement of the SC Pesticide Control Act and enforced by the Clemson University Department of Pesticide Regulation.

Reason: N/A

Proponent: Home Builders Association of South Carolina

Previous Code Cycles	Previous Modification Number	Previous Code Section
IRC 2018	IRC 2018 15	318.1

Comments: No changes in 2021 IRC.

7/27 Study Committee Recommendation: Support approval

2021 International Residential Code
South Carolina Building Codes Council
Modification Continuations from 2018

2021 Code Section: R318.4 Foam Plastic Protection

Modification: Deleted number 2 and renumber and Add Language.

In areas where the probability of termite infestation is "very heavy" as indicated in Figure ~~R301.2(7)~~ R318.4, extruded and expanded polystyrene, polyisocyanurate and other foam plastics shall not be installed on the exterior face or under interior or exterior foundation walls or slab foundations located below grade. The clearance between foam plastics installed above grade and exposed earth shall be not less than 6 inches (152 mm). For crawl space applications, foam plastic shall be installed so as to provide a termite inspection gap of no less than 6 inches along the top of the foundation wall and foundation sill plate.

Exceptions:

1. Buildings where the structural members of walls, floors, ceilings and roofs are entirely of noncombustible materials or pressure preservative treated wood.

2. On the interior side of basement walls

Reason: N/A

Proponent: Home Builders Association of South Carolina

Previous Code Cycles	Previous Modification Number	Previous Code Section
IRC 2018	IRC 2018 16	R318.4

Comments: Figure is now R318.4 in 2021 IRC. See change above.

7/27 Study Committee Recommendation: Support approval with Figure update

South Carolina Department of Labor, Licensing and Regulation
South Carolina Building Codes Council
110 Centerview Dr • Columbia • SC • 29210
P.O. Box 11329 • Columbia • SC • 29211-1329
Phone: 803-896-4688 • contact.bcc@llr.sc.gov • Fax: 803-896-4814
llr.sc.gov/bcc

IRC 2021-25

2021 BUILDING CODE MODIFICATION REQUEST FORM

Requirements:

- All requests must be submitted by September 22, 2021.
- Each request for code modification must be submitted separately.
- A cover letter from the local jurisdiction or professional association stating that the individual is authorized to present the proposed amendment; and verification that the proposed amendment has the support of at least a majority of the members of the board or council governing the local jurisdiction or professional association proposing the modification.
- Sufficient test information, studies, data, or other documentation that would be necessary to fully explain and justify the proposed amendment
- For local modification requests only: the physical or climatological basis for the request and the reason that the suggested change would correct the condition.
- A local jurisdiction or professional association shall not propose a modification which will amend, suspend, eliminate or supersede an existing statute, policy, rule or regulation of any state or federal agency per S.C. Regulation 8-240 (H).
- **A completed modification request must be received with all required documentation before it will be reviewed.**

☒ Statewide Modification

☐ Local Modification: _____

(List all jurisdictions that apply.)

Association/Jurisdiction: Home Builders Association of South Carolina

Address: 625 Taylor Street (Street) Columbia (City) SC (State) 29201 (Zip)

Name: Mark Nix Title/Position: Executive Director

Phone No.: [redacted] Email Address: [redacted]

Please select the applicable code to be modified:

2021 International Residential Code

Please list the exact code section, table, figure, or appendix to be modified, and attach a photocopy of the applicable code section: R318.5 – Termite Inspection Area

Code section as modified:
(Please strike through language being removed, and put language to be added in parentheses. Use additional pages as needed.)

R318.5 - Termite Inspection Area. Where foam plastic is applied in accordance with R318.4 a continuous 6" area centered along the sill plate shall be left open for termite activity inspection

9/28 Study Committee Recommendation: Support approval with change of "area" to "strip". See below.

R318.5 Termite Inspection Strip. Where foam plastic is applied in accordance with R318.4 a continuous 6" strip centered along the sill plate shall be left open for termite activity inspection.

In 200 characters or less, please briefly describe the justification for this modification request.

Provides added consistency and ease for inspections.

Per Regulation 8-240(E)(5), please list the persons with their titles and affiliations, known at the time of submittal, who will provide testimony in favor of the amendment. Due to the possibility of virtual hearings, **all information is the table below is required** to ensure proper notification. Use additional pages as needed.

Name	Title	Affiliation	Phone Number	Email Address
Mark Nix	Executive Director	HBA of SC	[redacted]	
Andy Barber	HBASC Codes Chairman	HBA of SC		

Affirmation

I certify that all information in this form, including all supplementary documents submitted with this form, are true and correct to the best of my knowledge after undertaking due diligence to determine their accuracy.

Signature: Mark Nix Digitally signed by Mark Nix Date: 2021.09.02 14:01:18 -04'00' Date: _____

Title: Executive Director

2021 International Residential Code
South Carolina Building Codes Council
Modification Continuations from 2018

2021 Code Section: R319.1 Address identification

Modification: Delete language.

The section now reads:

Buildings shall be provided with approved address identification. The address identification shall be legible and placed in a position that is visible from the street or road fronting the property. Address identification characters shall contrast with their background. Address numbers shall be Arabic numbers or alphabetical letters. Numbers shall not be spelled out. Each character shall be not less than 4 inches (102 mm) in height with a stroke width of not less than 0.5 inch (12.7 mm). Where access is by means of a private road and the building address cannot be viewed from the public way, a monument, pole or other sign or means shall be used to identify the structure. Address identification shall be maintained.

Reason: Impractical

Proponent: Home Builders Association of South Carolina

Previous Code Cycles	Previous Modification Number	Previous Code Section
IRC 2018	IRC 2018 17	R319.1
IRC 2015	IRC 2015 14	R319.1

Comments: No changes to this section in 2021 IRC.

R319.1 Address identification. Buildings shall be provided with *approved* address identification. The address identification shall be legible and placed in a position that is visible from the street or road fronting the property. Address identification characters shall contrast with their background. Address numbers shall be Arabic numbers or alphabetical letters. ~~Numbers shall not be spelled out. Each character shall be not less than 4 inches (102 mm) in height with a stroke width of not less than 0.5 inch (12.7 mm).~~ Where required by the fire code official, address identification shall be provided in additional *approved* locations to facilitate emergency response. Where access is by means of a private road and the building address cannot be viewed from the *public way*, a monument, pole or other sign or means shall be used to identify the structure. Address identification shall be maintained.

7/27 Study Committee Recommendation: Support approval

South Carolina Department of Labor, Licensing and Regulation
South Carolina Building Codes Council
110 Centerview Dr • Columbia • SC • 29210
P.O. Box 11329 • Columbia • SC • 29211-1329
Phone: 803-896-4688 • contact.bcc@llr.sc.gov • Fax: 803-896-4814
llr.sc.gov/bcc

IRC 2021-27

2021 BUILDING CODE MODIFICATION REQUEST FORM

Requirements:

- All requests must be submitted by September 22, 2021.
- Each request for code modification must be submitted separately.
- A cover letter from the local jurisdiction or professional association stating that the individual is authorized to present the proposed amendment; and verification that the proposed amendment has the support of at least a majority of the members of the board or council governing the local jurisdiction or professional association proposing the modification.
- Sufficient test information, studies, data, or other documentation that would be necessary to fully explain and justify the proposed amendment
- For local modification requests only: the physical or climatological basis for the request and the reason that the suggested change would correct the condition.
- A local jurisdiction or professional association shall not propose a modification which will amend, suspend, eliminate or supersede an existing statute, policy, rule or regulation of any state or federal agency per S.C. Regulation 8-240 (H).
- **A completed modification request must be received with all required documentation before it will be reviewed.**

☒ Statewide Modification

☐ Local Modification: _____

(List all jurisdictions that apply.)

Association/Jurisdiction: Home Builders Association of South Carolina

Address: 625 Taylor Street (Street) Columbia (City) SC (State) 29201 (Zip)

Name: Mark Nix Title/Position: Executive Director

Phone No.: [redacted] Email Address: [redacted]

Please select the applicable code to be modified:

2021 International Building Code

Please list the exact code section, table, figure, or appendix to be modified, and attach a photocopy of the applicable code section: R 321.1.2 Space Guards

Code section as modified:
(Please strike through language being removed, and put language to be added in parentheses. Use additional pages as needed.)

R321.1.2 - Space Guards. Swing-door elevators with a space between the hoistway door and car door or gate that exceeds 5 inches (127mm) must be fitted with a space guard (a.k.a. “baffle”). The baffle's vertical face shall extend at least 40 inches up from bottom of the door. The top face of the baffle shall be set at a 60 to 75 degree angle.

9/28 Study Committee Recommendation: Support approval

In 200 characters or less, please briefly describe the justification for this modification request.

The door baffle is intended to reduce the dangers associated with the gap between the swing door and elevator shaft. This door baffle is used to assist in safe compliance with elevator code commonalty known as the 3” x 5” Rule.

Per Regulation 8-240(E)(5), please list the persons with their titles and affiliations, known at the time of submittal, who will provide testimony in favor of the amendment. Due to the possibility of virtual hearings, **all information is the table below is required** to ensure proper notification. Use additional pages as needed.

Name	Title	Affiliation	Phone Number	Email Address
Mark Nix	Executive Director	HBA of SC	[redacted]	
Andy Barber	HBASC Codes Chairman	HBA of SC		
Stan Godshall		Port City Elevator		

Affirmation

I certify that all information in this form, including all supplementary documents submitted with this form, are true and correct to the best of my knowledge after undertaking due diligence to determine their accuracy.

Signature: *Mark Nix* Date: 9/17/2021

Title: Executive Director

2021 International Residential Code
South Carolina Building Codes Council
Modification Continuations from 2018

2021 Code Section: R322.1 General

Modification: Add Language below as last sentence.

Where there is a conflict with this code section and a locally adopted flood ordinance, the more restrictive provision shall apply.

Reason: N/A

Proponent: BOASC

Previous Code Cycles	Previous Modification Number	Previous Code Section
IRC 2018	IRC 2018 18	R322.1

Comments: No changes to this section in 2021 IRC.

7/27 Study Committee Recommendation: Support approval

South Carolina Department of Labor, Licensing and Regulation
South Carolina Building Codes Council
110 Centerview Dr • Columbia • SC • 29210
P.O. Box 11329 • Columbia • SC • 29211-1329
Phone: 803-896-4688 • contact.bcc@llr.sc.gov • Fax: 803-896-4814
llr.sc.gov/bcc

IRC 2021-29

2021 BUILDING CODE MODIFICATION REQUEST FORM

Requirements:

- All requests must be submitted by September 22, 2021.
- Each request for code modification must be submitted separately.
- A cover letter from the local jurisdiction or professional association stating that the individual is authorized to present the proposed amendment; and verification that the proposed amendment has the support of at least a majority of the members of the board or council governing the local jurisdiction or professional association proposing the modification.
- Sufficient test information, studies, data, or other documentation that would be necessary to fully explain and justify the proposed amendment
- For local modification requests only: the physical or climatological basis for the request and the reason that the suggested change would correct the condition.
- A local jurisdiction or professional association shall not propose a modification which will amend, suspend, eliminate or supersede an existing statute, policy, rule or regulation of any state or federal agency per S.C. Regulation 8-240 (H).
- **A completed modification request must be received with all required documentation before it will be reviewed.**

☒ Statewide Modification

☐ Local Modification: _____

(List all jurisdictions that apply.)

Association/Jurisdiction: Home Builders Association of South Carolina

Address: 625 Taylor Street (Street) Columbia (City) SC (State) 29201 (Zip)

Name: Mark Nix Title/Position: Executive Director

Phone No.: [redacted] Email Address: [redacted]

Please select the applicable code to be modified:

2021 International Residential Code

Please list the exact code section, table, figure, or appendix to be modified, and attach a photocopy of the applicable code section: R326 Habitable Attics

Code section as modified:
(Please strike through language being removed, and put language to be added in parentheses. Use additional pages as needed.)

R326 Habitable Attics Delete Exceptions 1, 1.1 & 1.2 & 4

8/19 Study Committee Recommendation: Support approval changing "one third" in exception 1.1 to "three fourths" and deleting exception 1.2. No other changes approved.

R326.3 Story above grade plane. A habitable attic shall be considered a story above *grade plane*.
Exceptions: A habitable attic shall not be considered to be a story above *grade plane* provided that the habitable attic meets all the following:
1. The aggregate area of the habitable attic is either of the following:
1.1. Not greater than ~~one-third~~ three-fourths of the floor area of the story below.
~~1.2. Not greater than one-half of the floor area of the story below where the habitable attic is located within a dwelling unit equipped with a fire sprinkler system in accordance with Section P2904.~~
2. The occupiable space is enclosed by the roof assembly above, knee walls, if applicable, on the sides and the floor-ceiling assembly below.
3. The floor of the habitable attic does not extend beyond the exterior walls of the story below.
4. Where a habitable attic is located above a third story, the dwelling unit or townhouse unit shall be equipped with a fire sprinkler system in accordance with Section P2904.

In 200 characters or less, please briefly describe the justification for this modification request.

Explanation: the deletion of these exceptions brings the definition of the Habitable Attic in line with the 2018 IRC.

Per Regulation 8-240(E)(5), please list the persons with their titles and affiliations, known at the time of submittal, who will provide testimony in favor of the amendment. Due to the possibility of virtual hearings, **all information is the table below is required** to ensure proper notification. Use additional pages as needed.

Name	Title	Affiliation	Phone Number	Email Address
Mark Nix	Executive Director	HBA of SC	[redacted]	
Andy Barber	HBASC Codes Chairman	HBA of SC		

Affirmation

I certify that all information in this form, including all supplementary documents submitted with this form, are true and correct to the best of my knowledge after undertaking due diligence to determine their accuracy.

Signature: Mark Nix Digitally signed by Mark Nix Date: 2021.08.10 16:08:16 -04'00' Date: _____

Title: Executive Director

South Carolina Department of Labor, Licensing and Regulation
South Carolina Building Codes Council
110 Centerview Dr • Columbia • SC • 29210
P.O. Box 11329 • Columbia • SC • 29211-1329
Phone: 803-896-4688 • contact.bcc@llr.sc.gov • Fax: 803-896-4814
llr.sc.gov/bcc

IRC 2021-30

2021 BUILDING CODE MODIFICATION REQUEST FORM

Requirements:

- All requests must be submitted by September 22, 2021.
- Each request for code modification must be submitted separately.
- A cover letter from the local jurisdiction or professional association stating that the individual is authorized to present the proposed amendment; and verification that the proposed amendment has the support of at least a majority of the members of the board or council governing the local jurisdiction or professional association proposing the modification.
- Sufficient test information, studies, data, or other documentation that would be necessary to fully explain and justify the proposed amendment
- For local modification requests only: the physical or climatological basis for the request and the reason that the suggested change would correct the condition.
- A local jurisdiction or professional association shall not propose a modification which will amend, suspend, eliminate or supersede an existing statute, policy, rule or regulation of any state or federal agency per S.C. Regulation 8-240 (H).
- **A completed modification request must be received with all required documentation before it will be reviewed.**

☒ Statewide Modification

☐ Local Modification: _____

(List all jurisdictions that apply.)

Association/Jurisdiction: Home Builders Association of South Carolina

Address: 625 Taylor Street (Street) Columbia (City) SC (State) 29201 (Zip)

Name: Mark Nix Title/Position: Executive Director

Phone No.: [redacted] Email Address: [redacted]

Please select the applicable code to be modified:

2021 International Residential Code

Please list the exact code section, table, figure, or appendix to be modified, and attach a photocopy of the applicable code section: R403.1.6 Foundation anchorage

Code section as modified:
(Please strike through language being removed, and put language to be added in parentheses. Use additional pages as needed.)

R403.1.6 Foundation anchorage. Wood sill plates and wood walls supported directly on continuous foundations shall be anchored to the foundation in accordance with this section.

Cold-formed steel framing shall be anchored directly to the foundation or fastened to wood sill plates anchored to the foundation. Anchorage of cold-formed steel framing and sill plates supporting cold- formed steel framing shall be in accordance with this section and Section R505.3.1 or R603.3.1.

Wood sole plates at all exterior walls on monolithic slabs, wood sole plates of *braced wall panels* at building interiors on monolithic slabs and all wood sill plates shall be anchored to the foundation with minimum 1/2-inch diameter (12.7 mm) anchor bolts spaced a maximum of 6 feet (1829 mm) on center or *approved* anchors or anchor straps spaced as required to provide equivalent anchorage to 1/2-inch- diameter (12.7 mm) anchor bolts. Bolts shall extend a minimum of 7 inches (178 mm) into concrete or grouted cells of concrete masonry units. The bolts shall be located in the middle third of the width of the plate. A nut and washer shall be tightened on each anchor bolt. There shall be a minimum of two bolts per plate section with one bolt located not more than 12 inches (305 mm) or less than seven bolt diameters from each end of the plate section. Interior bearing wall sole plates on monolithic slab foundations that are not part of a *braced wall panel* shall be positively anchored with approved fasteners. Sill plates and sole plates shall be protected against decay and termites where required by Sections R317 and R318. Anchor bolts shall be permitted to be located while concrete is still plastic and before it has set. Where anchor bolts resist placement or the consolidation of concrete around anchor bolts is impeded, the concrete shall be vibrated to ensure full contact between the anchor bolts and concrete.

Exceptions:

1. Walls 24 inches (610 mm) total length or shorter connecting offset braced wall panels shall be anchored to the foundation with a minimum of one anchor bolt located in the center third of the plate section and shall be attached to adjacent braced wall panels at corners as shown in Item 9 of Table R602.3(1).
2. Connection of walls 12 inches (305 mm) total length or shorter connecting offset braced wall panels to the foundation without anchor bolts shall be permitted. The wall shall be attached to adjacent braced wall panels at corners as shown in Item 9 of Table R602.3(1).
3. Where the basic wind speed in accordance with Figure R301.2(4)A does not exceed 115 miles per hour (51 m/s), the seismic design category is A or B and Method GB in accordance with Section R602.10 is used for a *braced wall line* on the interior of the dwelling, anchor bolts shall not be required for the wood sole plates of the *braced wall panels*. Positive anchorage with approved fasteners shall be provided.

8/19 Study Committee Recommendation: Do not support approval

In 200 characters or less, please briefly describe the justification for this modification request.

This amendment provides an exception to the requirement for attaching bottom plates of braced wall panels on the interior of a dwelling to foundations with anchor bolts. The exception applies in low-wind, low-seismic areas where gypsum board is used as the bracing method for the interior wall in question. See attached for additional reasoning.

Per Regulation 8-240(E)(5), please list the persons with their titles and affiliations, known at the time of submittal, who will provide testimony in favor of the amendment. Due to the possibility of virtual hearings, **all information is the table below is required** to ensure proper notification. Use additional pages as needed.

Name	Title	Affiliation	Phone Number	Email Address
Mark Nix	Executive Director	HBA of SC	[redacted]	
Andy Barber	HBASC Codes Chairman	HBA of SC		

Affirmation

I certify that all information in this form, including all supplementary documents submitted with this form, are true and correct to the best of my knowledge after undertaking due diligence to determine their accuracy.

Signature: Mark Nix Digitally signed by Mark Nix Date: 2021.08.10 16:09:54 -04'00' Date: _____

Title: Executive Director

Reason:

This amendment revises the language for anchorage of light-frame wood stud walls to the foundations of the house. As currently stated, the provisions require anchor bolts for the portions of a wall on the interior of a dwelling that are designated as braced wall panels for a braced wall line passing through the dwelling. To provide the required 7–inch embedment depth, a thickened slab or other continuous footing would be necessary. Chapters 4 and 6 of the IRC do not explicitlyrequire a continuous foundation in these locations in low-wind, low-seismic areas, and they are not traditionally provided. If interpreted and enforced by plan reviewers and inspectors in these areas, disputes and project delays will result and/or homeowners will incur significant additional construction costs.

The ICC Ad-Hoc Committee on Wall Bracing revised this section during the 2007/2008 code cyclewith the intent of ensuring that sufficient anchorage is provided along braced wall lines inside a dwelling to transfer lateral loads to either monolithic (thickened) slab foundations or continuous footings. While NAHB agrees that providing a continuous load path is important, the new language is overly broad in its application and not technically justified for many common conditions. The typical bracing method used for braced wall lines on the interior of a one- or two- story dwelling in a low-wind, low-seismic area is Method GB, consistent with the use of gypsum board as the typical interior wall finish material. The allowable shear capacity for Method GB whenused on both sides of a braced wall is 200plf (pounds per linear foot). The standard fastener schedule, Table R602.3(1), specifies 3-16d nails at 16" spacing for fastening the bottom plate of abraced wall panel on the interior of a dwelling to floor framing below (such as a raised floor system over a crawlspace or pier-and-beam foundation). This standard nailing provides a 200plf allowable capacity, as would many typical post-installed anchors (e.g. wedge or expansion anchors) that are short enough to be installed in just a slab-on-grade without the need for thickened footings, or even power-actuated fasteners. 1/2" diameter anchor bolts at 6-foot spacing are not necessary for the proper anchorage of these walls.

The proposed amendment provides an exception to the requirement that an interior wall that also used as part of a braced wall line be fastened to a slab-on-grade with anchor bolts, rather than other methods of making a “positive connection” such as wedge or expansion anchors, power fasteners, or concrete nails. The exception is limited to areas of low wind and low seismic hazardsand to walls braced using gypsum board, with its lower allowable shear capacity.

2021 International Residential Code
South Carolina Building Codes Council
Modification Continuations from 2018

2021 Code Section: R404.1.9.2 Masonry Piers Supporting floor girders

Modification: Modify language.

Section now reads:

R404.1.9.2 Masonry piers supporting floor girders. Masonry piers supporting wood girders sized in accordance with Tables R602.7(1) and R602.7(2) shall be permitted in accordance with this section. Piers supporting girders for interior bearing walls shall be filled solidly with grout or type M or S mortar and shall have a minimum nominal dimension of 8 inches (203 mm)and a maximum height not exceeding 10 times the nominal thickness from top of footing to bottom of sill plate or girder. Piers supporting beams and girders for exterior bearing walls shall be filled solidly with grout or type M or S mortar, shall contain a minimum of one #4 (13 mm) dowel mid-depth, and shall have a minimum nominal dimension of 8 inches (203 mm) and a maximum height of 4 times the nominal thickness from top of footing to bottom of sill plate or girder unless it can be shown by accepted engineering practice that there is sufficient foundation wall along the foundation line to resist the imposed lateral loads, in which case the maximum height shall not exceed 10 times the nominal thickness. Girders and sill plates shall be anchored to the pier or footing in accordance with Section R403.1.6 or Figure ~~R404.1.5(1)~~ R404.1.5.3. Floor girder bearing shall be in accordance with Section R502.6.

Reason: Unusually restrictive

Proponent: Home Builders Association of South Carolina and South Carolina Structural Engineers Association

Previous Code Cycles	Previous Modification Number	Previous Code Section
IRC 2018	IRC 2018 20	R404.1.9.2
IRC 2015	IRC 2015 16	R404.1.9.2
IRC 2012	IRC 2012 13	R404.1.9.2

Comments: See reference error above in red.

7/27 Study Committee Recommendation: Support approval with clerical correction above.

2021 International Residential Code
South Carolina Building Codes Council
Modification Continuations from 2018

2021 Code Section: R408.3 Unvented Crawl Space

Modification: Delete "Class 1" and Add Language.

Ventilation openings in under-floor spaces specified in Sections R408.1 and R408.2 shall not be required where the following items are provided:

1. Exposed earth shall be ~~is~~ covered with a continuous vapor retarder meeting ASTM E1745 Class A. Joints of the vapor retarder shall overlap by 6 inches (152 mm) and shall be sealed or taped. The edges of the vapor retarder shall extend not less than 6 inches (152 mm) up the stem wall and shall be attached and sealed to the stem wall or insulation.

Reason: N/A

Proponent: Structural Engineers Association of SC

Previous Code Cycles	Previous Modification Number	Previous Code Section
IRC 2018	IRC 2018 21	R408.3

Comments: 2021 IRC says "shall be," see above. Language changed in 2021 IRC. No longer references R408.1 and R408.2 in first sentence. Underlined modification can still be applied.

2021 IRC
R408.3 Unvented crawl space. For unvented under-floor spaces, the following items shall be provided:

1. Exposed earth shall be covered with a continuous Class I vapor retarder. Joints of the vapor retarder shall overlap by 6 inches (152 mm) and shall be sealed or taped. The edges of the vapor retarder shall extend not less than 6 inches (152 mm) up the stem wall and shall be attached and sealed to the stem wall or insulation.

(Additional text in code section after this…)

7/27 Study Committee Recommendation: Support approval with minor correction of "shall be" above.

IRC 2021-33

South Carolina Department of Labor, Licensing and Regulation
South Carolina Building Codes Council
110 Centerview Dr • Columbia • SC • 29210
P.O. Box 11329 • Columbia • SC • 29211-1329
Phone: 803-896-4688 • contact.bcc@llr.sc.gov • Fax: 803-896-4814
llr.sc.gov/bcc

2021 BUILDING CODE MODIFICATION REQUEST FORM

Requirements:

- All requests must be submitted by September 22, 2021.
- Each request for code modification must be submitted separately.
- A cover letter from the local jurisdiction or professional association stating that the individual is authorized to present the proposed amendment; and verification that the proposed amendment has the support of at least a majority of the members of the board or council governing the local jurisdiction or professional association proposing the modification.
- Sufficient test information, studies, data, or other documentation that would be necessary to fully explain and justify the proposed amendment
- For local modification requests only: the physical or climatological basis for the request and the reason that the suggested change would correct the condition.
- A local jurisdiction or professional association shall not propose a modification which will amend, suspend, eliminate or supersede an existing statute, policy, rule or regulation of any state or federal agency per S.C. Regulation 8-240 (H).
- **A completed modification request must be received with all required documentation before it will be reviewed.**

☒ Statewide Modification
☐ Local Modification: _____
(List all jurisdictions that apply.)

Association/Jurisdiction: Home Builders Association of South Carolina

Address: 625 Taylor Street (Street) Columbia (City) SC (State) 29201 (Zip)

Name: Mark Nix Title/Position: Executive Director

Phone No.: [redacted] Email Address: [redacted]

Please select the applicable code to be modified:

2021 International Residential Code

Please list the exact code section, table, figure, or appendix to be modified, and attach a photocopy of the applicable code section: R408.3 2.2 – Unvented crawl space

Code section as modified:
(Please strike through language being removed, and put language to be added in parentheses. Use additional pages as needed.)

2.2. Conditioned air supply sized to deliver at a rate equal to 1 cubic foot per minute (0.47 L/s) for each 50 square feet (4.7 m2) of under- floor area, including a return air pathway to the common area (such as a duct or transfer grille), and perimeter walls insulated in accordance with ~~Section N1102.2.10.1 of this code.~~ the S.C. Energy Codes.

9/28 Study Committee Recommendation: Support approval

In 200 characters or less, please briefly describe the justification for this modification request.

Provides added clarity and consistency of codes between regulation and statute.

Per Regulation 8-240(E)(5), please list the persons with their titles and affiliations, known at the time of submittal, who will provide testimony in favor of the amendment. Due to the possibility of virtual hearings, **all information is the table below is required** to ensure proper notification. Use additional pages as needed.

Name	Title	Affiliation	Phone Number	Email Address
Mark Nix	Executive Director	HBA of SC	[redacted]	
Andy Barber	HBASC Codes Chairman	HBA of SC		

Affirmation

I certify that all information in this form, including all supplementary documents submitted with this form, are true and correct to the best of my knowledge after undertaking due diligence to determine their accuracy.

Signature: Mark Nix Digitally signed by Mark Nix Date: 2021.09.02 14:01:18 -04'00' Date: _____

Title: Executive Director

2021 International Residential Code
South Carolina Building Codes Council
Modification Continuations from 2018

2021 Code Section: R408.4 Access

Modification: Text was removed.

The section now reads:

Access shall be provided to all under-floor spaces. Access openings through the floor shall be a minimum of 18 inches by 24 inches (457 mm by 610 mm). Openings through a perimeter wall shall be not less than 16 inches by 24 inches (407 mm by 610 mm). Where any portion of the through-wall access is below grade, an areaway not less than16 inches by 24 inches (407 mm by 610 mm) shall be provided. The bottom of the areaway shall be below the threshold of the access opening. See Section M1305.1.4 for access requirements where mechanical equipment is located under floors

Reason: To allow access openings under a doorway

Proponent: Home Builders Association of South Carolina

Previous Code Cycles	Previous Modification Number	Previous Code Section
IRC 2018	IRC 2018 22	R408.4
IRC 2015	IRC 2015 17	R408.4

Comments: Above text says “shall be a minimum of.” IRC language changed in 2018 code to “shall be not smaller than.” Make change?

7/27 Study Committee Recommendation: Support approval with minor correction of "shall not be smaller than".

South Carolina Department of Labor, Licensing and Regulation
South Carolina Building Codes Council
110 Centerview Dr • Columbia • SC • 29210
P.O. Box 11329 • Columbia • SC • 29211-1329
Phone: 803-896-4688 • contact.bcc@llr.sc.gov • Fax: 803-896-4814
llr.sc.gov/bcc

2021 BUILDING CODE MODIFICATION REQUEST FORM

Requirements:

- All requests must be submitted by September 22, 2021.
- Each request for code modification must be submitted separately.
- A cover letter from the local jurisdiction or professional association stating that the individual is authorized to present the proposed amendment; and verification that the proposed amendment has the support of at least a majority of the members of the board or council governing the local jurisdiction or professional association proposing the modification.
- Sufficient test information, studies, data, or other documentation that would be necessary to fully explain and justify the proposed amendment
- For local modification requests only: the physical or climatological basis for the request and the reason that the suggested change would correct the condition.
- A local jurisdiction or professional association shall not propose a modification which will amend, suspend, eliminate or supersede an existing statute, policy, rule or regulation of any state or federal agency per S.C. Regulation 8-240 (H).
- **A completed modification request must be received with all required documentation before it will be reviewed.**

☒ Statewide Modification

☐ Local Modification: _____

(List all jurisdictions that apply.)

Association/Jurisdiction: Home Builders Association of South Carolina

Address: 625 Taylor Street (Street) Columbia (City) SC (State) 29201 (Zip)

Name: Mark Nix Title/Position: Executive Director

Phone No.: [redacted] Email Address: [redacted]

Please select the applicable code to be modified:

2021 International Residential Code

Please list the exact code section, table, figure, or appendix to be modified, and attach a photocopy of the applicable code section: R408.8 Under-floor vapor retarder

Code section as modified:
(Please strike through language being removed, and put language to be added in parentheses. Use additional pages as needed.)

R408.8 Under-floor vapor retarder - Delete section 408

8/19 Study Committee Recommendation: Support approval

In 200 characters or less, please briefly describe the justification for this modification request.

Explanation: recommend replacing the entire Section 408 with IRC 2018 language as the new language is horrible and just a bad idea in Hot-Humid locations and virtually impossible to construct. The new language is so intertwined its hard to modify therefore inserting the existing language is much easier.

Per Regulation 8-240(E)(5), please list the persons with their titles and affiliations, known at the time of submittal, who will provide testimony in favor of the amendment. Due to the possibility of virtual hearings, **all information is the table below is required** to ensure proper notification. Use additional pages as needed.

Name	Title	Affiliation	Phone Number	Email Address
Mark Nix	Executive Director	HBA of SC	[redacted]	
Andy Barber	HBASC Codes Chairman	HBA of SC		

Affirmation

I certify that all information in this form, including all supplementary documents submitted with this form, are true and correct to the best of my knowledge after undertaking due diligence to determine their accuracy.

Signature: Mark Nix Digitally signed by Mark Nix Date: 2021.08.10 16:07:50 -04'00' Date: _____

Title: Executive Director

2021 International Residential Code
South Carolina Building Codes Council
Modification Continuations from 2018

2021 Code Section: R502.11.4 Truss design drawings

Modification: The section was modified to eliminate the requirement for truss design approval prior to installation.

The section now states:

Truss design drawings, prepared in compliance with Section R502.11.1, shall be provided to the building official at the time of their inspection. Truss design drawings shall be provided with the shipment of trusses delivered to the job site. Truss design drawings shall include at a minimum the information specified ~~below~~ as follows:

Reason: The section was modified to allow the approval of truss design drawings by local building officials to occur at the time of the framing inspection, rather than at an undefined time prior to installation.

Proponent: Home Builders Association of South Carolina

Previous Code Cycles	Previous Modification Number	Previous Code Section
IRC 2018	IRC 2018 23	R502.11.4
IRC 2015	IRC 2015 18	R502.11.4
IRC 2012	IRC 2012 14	R502.11.4
IRC 2006	IRC 2006 21	R502.11.4
IRC 2003	IRC 2003 17	R502.11.4

Comments: No change in 2021 IRC to code section. Make change above to match code?

7/27 Study Committee Recommendation: Support approval with minor correction of "as follows" above.

2021 International Residential Code
South Carolina Building Codes Council
Modification Continuations from 2018

2021 Code Section: R506.2.3 Vapor retarder

Modification: Delete "Garages" from Exception 1.

Exception 1 now reads: Utility buildings and other unheated accessory structures

Reason: It is a fairly common practice for garages to be transformed into conditioned space at which time having a vapor retarder becomes necessary, or to be converted to storage space (over 70 sq. ft.) at which time a vapor barrier is required.

Proponent: Structural Engineers' Association of South Carolina

Previous Code Cycles	Previous Modification Number	Previous Code Section
IRC 2018	IRC 2018 24	R506.2.3
IRC 2015	IRC 2015 19	R506.2.3

Comments: First sentence changed in 2021 IRC. Does not change modification.

2021 IRC
R506.2.3 Vapor retarder. A minimum 10-mil (0.010 inch; 0.254 mm) vapor retarder conforming to ASTM E1745 Class A requirements with joints lapped not less than 6 inches (152 mm) shall be placed between the concrete floor slab and the base course or the prepared subgrade where a base course does not exist.
Exception: The vapor retarder is not required for the following:
1. Garages, utility buildings and other unheated *accessory structures*.
2. For unheated storage rooms having an area of less than 70 square feet (6.5 m_2) and carports.
3. Driveways, walks, patios and other flatwork not likely to be enclosed and heated at a later date.
4. Where *approved* by the *building official*, based on local site conditions.

7/27 Study Committee Recommendation: Support approval

2021 International Residential Code
South Carolina Building Codes Council
Modification Continuations from 2018

2021 Code Section: R606.7 Piers

Modification: Remove type N mortar from section.

Reason: To allow the use of only type M or S mortar to comply with ACI 530 which disallows the use of type N mortar in foundation walls.

Proponent: Structural Engineers' Association of South Carolina

Previous Code Cycles	Previous Modification Number	Previous Code Section
IRC 2018	IRC 2018 25	R606.7
IRC 2015	IRC 2015 20	R606.7

Comments: No changes to section in 2021 IRC.

7/27 Study Committee Recommendation: Support approval with reference change. Have Jesse double check, but he said it should be TMS402 and not ACI 530.

2021 International Residential Code
South Carolina Building Codes Council
Modification Continuations from 2018

2021 Code Section: R802.10.1 Truss design drawings

Modification: The section was modified to eliminate the requirement for truss design approval prior to installation.

The section now states:

Truss design drawings, prepared in compliance with Section R802.10, shall be provided to the building official at the time of their inspection. Truss design drawings shall be provided with the shipment of trusses delivered to the job site. Truss design drawings shall include at a minimum the ~~information specified below~~ following information:

Reason: The section was modified to allow the approval of truss design drawings by local building officials to occur at the time of the framing inspection, rather than at an undefined time prior to installation.

Proponent: Home Builders Association of South Carolina

Previous Code Cycles	Previous Modification Number	Previous Code Section
IRC 2018	IRC 2018 26	R802.10.1
IRC 2015	IRC 2015 21	R802.10.1

Comments: Continued modification IRC 2003 17, IRC 2006 21 and 2012 14 with minor language change to include all trusses.

See change above to match code.

7/27 Study Committee Recommendation: Support approval with minor correction of "following information" above.

2021 International Residential Code
South Carolina Building Codes Council
Modification Continuations from 2018

2021 Code Section: R905.2.8.5 Drip Edge

Modification: Language change.

This section now reads:

A drip edge shall be provided at eaves and rake edges of asphalt shingle roofs where required by the manufacturer.

Reason: Impractical

Proponent: Home Builders Association of South Carolina

Previous Code Cycles	Previous Modification Number	Previous Code Section
IRC 2018	IRC 2018 27	R905.2.8.5
IRC 2015	IRC 2015 22	R905.2.8.5

Comments: No changes in 2021 IRC.

7/27 Study Committee Recommendation: Support approval

2021 International Residential Code
South Carolina Building Codes Council
Modification Continuations from 2018

2021 Code Section: Chapter 11 Energy Efficiency

Modification: Deleted without substitution

Reason: The State of South Carolina has specific energy standards in statutory form (Re: Title 6, Chapter 9, Building Codes and Title 6, Chapter 10, Building Energy Efficiency Standard Act.). To eliminate any possible conflicts concerning the insulation requirements for single and two family residential buildings between the International Residential Code and state law, Chapter 11 was deleted.

Proponent: Home Builders Association of South Carolina

Previous Code Cycles	Previous Modification Number	Previous Code Section
IRC 2018	IRC 2018 28	Chapter 11
IRC 2015	IRC 2015 22	Chapter 11
IRC 2012	IRC 2012 16	Chapter 11
IRC 2006	IRC 2006 27	Chapter 11
IRC 2003	IRC 2003 21	Chapter 11

Comments: No changes in 2021 IRC

7/27 Study Committee Recommendation: Support approval

2021 International Residential Code
South Carolina Building Codes Council
Modification Continuations from 2018

2021 Code Section: M1411.6 Insulation of refrigerant piping

Modification: The thermal resistivity of the insulation around refrigerant vapor lines was reduced from R 4.0 to R 2.5.

The section now states:

Piping and fittings for refrigerant vapor (suction) lines shall be insulated with insulation ~~have~~ having a thermal resistivity of at least R 2.5 hr. ft 2 F/Btu and having external surface permeance not exceeding 0.05 perm [2.87 ng/(s·m2 ·Pa)] when tested in accordance with ASTM E 96.

Reason: Section M1411.4 requires insulation of refrigerant lines to R 4. Further research is needed to determine if this insulating product is commercially available. To qualify for R 4 additional insulation may be required, which could limit the spaces in which refrigerant lines could be installed.

Proponent: Home Builders Association of South Carolina

Previous Code Cycles	Previous Modification Number	Previous Code Section
IRC 2018	IRC 2018 29	M1411.6
IRC 2015	IRC 2015 24	M1411.6
IRC 2012	IRC 2012 18	M1411.6
IRC 2006	IRC 2006 28	M1411.5
IRC 2003	IRC 2003 22	M1411.4

Comments: Note typo above. 2021 IRC changed R-4 to “not less than R-3.” Keep modification?

2021 IRC
M1411.6 Insulation of refrigerant piping. Piping and fittings for refrigerant vapor (suction) lines shall be insulated with insulation having a thermal resistivity of not less than R-3 and having external surface permeance not exceeding 0.05 perm [2.87 ng/(s × m^2 × Pa)] when tested in accordance with ASTM E96.

7/27 Study Committee Recommendation: Support approval with clerical correction of "having" above.

2021 International Residential Code
South Carolina Building Codes Council
Modification Continuations from 2018

2021 Code Section: ~~M1411.8~~ M1411.9 Locking access port caps

Modification: Deleted without substitution

Reason: The section appears to solve a non-issue at an added cost to the consumer.

Proponent: Home Builders Association of South Carolina

Previous Code Cycles	Previous Modification Number	Previous Code Section
IRC 2018	IRC 2018 30	M1411.8
IRC 2015	IRC 2015 25	M1411.6
IRC 2012	IRC 2012 18	M1411.6

Comments: Existing mod is now M1411.9

2021 IRC
M1411.9 Locking access port caps. Refrigerant circuit access ports located outdoors shall be fitted with lockingtype tamper-resistant caps or shall be otherwise secured to prevent unauthorized access.

7/27 Study Committee Recommendation: Support approval with change of code section noted above.

2021 International Residential Code
South Carolina Building Codes Council
Modification Continuations from 2018

2021 Code Section: M1502.3 Duct termination

Modification: Deleted the third sentence without substitution.

The section now states:

Exhaust ducts shall terminate on the outside of the building. Exhaust duct terminations shall be in accordance with the dryer manufacturer's installation instructions. Exhaust duct terminations shall be equipped with a backdraft damper. Screens shall not be installed at the duct termination.

Reason: The three feet dimension is arbitrary and restrictive; the dimension is not a requirement of the dryer manufacturers.

Proponent: Home Builders Association of South Carolina

Previous Code Cycles	Previous Modification Number	Previous Code Section
IRC 2018	IRC 2018 31	M1502.3
IRC 2015	IRC 2015 26	M1502.3
IRC 2012	IRC 2012 19	M1502.3
IRC 2006	IRC 2006 29	M1502.2

Comments: Language was added in 2021 IRC to the sentence that is deleted with modification, see below.

M1502.3 Duct termination. Exhaust ducts shall terminate on the outside of the building. Exhaust duct terminations shall be in accordance with the dryer manufacturer's installation instructions. If the manufacturer's instructions do not specify a termination location, the exhaust duct shall terminate not less than 3 feet (914 mm) in any direction from openings into buildings, including openings in ventilated soffits. Exhaust duct terminations shall be equipped with a backdraft damper. Screens shall not be installed at the duct termination.

7/27 Study Committee Recommendation: Support approval

2021 International Residential Code
South Carolina Building Codes Council
Modification Continuations from 2018

2021 Code Section: M1502.4.2 Duct Installation

Modification: Deleted "more than 1/8" and Add Language.

Exhaust ducts shall be supported at intervals not to exceed 8 feet and within 16 inches of each side of a joint that is not installed in a vertical orientation, secured in place, making rigid contact with the duct at not less than 4 equally spaced points or 2/3rds contact if strap is used. All brackets or strapping must be noncombustible. The insert end of the duct shall extend into the adjoining duct or fitting in the direction of airflow. The overlap shall comply with Section M1601.4.2. Ducts shall not be joined with screws or similar devices that protrude into the inside of the duct. Exhaust ducts shall be sealed in accordance with Section M1601.4.1. Where dryer ducts are enclosed in wall or ceiling cavities, such cavities shall allow the installation without deformation. The duct work may be ovalized as long as it terminates in an approved duct box. Minor imperfections located on the duct, in areas other than along the seam, do not constitute a violation.

Reason: N/A

Proponent: Home Builders Association of South Carolina

Previous Code Cycles	Previous Modification Number	Previous Code Section
IRC 2018	IRC 2018 32	M1502.4.2

Comments: No changes in 2021 IRC.

7/27 Study Committee Recommendation: Support approval

2021 International Residential Code
South Carolina Building Codes Council
Modification Continuations from 2018

2021 Code Section: ~~M1502.4.5~~ M1502.4.6 Duct length

Modification: Language was modified in the first sentence to increase the maximum dryer duct length to 35 feet.

The section now states:

The maximum length of a clothes dryer exhaust duct shall not exceed 35 feet (10668 mm) from the dryer location to the wall or roof termination.

Reason: To coincide with the maximum duct length specified by most clothes dryer manufacturers

Proponent: Home Builders Association of South Carolina

Previous Code Cycles	Previous Modification Number	Previous Code Section
IRC 2018	IRC 2018 33	M1502.4.5
IRC 2015	IRC 2015 27	M1502.4.4
IRC 2012	IRC 2012 20	M1502.4.4
IRC 2006	IRC 2006 30	M1502.6

Comments: Section moved to M1502.4.6, no changes to section other than move.

2021 IRC
M1502.4.6 Duct length. The maximum allowable exhaust duct length shall be determined by one of the methods specified in Sections M1502.4.6.1 through M1502.4.6.3.

7/27 Study Committee Recommendation: Support approval with change of code section above.

2021 International Residential Code
South Carolina Building Codes Council
Modification Continuations from 2018

2021 Code Section: M1503.6 Makeup air

Modification: Language was modified to require make up air in the amount of excess over 400 cfm.

The section and exception were deleted. Section now states:

Exhaust hood systems capable of exhausting more than 400 cubic feet per minute (0.19m3 /s) shall be mechanically or naturally provided with makeup air at a rate approximately equal to the exhaust air rate more than 400 cubic feet per minute. Such makeup air systems shall be equipped with not less than one damper. Each damper shall be a gravity damper or an electrically operated damper that automatically opens when the exhaust system operates. Dampers shall be accessible for inspection, service, repair and replacement without removing permanent construction or any other ducts not connected to the damper being inspected, serviced, repaired or replaced.

Reason: Makeup air is not required for installations less than 400 cfm.

Proponent: Home Builders Association of South Carolina

Previous Code Cycles	Previous Modification Number	Previous Code Section
IRC 2018	IRC 2018 34	M1503.6
IRC 2015	IRC 2015 28	M1503.4

Comments: No changes in 2021 IRC.

7/27 Study Committee Recommendation: Support approval

2021 International Residential Code
South Carolina Building Codes Council
Modification Continuations from 2018

2021 Code Section: M1504.3 Exhaust Openings

Modification: Add Language.

Air exhaust openings shall terminate as follows:

1. Not less than 3 feet (914 mm) from property lines.

2. Not less than 3 feet (914 mm) from gravity air intake openings, operable windows and doors.

3. Not less than 10 feet (3048mm) from mechanical air intake openings except where the exhaust opening is located not less than 3 feet (914mm) above the air intake opening. Openings shall comply with Section R303.5.2 and R303.6.

Exception: Bathrooms, water closets and shower spaces.

Reason: N/A

Proponent: Home Builders Association of South Carolina

Previous Code Cycles	Previous Modification Number	Previous Code Section
IRC 2018	IRC 2018 35	M1504.3

Comments: No change in 2021 IRC.

7/27 Study Committee Recommendation: Support approval

2021 International Residential Code
South Carolina Building Codes Council
Modification Continuations from 2018

2021 Code Section: M1601.4.1 Joints, Seams and Connections

Modification: Language was modified to not require additional closure system for seams of other than snap lock and button lock types.

Exceptions:

1. Spray polyurethane foam shall be permitted to be applied without additional joint seals.

2. Where a duct connection is made that is partially inaccessible, three screws or rivets shall be equally spaced on the exposed portion of the joint so as to prevent a hinge effect.

3. For ducts having a static pressure classification of less than 2 inches of water column (500 Pa), additional closure systems shall not be required for continuously welded joints and seams and locking-type joints.

Reason:

Proponent: Home Builders Association of South Carolina

Previous Code Cycles	Previous Modification Number	Previous Code Section
IRC 2018	IRC 2018 36	M1601.4.1
IRC 2015	IRC 2015 29	M1601.4.1

Comments: Make change below to match code? No changes in 2021 IRC.

Exceptions:
1. Spray polyurethane foam shall be permitted to be applied without additional joint seals.

2. Where a duct connection is made that is partially without access, three screws or rivets shall be equally spaced on the exposed portion of the joint so as to prevent a hinge effect.

3. For ducts having a static pressure classification of less than 2 inches of water column (500 Pa), additional closure systems shall not be required for continuously welded joints and seams and locking-type joints and seams. ~~This exception shall not apply to snap-lock and button-lock type joints and seams that are located outside of *conditioned spaces*.~~

7/27 Study Committee Recommendation: Support approval with changes in red to match 2021 code.

2021 International Residential Code
South Carolina Building Codes Council
Modification Continuations from 2018

2021 Code Section: G2418.2 Design and installation

Modification: The word “metal” was removed from the first sentence of the section.

The sentence now states:

Piping shall be supported with pipe hooks, pipe straps, bands, brackets, hangers, or building structural components suitable for the size of piping, of adequate strength and quality, and located at intervals so as to prevent or damp out excessive vibration.

Reason: To allow other support materials that have been used successfully for years.

Proponent: Home Builders Association of South Carolina

Previous Code Cycles	Previous Modification Number	Previous Code Section
IRC 2018	IRC 2018 37	G2418.2
IRC 2015	IRC 2015 30	G2418.2
IRC 2012	IRC 2012 21	G2418.2

Comments: No changes in 2021 IRC.

7/27 Study Committee Recommendation: Support approval

2021 International Residential Code
South Carolina Building Codes Council
Modification Continuations from 2018

2021 Code Section: P2503.6 Shower liner test

Modification: The requirement for a dam for the shower liner test was eliminated.

The sentence now states:

Where shower floors and receptors are made watertight by the application of materials required by section P2709.2, the completed liner installation shall be tested. Shower liner shall be tested to the lesser of the depth of threshold or 2" and shall be operated at normal pressure for a test period of not less than 15 minutes, and there shall be no evidence of leakage.

Reason: To allow a simple test performed under typical conditions

Proponent: Home Builders Association of South Carolina

Previous Code Cycles	Previous Modification Number	Previous Code Section
IRC 2018	IRC 2018 38	P2503.6
IRC 2015	IRC 2015 31	P2503.6
IRC 2012	IRC 2012 22	P2503.6

Comments: No changes in 2021 IRC.

7/27 Study Committee Recommendation: Support approval

South Carolina Department of Labor, Licensing and Regulation
South Carolina Building Codes Council
110 Centerview Dr • Columbia • SC • 29210
P.O. Box 11329 • Columbia • SC • 29211-1329
Phone: 803-896-4688 • contact.bcc@llr.sc.gov • Fax: 803-896-4814
llr.sc.gov/bcc

IRC 2021-52

2021 BUILDING CODE MODIFICATION REQUEST FORM

Requirements:

- All requests must be submitted by September 22, 2021.
- Each request for code modification must be submitted separately.
- A cover letter from the local jurisdiction or professional association stating that the individual is authorized to present the proposed amendment; and verification that the proposed amendment has the support of at least a majority of the members of the board or council governing the local jurisdiction or professional association proposing the modification.
- Sufficient test information, studies, data, or other documentation that would be necessary to fully explain and justify the proposed amendment
- For local modification requests only: the physical or climatological basis for the request and the reason that the suggested change would correct the condition.
- A local jurisdiction or professional association shall not propose a modification which will amend, suspend, eliminate or supersede an existing statute, policy, rule or regulation of any state or federal agency per S.C. Regulation 8-240 (H).
- **A completed modification request must be received with all required documentation before it will be reviewed.**

☒ Statewide Modification
☐ Local Modification: _____
(List all jurisdictions that apply.)

Association/Jurisdiction: Home Builders Association of South Carolina

Address: 625 Taylor Street (Street) Columbia (City) SC (State) 29201 (Zip)

Name: Mark Nix Title/Position: Executive Director

Phone No.: [redacted] Email Address: [redacted]

Please select the applicable code to be modified:

2021 International Residential Code

Please list the exact code section, table, figure, or appendix to be modified, and attach a photocopy of the applicable code section: P2503.6 Shower Liner Test

Code section as modified:
(Please strike through language being removed, and put language to be added in parentheses. Use additional pages as needed.)

P2503.6 Shower Liner Test - Add sentence at end of paragraph *The shower liner test shall be performed at the final plumbing inspection.*

8/19 Study Committee Recommendation: Support approval

In 200 characters or less, please briefly describe the justification for this modification request.

Explanation: we need to set a particular inspection method for consistency.

Per Regulation 8-240(E)(5), please list the persons with their titles and affiliations, known at the time of submittal, who will provide testimony in favor of the amendment. Due to the possibility of virtual hearings, **all information is the table below is required** to ensure proper notification. Use additional pages as needed.

Name	Title	Affiliation	Phone Number	Email Address
Mark Nix	Executive Director	HBA of SC	[redacted]	
Andy Barber	HBASC Codes Chairman	HBA of SC		

Affirmation

I certify that all information in this form, including all supplementary documents submitted with this form, are true and correct to the best of my knowledge after undertaking due diligence to determine their accuracy.

Signature: Mark Nix Digitally signed by Mark Nix Date: 2021.08.10 16:07:08 -04'00' Date: _____

Title: Executive Director

South Carolina Department of Labor, Licensing and Regulation
South Carolina Building Codes Council
110 Centerview Dr • Columbia • SC • 29210
P.O. Box 11329 • Columbia • SC • 29211-1329
Phone: 803-896-4688 • contact.bcc@llr.sc.gov • Fax: 803-896-4814
llr.sc.gov/bcc

IRC 2021-53

2021 BUILDING CODE MODIFICATION REQUEST FORM

Requirements:

- All requests must be submitted by September 22, 2021.
- Each request for code modification must be submitted separately.
- A cover letter from the local jurisdiction or professional association stating that the individual is authorized to present the proposed amendment; and verification that the proposed amendment has the support of at least a majority of the members of the board or council governing the local jurisdiction or professional association proposing the modification.
- Sufficient test information, studies, data, or other documentation that would be necessary to fully explain and justify the proposed amendment
- For local modification requests only: the physical or climatological basis for the request and the reason that the suggested change would correct the condition.
- A local jurisdiction or professional association shall not propose a modification which will amend, suspend, eliminate or supersede an existing statute, policy, rule or regulation of any state or federal agency per S.C. Regulation 8-240 (H).
- **A completed modification request must be received with all required documentation before it will be reviewed.**

☒ Statewide Modification
☐ Local Modification: _____
(List all jurisdictions that apply.)

Association/Jurisdiction: Home Builders Association of South Carolina

Address: 625 Taylor Street (Street) Columbia (City) SC (State) 29201 (Zip)

Name: Mark Nix Title/Position: Executive Director

Phone No.: [redacted] Email Address: [redacted]

Please select the applicable code to be modified:

2021 International Residential Code

Please list the exact code section, table, figure, or appendix to be modified, and attach a photocopy of the applicable code section: P2603.2.1 -Protection against physical damage

Code section as modified:
(Please strike through language being removed, and put language to be added in parentheses. Use additional pages as needed.)

P2603.2.1 -Protection against physical damage - Add sentence to end *Steel shield plates shall be secured with nails, screws or per manufacturers requirements.*

8/19 Study Committee Recommendation: Support approval as written below in red.

P2603.2.1 Protection against physical damage. In concealed locations, where piping, other than cast-iron or galvanized steel, is installed through holes or notches in studs, joists, rafters or similar members less than 11/4 inches (31.8 mm) from the nearest edge of the member, the pipe shall be protected by steel shield plates. Such shield plates shall have a thickness of not less than 0.0575 inch (1.463 mm) (No. 16 Gage). Such plates shall cover the area of the pipe where the member is notched or bored, and shall extend not less than 2 inches (51 mm) above sole plates and below top plates. Steel shield plates shall not be secured with nails or screws, unless required by the manufacturer.

In 200 characters or less, please briefly describe the justification for this modification request.

Explanation: Clarification.

Per Regulation 8-240(E)(5), please list the persons with their titles and affiliations, known at the time of submittal, who will provide testimony in favor of the amendment. Due to the possibility of virtual hearings, **all information is the table below is required** to ensure proper notification. Use additional pages as needed.

Name	Title	Affiliation	Phone Number	Email Address
Mark Nix	Executive Director	HBA of SC	[redacted]	
Andy Barber	HBASC Codes Chairman	HBA of SC		

Affirmation

I certify that all information in this form, including all supplementary documents submitted with this form, are true and correct to the best of my knowledge after undertaking due diligence to determine their accuracy.

Signature: Mark Nix Digitally signed by Mark Nix Date: 2021.08.10 16:03:39 -04'00' Date: _____

Title: Executive Director

2021 International Residential Code
South Carolina Building Codes Council
Modification Continuations from 2018

2021 Code Section: P2603.5 Freezing

Modification: Modify language to allow a soil or waste pipe to be installed outside of a building.

The section now reads:

In localities having a winter design temperature of 32 degrees (0 degrees C) or lower as shown in Table R301.2~~(1)~~ of this code, a water pipe shall not be installed outside of a building, in exterior walls, in attic or crawl spaces, or any other place subjected to freezing temperatures unless adequate provision is made to protect it from freezing by insulation or heat or both. Water service pipe shall be installed not less than 12 inches (305 mm) deep and not less than 6 inches (152 mm) below the frost line.

Reason: Unusually restrictive

Proponent: Home Builders Association of South Carolina

Previous Code Cycles	Previous Modification Number	Previous Code Section
IRC 2018	IRC 2018 39	P2603.5
IRC 2015	IRC 2015 32	P2603.5

Comments: No changes in 2021 IRC. Note correction above.

7/27 Study Committee Recommendation: Support approval with minor correction.

South Carolina Department of Labor, Licensing and Regulation
South Carolina Building Codes Council
110 Centerview Dr • Columbia • SC • 29210
P.O. Box 11329 • Columbia • SC • 29211-1329
Phone: 803-896-4688 • contact.bcc@llr.sc.gov • Fax: 803-896-4814
llr.sc.gov/bcc

IRC 2021-55

2021 BUILDING CODE MODIFICATION REQUEST FORM

Requirements:

- All requests must be submitted by September 22, 2021.
- Each request for code modification must be submitted separately.
- A cover letter from the local jurisdiction or professional association stating that the individual is authorized to present the proposed amendment; and verification that the proposed amendment has the support of at least a majority of the members of the board or council governing the local jurisdiction or professional association proposing the modification.
- Sufficient test information, studies, data, or other documentation that would be necessary to fully explain and justify the proposed amendment
- For local modification requests only: the physical or climatological basis for the request and the reason that the suggested change would correct the condition.
- A local jurisdiction or professional association shall not propose a modification which will amend, suspend, eliminate or supersede an existing statute, policy, rule or regulation of any state or federal agency per S.C. Regulation 8-240 (H).
- **A completed modification request must be received with all required documentation before it will be reviewed.**

☒ Statewide Modification
☐ Local Modification: _____
(List all jurisdictions that apply.)

Association/Jurisdiction: Home Builders Association of South Carolina

Address: 625 Taylor Street (Street) Columbia (City) SC (State) 29201 (Zip)

Name: Mark Nix Title/Position: Executive Director

Phone No.: [redacted] Email Address: [redacted]

Please select the applicable code to be modified:

2021 International Residential Code

Please list the exact code section, table, figure, or appendix to be modified, and attach a photocopy of the applicable code section: P2603.5 Freezing

Code section as modified:
(Please strike through language being removed, and put language to be added in parentheses. Use additional pages as needed.)

P2603.5 Freezing Add Exception: Water pipes that are installed on the warm in winter side of the building envelope IE above the insulation line in a floor system or below the insulation line in an attic do not need additional pipe insulation.

8/19 Study Committee Recommendation: Support approval

In 200 characters or less, please briefly describe the justification for this modification request.

Explanation: this should not affect the current modification addressing soil and waste pipe removal from this paragraph.

Per Regulation 8-240(E)(5), please list the persons with their titles and affiliations, known at the time of submittal, who will provide testimony in favor of the amendment. Due to the possibility of virtual hearings, **all information is the table below is required** to ensure proper notification. Use additional pages as needed.

Name	Title	Affiliation	Phone Number	Email Address
Mark Nix	Executive Director	HBA of SC	[redacted]	
Andy Barber	HBASC Codes Chairman	HBA of SC		

Affirmation

I certify that all information in this form, including all supplementary documents submitted with this form, are true and correct to the best of my knowledge after undertaking due diligence to determine their accuracy.

Signature: Mark Nix Digitally signed by Mark Nix Date: 2021.08.10 16:03:18 -04'00' Date: _____

Title: Executive Director

South Carolina Department of Labor, Licensing and Regulation
South Carolina Building Codes Council
110 Centerview Dr • Columbia • SC • 29210
P.O. Box 11329 • Columbia • SC • 29211-1329
Phone: 803-896-4688 • contact.bcc@llr.sc.gov • Fax: 803-896-4814
llr.sc.gov/bcc

IRC 2021-56

2021 BUILDING CODE MODIFICATION REQUEST FORM

Requirements:

- All requests must be submitted by September 22, 2021.
- Each request for code modification must be submitted separately.
- A cover letter from the local jurisdiction or professional association stating that the individual is authorized to present the proposed amendment; and verification that the proposed amendment has the support of at least a majority of the members of the board or council governing the local jurisdiction or professional association proposing the modification.
- Sufficient test information, studies, data, or other documentation that would be necessary to fully explain and justify the proposed amendment
- For local modification requests only: the physical or climatological basis for the request and the reason that the suggested change would correct the condition.
- A local jurisdiction or professional association shall not propose a modification which will amend, suspend, eliminate or supersede an existing statute, policy, rule or regulation of any state or federal agency per S.C. Regulation 8-240 (H).
- **A completed modification request must be received with all required documentation before it will be reviewed.**

☒ Statewide Modification

☐ Local Modification: _____

(List all jurisdictions that apply.)

Association/Jurisdiction: Home Builders Association of South Carolina

Address: 625 Taylor Street (Street) Columbia (City) SC (State) 29201 (Zip)

Name: Mark Nix Title/Position: Executive Director

Phone No.: [redacted] Email Address: [redacted]

Please select the applicable code to be modified:

2021 International Residential Code

Please list the exact code section, table, figure, or appendix to be modified, and attach a photocopy of the applicable code section: P2705.1.3 General

Code section as modified:
(Please strike through language being removed, and put language to be added in parentheses. Use additional pages as needed.)

P2705.1.3 General - Add Exception - Toilets and/or bidets shall not be required to be caulked to flooring surface.

8/19 Study Committee Recommendation: Support approval as written below in red.

SECTION P2705
INSTALLATION

P2705.1 General. The installation of fixtures shall conform to the following:

1. Floor-outlet or floor-mounted fixtures shall be secured to the drainage connection and to the floor, where so designed, by screws, bolts, washers, nuts and similar fasteners of copper, copper alloy or other corrosion-resistant material.
2. Wall-hung fixtures shall be rigidly supported so that strain is not transmitted to the plumbing system.
3. Where fixtures come in contact with walls and floors, the contact area shall be watertight.
   Exception: Water closets and/or bidets shall not be required to be caulked to flooring surface.
4. Plumbing fixtures shall be usable.
5. Water closets, lavatories and bidets. A water closet, lavatory or bidet shall not be set closer than 15 inches (381 mm) from its center to any side wall, partition or vanity or closer than 30 inches (762 mm) centerto-center between adjacent fixtures. There shall be a clearance of not less than 21 inches (533 mm) in front of a water closet, lavatory or bidet to any wall, fixture or door.
6. The location of piping, fixtures or equipment shall not interfere with the operation of windows or doors.
7. In flood hazard areas as established by Table R301.2, plumbing fixtures shall be located or installed in accordance with Section R322.1.6.
8. Integral fixture-fitting mounting surfaces on manufactured plumbing fixtures or plumbing fixtures constructed on site, shall meet the design requirements of ASME A112.19.2/CSA B45.1 or ASME A112.19.3/CSA B45.4.

In 200 characters or less, please briefly describe the justification for this modification request.

Explanation: it has been decided that sealing a toilet/bidets to the floor would prevent witness to possible seal leaks that may go undetected.

Per Regulation 8-240(E)(5), please list the persons with their titles and affiliations, known at the time of submittal, who will provide testimony in favor of the amendment. Due to the possibility of virtual hearings, **all information is the table below is required** to ensure proper notification. Use additional pages as needed.

Name	Title	Affiliation	Phone Number	Email Address
Mark Nix	Executive Director	HBA of SC	[redacted]	
Andy Barber	HBASC Codes Chairman	HBA of SC		

Affirmation

I certify that all information in this form, including all supplementary documents submitted with this form, are true and correct to the best of my knowledge after undertaking due diligence to determine their accuracy.

Signature: Mark Nix Digitally signed by Mark Nix Date: 2021.08.10 16:02:57 -04'00' Date: _____

Title: Executive Director

South Carolina Department of Labor, Licensing and Regulation
South Carolina Building Codes Council
110 Centerview Dr • Columbia • SC • 29210
P.O. Box 11329 • Columbia • SC • 29211-1329
Phone: 803-896-4688 • contact.bcc@llr.sc.gov • Fax: 803-896-4814
llr.sc.gov/bcc

IRC 2021-57

2021 BUILDING CODE MODIFICATION REQUEST FORM

Requirements:

- All requests must be submitted by September 22, 2021.
- Each request for code modification must be submitted separately.
- A cover letter from the local jurisdiction or professional association stating that the individual is authorized to present the proposed amendment; and verification that the proposed amendment has the support of at least a majority of the members of the board or council governing the local jurisdiction or professional association proposing the modification.
- Sufficient test information, studies, data, or other documentation that would be necessary to fully explain and justify the proposed amendment
- For local modification requests only: the physical or climatological basis for the request and the reason that the suggested change would correct the condition.
- A local jurisdiction or professional association shall not propose a modification which will amend, suspend, eliminate or supersede an existing statute, policy, rule or regulation of any state or federal agency per S.C. Regulation 8-240 (H).
- **A completed modification request must be received with all required documentation before it will be reviewed.**

☒ Statewide Modification
☐ Local Modification: _____
(List all jurisdictions that apply.)

Association/Jurisdiction: Home Builders Association of South Carolina

Address: 625 Taylor Street (Street) Columbia (City) SC (State) 29201 (Zip)

Name: Mark Nix Title/Position: Executive Director

Phone No.: [redacted] Email Address: [redacted]

Please select the applicable code to be modified:

2021 International Residential Code

Please list the exact code section, table, figure, or appendix to be modified, and attach a photocopy of the applicable code section: P2708.4 Shower control valves

Code section as modified:
(Please strike through language being removed, and put language to be added in parentheses. Use additional pages as needed.)

P2708.4 Shower control valves. Individual shower and tub/shower combination valves shall be balanced-pressure, thermostatic or combination balanced-pressure/thermostatic valves that conform to the requirements of ASSE 1016/ASME 112.1016/CSA B125.16 or ASME A112.18.1/CSA B125.1. ~~Shower control valves shall be rated for the flow rate of the installed shower head. Such valves shall be installed at the point of use.~~

Shower and tub/shower combination valves required by this section shall be equipped with a means to limit the maximum setting of the valve to 120°F (49°C), which shall be field adjusted in accordance with the manufacturer's instructions to provide water at a temperature not to exceed 120ºF (49°C). In-line thermostatic valves shall not be utilized for compliance with this section.

8/19 Study Committee Recommendation: Support approval

In 200 characters or less, please briefly describe the justification for this modification request.

Reason: Unenforceable and ambiguous.

Per Regulation 8-240(E)(5), please list the persons with their titles and affiliations, known at the time of submittal, who will provide testimony in favor of the amendment. Due to the possibility of virtual hearings, **all information is the table below is required** to ensure proper notification. Use additional pages as needed.

Name	Title	Affiliation	Phone Number	Email Address
Mark Nix	Executive Director	HBA of SC	[redacted]	
Andy Barber	HBASC Codes Chairman	HBA of SC		

Affirmation

I certify that all information in this form, including all supplementary documents submitted with this form, are true and correct to the best of my knowledge after undertaking due diligence to determine their accuracy.

Signature: Mark Nix Digitally signed by Mark Nix Date: 2021.08.10 16:00:56 -04'00' Date: _____

Title: Executive Director

South Carolina Department of Labor, Licensing and Regulation
South Carolina Building Codes Council
110 Centerview Dr • Columbia • SC • 29210
P.O. Box 11329 • Columbia • SC • 29211-1329
Phone: 803-896-4688 • contact.bcc@llr.sc.gov • Fax: 803-896-4814
llr.sc.gov/bcc

IRC 2021-58

2021 BUILDING CODE MODIFICATION REQUEST FORM

Requirements:

- All requests must be submitted by September 22, 2021.
- Each request for code modification must be submitted separately.
- A cover letter from the local jurisdiction or professional association stating that the individual is authorized to present the proposed amendment; and verification that the proposed amendment has the support of at least a majority of the members of the board or council governing the local jurisdiction or professional association proposing the modification.
- Sufficient test information, studies, data, or other documentation that would be necessary to fully explain and justify the proposed amendment
- For local modification requests only: the physical or climatological basis for the request and the reason that the suggested change would correct the condition.
- A local jurisdiction or professional association shall not propose a modification which will amend, suspend, eliminate or supersede an existing statute, policy, rule or regulation of any state or federal agency per S.C. Regulation 8-240 (H).
- **A completed modification request must be received with all required documentation before it will be reviewed.**

☒ Statewide Modification

☐ Local Modification: _____
(List all jurisdictions that apply.)

Association/Jurisdiction: Home Builders Association of South Carolina

Address: 625 Taylor Street (Street) Columbia (City) SC (State) 29201 (Zip)

Name: Mark Nix Title/Position: Executive Director

Phone No.: [redacted] Email Address: [redacted]

Please select the applicable code to be modified:

2021 International Residential Code

Please list the exact code section, table, figure, or appendix to be modified, and attach a photocopy of the applicable code section: P2713.3 Bathtub and whirlpool bathtub valves.

Code section as modified:
(Please strike through language being removed, and put language to be added in parentheses. Use additional pages as needed.)

P2713.3 Bathtub and whirlpool bathtub valves.

~~Bathtubs and whirlpool bathtub valves shall have or be supplied by a water-temperature-limiting device that conforms to ASSE 1070/ASME A112.1070/CSA B125.70, except where such valves are combination tub/shower valves in accordance with Section P2708.4. The water-temperature-limiting device required by this section shall be equipped with a means to limit the maximum setting of the device to 120ºF (49ºC), and, where adjustable, shall be field adjusted in accordance with the manufacturer's instructions to provide hot water at a temperature not to exceed 120ºF (49ºC). Access shall be provided to water-temperature-limiting devices that conform to ASSE 10705/ASME A112.1070/CSA B125.70.~~
~~**Exception:** Access is not required for nonadjustable water-temperature-limiting devices that conform to ASSE 1070/ASME A112.1070/CSA B125.70 and are integral with a fixture fitting, provided that the fixture fitting itself can be accessed for replacement.~~

Hot water supplied to bathtubs and whirlpool bathtubs shall be limited to a temperature of not greater than 120°F (49°C) by a water-temperature limiting device that conforms to ASSE 1070/ASME A112.1070/CSA B125.70 or CSA B125.3, except where such protection is otherwise provided by a combination tub/shower valve in accordance with Section P2708.4.

8/19 Study Committee Recommendation: Support approval

In 200 characters or less, please briefly describe the justification for this modification request.

Reason. New language is unenforceable and ambiguous. Reverts language back to 2018 IRC.

Per Regulation 8-240(E)(5), please list the persons with their titles and affiliations, known at the time of submittal, who will provide testimony in favor of the amendment. Due to the possibility of virtual hearings, **all information is the table below is required** to ensure proper notification. Use additional pages as needed.

Name	Title	Affiliation	Phone Number	Email Address
Mark Nix	Executive Director	HBA of SC	[redacted]	
Andy Barber	HBASC Codes Chairman	HBA of SC		

Affirmation

I certify that all information in this form, including all supplementary documents submitted with this form, are true and correct to the best of my knowledge after undertaking due diligence to determine their accuracy.

Signature: Mark Nix Digitally signed by Mark Nix Date: 2021.08.10 16:00:22 -04'00' Date: _____

Title: Executive Director

THE SOUTH CAROLINA MASTER PLUMBERS ASSOCIATION

[redacted]

September 20, 2021

South Carolina Building Codes Council
PO Box 11329
Columbia, SC 29211-1329

CC: Molly Price - Administrator
Teresa Martin Board Staff, Building Codes

Subject: 2021 Code Modification Association Cover Letter

To Whom It May Concern:

This cover letter is providing verification that SC MPA Code Committee, as represented by Committee Member Charles Stewart and President Anthony Zazaca offers the attached submissions and provides supporting testimony for the proposed modification to the 2021 International Residential Code, as well as the 2021 International Building Code. This action has been approved and authorized by the S.C. Master Plumbers Association.

Respectfully Yours,

Anthony Zazaca
President
S. C. Master Plumbers Association

"The Plumber Protects the Health and Safety of the Nation"

IRC 2021-59

South Carolina Department of Labor, Licensing and Regulation
South Carolina Building Codes Council
110 Centerview Dr • Columbia • SC • 29210
P.O. Box 11329 • Columbia • SC • 29211-1329
Phone: 803-896-4688 • contact.bcc@llr.sc.gov • Fax: 803-896-4814
llr.sc.gov/bcc

2021 BUILDING CODE MODIFICATION REQUEST FORM

Requirements:

- All requests must be submitted by September 22, 2021.
- Each request for code modification must be submitted separately.
- A cover letter from the local jurisdiction or professional association stating that the individual is authorized to present the proposed amendment; and verification that the proposed amendment has the support of at least a majority of the members of the board or council governing the local jurisdiction or professional association proposing the modification.
- Sufficient test information, studies, data, or other documentation that would be necessary to fully explain and justify the proposed amendment
- For local modification requests only: the physical or climatological basis for the request and the reason that the suggested change would correct the condition.
- A local jurisdiction or professional association shall not propose a modification which will amend, suspend, eliminate or supersede an existing statute, policy, rule or regulation of any state or federal agency per S.C. Regulation 8-240 (H).
- **A completed modification request must be received with all required documentation before it will be reviewed.**

☒ Statewide Modification
☐ Local Modification: _____
(List all jurisdictions that apply.)

Association/Jurisdiction: South Carolina Master Plumbers Association

Address: [redacted] (Street) _____ [redacted] (City) [redacted] (State) [redacted] (Zip)

Name: Charles Stewart Title/Position: Code Committee Member

Phone No.: [redacted] Email Address: [redacted]

Please select the applicable code to be modified:

2021 International Residential Code

Please list the exact code section, table, figure, or appendix to be modified, and attach a photocopy of the applicable code section: IRC P-2903.7

Code section as modified:

(Please strike through language being removed, and put language to be added in parentheses. Use additional pages as needed.)

P2903.7 Size of Water-Service Mains, Branch Mains and Risers
The size of the water service pipe shall be not less than [redacted] (19 mm) diameter. The size of water service mains, branch mains and risers shall be determined from the water supply demand [gpm (L/m)], available water pressure [psi (kPa)] and friction loss caused by the water meter and developed length of pipe [feet (m)], including equivalent length of fittings. The size of each water distribution system shall be determined according to design methods conforming to acceptable engineering practice, such as those methods in Appendix P and shall be approved by the building official.

P2903.7 Size of Water-Service Mains, Branch Mains and Risers
The size of the water service pipe shall be not less than (1 inch (25.4 mm)) diameter. The size of water service mains, branch mains and risers shall be determined from the water supply demand [gpm (L/m)], available water pressure [psi (kPa)] and friction loss caused by the water meter and developed length of pipe [feet (m)], including equivalent length of fittings. The size of each water distribution system shall be determined according to design methods conforming to acceptable engineering practice, such as those methods in Appendix P and shall be approved by the building official.

Cost Analysis for this Modification:
The cost of the current water service line pipe only is .54 per linear foot (PVC)and this modification would increase that cost by .18 per linear foot (PVC). The labor and ditch cost are considered as unaffected.
¾ " PVC = .36 ¾ PEX = .49
1 " PVC = .54 1 " PEX = .68
Production home with typical 40 LF service line would incur an increased cost of 7.20 per new home.

8/19 Study Committee Recommendation: Do not support approval

In 200 characters or less, please briefly describe the justification for this modification request.

Reason for Modification:
To provide adequate water supply for future installation and retrofitting of residential sprinklers. This modification will encourage residential sprinkler retrofits by drastically reducing the design and installation cost when the 1 " service is readily available.Cost Analysis for this Modification:
The cost of the current water service line pipe only is .54 per linear foot (PVC)and this modification would increase that cost by .18 per linear foot (PVC). The labor and ditch cost are considered as unaffected.

Per Regulation 8-240(E)(5), please list the persons with their titles and affiliations, known at the time of submittal, who will provide testimony in favor of the amendment. Due to the possibility of virtual hearings, **all information is the table below is required** to ensure proper notification. Use additional pages as needed.

Name	Title	Affiliation	Phone Number	Email Address
Charles Stewart	Code Committee Member	SC MPA	[redacted]	
Anthony Zazaca	President	SC MPA		

Affirmation
I certify that all information in this form, including all supplementary documents submitted with this form, are true and correct to the best of my knowledge after undertaking due diligence to determine their accuracy.

Signature: _____ Date: 9/20/2021

Title: Code Committee Member

From: Charles Stewart
To: Maggie Smith
Cc: Molly Price
Subject: Re: 2021 IRC and IBC proposed Modifications
Date: Wednesday, September 22, 2021 10:59:58 PM
Attachments: image003.png

Greetings
Please use the form we submitted for the cover letter for all the proposals
Please be aware that the code committee, who serves at the will of the majority of the voting membership, has proffered the aforementioned proposals as a result of the majority vote of the membership of the S C MPA..
Thank you
Charles Stewart

On Wed, Sep 22, 2021 at 11:36 AM Maggie Smith <maggie.smith@llr.sc.gov> wrote:

> Thank you Mr. Stewart. These requests will be placed on the agenda for the 9/28 Study Committee Meeting. Should I use the cover letter that you submitted in person for each of these requests? Also, can you also confirm that these modification requests have the support of the majority of your members? Please let me know if you have any questions.
>
> Maggie Smith, CBO
>
> SC Building Codes Council
>
> SC Manufactured Housing Board
>
> 110 Centerview Dr, Columbia SC 29210 (physical)
>
> PO Box 11329, Columbia SC 29211 (mailing)
>
> Ph: 803-896-4688
>
> Fx: 803-896-4814
>
> Twitter: @SCDLLR
>
> Facebook: @SCLLR
>
> Website: www.llr.sc.gov

2021 International Residential Code
South Carolina Building Codes Council
Modification Continuations from 2018

2021 Code Section: P2903.10 Hose bibb

Modification: Delete section without substitution.

Entire section deleted

Reason: Unusually restrictive

Proponent: Home Builders Association of South Carolina

Previous Code Cycles	Previous Modification Number	Previous Code Section
IRC 2018	IRC 2018 40	P2903.10
IRC 2015	IRC 2015 33	P2903.10

Comments: No changes in 2021 IRC.

7/27 Study Committee Recommendation: Support approval

2021 International Residential Code
South Carolina Building Codes Council
Modification Continuations from 2018

2021 Code Section: P2904.1 General

Modification: Text was added to the end of the existing section.

The sentence now states:

The design and installation of residential fire sprinkler systems shall be in accordance with NFPA 13D or Section P2904 which shall be considered equivalent to NFPA 13D. Partial residential sprinkler systems shall be permitted to be installed only in buildings not required to be equipped with a residential sprinkler system. Section P2904 shall apply to stand-alone and multipurpose wet-pipe sprinkler systems that do not include the use of antifreeze. A multipurpose fire sprinkler system shall provide domestic water to both fire sprinklers and plumbing fixtures. A stand-alone sprinkler system shall be separate and independent from the water distribution system. A backflow preventer shall not be required to separate a stand-alone sprinkler system from the water distribution system. Any individual offering to contract for the design, installation, testing, and/or maintenance of a residential multipurpose fire sprinkler systems, as referred in section P2904, must be certified and licensed through the South Carolina Contractors Licensing Board.

Reason: To protect the homeowner and contractor from liability due to faulty design or installation.

Proponent: Home Builders Association of South Carolina

Previous Code Cycles	Previous Modification Number	Previous Code Section
IRC 2018	IRC 2018 41	P2904.1
IRC 2015	IRC 2015 34	P2904.1
IRC 2012	IRC 2012 23	P2904.1

Comments: Delete modification. SC Contractor's licensing Board determined that this type of system does not require a Fire Sprinkler Contractor license.

SECTION 40-10-20. Definitions.(8) "Fire sprinkler system" means a system of overhead or underground piping, or both, to protect the interior or exterior of a building or structure from fire where the primary extinguishing agent is water and designed in accordance with fire protection engineering standards. The system includes the overhead and underground fire water mains, fire hydrants and hydrant mains, standpipes, and hose connection to sprinkler systems, supplied from a reliable, constant, and sufficient water supply, such as a gravity tank, fire pump, reservoir, or pressure tank, or connection by underground piping to a city main but does not include dual or multi-purpose water lines supplying fire systems or equipment, potable water, or process water, or both. The system is a network of specially sized or hydraulically designed piping installed in a building, structure, or area, generally overhead, and to which sprinklers are connected in a systematic pattern. The system includes a controlling valve and a device for actuating an alarm when the system is in operation. The system is usually activated by heat from a fire and discharges water over the fire area. Fire protection sprinkler systems include the following types: water based or wet-pipe systems, water foam systems, dry-pipe systems, preaction systems, residential systems, deluge systems, combined dry-pipe and preaction systems, non-freeze systems, and circulating closed loop systems.

7/27: Modification dropped for reasons above.

THE SOUTH CAROLINA MASTER PLUMBERS ASSOCIATION

[redacted]

September 20, 2021

South Carolina Building Codes Council
PO Box 11329
Columbia, SC 29211-1329

CC: Molly Price - Administrator
Teresa Martin Board Staff, Building Codes

Subject: 2021 Code Modification Association Cover Letter

To Whom It May Concern:

This cover letter is providing verification that SC MPA Code Committee, as represented by Committee Member Charles Stewart and President Anthony Zazaca offers the attached submissions and provides supporting testimony for the proposed modification to the 2021 International Residential Code, as well as the 2021 International Building Code. This action has been approved and authorized by the S.C. Master Plumbers Association.

Respectfully Yours,

Anthony Zazaca
President
S. C. Master Plumbers Association

"The Plumber Protects the Health and Safety of the Nation"

South Carolina Department of Labor, Licensing and Regulation
South Carolina Building Codes Council
110 Centerview Dr • Columbia • SC • 29210
P.O. Box 11329 • Columbia • SC • 29211-1329
Phone: 803-896-4688 • contact.bcc@llr.sc.gov • Fax: 803-896-4814
llr.sc.gov/bcc

2021 BUILDING CODE MODIFICATION REQUEST FORM

Requirements:

- All requests must be submitted by September 22, 2021.
- Each request for code modification must be submitted separately.
- A cover letter from the local jurisdiction or professional association stating that the individual is authorized to present the proposed amendment; and verification that the proposed amendment has the support of at least a majority of the members of the board or council governing the local jurisdiction or professional association proposing the modification.
- Sufficient test information, studies, data, or other documentation that would be necessary to fully explain and justify the proposed amendment
- For local modification requests only: the physical or climatological basis for the request and the reason that the suggested change would correct the condition.
- A local jurisdiction or professional association shall not propose a modification which will amend, suspend, eliminate or supersede an existing statute, policy, rule or regulation of any state or federal agency per S.C. Regulation 8-240 (H).
- **A completed modification request must be received with all required documentation before it will be reviewed.**

☒ Statewide Modification
☐ Local Modification: _____
(List all jurisdictions that apply.)

Association/Jurisdiction: South Carolina Master Plumbers Association

Address: [redacted] [redacted]
Street City State Zip

Name: Charles Stewart Title/Position: _____

Phone No.: [redacted] Email Address: _____

Please select the applicable code to be modified:

2021 International Residential Code

Please list the exact code section, table, figure, or appendix to be modified, and attach a photocopy of the applicable code section: P-2904.2.4.2.1 Additional requirements for pendant sprinklers.

Code section as modified:
(Please strike through language being removed, and put language to be added in parentheses. Use additional pages as needed.)

IRC Current Language

(EXCEPTION: Pendant sprinklers within 3 feet (915 mm) of the center of a ceiling fan shall not be considered to be obstructed if the total area of the fan blades do not exceed more than 50% of the plan area view.)

9/28 Study Committee Recommendation: Support approval

In 200 characters or less, please briefly describe the justification for this modification request.

Reason for Modification:
To reconcile SC IRC P2904.2.4.2.1 to agree with NFPA 13D 8.2.5.1.4 that is considered to be equal to SC IRC P-2904
NFPA 13D 2016 8.2.5.1.4 Where area of the fan blades encompass more than 50% of the area of the plan view, the sprinkler shall be installed in accordance with 8.2.5.3
Cost Analysis for this Modification:
The cost of the residential sprinkler protection in the affected fan areas are reduced by as much as 50% with no reduction in the effectiveness of the fire sprinkler performance.

Per Regulation 8-240(E)(5), please list the persons with their titles and affiliations, known at the time of submittal, who will provide testimony in favor of the amendment. Due to the possibility of virtual hearings, **all information is the table below is required** to ensure proper notification. Use additional pages as needed.

Name	Title	Affiliation	Phone Number	Email Address
Charles Stewart		SC MPA	[redacted]	

Affirmation
I certify that all information in this form, including all supplementary documents submitted with this form, are true and correct to the best of my knowledge after undertaking due diligence to determine their accuracy.

Signature: _____ Date: 9-20-2021

Title: Member of Committee SC MPA

South Carolina Department of Labor, Licensing and Regulation
South Carolina Building Codes Council
110 Centerview Dr • Columbia • SC • 29210
P.O. Box 11329 • Columbia • SC • 29211-1329
Phone: 803-896-4688 • contact.bcc@llr.sc.gov • Fax: 803-896-4814
llr.sc.gov/bcc

IRC 2021-63

2021 BUILDING CODE MODIFICATION REQUEST FORM

Requirements:

- All requests must be submitted by September 22, 2021.
- Each request for code modification must be submitted separately.
- A cover letter from the local jurisdiction or professional association stating that the individual is authorized to present the proposed amendment; and verification that the proposed amendment has the support of at least a majority of the members of the board or council governing the local jurisdiction or professional association proposing the modification.
- Sufficient test information, studies, data, or other documentation that would be necessary to fully explain and justify the proposed amendment
- For local modification requests only: the physical or climatological basis for the request and the reason that the suggested change would correct the condition.
- A local jurisdiction or professional association shall not propose a modification which will amend, suspend, eliminate or supersede an existing statute, policy, rule or regulation of any state or federal agency per S.C. Regulation 8-240 (H).
- **A completed modification request must be received with all required documentation before it will be reviewed.**

☒ Statewide Modification

☐ Local Modification: _____
(List all jurisdictions that apply.)

Association/Jurisdiction: National Electrical Manufacturers Association (NEMA)

Address: 1300 17th Street North, Suite 900 (Street) Rosslyn (City) Virginia (State) 22209 (Zip)

Name: Bryan P. Holland, MCP, CStd Title/Position: Senior Technical Field Rep

Phone No.: [redacted] Email Address: [redacted]

Please select the applicable code to be modified:

2021 International Residential Code

Please list the exact code section, table, figure, or appendix to be modified, and attach a photocopy of the applicable code section: Part VIII-Electrical, Chapters 34-43

Code section as modified:
(Please strike through language being removed, and put language to be added in parentheses. Use additional pages as needed.)

CHAPTER 34 GENERAL REQUIREMENTS

"Delete all text that follows"

Section E3401

GENERAL

E3401.1 Applicability.

(Electrical devices, equipment, systems, and components for buildings under the scope of this code shall comply with the applicable provisions of NFPA 70, National Electrical Code.) ~~The provisions of Chapters 34 through 43 shall establish the general scope of the electrical system and equipment requirements of this code. Chapters 34 through 43 cover those wiring methods and materials most commonly encountered in the construction of one- and two-family dwellings and structures regulated by this code. Other wiring methods, materials and subject matter covered in NFPA 70 are also allowed by this code.~~

~~E3401.2 Scope~~
~~E3401.3 Not covered~~
~~E3401.4 Additions and alterations~~
~~E3402 Building Structure Protection~~
~~E3403 Inspection and Approval~~
~~E3405 Equipment Location and Clearances~~
~~E3406 Electrical Conductors and Connectors~~
~~E3407 Conductor and Terminal Identification~~
~~Chapter 35 Services~~
~~Chapter 36 Wiring Methods~~
~~Chapter 37 Branch Circuit and Feeder Requirements~~
~~Chapter 38 Wiring Methods~~
~~Chapter 39 Power and Lighting Distribution~~
~~Chapter 40 Devices and Luminaires~~
~~Chapter 41 Appliance Installation~~
~~Chapter 42 Swimming Pools~~
~~Chapter 43 Class 2 Remote-Control, Signaling and Power-Limited Circuits~~

8/19 Study Committee Recommendation: Do not support approval

In 200 characters or less, please briefly describe the justification for this modification request.

This proposed modification revises the applicability of the IRC related to electrical installations by providing a pointer to the NEC for compliance and requests the rest of Chapter 34 and all of Chapter 35-43 to be deleted or placed in "reserved" status. Having electrical installation requirements in both the NEC and Chapters 34-43 of the IRC can create confusion and complicates proper enforcement. Since the rules outlined in Chapters 34-43 are direct extracts from the NEC, these rules are not needed in the IRC. It should be noted that Chapters 34-43 are not adopted or enforced in FL, GA, NC, TN, TX, and many other states.

Per Regulation 8-240(E)(5), please list the persons with their titles and affiliations, known at the time of submittal, who will provide testimony in favor of the amendment. Due to the possibility of virtual hearings, **all information is the table below is required** to ensure proper notification. Use additional pages as needed.

Name	Title	Affiliation	Phone Number	Email Address
Bryan Holland	Senior Technical Field Rrepresentative	NEMA	[redacted]	

Affirmation

I certify that all information in this form, including all supplementary documents submitted with this form, are true and correct to the best of my knowledge after undertaking due diligence to determine their accuracy.

Signature:_____ Date: June 3, 2021

Title: Senior Technical Field Rep

IRC 2021-64

South Carolina Department of Labor, Licensing and Regulation
South Carolina Building Codes Council
110 Centerview Dr • Columbia • SC • 29210
P.O. Box 11329 • Columbia • SC • 29211-1329
Phone: 803-896-4688 • contact.bcc@llr.sc.gov • Fax: 803-896-4814
llr.sc.gov/bcc

2021 BUILDING CODE MODIFICATION REQUEST FORM

Requirements:

- All requests must be submitted by September 22, 2021.
- Each request for code modification must be submitted separately.
- A cover letter from the local jurisdiction or professional association stating that the individual is authorized to present the proposed amendment; and verification that the proposed amendment has the support of at least a majority of the members of the board or council governing the local jurisdiction or professional association proposing the modification.
- Sufficient test information, studies, data, or other documentation that would be necessary to fully explain and justify the proposed amendment
- For local modification requests only: the physical or climatological basis for the request and the reason that the suggested change would correct the condition.
- A local jurisdiction or professional association shall not propose a modification which will amend, suspend, eliminate or supersede an existing statute, policy, rule or regulation of any state or federal agency per S.C. Regulation 8-240 (H).
- **A completed modification request must be received with all required documentation before it will be reviewed.**

☒ Statewide Modification

☐ Local Modification: _____

(List all jurisdictions that apply.)

Association/Jurisdiction: Home Builders Association of South Carolina

Address: 625 Taylor Street (Street) Columbia (City) SC (State) 29201 (Zip)

Name: Mark Nix Title/Position: Executive Director

Phone No.: [redacted] Email Address: [redacted]

Please select the applicable code to be modified:

2021 International Residential Code

Please list the exact code section, table, figure, or appendix to be modified, and attach a photocopy of the applicable code section: E3405.2 Working Clearances for Energized Equipment and Panelboards

Code section as modified:
(Please strike through language being removed, and put language to be added in parentheses. Use additional pages as needed.)

E3405.2 Working Clearances for energized equipment and panel boards.

"Except as otherwise specified in Chapters 34 through 43 ... A horizontal ceiling structural member or access panel shall be permitted in this space. [110.26 (A) (1), (2), (3), (4)]"

Exceptions:

1. In existing dwelling units, service equipment and panel boards that are not rated in excess of 200 amperes shall be permitted in spaces where the height of the working space is less than 6.5 feet (1981 mm). [110.26 (A) (3) Exception No. 1]

2. Meters that are installed in meter sockets shall be permitted to extend beyond the other equipment. Meter sockets shall not be exempt from the requirements of this section. [110.26 (A) (3) Exception No. 2]

Added Language:

Exception:

3. Emergency disconnects and other types of equipment for the control and protection of services, shall be permitted to be installed above 6.5 feet (1981 mm) when the following conditions are present.

A. When in an area that has a design flood elevation above 6.5 feet (1981 mm) and therefore will violate National Flood Insurance Programs (NFIP)/FEMA requirements based on the Code of Ordinances.

B. When a working platform is not able to be constructed due to infringement of property setbacks.

9/28 Study Committee Recommendation: Do not support approval

In 200 characters or less, please briefly describe the justification for this modification request.

Provides an exception for contractors to install a means of disconnect above 6.5 feet when in a designated flood zone. Currently, there are conflicting code requirements between Building Code and Local Ordinances regarding location and means of disconnect and the required elevation. This exception allows for discretion by the contractors and building officals to mitigate between the conflicting codes.

Per Regulation 8-240(E)(5), please list the persons with their titles and affiliations, known at the time of submittal, who will provide testimony in favor of the amendment. Due to the possibility of virtual hearings, **all information is the table below is required** to ensure proper notification. Use additional pages as needed.

Name	Title	Affiliation	Phone Number	Email Address
Mark Nix	Executive Director	HBA of SC	[redacted]	
Andy Barber	HBASC Codes Chairman	HBA of SC		

Affirmation

I certify that all information in this form, including all supplementary documents submitted with this form, are true and correct to the best of my knowledge after undertaking due diligence to determine their accuracy.

Signature: Mark Nix Digitally signed by Mark Nix Date: 2021.09.02 14:01:18 -04'00' Date: 9/20/21

Title: Executive Director

From: Mark Nix
To: Molly Price
Cc: [redacted]
Subject:
Date: Wednesday, September 22, 2021 12:22:00 PM
Attachments: E3405.2 Working clearances for energized equipment and panelboards.pdf

---

Molly,

By way of this email please find attached the final submission of the Home Builders Association of South Carolina's (HBASC) 2021 I-Codes modification proposals. As the Executive Director of the HBA of SC, as witnessed by Wayne Moore, HBASC President and Andy Barber, HBASC Building Codes Committee Chair and Board member, that I am authorized to present all proposed amendments by the HBASC and verifies that all proposed modifications have the support and confidence of the HBASC Board who have been duly elected by its membership. This email also constitutes as a cover letter for all code modification proposals presented today and in past submissions. If you have any questions please do not hesitate to contact me.

Thank you for all you do for the state of South Carolina.

Mark Nix
Executive Director
Home Builders Association of South Carolina
[redacted]

South Carolina Department of Labor, Licensing and Regulation
South Carolina Building Codes Council
110 Centerview Dr • Columbia • SC • 29210
P.O. Box 11329 • Columbia • SC • 29211-1329
Phone: 803-896-4688 • contact.bcc@llr.sc.gov • Fax: 803-896-4814
llr.sc.gov/bcc

IRC 2021-65

2021 BUILDING CODE MODIFICATION REQUEST FORM

Requirements:

- All requests must be submitted by September 22, 2021.
- Each request for code modification must be submitted separately.
- A cover letter from the local jurisdiction or professional association stating that the individual is authorized to present the proposed amendment; and verification that the proposed amendment has the support of at least a majority of the members of the board or council governing the local jurisdiction or professional association proposing the modification.
- Sufficient test information, studies, data, or other documentation that would be necessary to fully explain and justify the proposed amendment
- For local modification requests only: the physical or climatological basis for the request and the reason that the suggested change would correct the condition.
- A local jurisdiction or professional association shall not propose a modification which will amend, suspend, eliminate or supersede an existing statute, policy, rule or regulation of any state or federal agency per S.C. Regulation 8-240 (H).
- **A completed modification request must be received with all required documentation before it will be reviewed.**

☒ Statewide Modification
☐ Local Modification: _____
(List all jurisdictions that apply.)

Association/Jurisdiction: Home Builders Association of South Carolina

Address: 625 Taylor Street (Street) Columbia (City) SC (State) 29201 (Zip)

Name: Mark Nix Title/Position: Executive Director

Phone No.: [redacted] Email Address: [redacted]

Please select the applicable code to be modified:

2021 International Residential Code

Please list the exact code section, table, figure, or appendix to be modified, and attach a photocopy of the applicable code section: E3601.8 Emergency Disconnect

Code section as modified:
(Please strike through language being removed, and put language to be added in parentheses. Use additional pages as needed.)

~~E3601.8 Emergency disconnect~~

Reason:

The intent of this change is to allow firefighters to quickly shut off power from the electrical service before entering a house to fight a fire. In some states, especially in the southwest, this is already common practice. A likely means of complying with the requirement in other parts of the country would be installing a meter main housing, which includes the main circuit breaker along with the meter socket, on the exterior of the home where the service drop is located. A second main breaker would not be necessary in the electrical panel located inside the home.

This requirement is not necessary in jurisdictions where the fire service has made other arrangements for dealing with the electrical service in the case of fire. It is also important to note that activating the disconnect will not shut off all power in every case. Some systems, such as photovoltaic and backup generators, will still provide power even after power from the electrical utility is disconnected.

This requirement also provides a serious security risk as it would make it easy for criminals or vandals to easily shut power down to the entire house.

8/19 Study Committee Recommendation: Do not support approval

In 200 characters or less, please briefly describe the justification for this modification request.

Explanation: see above

Per Regulation 8-240(E)(5), please list the persons with their titles and affiliations, known at the time of submittal, who will provide testimony in favor of the amendment. Due to the possibility of virtual hearings, **all information is the table below is required** to ensure proper notification. Use additional pages as needed.

Name	Title	Affiliation	Phone Number	Email Address
Mark Nix	Executive Director	HBA of SC	[redacted]	
Andy Barber	HBASC Codes Chairman	HBA of SC		

Affirmation

I certify that all information in this form, including all supplementary documents submitted with this form, are true and correct to the best of my knowledge after undertaking due diligence to determine their accuracy.

Signature: Mark Nix Digitally signed by Mark Nix Date: 2021.08.10 16:06:03 -04'00' Date: _____

Title: Executive Director

South Carolina Department of Labor, Licensing and Regulation
South Carolina Building Codes Council
110 Centerview Dr • Columbia • SC • 29210
P.O. Box 11329 • Columbia • SC • 29211-1329
Phone: 803-896-4688 • contact.bcc@llr.sc.gov • Fax: 803-896-4814
llr.sc.gov/bcc

IRC 2021-66

2021 BUILDING CODE MODIFICATION REQUEST FORM

Requirements:

- All requests must be submitted by September 22, 2021.
- Each request for code modification must be submitted separately.
- A cover letter from the local jurisdiction or professional association stating that the individual is authorized to present the proposed amendment; and verification that the proposed amendment has the support of at least a majority of the members of the board or council governing the local jurisdiction or professional association proposing the modification.
- Sufficient test information, studies, data, or other documentation that would be necessary to fully explain and justify the proposed amendment
- For local modification requests only: the physical or climatological basis for the request and the reason that the suggested change would correct the condition.
- A local jurisdiction or professional association shall not propose a modification which will amend, suspend, eliminate or supersede an existing statute, policy, rule or regulation of any state or federal agency per S.C. Regulation 8-240 (H).
- **A completed modification request must be received with all required documentation before it will be reviewed.**

☒ Statewide Modification

☐ Local Modification: _____
(List all jurisdictions that apply.)

Association/Jurisdiction: Home Builders Association of South Carolina

Address: 625 Taylor Street (Street) Columbia (City) SC (State) 29201 (Zip)

Name: Mark Nix Title/Position: Executive Director

Phone No.: [redacted] Email Address: [redacted]

Please select the applicable code to be modified:

2021 International Residential Code

Please list the exact code section, table, figure, or appendix to be modified, and attach a photocopy of the applicable code section: E3606.5 Service Equipment-General

Code section as modified:
(Please strike through language being removed, and put language to be added in parentheses. Use additional pages as needed.)

~~E3606.5 Service Equipment-General~~

Delete section

8/19 Study Committee Recommendation: Support approval

In 200 characters or less, please briefly describe the justification for this modification request.

Explanation: delete the entire section as the requirement does not cover low voltage systems, cannot provide complete coverage from surges outside of the incoming service line. This language would also foster an unreasonable and unenforceable implied warranty. The additional costs do not justify any potential benefits.

Per Regulation 8-240(E)(5), please list the persons with their titles and affiliations, known at the time of submittal, who will provide testimony in favor of the amendment. Due to the possibility of virtual hearings, **all information is the table below is required** to ensure proper notification. Use additional pages as needed.

Name	Title	Affiliation	Phone Number	Email Address
Mark Nix	Executive Director	HBA of SC	[redacted]	
Andy Barber	HBASC Codes Chairman	HBA of SC		

Affirmation

I certify that all information in this form, including all supplementary documents submitted with this form, are true and correct to the best of my knowledge after undertaking due diligence to determine their accuracy.

Signature: Mark Nix Digitally signed by Mark Nix Date: 2021.08.10 16:05:41 -04'00' Date: _____

Title: Executive Director

2021 International Residential Code
South Carolina Building Codes Council
Modification Continuations from 2018

2021 Code Section: E3802.4 In unfinished basements

Modification: Remove requirement for smaller cables to be ran through joists or on running boards in a crawl space.

E3802.4 In unfinished basements. Where type NM or SE cable is run at angles with joists in unfinished basements, cable assemblies containing two or more conductors of sizes 6 AWG and larger and assemblies containing three or more conductors of sizes 8 AWG and larger shall not require additional protection where attached directly to the bottom of the joists. Smaller cables shall be run either through bored holes in joists or on running boards. Type NM or SE cable installed on the wall of an unfinished basement shall be permitted to be installed in a listed conduit or tubing or shall be protected in accordance with Table E3802.1. Conduit or tubing shall be provided with a suitable insulating bushing or adapter at the point where the cable enters the raceway. The sheath of the Type NM or SE cable shall extend through the conduit or tubing and into the outlet or device box not less than 1/4 inch (6.4 mm). The cable shall be secured within 12 inches (305 mm) of the point where the cable enters the conduit or tubing. Metal conduit, tubing, and metal outlet boxes shall be connected to an equipment grounding conductor complying with SectionE3908.13. [334.15(C)]

Reason: Unusually restrictive

Proponent: Home Builders Association of South Carolina

Previous Code Cycles	Previous Modification Number	Previous Code Section
IRC 2018	IRC 2018 42	E3802.4
IRC 2015	IRC 2015 35	E3802.4

Comments: No changes to section in 2021 IRC.

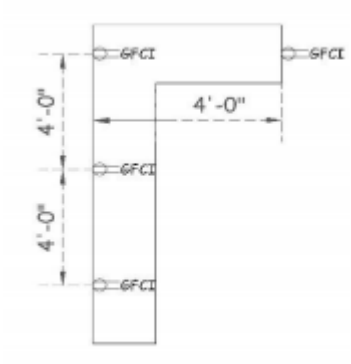
7/27 Study Committee Recommendation: Support approval

2021 International Residential Code
South Carolina Building Codes Council
Modification Continuations from 2018

2021 Code Section: ~~R3901.4.3 Peninsular countertop space~~ E3901.4.2 Island and peninsular countertops and work spaces.

Modification: Delete and Add Language.

Not less than one receptacle outlet shall be installed at each peninsular countertop long dimension space having a long dimension of 48 inches (1220 mm) or greater and a short dimension of 12 inches (305 mm) or greater. A peninsular countertop is measured from the connected perpendicular wall. [210.52(C)(3)].



Reason: N/A

Proponent: Home Builders Association of South Carolina

Previous Code Cycles	Previous Modification Number	Previous Code Section
IRC 2018	IRC 2018 43	R3901.4.3

Comments: Section redone in 2021 IRC to combine island and peninsular countertops.

E3901.4.2 Island and peninsular countertops and work spaces. Receptacle outlets shall be installed in accordance with the following: [210.52(C)(2)]
1. At least one receptacle outlet shall be provided for the first 9 square feet (0.84 m^2), or fraction thereof, of the countertop or work surface. A receptacle outlet shall be provided for every additional 18 square feet (1.7 m^2), or fraction thereof, of the countertop or work surface. [210.52(C)(2)(a)]
2. At least one receptacle outlet shall be located within 2 feet (600 mm) of the outer end of a peninsular countertop or work surface. Additional receptacle outlets shall be permitted to be located as determined by the installer, designer or building *owner*. The location of the receptacle outlets shall be in accordance with Section E3901.4.3. [210.52(C)(2)(b)]

7/27: Modification dropped. 2021 code changes cover modification.

South Carolina Department of Labor, Licensing and Regulation
South Carolina Building Codes Council
110 Centerview Dr • Columbia • SC • 29210
P.O. Box 11329 • Columbia • SC • 29211-1329
Phone: 803-896-4688 • contact.bcc@llr.sc.gov • Fax: 803-896-4814
llr.sc.gov/bcc

IRC 2021-69

2021 BUILDING CODE MODIFICATION REQUEST FORM

Requirements:

- All requests must be submitted by September 22, 2021.
- Each request for code modification must be submitted separately.
- A cover letter from the local jurisdiction or professional association stating that the individual is authorized to present the proposed amendment; and verification that the proposed amendment has the support of at least a majority of the members of the board or council governing the local jurisdiction or professional association proposing the modification.
- Sufficient test information, studies, data, or other documentation that would be necessary to fully explain and justify the proposed amendment
- For local modification requests only: the physical or climatological basis for the request and the reason that the suggested change would correct the condition.
- A local jurisdiction or professional association shall not propose a modification which will amend, suspend, eliminate or supersede an existing statute, policy, rule or regulation of any state or federal agency per S.C. Regulation 8-240 (H).
- **A completed modification request must be received with all required documentation before it will be reviewed.**

☒ Statewide Modification

☐ Local Modification: _____

(List all jurisdictions that apply.)

Association/Jurisdiction: Home Builders Association of South Carolina

Address: 625 Taylor Street (Street) Columbia (City) SC (State) 29201 (Zip)

Name: Mark Nix Title/Position: Executive Director

Phone No.: [redacted] Email Address: [redacted]

Please select the applicable code to be modified:

2021 International Residential Code

Please list the exact code section, table, figure, or appendix to be modified, and attach a photocopy of the applicable code section: E3901.4.2.1 - Island and peninsular countertops and work spaces

Code section as modified:
(Please strike through language being removed, and put language to be added in parentheses. Use additional pages as needed.)

E3901.4.2.1 - Island and peninsular countertops and work spaces -Modify-

At least one receptacle outlet shall be provided for the first 6 ~~9 square~~ feet of length or fraction thereof, of the countertop or work surface. A minimum of two receptacle outlets shall be provided for any island over 6 feet long.

8/19 Study Committee Recommendation: Support approval

In 200 characters or less, please briefly describe the justification for this modification request.

Explanation: simplifies the language and makes it more efficient to determine the number of outlets required. The language closely matched E3901.4.2.2.

Per Regulation 8-240(E)(5), please list the persons with their titles and affiliations, known at the time of submittal, who will provide testimony in favor of the amendment. Due to the possibility of virtual hearings, **all information is the table below is required** to ensure proper notification. Use additional pages as needed.

Name	Title	Affiliation	Phone Number	Email Address
Mark Nix	Executive Director	HBA of SC	[redacted]	
Andy Barber	HBASC Codes Chairman	HBA of SC		

Affirmation

I certify that all information in this form, including all supplementary documents submitted with this form, are true and correct to the best of my knowledge after undertaking due diligence to determine their accuracy.

Signature: Mark Nix Digitally signed by Mark Nix Date: 2021.08.10 16:04:57 -04'00' Date: _____

Title: Executive Director

South Carolina Department of Labor, Licensing and Regulation
South Carolina Building Codes Council
110 Centerview Dr • Columbia • SC • 29210
P.O. Box 11329 • Columbia • SC • 29211-1329
Phone: 803-896-4688 • contact.bcc@llr.sc.gov • Fax: 803-896-4814
llr.sc.gov/bcc

IRC 2021-70

2021 BUILDING CODE MODIFICATION REQUEST FORM

Requirements:

- All requests must be submitted by September 22, 2021.
- Each request for code modification must be submitted separately.
- A cover letter from the local jurisdiction or professional association stating that the individual is authorized to present the proposed amendment; and verification that the proposed amendment has the support of at least a majority of the members of the board or council governing the local jurisdiction or professional association proposing the modification.
- Sufficient test information, studies, data, or other documentation that would be necessary to fully explain and justify the proposed amendment
- For local modification requests only: the physical or climatological basis for the request and the reason that the suggested change would correct the condition.
- A local jurisdiction or professional association shall not propose a modification which will amend, suspend, eliminate or supersede an existing statute, policy, rule or regulation of any state or federal agency per S.C. Regulation 8-240 (H).
- **A completed modification request must be received with all required documentation before it will be reviewed.**

☒ Statewide Modification

☐ Local Modification: _____
(List all jurisdictions that apply.)

Association/Jurisdiction: Home Builders Association of South Carolina

Address: 625 Taylor Street (Street) Columbia (City) SC (State) 29201 (Zip)

Name: Mark Nix Title/Position: Executive Director

Phone No.: [redacted] Email Address: [redacted]

Please select the applicable code to be modified:

2021 International Residential Code

Please list the exact code section, table, figure, or appendix to be modified, and attach a photocopy of the applicable code section: E3902 Ground Fault & Arc-Fault Circuit-Interrupter Protection

Code section as modified:
(Please strike through language being removed, and put language to be added in parentheses. Use additional pages as needed.)

E3902. Ground-Fault and Arc-Fault Circuit Interrupter Protection

(remove all references to; through 250 volt. See attached

8/19 Study Committee Recommendation: Support approval

In 200 characters or less, please briefly describe the justification for this modification request.

This amendment removes the requirement for AFCI devices for residential dwelling units, including one- and two-family homes. See attached for additional reasoning.

Per Regulation 8-240(E)(5), please list the persons with their titles and affiliations, known at the time of submittal, who will provide testimony in favor of the amendment. Due to the possibility of virtual hearings, **all information is the table below is required** to ensure proper notification. Use additional pages as needed.

Name	Title	Affiliation	Phone Number	Email Address
Mark Nix	Executive Director	HBA of SC	[redacted]	
Andy Barber	HBASC Codes Chairman	HBA of SC		

Affirmation

I certify that all information in this form, including all supplementary documents submitted with this form, are true and correct to the best of my knowledge after undertaking due diligence to determine their accuracy.

Signature: Mark Nix Digitally signed by Mark Nix Date: 2021.08.10 16:04:25 -04'00' Date: _____

Title: Executive Director

SECTION E3902 GROUND-FAULT AND ARC-FAULT

CIRCUIT-INTERRUPTER PROTECTION

E3902.1 Bathroom receptacles. 125-volt ~~through 250-volt~~ receptacles installed in bathrooms and supplied by single- phase branch circuits rated 150 volts or less to ground shall have ground-fault circuit-interrupter protection for person- nel. [210.8(A)(1)]

E3902.2 Garage and accessory building receptacles. 125- volt ~~through 250-volt~~ receptacles installed in garages and grade-level portions of unfinished accessory buildings used for storage or work areas and supplied by single-phase branch circuits rated 150 volts or less to ground shall have ground-fault circuit-interrupter protection for personnel. [210.8(A)(2)]

E3902.3 Outdoor receptacles. 125-volt through ~~250-volt~~ receptacles installed outdoors and supplied by single-phase branch circuits rated 150 volts or less to ground shall have ground-fault circuit-interrupter protection for personnel. [210.8(A)(3)]

Exception: Receptacles as covered in Section E4101.7. [210.8(A)(3) Exception]

E3902.4 Crawl space receptacles and lighting outlets. Where a crawl space is at or below grade level, 125-volt ~~through 250-volt~~ receptacles installed in such spaces and supplied by single-phase branch circuits rated 150 volts or less to ground shall have ground-fault circuit-interrupter protection for personnel. Lighting outlets not exceeding 120 volts shall have ground-fault circuit-interrupter protection. [210.8(A)(4), 2108(E)]

E3902.5 Basement receptacles. 125-volt ~~through 250-volt~~ receptacles installed in basements and supplied by single- phase branch circuits rated 150 volts or less to ground shall have ground-fault circuit-interrupter protection for person- nel. [210.8(A)(5)]

Exception: A receptacle supplying only a permanently installed fire alarm or burglar alarm system. A receptacle installed in accordance with this exception shall not be considered as meeting the requirement of Section E3901.9. Receptacles installed in accordance with this exception shall not be considered as meeting the require- ment of Section E3901.9. [210.8(A)(5) Exception]

E3902.6 Kitchen receptacles. 125-volt ~~through 250-volt~~ receptacles that serve countertop surfaces and are supplied by single-phase branch circuits rated 150 volts or less to ground shall have ground-fault circuit-interrupter protection for personnel. [210.8(A)(6)]

E3902.7 Sink receptacles. 125-volt ~~through 250-volt~~ receptacles that are located within 6 feet (1829 mm) of the top inside edge of the bowl of the sink and supplied by single- phase branch circuits rated 150 volts or less to ground shall have ground-fault circuit-interrupter protection for person- nel. [210.8(A)(7)]

E3902.8 Bathtub or shower stall receptacles. 125-volt ~~through 250-volt~~ receptacles that are located within 6 feet (1829 mm) of the outside edge of a bathtub or shower stall and supplied by single-phase branch circuits rated 150 volts

or less to ground shall have ground-fault circuit-interrupter protection for personnel. [210.8(A)(9)]

E3902.9 Laundry areas. 125-volt ~~through 250-volt~~ receptacles installed in laundry areas and supplied by single-phase branch circuits rated 150 volts or less to ground shall have ground-fault circuit-interrupter protection for personnel. [210.8(A)(10)]

E3902.10 Indoor damp and wet locations. 125-volt ~~through 250-volt~~ receptacles installed in indoor damp and wet locations and supplied by single-phase branch circuits rated 150 volts or less to ground shall have ground-fault circuit-interrupter protection for personnel. [210.8(A)(11)]

E3902.11 Kitchen dishwasher branch circuit. Ground- fault circuit-interrupter protection shall be provided for outlets supplied by branch circuits rated 150 volts or less to ground that supply dishwashers in dwelling unit locations. [422.5 (A)]

E3902.12 Boathouse receptacles. 125-volt ~~through 250- volt~~ receptacles installed in boathouses and supplied by single-phase branch circuits rated 150 volts or less to ground shall have ground-fault circuit-interrupter protection for personnel. [210.8(A)(8)]

E3902.13 Boat hoists. Ground-fault circuit-interrupter protection for personnel shall be provided for 240-volt and less outlets that supply boat hoists. [555.9]

E3902.14 Electrically heated floors. Ground-fault circuit- interrupter protection for personnel shall be provided for electric heating cables embedded in concrete or poured masonry floors in bathrooms, kitchens and in hydromassage bathtub, spa and hot tub locations. Heating cables installed under floor coverings shall be provided with ground-fault circuit-interrupter protection for personnel. [424.44(E), 424.45(E)]

E3902.15 Location of ground-fault circuit interrupters. Ground-fault circuit interrupters shall be installed in a read- ily accessible location. When determining distance from receptacles, the distance shall be measured as the shortest path the supply cord of an appliance connected to the recep- tacle would follow without piercing a floor, wall, ceiling, or fixed barrier, or the shortest path without passing through a window. [210.8(A)]

E3902.16 Location of arc-fault circuit interrupters. Arc- fault circuit interrupters shall be installed in readily accessi- ble locations.

E3902.17 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, living rooms, parlors, libraries,

dens, bedrooms, sunrooms, recreations rooms, closets, hallways, laundry areas and similar rooms or areas shall be protected by any of the following: [210.12(A)]

1. A listed combination-type arc-fault circuit inter- rupter, installed to provide protection of the entire branch circuit. [210.12(A)(1)]

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. [210.12(A)(2)]

3. A listed supplemental arc-protection circuit breaker installed at the origin of the branch circuit in combi- nation 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:

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

3.2. The maximum length of the branch-circuit wiring from the branch-circuit overcurrent device to the first outlet shall not exceed 50 feet (15.2 m) for 14 AWG conductors and 70 feet (21.3 m) for 12 AWG conductors.

3.3. The first outlet box on the branch circuit shall be marked to indicate that it is the first outlet on the circuit. [210.12(A)(3)]

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 follow- ing conditions are met:

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

4.2. The maximum length of the branch-circuit wiring from the branch-circuit overcurrent device to the first outlet shall not exceed 50 feet (15.2 m) for 14 AWG conductors and 70 feet (21.3 m) for 12 AWG conductors.

4.3. The first outlet box on the branch circuit shall be marked to indicate that it is the first outlet on the circuit.

4.4. The combination of the branch-circuit over- current 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. [210.12(A)(4)]

5. Where metal raceways, metal wireways, metal auxil- iary gutters or Type MC or Type AC cable meeting the applicable requirements of Section E3908.9 with metal boxes, metal conduit bodies and metal enclo- sures are installed for the portion of the branch circuit between the branch-circuit overcurrent device and the first outlet, a listed outlet branch-circuit type AFCI installed at the first outlet shall be considered as providing protection for the remaining portion of the branch circuit. [210.12(A)(5)]

6. Where a listed metal or nonmetallic conduit or tubing or Type MC cable is encased in not less than 2 inches (50.8 mm) of concrete for the portion of the branch circuit between the branch-circuit overcurrent device and the first outlet, a listed outlet branch-circuit-type AFCI installed at the first outlet shall be considered as providing protection for the remaining portion of the branch circuit. [210.12(A)(6)]

Exception: AFCI protection shall not be required for an individual branch circuit supplying a fire alarm system where the branch circuit is installed in a metal raceway, metal auxiliary gutter, steel-armored cable, Type MC or Type AC, meeting the requirements of Section E3908.9, with metal boxes, conduit bodies and enclosures.

E3902.18 Arc-fault circuit-interrupter protection for branch circuit extensions or modifications. Where branch- circuit wiring is modified, replaced, or extended in any of the areas specified in Section E3902.17, the branch circuit shall be protected by one of the following:

1. A combination-type AFCI located at the origin of the branch circuit.

2. An outlet branch-circuit type AFCI located at the first receptacle outlet of the existing branch circuit. [210.12(B)]

Exception: AFCI protection shall not be required where the extension of the existing branch circuit conductors is not more than 6 feet (1.8 m) in length and does not include any additional outlets or devices other than splic- ing devices. This measurement shall not include the conductors inside an enclosure, cabinet, or junction box. [210.12(B) Exception]

While questions regarding construction code requirements intended to increase the safety of homes cannot, and should not, be decided solely on the issue of cost, it is reasonable to ask if there is a demonstrated need for the requirement or if an acceptable level of safety can be achieved through other, less expensive means. The cost of an incremental increase in the margin of safety can be quite high.

Higher regulatory costs have real consequences for working American families. These regulations end up pushing the price of housing beyond the means of many teachers, police officers, firefighters and other middle- class workers. Nationally, for every $1,000 increase in the price of a home, about 150,000 households are priced out of the market for a median-priced new home. The added cost of $300-$400 for AFCIs may not sound like much when compared to the overall cost of a home, but this is only one of many regulations which adds cost for new homebuyers. Every $838 increase in construction costs adds an additional $1,000 to the final price of the home.

Mandating costly incremental increases in safety will only protect those who can afford them and will often decrease safety for those who cannot. Families who cannot qualify to purchase homes due to the increased costs from mandatory code requirements such as AFCIs will have to live in housing that is less safe, because that housing was built to less stringent code requirements.

T**he total cost to home buyers to install AFCIs is over $430,000,000—per year. This is 24 times the cost of damage per year, and it is clear that requiring AFCIs in new construction will not prevent all damage.** This is due to the fact that AFCIs cannot prevent all fires and, more importantly, that electrical fires occur overwhelmingly in older houses.

From 1980 to 2015 there has been a significant drop in the number of reported fires, injuries and fatalities in the United States. During that time period the number of fires has dropped by 50 percent and fatalities have dropped by about the same margin, even as the population increased. The decline was sharpest during the 1980s before AFCIs were introduced. This further supports the importance of encouraging homeowners to move up to newer homes without the added burden of increased regulation.

Reason:

This amendment retains the provisions of the 2017 NEC. AFCIs were first introduced in the 1999 edition of the National Electrical Code (NEC) with an effective date of Jan. 1, 2002. Code Making Panel 2, which had responsibility over branch circuits where AFCIs are addressed, largely based its approval of the code change on several U.S. Consumer Product Safety Commission (CPSC) reports. **However, the number of incidents cited at the time were several times higher than in later reports, and where the data showed that AFCIs would have a minimal benefit, the results were ignored.** The resulting expected benefits led to AFCI requirements being included in the NEC, but were overblown.

The problems with the rationale were so evident that even electrical manufacturers spoke against the proposal. During the 1998 code development cycle comment period, manufacturers' representatives stated that a large body of information was available to support rejecting an AFCI mandate. The main issue: the electrical problems AFCIs are designed to prevent occur overwhelmingly in older dwellings.

When the Home Was Built Is Important

A CPSC epidemiological study, "Residential Electrical Distribution System Fires," showed that 85% of fires of electrical origin occur in homes that are more than 20 years old. This means that the bulk of these homes were wired in accordance with the 1965 or earlier editions of the NEC. Further, they were wired with products manufactured to product safety standards of a similar vintage. In the years since, numerous changes have been made in both the NEC and product safety standards which mitigate against similar fires in newer homes—even as they age.

The June 2015 issue of the U.S. Fire Administration's Topical Fire Report Series reported "A strong relationship between housing age and the rate of electrical fires has been observed, **with housing over 40 years old having the strongest association with electrical distribution fires** [emphasis added]." The median age of one- and two-family housing in the U.S. is 40 years. The share of housing units built before 1970 is 39%, and those built before 1950 is 18%. According to a study conducted by the U.S. Consumer Product Safety Commission, dwellings built before 1965 may still have fuses instead of circuit breakers, and those built before 1945 may still have knob and tube wiring.

These older homes were also wired with a very limited number of receptacle outlets, resulting in extensive use of extension cords or improper alterations and additions to the original electrical system, both recognized fire hazards. In addition, they are more likely to have outdated appliances, space heaters or other characteristics that might lead to a greater risk of a fire starting. Newer homes have fire blocking, hardwired smoke alarms and egress windows installed to today's codes, all of which increase the chances of surviving a fire. **Even as homes built to today's residential code get older, they will continue to provide protection for families through their improved safety.**

GFCI's for 250-Volt Receptacles

This change will require receptacles serving 250-volt appliances, such as stoves and clothes dryers, to have GFCI protection when located in bathrooms, crawl spaces, basements, laundry areas or within 6 feet of sinks,bathtubs or showers. This section previously applied to receptacles up to 125 volts only.

The unfortunate event used as the sole substantiation for the change involved an older stove with both an appliance manufacturing error as well as an installation error. This change goes beyond requiring belt and suspenders safety provisions. Those were already in place, and it took both to fail for the incident to occur.

The proposed requirement of GFCI protection for all 250-volt receptacles is too broad and not supported by thecommittee's substantiation. According to the NFPA article used to support the change, the appliance in question was "an older installation, one predating today's requirement to install an equipment grounding conductor in the branch circuit to the range". It sounds like the tragedy was only possible with older wiring. Thisis another example that shows new construction and updated electrical systems do not constitute the same dangers as those in older homes.

The committee contends that 250-volt receptacles present similar hazards as 125-volt convenience receptaclesand this is not true. 250-volt receptacles are installed behind the range or dryer without being readily accessibleto the consumer. 250-volt appliances are plugged in and left for the operation of the appliance, but 125-volt receptacles are generally accessible to the consumer. If the consumer chose to, they could use a convenience receptacle for extension cords or other appliance use, whereas a 250-volt receptacle is specific to that appliance.

Docs sent from NEMA on 8/11/21

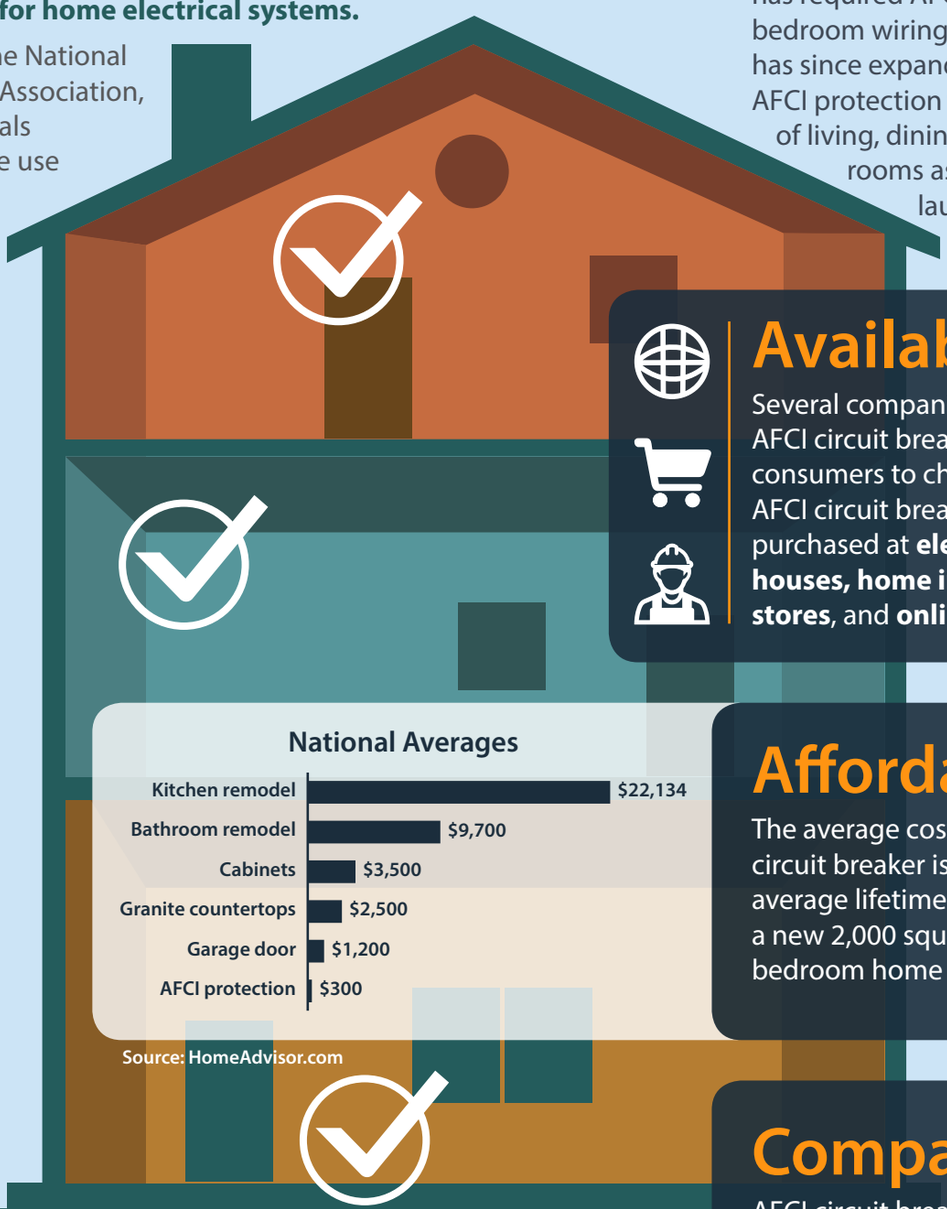
IRC 2021-70

Circuit Breaker AFCIs | Advanced Technology for the Modern Home

Applying technology to improve the electrical safety of the modern home is a wise investment for both the homeowner and the community at large. Circuit breaker arc-fault circuit interrupters, or AFCIs, can provide enhanced protection from fires resulting from damaged or unsafe home wiring conditions. Typical household fuses and standard circuit breakers do not respond to early arcing and sparking conditions in home wiring. By the time a fuse or standard circuit breaker opens a circuit to defuse these conditions, a fire may already have begun.

AFCI circuit breakers represent the latest technological advancement for home electrical systems.

According to the National Fire Protection Association, fire safety officials recommend the use of AFCIs in all dwellings.



AFCI circuit breakers should be installed by a person trained and qualified in electrical wiring methods.

Effective

AFCI circuit breakers are **intelligent devices** containing advanced technology that will detect an arc fault in home wiring and automatically shut down the electricity when it senses a hazard.

The National Fire Prevention Association publishes the National Electrical Code® (NEC) to protect people and property from electrical hazards. The NEC has required AFCI protection for bedroom wiring since 2002 and has since expanded to require AFCI protection for the wiring of living, dining, and family rooms as well as kitchens, laundry, hallways, and closets.

Available

Several companies manufacture AFCI circuit breakers for consumers to choose from. AFCI circuit breakers can be purchased at **electrical supply houses, home improvement stores**, and **online**.

Affordable

The average cost for an AFCI circuit breaker is **$38***, and the average lifetime cost to protect a new 2,000 square-foot, four-bedroom home is **$300**.

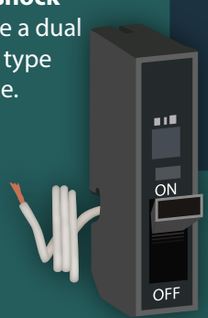
Compatible

AFCI circuit breakers work extremely well with **new appliances** that meet U.S. product safety standards.

AFCI vs GFCI

AFCIs and GFCIs provide different but **critically important protection**. AFCI circuit breakers address fire hazards whereas GFCIs address **electric shock hazards**. A common way to provide both types of protection is to use a dual function breaker that combines Class A 5mA GFCI and combinations type AFCI protection against both arc faults and ground fault in one device.

According to the Consumer Product Safety Commission, both AFCI and GFCI circuit breakers are important safety devices.



For more information go to **www.afcisafety.org**

**NEMA blind survey for 2017 HUD Manufactured Housing Construction Standards.*

NEMA National Electrical Manufacturers Association

National Electrical Manufacturers Association
The association of electrical equipment and medical imaging manufacturers
www.nema.org

Circuit Breaker Arc-Fault Circuit Interrupters (AFCIs) – Myth vs. Fact

Cost

Myth: AFCI circuit breakers required in new home construction can cost $3,000+ per home, making them unaffordable.

Fact: The average cost for an AFCI circuit breaker is $38 (according to a NEMA blind survey for 2017 HUD Manufactured Housing Construction Safety Standards), or approx. $300 to protect a new 2,000-square-foot, four-bedroom home from electrical fires caused by electrical arcing. That's about 83 cents per month to protect a family from electrical fires over a 30-year mortgage. In contrast, material and hefty labor costs associated with installing a home builder upgrade like granite countertops averages around $4,500, or $12.50 per month over the same period. The National League of Cities recently indicated home builder "labor and land costs are by far the biggest construction expenses nationwide," resulting in rapidly rising home prices.

Appliance Compatibility

Myth: AFCI circuit breakers are not compatible with common household appliances.

Fact: AFCI circuit breakers work extremely well with new appliances that meet U.S. product safety standards. Some older appliances may incorporate components that predate current product safety standards or have operational characteristics that are not compatible with AFCI protection. Counterfeit appliances or those not certified by a Nationally Recognized Testing Laboratory (NRTL) may also be incompatible with AFCI circuit breakers.

AFCI/GFCI Compatibility

Myth: AFCI circuit breaker and Ground Fault Circuit Interrupters (GFCIs) won't work together.

Fact: AFCI circuit breakers and GFCIs complement and function well together in providing electrical safety and fire protection throughout a home. Both devices are required by the 2017 National Electrical Code® because they provide different, but critically important, protection. AFCI circuit breakers detect dangerous arcing in a home's wiring and stop electrical fires before they can start. GFCIs are required in rooms like kitchens, bathrooms and laundry rooms where water is present and help prevent possible shock and electrocution. There are dual function AFCI/GFCI circuit breakers on the market today that provide both types of protection in one device.

Product Availability

Myth: AFCI circuit breakers are hard to find.

Fact: Several companies manufacture AFCI circuit breakers for consumers to choose from. AFCI circuit breakers can be purchased at electrical supply houses, home improvement stores, and online.

AFCI Lifespan

Myth: AFCI circuit breakers only last one year or need frequent replacement.

Fact: AFCI circuit breakers are tested and certified to extremely rigorous U.S. product safety standards. When installed correctly, AFCI circuit breakers are expected to last the life of a standard circuit breaker under normal operating conditions. AFCI circuit breakers also carry a manufacturer's warranty.

Circuit Breaker Arc-Fault Circuit Interrupters (AFCI)

IRC 2021-70

Smoke alarms, fire extinguishers and escape ladders are all examples of emergency equipment used in homes to take action when a fire occurs. A circuit breaker arc-fault circuit interrupter (AFCI) is a product designed to detect a wide range of arcing electrical faults to help reduce the electrical system from being an ignition source of a fire. Unlike a standard circuit breaker detecting overloads and short circuits, an AFCI utilizes advanced electronic technology to "sense" the different arcing conditions that may be occur on a circuit. While there are different techniques employed to detect arcs by the various AFCI circuit breaker manufacturers, the end result is the same: detection of arcing conditions on the branch-circuit wiring, plugged-in electrical cords, and within appliances and other utilization equipment.

Importance

AFCI circuit breakers were created as a direct response to a U.S. Consumer Product Safety Commission report conducted by Underwriters Laboratories (UL) that identified an electrical problem in residential wiring systems causing numerous residential fires. In 1999, AFCI protection became a requirement in the National Electrical Code®. According to a 2017 National Fire Protection Association report, between 2010 and 2014, U.S. municipal fire departments responded to an estimated annual average of 45,210 home structure fires involving electrical failure or malfunction. These fires caused annual averages of 420 civilian deaths, 1,370 civilian injuries, and $1.4 billion in direct property damage.

Affordability

The average cost for an AFCI circuit breaker is $38, according to a NEMA blind survey for 2017 HUD Manufactured Housing Construction Safety Standards, or $300 to protect a new 2,000-square-foot, four-bedroom home from electrical fires caused by electrical arcing. That equates to 83 cents per month to protect a family from electrical fires over a 30-year mortgage. When installed correctly, AFCI circuit breakers are expected to last the life of a standard circuit breaker under normal operating conditions. AFCI circuit breakers can be purchased at electrical supply houses, home improvement stores, and online. Several companies manufacture AFCI circuit breakers for consumers to choose from.

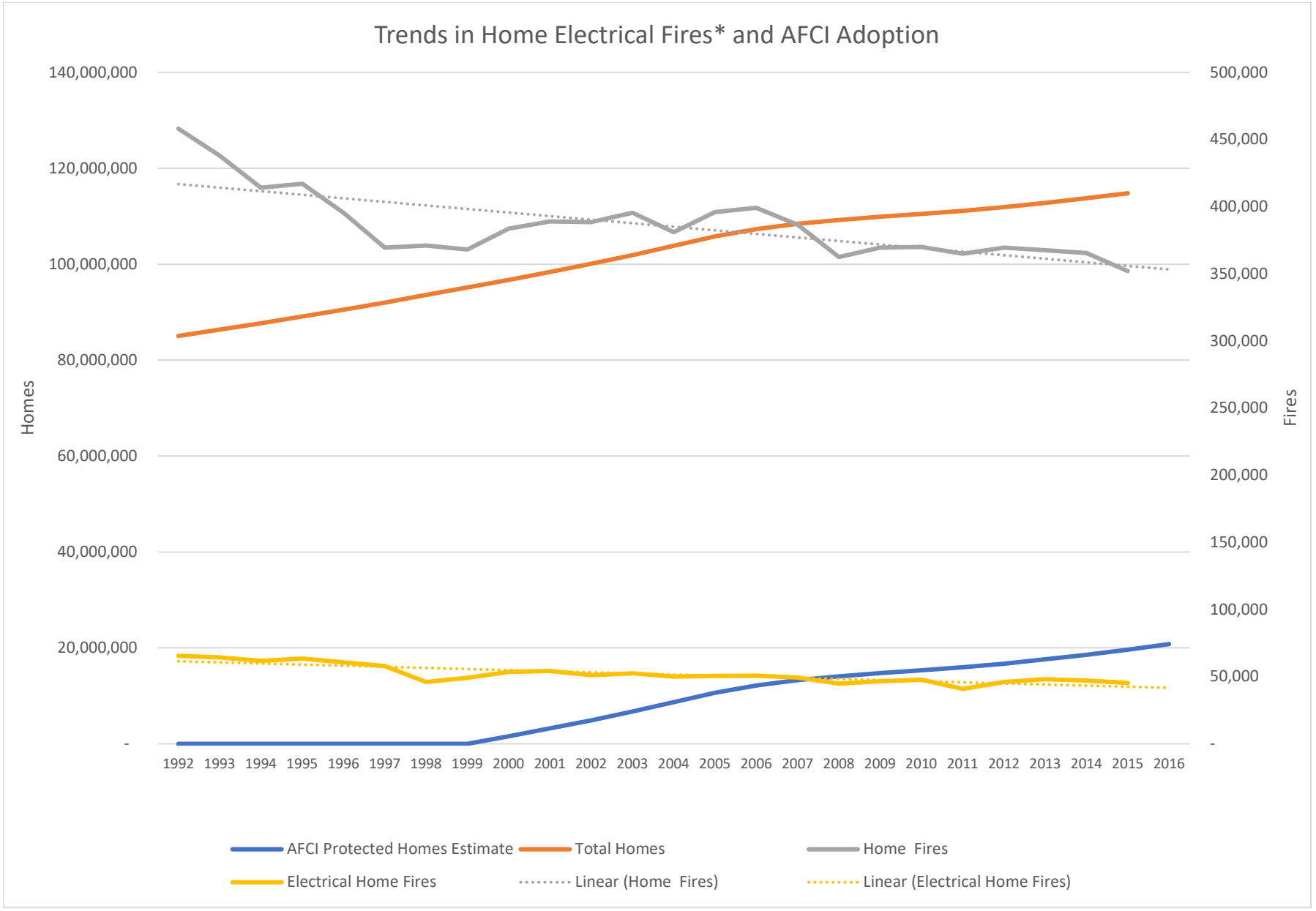
Compatibility

AFCI circuit breakers work extremely well with appliances and devices that meet U.S. product safety standards. AFCI circuit breakers also compliment ground-fault circuit interrupters (GFCIs) and function well together to provide electrical safety and fire protection throughout a home. Both devices are required by the National Electrical Code® because they provide different but critically important protection. AFCIs detect dangerous arcing in a home's wiring and stop electrical fires before they can start whereas GFCIs help to prevent possible shock and electrocution where these hazards to a person are present.

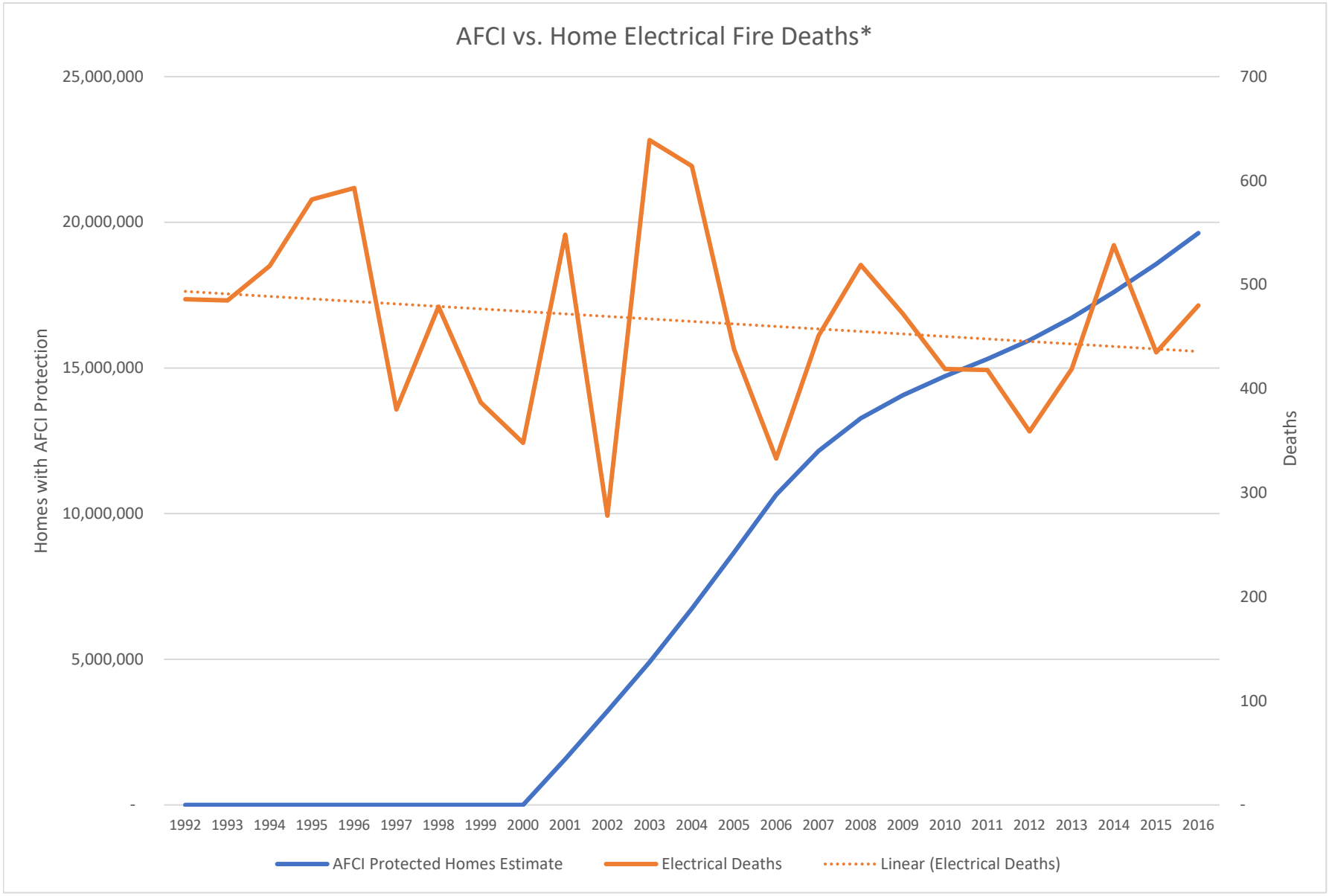
NEMA Position

The National Electrical Manufacturers Association actively supports and promotes the installation and use of AFCI technology in residential and commercial buildings as an important electrical safety device to protect persons and property.

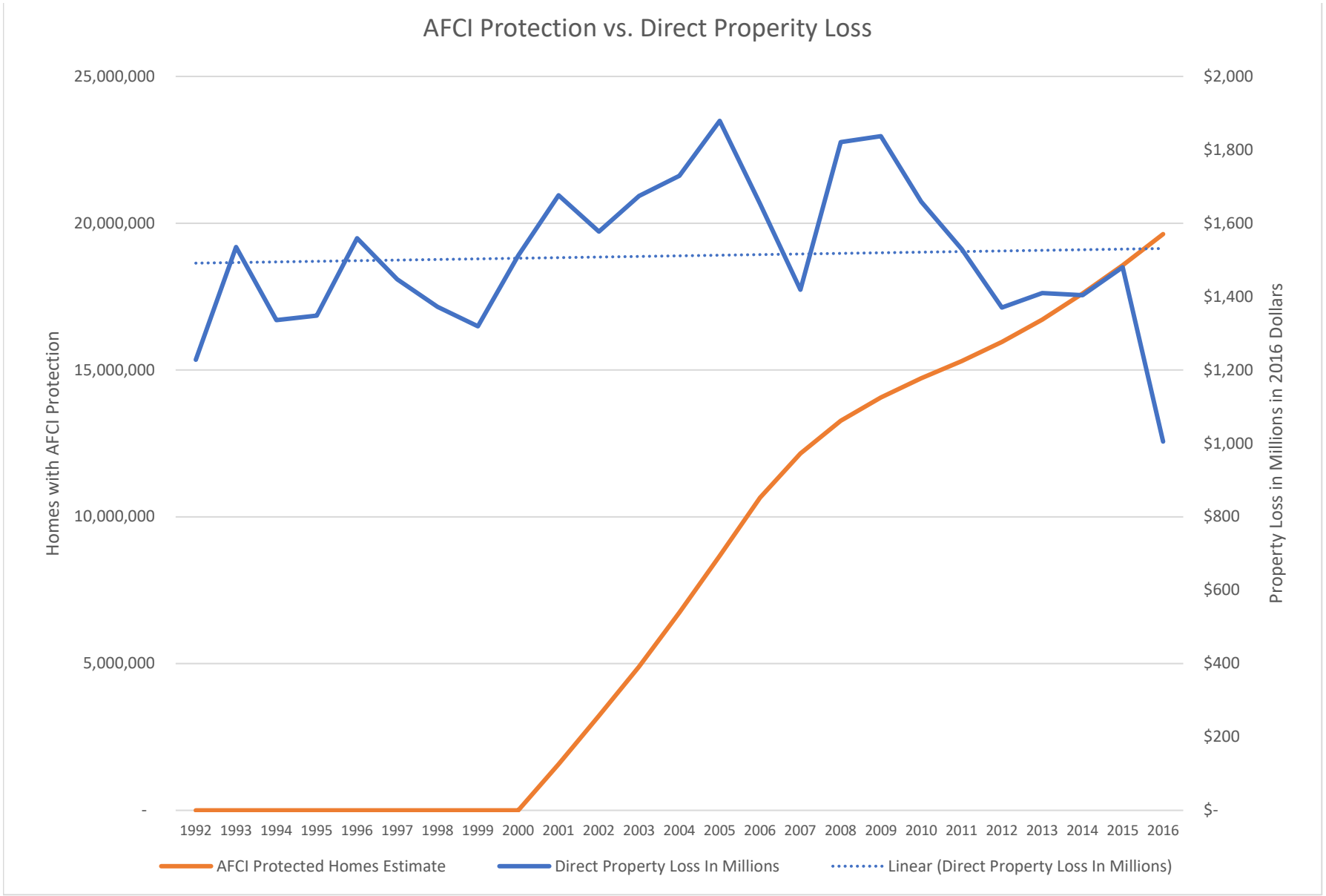
The National Electrical Manufacturers Association (NEMA) represents nearly 350 electrical equipment and medical imaging manufacturers that make safe, reliable, and efficient products and systems. Our combined industries account for 360,000 American jobs in more than 7,000 facilities covering every state. Our industry produces $106 billion shipments of electrical equipment and medical imaging technologies per year with $36 billion exports.



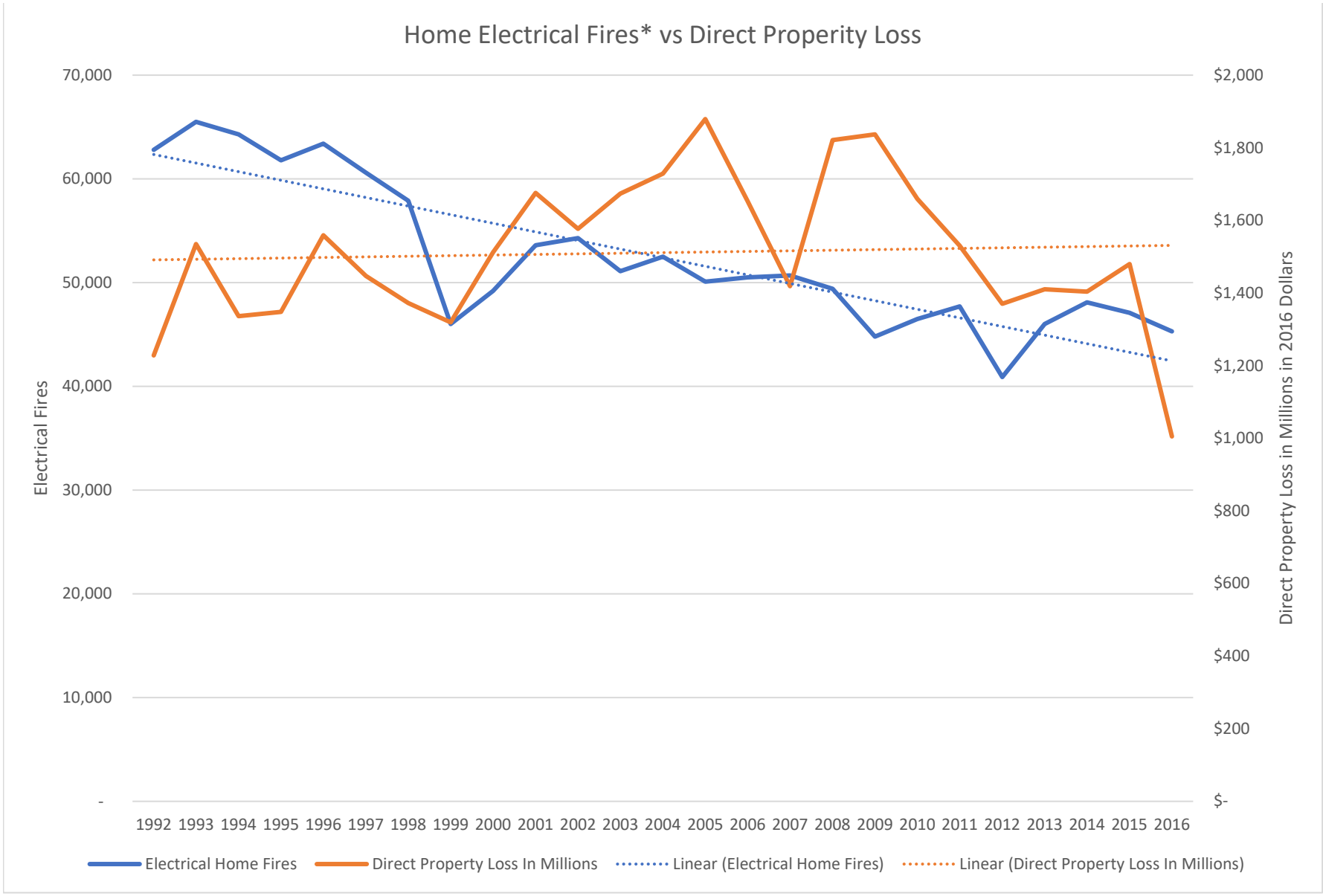
*Caused only by Electrical Failure of Malfunction



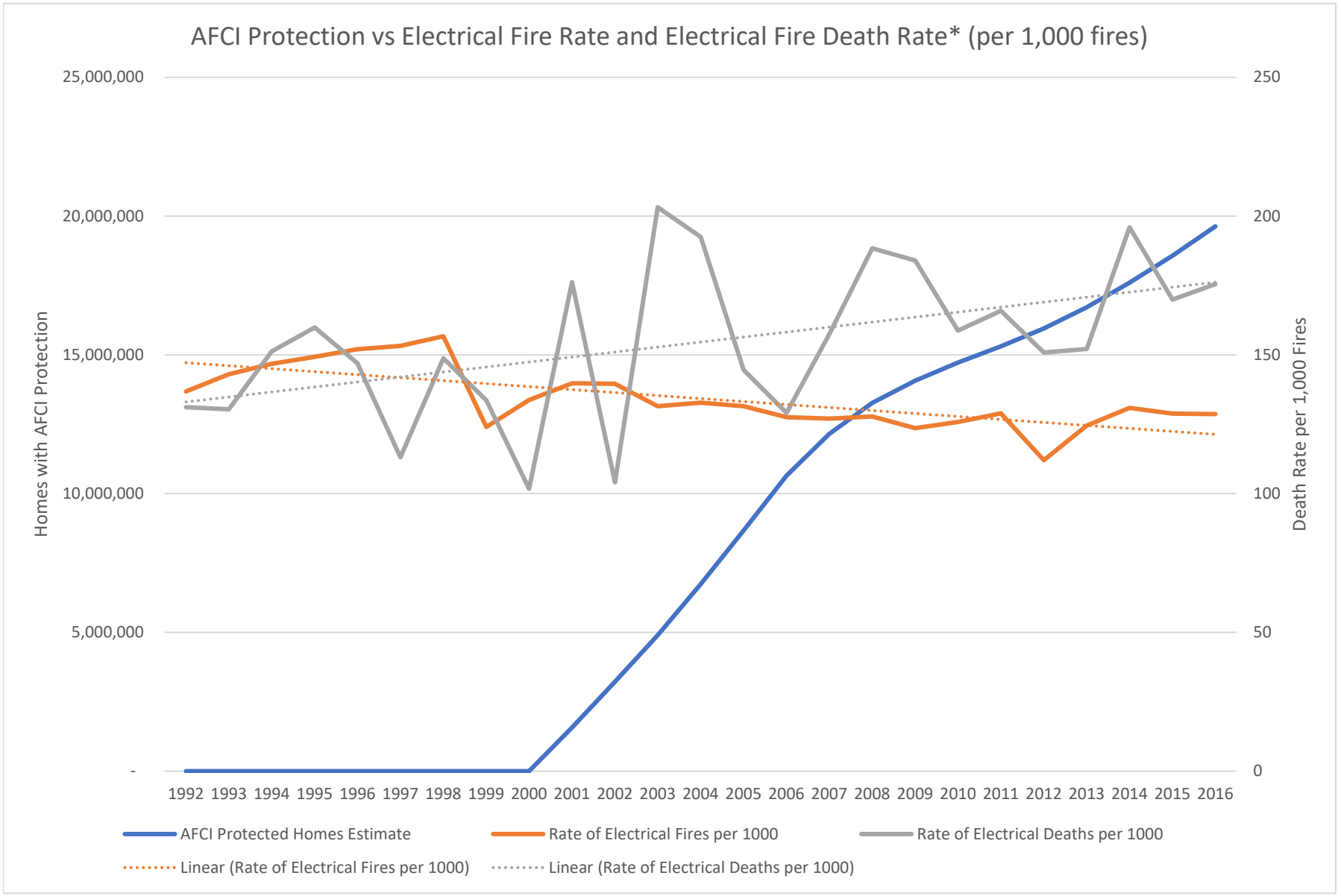
*Caused only by Electrical Failure of Malfunction



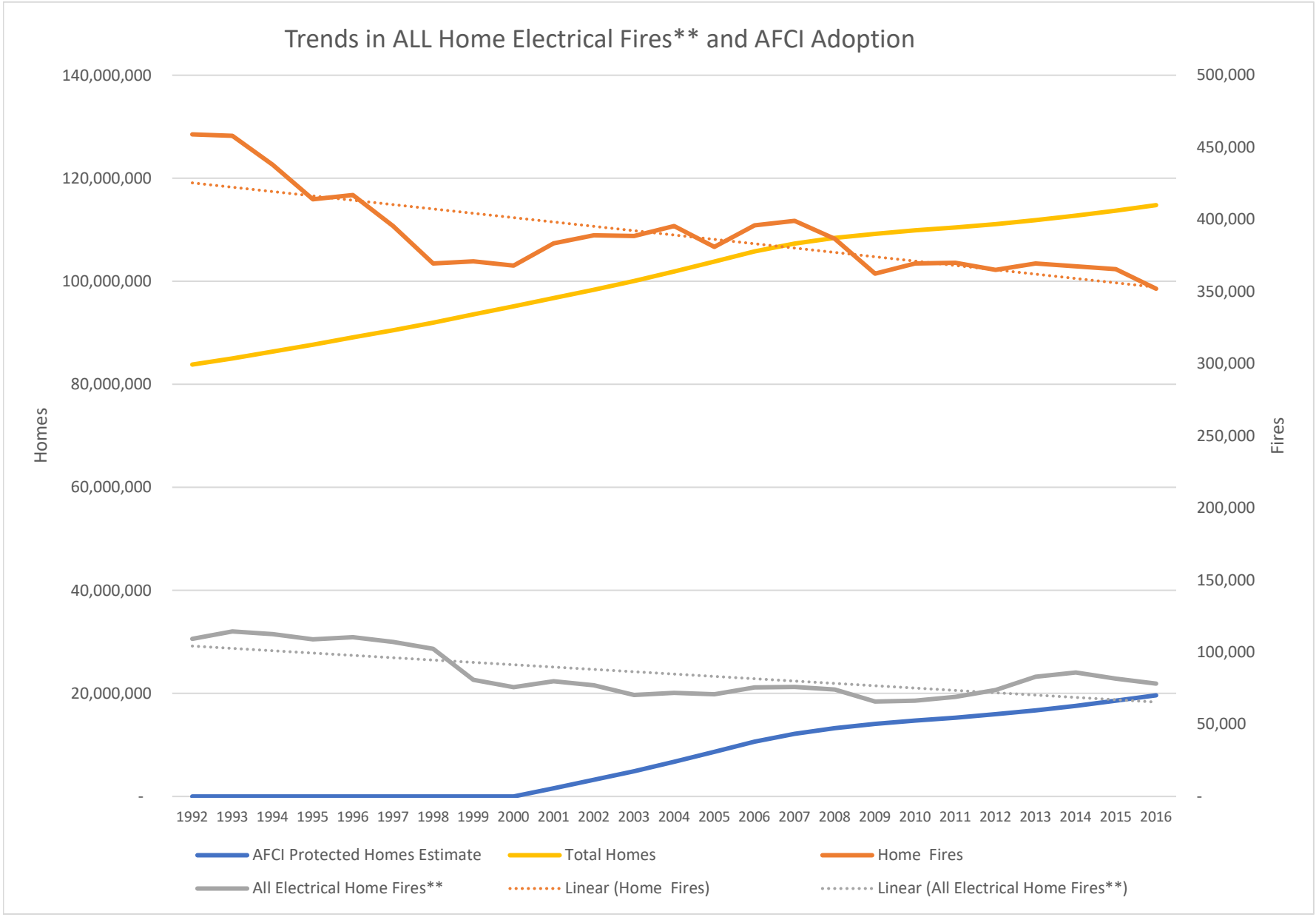
*Caused only by Electrical Failure of Malfunction



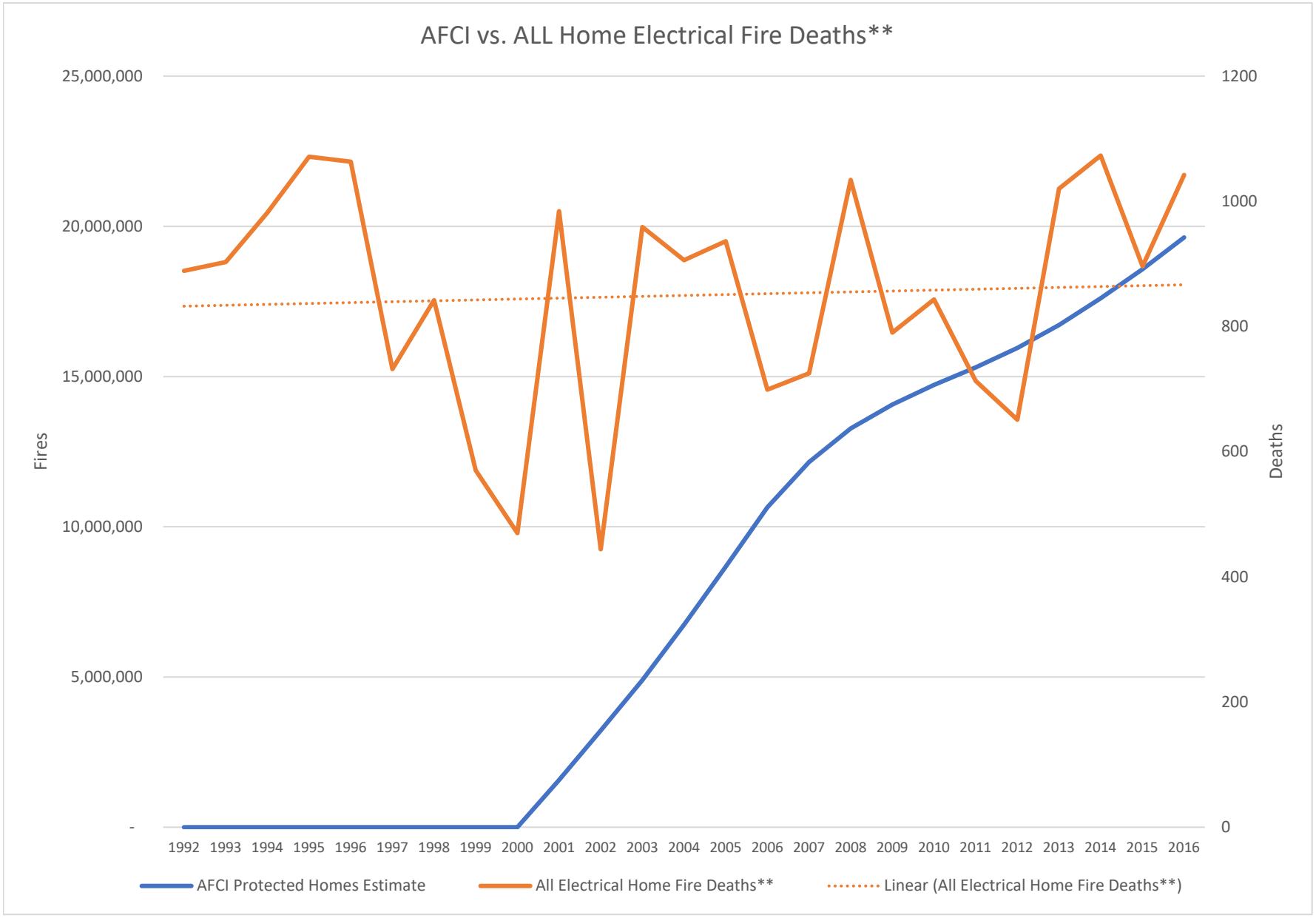
*Caused only by Electrical Failure of Malfunction



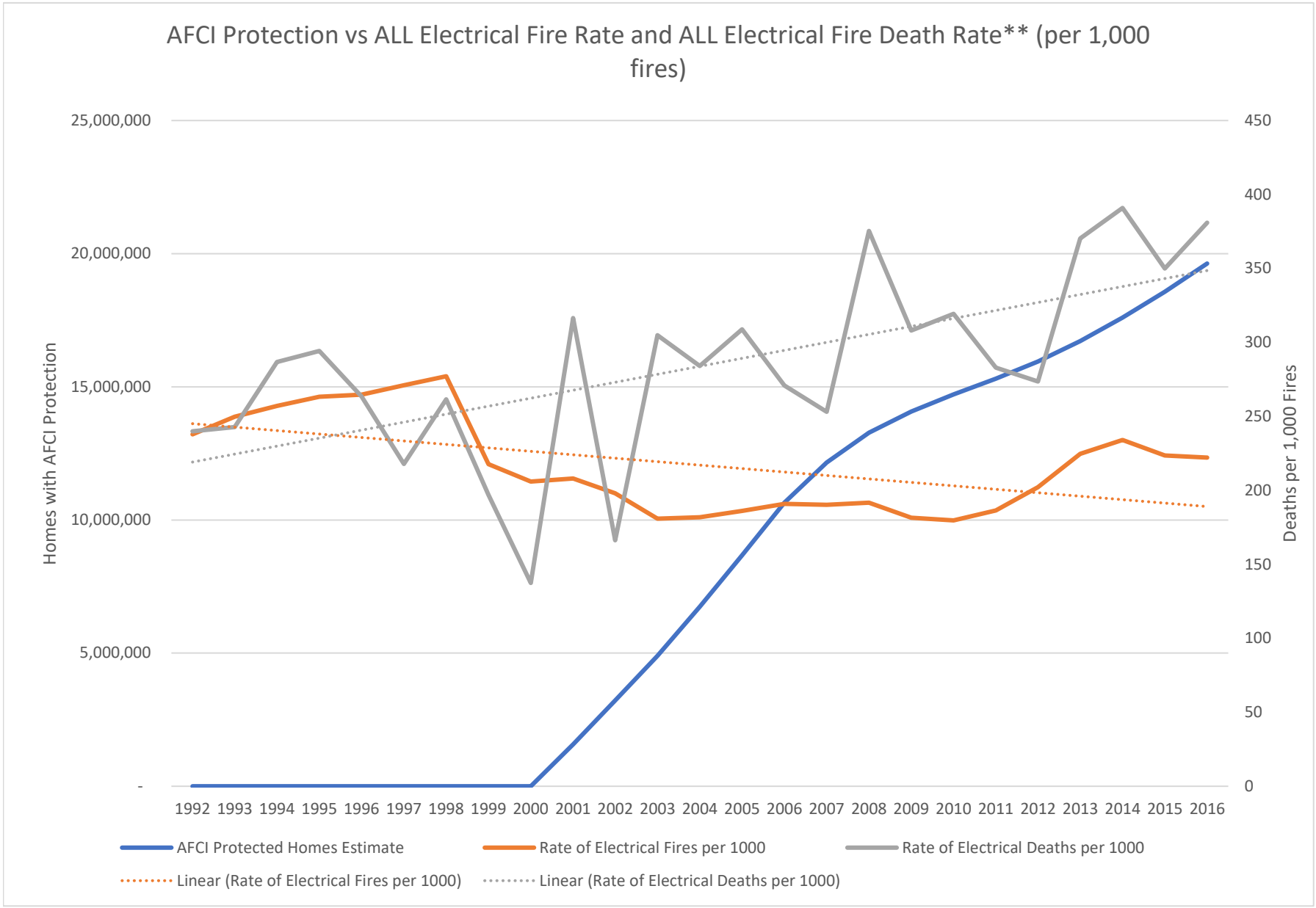
*Caused only by Electrical Failure of Malfunction



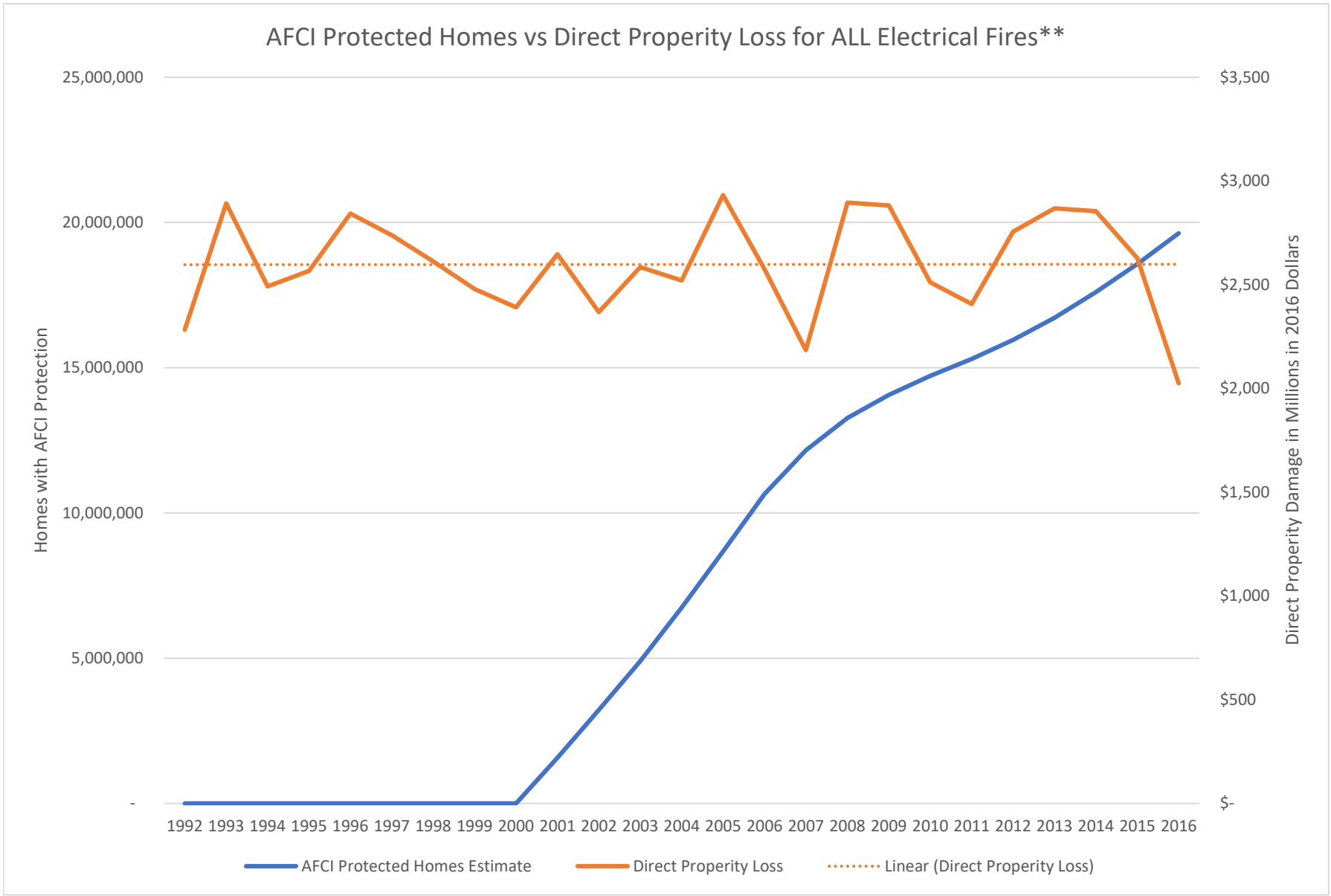
**Caused by Electrical Failure, Malfunction, Distribution, and Lighting



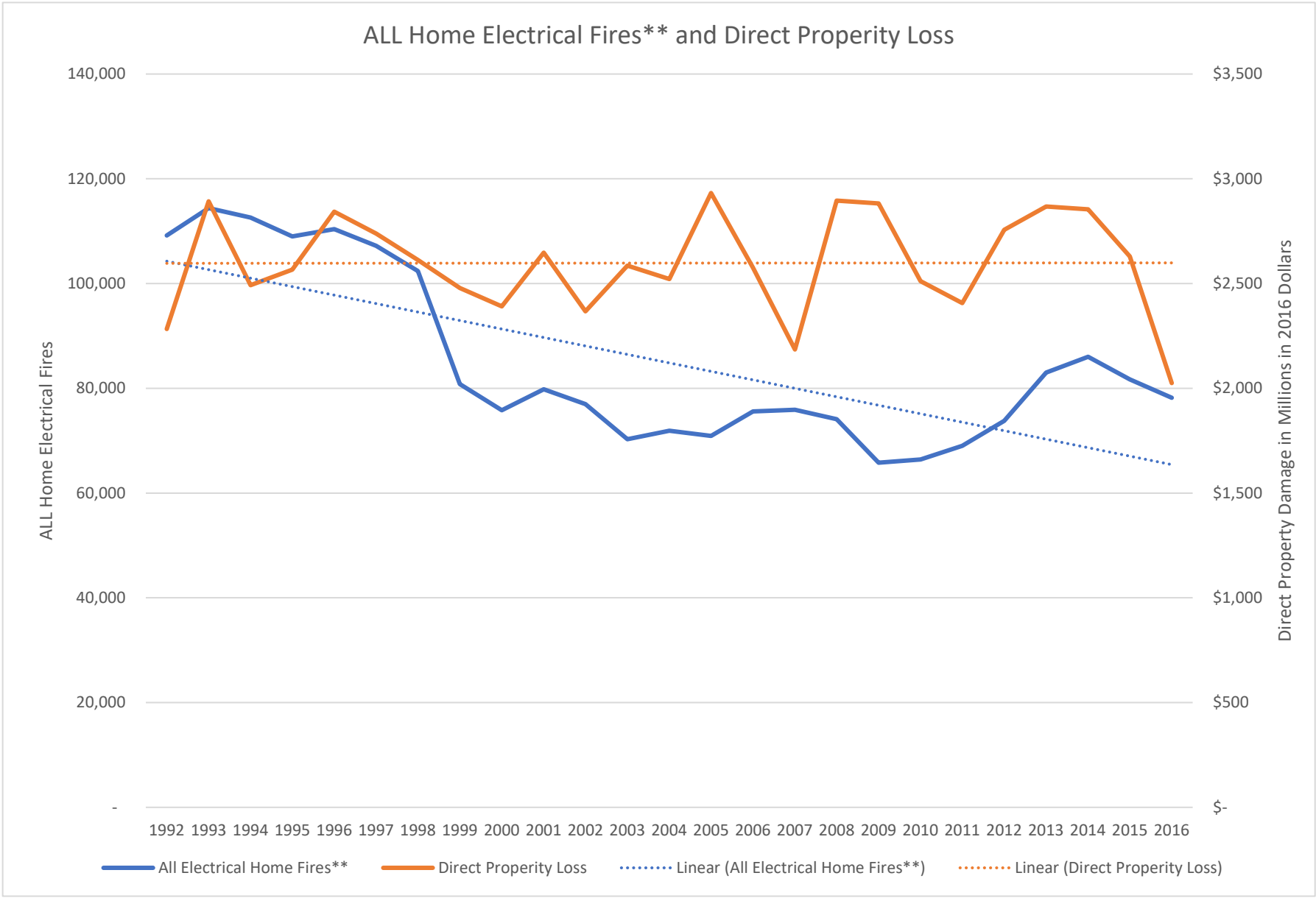
**Caused by Electrical Failure, Malfunction, Distribution, and Lighting



**Caused by Electrical Failure, Malfunction, Distribution, and Lighting



**Caused by Electrical Failure, Malfunction, Distribution, and Lighting



**Caused by Electrical Failure, Malfunction, Distribution, and Lighting

arc fault circuit interrupters

using advanced technology to reduce electrical fires

NEMA

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION

INTRODUCTION

Arc fault circuit interrupters (AFCIs) are required by the National Electrical Code® (NEC) for certain electrical circuits in the home. Questions have been raised regarding their application and even the need for them. Various technical "opinions," organizational "marketing pitches," and misinformation are being distributed about AFCIs that further mislead the public about the purpose of the device as a part of overall electrical safety for the public.

This brochure is intended to address the various aspects of AFCIs and dispell the misinformation circulating in the industry.

WHY DO WE REALLY NEED AFCIs?

Smoke alarms, fire extinguishers and escape ladders are all examples of emergency equipment used in homes to take action when a fire occurs. An AFCI is a product that is designed to detect a wide range of arcing electrical faults to help prevent the electrical system from being an ignition source of a fire. Conventional overcurrent protective devices do not detect low level hazardous arcing currents that have the potential to initiate electrical fires. It is well known that electrical fires do exist and take many lives and damage or destroy significant amounts of property. Electrical fires can be a silent killer occurring in areas of the home that are hidden from view and early detection. The objective is to protect the circuit in a manner that will reduce its chances of being a source of an electrical fire.

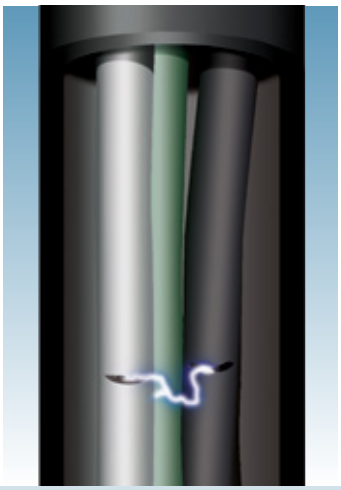
THE JOURNEY TO DEVELOP DETECTION TECHNOLOGY

Research in the arc fault area began in the late 1980s and early 1990s when the U.S. Consumer Product Safety Commission (CPSC) identified a concern with the residential fires of electrical origin. A large number of these fires were estimated to be in branch circuit wiring systems.

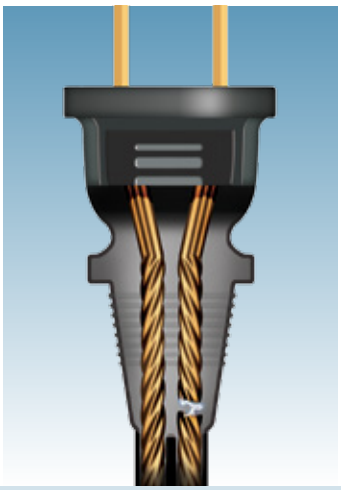
The concept of AFCIs gained more momentum when code proposals were made to the 1993 NEC to change the instantaneous trip levels of 15A and 20A circuit breakers. The Electronic Industries Association (EIA) had studied the issue of electrical fires and determined that additional protection against arcing faults were an area that needed to be addressed by electrical protection. This proposal first attempted to do this by requiring that instantaneous trip levels of a circuit breaker be reduced from a range of 120 to 150 amperes down to 85 amperes. However, it became clear that the lowering of those levels below some of the minimums already available on the market would result in significant unwanted tripping due to normal inrush currents.

It was these early studies and code efforts that led to the first proposals requiring AFCIs, which were made during the development of the 1999 NEC. NEC Code-Making Panel 2 (CMP2) reviewed many proposals ranging from protecting the entire residence to the protection of living and sleeping areas. In addition, the panel heard numerous presentations on both sides of the issue. After much data analysis and discussion, the CMP2 concluded that AFCI protection should be required for branch circuits that supply receptacle outlets in bedrooms.

Subsequent editions of the NEC further upgraded the requirements to include 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, and similar rooms or areas, along with other enhancements.



Parallel Arc



Series Arc

WHAT ARE ARC FAULTS?

The UL Standard for AFCIs (UL 1699) defines an arc fault as an unintentional arcing condition in a circuit. Arcing creates high intensity heating at the point of the arc, resulting in burning particles that may over time ignite surrounding material, such as wood framing or insulation.

The temperatures of these arcs can exceed 10,000 degrees Fahrenheit. Repeated arcing can create carbon paths that are the foundation for continued arcing, generating even higher temperatures.

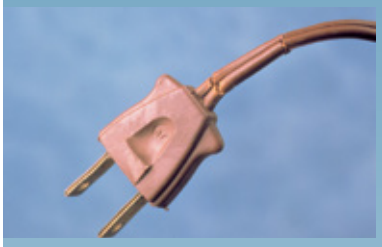
typical causes of arc faults

Example conditions where arc faults may start include:

- Damaged wires
- Worn electrical insulation
- Wires or cords in contact with vibrating metal
- Overheated or stressed electrical cords and wires
- Misapplied or damaged electrical appliances

Furniture pushed against or resting on electrical cords can damage the wire insulation. Damaged cords can become a potential condition for arcing.

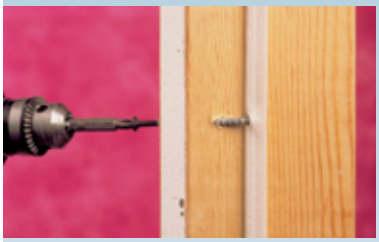
Extension or appliance cords that are damaged or have worn or cracked insulation can contribute to electrical arcing.



Cord insulation can be deteriorated by heat generated by hot air ducts or sunlight.

Cables that are improperly nailed or stapled too tightly against a wall stud can sever insulation and cause arcing.

Wires located behind walls can be accidentally punctured by a screw or drill bit damaging the insulation of the wiring.



Nails carelessly driven into walls can break wire insulation and cause arcing.

Nonmetallic sheathed cable damaged by gusset plate while being pulled through attic.

FIRE DATA ANALYSIS

The Federal Government, the National Fire Protection Association, and US fire departments track the incidence of electrical fires across the United States and categorize those fires based on their causes. In reviewing statistics from 2003 to 2014, fires in home electrical systems averaged 25,366 annually and resulted in 378 civilian deaths, 1,290 civilian injuries and $1.4 billion in direct property damage.* The NFPA Home Electrical Fires Fact Sheet indicates that wiring and related equipment were involved in 63% of these fires and half of the associated deaths in 2007-2011.

The U.S. Department of Housing and Urban Development (HUD) recommendation is to promote AFCIs as one of the many devices that can be used to prevent burns and fire related injuries. In addition, it cites a 1999 CPSC Report recommending the use of AFCIs to "prohibit or reduce potential electrical fires from happening."**

As you can see from the data above, fires of electrical origin are a significant issue that must be addressed. Frequently, it is argued that fires only occur in older homes. However, it should be recognized that new homes become older homes. It is critical to install the AFCIs in the beginning so that they can perform their protection function from the start. Seldom are devices such as AFCIs added to homes after they are constructed and occupied.

*Home Electrical Fires Fact Sheet, National Fire Protection Association

**Healthy Homes Issues: Injury Hazards, U.S. Department of Housing and Urban Development, Version 3, March 2006

HOW IS AN ARC FAULT DETECTED?

An AFCI device uses advanced electronic technology to "sense" the different arcing conditions. While there are different technologies employed to measure arcs by the various AFCI manufacturers, the end result is the same, detecting parallel arcs (line to line, line to neutral and line to ground) and/or series arcs (arcing in series with one of the conductors).

How does arc fault detection work? In essence, the detection is accomplished by the use of advanced electronic technology to monitor the circuit for the presence of "normal" and "dangerous" arcing conditions. Some equipment in the home, such as a motor driven vacuum cleaner or furnace motor, naturally create arcs. This is considered to be a normal arcing condition. Another normal arcing condition that can sometimes be seen is when a light switch is turned off and the opening of the contacts creates an arc.

A dangerous arc, as mentioned earlier, occurs for many reasons, including damage of the electrical conductor insulation. When arcing occurs, the AFCI analyzes the characteristics of the event and determines if it is a hazardous event. AFCI manufacturers test for the hundreds of possible operating conditions and then program their devices to monitor constantly for the normal and dangerous arcing conditions.

THE NEC AND UL STANDARD

National Electrical Code

The National Electrical Code specifically defines and mandates the installation of AFCIs. The areas in homes where AFCI protection is required have gradually expanded, and as of the 2014 edition include kitchens, family rooms, dining rooms, living rooms, parlors, libraries, dens, bedrooms, sunrooms, recreation rooms, closets, hallways, laundry areas, and similar rooms or areas.

UL Standard

Product standards to cover AFCIs began to be developed in the mid-1990s. Underwriters Laboratories published UL 1699 Standard for Safety for AFCIs in 1999 to cover a wide variety of conditions to evaluate an AFCI. The standard includes requirements for the following conditions:

- Humidity conditioning
- Leakage current
- Voltage surge
- Environmental evaluation
- Dielectric voltage
- Arc-fault detection
- Unwanted tripping
- Operation inhibition
- Resistance to environmental noise
- Abnormal operation

One of the most frequent questions about AFCIs is related to resistance to unwanted tripping. There are four varieties of tests related to its ability to resist unwanted tripping:

- Inrush current: High-current-draw devices such as tungsten filament lamps and capacitor start motors.
- Normal arcing: Brush motors, thermostatic contacts, wall switch and appliance plugs.
- Non-sinusoidal waveforms: Examples of devices creating these electrical waveforms include electronic lamp dimmers, computer switching-mode power supplies and fluorescent lamps.
- Cross talk: This test measures trip avoidance for an AFCI when an arc is detected in an adjacent circuit. Only the circuit with the arc should cause the breaker to trip, not another circuit.

Through the use of the NEC requirement and extensive UL testing, manufacturers' AFCI products provide superior protection against arcing faults.

CONTRASTING AFCIs AND GFCIs

There is a major difference between the functioning of an AFCI as compared to a GFCI (ground fault circuit interrupter). The function of the GFCI is to protect people from the deadly effects of electric shock that could occur if parts of an electrical appliance or tool become energized due to a ground fault. The function of the AFCI is to protect the branch circuit wiring and electrical cords connected to it from dangerous arcing faults that could initiate an electrical fire.

AFCI and GFCI technologies can co-exist with each other and are a great complement for the most complete protection that can be provided on a circuit.

WHAT ARE THE VARIOUS SAFETY AND GOVERNMENTAL AGENCIES SAYING ABOUT AFCI?

"The National Association of State Fire Marshals (NASFM) strongly supports the broad adoption of AFCI technology through national, state, and local building codes. AFCIs are the most welcome addition to fire prevention in decades. AFCIs promise to save hundreds of lives every year."

— John C. Bean, President, NASFM

"The National Association of Home Inspectors (NAHI) strongly encourages its members to educate all of their clients about the life and property saving benefits of AFCI technology, especially those clients considering the purchase of a home more than 20 years old."

— Mallory Anderson, Executive Director

"The National Electrical Contractors Association (NECA) submitted comments to legislative committees in Michigan and South Carolina, urging them to retain requirements for AFCI protection of bedroom receptacles in their state electrical codes. Cost-cutting pressure from homebuilders' associations in both states led to code proposals to delete AFCI protection required by the National Electrical Code, when constructing new homes."

— NECA Contractor Code Letter

"CPSC has identified arc fault circuit interrupter (AFCI) technology as an effective means of preventing fires caused by electrical wiring faults in homes."

— U.S. Fire Administration

"The Electrical Safety Foundation International (ESFI) urges that arc fault circuit interrupter (AFCI) technology be installed in all new and existing housing to protect homes and families from fires caused by electrical arcing."

— Brett Brenner, President, ESFI

TYPES OF ARC FAULT CIRCUIT INTERRUPTERS

AFCI and GFCI Protection

An AFCI can be used in conjunction with GFCI protection to provide both arcing fault protection as well as 5mA ground fault (people) protection. A way to provide both types of protection is to use an AFCI circuit breaker and a GFCI receptacle. Another way is to install a dual function device that provides both AFCI and GFCI protection.

defining the arc fault risk to people and property

WIRING AND INSTALLATION GUIDELINES

There are no special requirements for an AFCI circuit other than proper installation and wiring practices. There are various special considerations that must be given to certain circuits that vary from the norm, such as shared neutral applications, but in general the application of an AFCI is as simple as following the installation instructions that come from the manufacturer.

As with any change in the required protection for the electrical system, there have been many discussions and deliberations both for and against arc fault protection being a part of the NEC. Some have argued that the cost of installing AFCIs is higher than the cost of installing standard devices and, as such, it costs too much to provide the increased protection. Others have argued that since it is a relatively new type of protection, it does not have the history on which to base a decision as to whether to support or not.

These issues have been debated thoroughly and completely. It is important to keep a few critical facts in mind.

- The cost to install AFCI circuit breakers in the home is insignificant when compared to the number of lives and property the device helps protect.
- The additional cost to install AFCIs is insignificant compared to the total cost of a new home, typically less than 0.1%.
- The Consumer Product Safety Commission staff report on Estimated Residential Structure Fires on Selected Electrical Equipment (October 2006) from 1999-2003 reported that 142,300 electrical distribution fires occurred on all distribution components. Installed wiring fires were estimated to have occurred in 50,200 instances.
- Using the same report, the CPSC projected that there were 910 deaths attributed to electrical distribution equipment during that five-year period. Installed wiring led to approximately 210 deaths as a part of that total.

Applying technology to improve the electrical safety of the home is a wise investment for both the homeowner and the community at large. Reducing fires of electrical origin and saving lives is an important responsibility of the entire construction and regulatory community. Taking these CPSC statistics into account, one has to ask, if a portion of the 50,200 fires could have been prevented, would the increase in cost have been worth the added protection AFCIs provide the homeowner?

what is the price of new safety technology worth?

When GFCIs were introduced in the 1970s, similar discussions took place regarding the cost/benefit to the consumer, homebuilder and others. GFCIs have been a standard requirement in homes for over 30 years with additional locations and circuits being added over time as well. GFCI also has a statistical track record over time as to the reduction of electrocutions. On an annual basis, in 1983, there were almost 900 electrocutions total per year with approximately 400 being consumer product related. Ten years later, the total was reduced to 650 annually and slightly over 200 consumer product electrocutions annually.

With over 20 years of history, statistically based analysis of GFCIs was built on a solid foundation of data. AFCIs are relatively new and have only been installed in a small fraction of the total number of circuits in U.S. homes. As with all products, given time, they too will be able to provide a solid statistical base of measure.

Some have argued that it should be shown how many times an AFCI has "prevented" a fire from occurring. Of course, this is not a feasible request. The AFCI disconnects the power when an arc fault occurs, therefore no incidence of fire or arc is reported to authorities. The same can be true when a smoke alarm siren alerts the homeowner and the small smoking event is extinguished without incident. Is that statistic reported to the federal government or local fire department? Of course not. Safety prevention is just that: prevention. The only statistics that are reported are those that have resulted in a fire or a response of a fire department. Many safety protection actions go unreported.

If we are to offer consumers a safer home, then the appropriate technology should be put into place.

Removing AFCI as a local or state code requirement is reducing safety requirements. These rules are established by a national body of experts that have heard testimony from many sources as well as reviewed a significant amount of data to make their recommendation. Shouldn't we trust the safety experts that develop our safety procedures?

NEMA AND ELECTRICAL SAFETY

For more than 80 years, manufacturers of low-voltage distribution equipment have been working to ensure public safety through standards writing efforts and the dissemination of important industry information through the National Electrical Manufacturers Association (NEMA), one of the most respected standards development organizations in the world. Headquartered in Rosslyn, Virginia, NEMA has approximately 350 electroindustry member companies, including large, medium and small businesses. To learn more about NEMA visit **www.nema.org**.

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
1300 North 17th Street, Suite 900 • Rosslyn, Virginia 22209
(703) 841-3200 Fax: (703) 841-5900
www.nema.org

ARC-FAULT CIRCUIT INTERRUPTERS

Protecting Your Home from Fires

Home fires are more deadly and costly than ever. While the number of total fires and fire injuries are decreasing, property damage and fire deaths are on the rise. Each year arc-faults, caused by worn and inadequate wiring, overburdened circuits, outdated technology, and aging electrical systems, start more than **35,000 home fires** causing over **1,130 injuries, 500 deaths,** and **$1.4 billion** in property damage.

IRC 2021-70

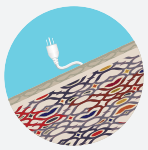
Common Causes of Arc-Faults

Damaged electrical wiring

Wiring damaged by screws or nails

Wiring damaged by doors

Damaged electrical insulation

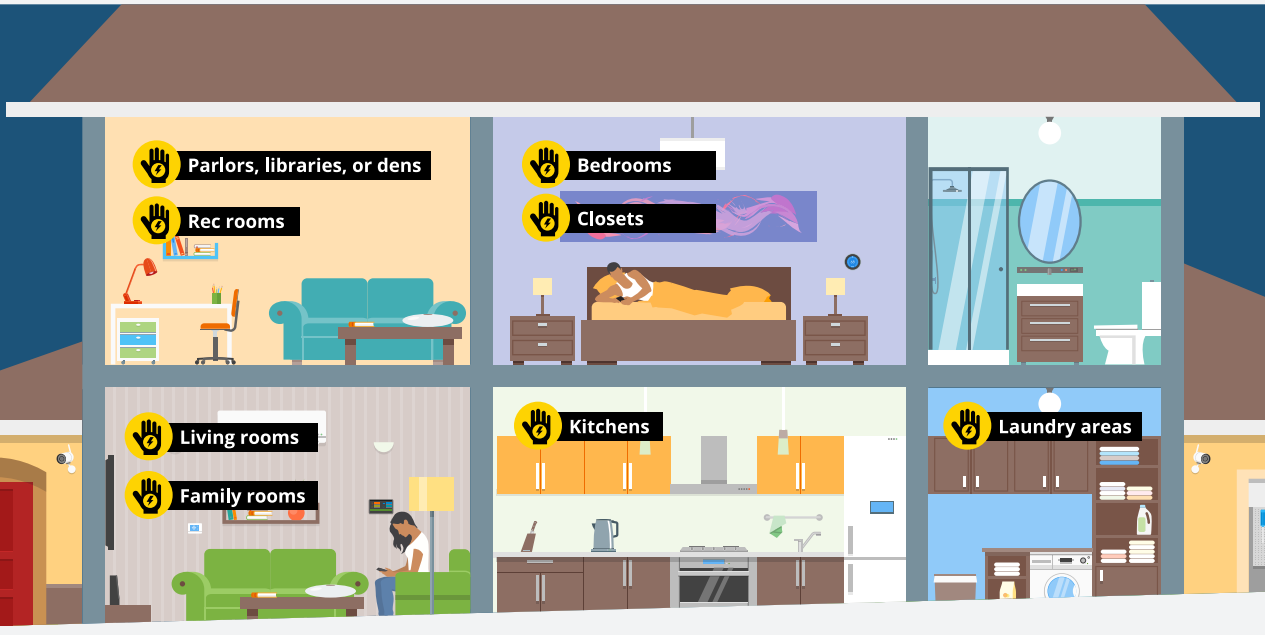


Overheated cords under carpets or rugs

Damaged or loose connections

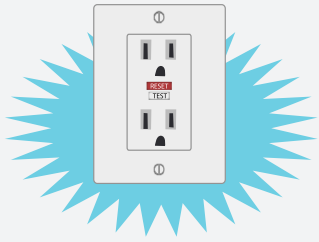
Cords and plugs damaged by furniture

Arc-fault protection is required in:



Types of arc-fault protection:

A listed combination-type AFCI circuit breaker



A listed outlet branch-circuit-type AFCI receptacle

A listed outlet branch-circuit-type AFCI receptacle in combination with a listed branch-circuit overcurrent device

Please share this free resource to save lives

AFCI circuit breakers and receptacles protect all downstream wiring and appliances from arc-faults. Receptacles should be installed at the first outlet box of a circuit.

ESFI.org

www.facebook.com/ESFI.org www.twitter.com/ESFIdotorg www.youtube.com/ESFIdotorg

IRC 2021-70

Insurance Institute for Business & Home Safety®

Electrical Fires and Arc-Fault Circuit Interrupter Protection

January 2017

Electrical Fires and Arc-Fault Circuit Interrupter Protection

Protective devices such as circuit breakers (and fuses before them) have long been used in nearly all homes to reduce the risk of electric fires. These devices protect against excessive current, which can cause overheating and damage to the electrical circuit itself, potentially resulting in fire or explosion. Circuit breakers and fuses are designed to interrupt the current flow when it exceeds the limit the circuit was designed for. However, they do not address another common cause of electric circuit fires—those caused by arcing or leakage of electrical currents (i.e., exposure of electrical currents to air) in a circuit that is energized.[1] It is estimated that at least 65% of the almost 50,000 annual home fires result from these arc faults (Hall, 2013) that can reach temperatures of several thousand degrees Celsius and present a serious fire hazard.

What are Arc Faults?

Common causes of arc faults include:

- Loose connections in outlets, switches and wires in fixtures such as ceiling fans and lights
- Frayed or damaged electrical cords due to impacts, pressure from residing under furniture, or age and normal wear and tear
- Damage to wiring insulation—e.g., damage by nails or screws driven through walls
- Spillage of liquids

Protective Benefits of Arc-Fault Circuit Interrupters

Arc-fault circuit interrupters (AFCIs) are electronic devices designed to detect dangerous arc faults that occur at currents below levels that would trip an ordinary circuit breaker. The precise methods for detecting arc faults differ across manufacturers and devices, but generally speaking, AFCIs continually monitor the current and voltage wave forms in an electrical circuit and interrupt (cut off power to the circuit) if these wave forms have characteristics indicative of dangerous arcing. In addition to detecting problems in electrical wiring and connections, AFCIs can also detect and protect against arcing in connected cords and appliances.

[1]Arcing conditions sometimes result in excessive current through the circuit, the type of condition standard circuit breakers are designed to respond to and protect against. However, in many situations, the high temperatures produced by arc faults can occur without drawing excessive current. In the absence of excess current, standard circuit breakers cannot protect against such arc faults, which they were not designed to detect.

Arc-Fault Circuit Interrupters and the National Electrical Code®(NEC)

The fire risk associated with arc faults has long been recognized. Research in the development of AFCIs took on greater urgency in the 1980s and 1990s in response to growing concern about electrical fires by the Consumer Product Safety Commission (CPSC). The goal was to develop a device that went beyond standard circuit breakers to detect and respond quickly to arc faults before they ignited, while at the same time minimizing nuisance tripping. In 1997, the first AFCIs that could detect and respond to different types of arcing conditions became commercially available. AFCIs were first included in the 1999 NEC[2] with a delayed adoption until 2002 in order to permit a transition period to accommodate the new requirement (Domitrovich & Lippert, 2013). In 1999, Underwriters Laboratories (UL) finalized UL 1699 Standard for Arc-Fault Circuit Interrupters which provides a standard for testing and listing approved AFCIs (Siemens Industry Inc., 2012).

The NEC requirements have evolved and expanded over time. Initially the NEC required protection of 120 volt, 15- and 20-ampere branch circuits that supplied outlets in bedrooms in new construction. Subsequent editions of the NEC have extended these requirements to include AFCI protection for branch circuits in kitchens, family rooms, dining rooms, living rooms, bedrooms, parlors, libraries, dens, sunrooms, recreation rooms, closets, hallways and laundry areas. (Outlets in bathrooms, garages, unfinished basements and outdoors are not required to be AFCI-protected.) Recognizing that electrical fires could also occur in existing dwellings, the NEC also requires AFCI protection where branch circuit wiring in an existing home is modified, replaced or extended (National Fire Protection Agency, 2014).

The NEC provides for multiple methods of protecting branch circuits for arc-fault conditions, but the simplest method of protection (particularly in new construction) can be achieved by installing listed combination-type AFCI devices at the panel box at the origin of the branch circuits. This method of protection may also be preferred when a branch circuit in an existing home is modified. However, an alternative method of providing protection in modifications to existing circuits is to install a listed branch circuit–type AFCI in the first outlet of the circuit, which will provide protection for the outlet and the remaining downstream branch circuit wiring and power supply cords.

Addressing Concerns about AFCIs

Most jurisdictions adopting the NEC do so without modifying the provisions related to arc-fault protection. However, some states have faced occasional efforts to remove or modify the arc-fault protection requirements during their code adoption process. Two of

[2]The NEC (also known as NFPA 70) published by the National Fire Protection Association (NFPA) is the most widely adopted standard for the safe installation of electrical wiring and equipment in the United States.

the most commonly cited arguments against mandating AFCIs are the issues of nuisance tripping and the increased cost of AFCIs over standard circuit breakers.

On occasion, normal operating conditions can mimic arcing conditions that cause AFCIs to interrupt the current (trip) when dangerous conditions do not actually exist. This is referred to as nuisance tripping. Since they became commercially available in 1997, AFCI technology has evolved and improved, resulting in fewer incidences of nuisance tripping while expanding the dangerous conditions they protect against. And it is important to remember that what may be perceived as nuisance tripping may actually be a properly functioning AFCI accurately detecting and responding to dangerous arcing conditions that are not readily apparent.

One source of nuisance tripping may be in the way circuits have been wired by electricians. For example, the practice of having more than one electrical circuit share a neutral line or having crossed neutral lines will cause the ground fault detection function in an AFCI to interrupt the circuit. In such cases, the AFCIs are performing as intended. But the practice of having multiple circuits share a neutral line has recently been prohibited in the 2011 edition of the NEC. Consequently, this should not be a source of nuisance tripping in new homes with AFCIs going forward.

The incompatibility of certain electrical devices has also been cited as a cause of nuisance tripping. A typical home will have multiple electronic devices with different loads on a common circuit and the combination of devices in use can result in a variety or current wave forms flowing through the circuit under normal operating conditions. Additionally, some electronic devices will have operational or “safe arcing” as part of their normal operating conditions. Treadmills, televisions and fluorescent lights have been known to create wave forms that mimic those of dangerous arcing. AFCIs are designed to analyze a range of current wave forms flowing through a circuit and distinguish between those that represent dangerous arcing versus those that are present under normal operating conditions and do not pose a risk. The technology for doing so is not perfect. However, before AFCIs are listed by UL (under standard UL 1699) and make it to market, they are tested not only to ensure they respond quickly to dangerous arcing conditions, but also to make sure they do not respond to a variety of safe conditions that resemble dangerous arcing conditions (Underwriters Laboratories, 2006).

The other cited issue is cost. Standard circuit breakers sold in big-box hardware retailers cost between $3.72 and $4.56, while circuit breakers with arc-fault protection cost between $37.97 and $42.97. In a typical 2,500-square-foot home requiring 12 breakers, the difference in the cost of the two types of breakers could be between $400 and $470. According to the U.S. census, the median price of a new home in 2015 was $271,300, so the cost of upgrading all of the circuit breakers to AFCIs represents a tiny fraction (about 0.15%) of the price of a typical new home. Safety advocates agree this is a small price to pay for the potential reduction in human and property losses that could be realized with the widespread use of AFCI protection.

Public and Private Organizations Endorse AFCI Technology

Laboratory-tested AFCI devices have proven to be effective in detecting and isolating wiring problems that could lead to electrical fires and fatalities (Domitrovich & Lippert, 2013). The same NFPA study that estimated an average of nearly 50,000 electrical fires between 2007 and 2011 also estimated that these fires resulted in an annual average of 455 civilian deaths, 1,518 civilian injuries, and $1.48 billion in direct property losses (Hall, 2013). The CPSC estimates 50% or more of these electrical fires could be prevented by the use of AFCI protection (Karels, 2003). Over their nearly 2 decades of commercial availability, AFCIs have gained the endorsement of many organizations.

- **Consumer Product Safety Commission (CPSC).** A letter to jurisdictions considering adopting the 2008 NEC stated, “The CPSC staff is a strong proponent of the implementation of AFCIs as a powerful tool in mitigating fires that originate in the electrical distribution system” (Trotta, 2008).
- **U.S. Fire Administration (USFA).** USFA literature highlights the value of AFCIs. “Arc fault circuit interrupters (AFCIs) shut off electricity when a dangerous situation occurs. Have a licensed electrician install them in your home” (U.S. Fire Administration, 2012).
- **National Association of State Fire Marshals (NASFM).** “The National Association State Fire Marshals (NASFM) strongly supports the broad adoption of AFCI technology through national, state, and local building codes. AFCIs are the most welcome addition to fire prevention in decades. AFCIs promise to save hundreds of lives every year,” says NASFM President John C. Dean (Siemens Industry Inc., 2012).
- **National Association of Home Inspectors (NAHI).** “NAHI strongly encourages its members to educate all of their clients about the life- and property-saving benefits of AFCI technology, especially those clients considering the purchase of a home more than 20 years old,” says Executive Director Mallory Anderson (Siemens Industry Inc., 2012).
- **Electrical Safety Foundation International (ESFI).** “ESFI urges that AFCI technology be installed in all new and existing housing to protect homes and families from fires caused by electrical arcing,” observes ESFI President Brett Brenner (Siemens Industry Inc., 2012).
- **The Federal Emergency Management Agency (FEMA).** FEMA recommends installation of AFCIs as a mean of preventing electrical fires (National Fire Data Center, 2014).

References

Babrauskas, D. V. (2001). How do Electrical Wiring Faults Lead to Structure Ignitions. *International Fire & Materials Conference.* Interscience Communications.

Domitrovich, T., & Lippert, K. (2013). AFCIs From a Standards Perspective. *Electrical Safety Workshop.* Dallas: Institute of Electrical and Electronics Engineers.

Hall, J. R. (2013). *Home Electrical Fires.* Fire Analysis and Research Division. Quincy, Massachusetts: National Fire Protection Association.

Karels, T. R. (2003). *Economic Considerations - AFCI Replacements.* Retrieved from Consumer Product Safety Commision: https://www.cpsc.gov/PageFiles/102325/ecafci.pdf

National Electrical Contractors Association. (2004). *Contractors Code Letter.* Retrieved from National Electrical Installation Standards: http://www.neca-neis.org/ccl/newsletter/report28a7.html?articleID=4180

National Fire Data Center. (2014). *Residential Building Electrical Fires.* Washington: Federal Emergency Management Agency.

National Fire Protection Agency. (2011). *NFPA 70 National Electrical Code 2011 Edition.* Quincy, Massachusetts: National Fire Protection Agency.

National Fire Protection Agency. (2014). *NFPA 70 National Electrical Code 2014 Edition.* Quincy, Massachusetts: National Fire Protection Agency.

Siemens Industry Inc. (2012). *History of the AFCI.* Retrieved from Siemens (Company Web Site): http://w3.usa.siemens.com/us/internet-dms/btlv/residential/residential/docs_AFIC%20Circuit%20Protection/SIE_WP_AFCI_History.pdf

Trotta, A. M. (2008). *2008 NEC PDF: To: Code Making Authorities Considering the Adoption of the 2008 National Electrical Code.* Retrieved from Consumer Product Safety Commission: http://www.cpsc.gov/PageFiles/107517/2008nec.pdf

Underwriters Laboratories. (2006). *Standard 1699 - Standard for Arc-Fault Circuit Interrupters*. Retrieved from Underwriters Laboratories: http://ulstandards.ul.com/standard/?id=1699

U.S. Fire Administration. (2012). *Fire Safety Checklist.* Retrieved from Federal Emergency Management Agency: https://www.usfa.fema.gov/downloads/pdf/publications/fa_221.pdf

UNITED STATES
CONSUMER PRODUCT SAFETY COMMISSION
WASHINGTON, DC 20207

Memorandum

Date: March 10, 2003

TO : William H. King, Jr., ESEE

THROUGH: Warren J. Prunella, Associate Executive Director For Economic Analysis

FROM : Terrance R. Karels, EC

SUBJECT : Economic Considerations --- AFCI Replacements

You asked that Economic Analysis provide you with some preliminary estimates of the costs and benefits of replacement of circuit breakers with newer-technology arc-fault circuit interrupters (AFCIs). The following estimates are based on staff reports, contacts with trade and industry sources, and other readily available information regarding residential fires and AFCIs.

Electrical Fire Cost to Society

The Commission's Directorate for Epidemiology reports that there were an average of 41,500 residential fires involving residential electrical distribution systems over the 9 year period 1990-1998.[1] These fires resulted in an average of 326 deaths, 1,481 injuries, and $646 million in property losses per year over that period. For analytical purposes, the CPSC assigns a statistical value per life of $5 million; using the CPSC's Injury Cost Model, the estimated average cost of fire-related injury (including burns and smoke inhalation) is about $56,000. Adding each of these three cost elements, the average total estimated cost to society of these residential electrical fires would be about $2.360 billion per year ($1.630 billion+$83 million+$646 million).

It should be noted that "societal costs" is confined in this analysis to consumer deaths, injuries, and property loss to residents involved in a residential fire. Deaths and injuries sustained by fire personnel and the cost of fighting fires were not included in the society cost estimate.

Costs by Age of Housing Units

According to a 1990 CPSC Epidemiological study, "Residential Electrical Distribution System Fires," 85% of all such fires involved housing over 20 years old.[2] Thus, the societal costs of these fires in older homes would be significantly greater than that for newer housing. If

[1] Revised Residential Fire Loss Estimates, 1980-1998, National Estimates of Fires, Deaths, Injuries, and Property Losses from Non-Incendiary, Non-Suspicious Fires, July, 2002.
[2] The study was based on 149 investigated fires in 16 cities, and do not represent a statistically representative sample.

residential fires for the period 1990-98 (the period for which fire incident data were used) tracked the same pattern as the 1990 study, some 85% of fires --- and 85% of the expected societal costs--- would occur with housing over 20 years old. According to data derived from the **Annual Housing Survey, 1999** (US Census Bureau), there was an average of about 98.7 million housing units during the period 1990-98 (the period for which fire incident data were used). Over this period, an average of 70 million housing units (or 71%) were over 20 years old.

Thus, it appears that the age of housing units is a significant factor in the risk of residential fire involving electrical distribution systems. For houses under 20 years of age, the societal cost of these fires would be $354 million per year ($2.36 billion x .15). Since there were an average of 28.7 million houses under 20 years old over the period, the average expected societal cost would be $12.33 per year ($354 million / 28.7 million) per housing unit.

For housing over 20 years old, the societal costs would be $2.01 billion per year. For the 70 million houses that were over 20 years old, the expected societal costs of these fires would be $28.66 per unit per year ($2.006 billion /70 million).

Savings Over the Life of the AFCI

The CPSC's Engineering staff estimate that current-technology AFCIs may remain in service for 40 years or more, based on the industry's reported rate of replacement of existing circuit breakers in the US. For the purpose of this preliminary estimate, we assume that AFCIs will experience a service life of 30 to 40 years. Benefits associated with their use would accrue over the entire lifetime of the products.

The total benefits would be the present discounted value of the reduction in societal costs associated with residential electrical fires. Since the electrical fires appear concentrated after the structure is over 20 years old, the societal costs would differ depending upon when the AFCIs were installed. The following table shows the expected societal costs that would be addressed by AFCIs, under several scenarios. All societal costs were discounted at a rate of 3%.

	Present Value of Societal Costs Addressed by AFCIs	
	If a 30-year life	If a 40-year life
If installed at initial construction[3]	$324	$425
If installed after 10 years[4]	$429	$530
If installed after 20 years[5]	$572	$673

The discount rate has a significant effect on the present value of societal costs. For example, at a 7% discount rate, the discounted addressable societal costs for AFCIs installed at initial construction decline to $184 (if a service life of 30 years) and to $208 (if a 40 year service life). If AFCIs are installed after the housing was 10 years old, the discounted societal costs would

[3] This example assumes societal costs of $12.33 annually for the first 20 years, and $28.66 thereafter
[4] This example assumes societal costs of $12.33 annually for 10 years, and $28.66 thereafter
[5] This example assumes societal costs of $28.66 annually

range from $243 (if 30 year service life) to $267 (if 40 year service life). If installed in housing over 20 years old, the discounted societal costs would range from $363 (if 30 year service life) to $387 (if 40 year service life).

Cost of AFCIs

According to Engineering Sciences staff (ES), the average cost differential of residential AFCI circuit breakers compared to residential circuit breakers without the AFCI feature is $15 to $20 per unit. Staff also estimate that an average of 10 additional circuits per household would require AFCI protection beyond those currently required by the National Electrical Code. Thus, the cost of adding AFCI protection would total about $150 to $200 per housing unit. For the purposes of this preliminary analysis, we have used $175 (the midpoint of the estimates) as the cost of adding AFCI protection, per housing unit.

Effectiveness and Comparison of Costs and Benefits

As noted earlier, industry estimates put replacement sales of circuit breakers at levels that suggest that circuit breakers experience useful lives in excess of 40 years. If AFCIs experience a service life of 40 years (the most likely scenario based on the useful life of current-technology circuit breakers), and are installed at the time of initial construction of the residence, the inclusion of AFCIs would need to achieve effectiveness of about 41% in order for the estimated discounted benefits (the reduction in societal costs) to be equal to the costs of installation of the AFCIs ($175 in costs/$425 in benefits).

If the AFCIs were installed after the housing units were 10 years old (as might occur with early housing renovations), AFCIs would need only a 33% effectiveness in order to achieve cost-effectiveness ($175/$530). And if AFCIs were installed after the housing units were 20 years old (a likely time frame for major housing renovations), a 26% rate of effectiveness would yield benefits equivalent to costs ($175/$673).

Using a 30-year useful life for AFCIs, if installed at the time of initial construction, AFCIs would need to be about 54% effective in order to be cost-effective ($175/$324). If installed after the housing were over 10 years old, an effectiveness rate of 41% would yield a balance of costs and benefits ($175/$429). And if the AFCIs were installed after the housing was 20 years old, an effectiveness of 31% would result in costs in balance with benefits ($175/$572).

The inclusion of AFCI protection is expected to reduce, but not eliminate residential fires from electrical distribution systems. Citing reviews of in-depth investigations, ES staff estimate that the inclusion of AFCI protection in circuit breakers could have prevented 50% or more of these fires.

Thus, if the ES staff estimate of 50% effectiveness is correct (and assuming a 3% discount rate), the preliminary estimate of benefits of installing AFCI protection would exceed the costs in all but one scenario: for AFCIs with a 30-year useful life installed at the time of the initial construction, the projected benefits would be $162 (50% of $324), while the expected costs would be $175.

However, it should be noted that the results of the analysis are sensitive to the discount rate used. If a 7% discount rate is applied to the societal costs, the benefits of installing AFCI protection expected to last 30 to 40 years in *new* housing could be less than the costs: $92 to $104 (50% of $189 and $208, respectively); if AFCIs were installed in housing over 10 years old, the benefits would be $122 to $134 (50% of $243 and $267, respectively). However, the installation of AFCIs in housing over 20 years old still results in significant benefits over costs: $181 to $194 (50% of $363 to $387, respectively).

Aggregated Benefits and Costs

The preceding section described the expected benefits and costs of requiring AFCIs on a per-house basis. However, because industry sources indicate that about 1.9 million housing units undergo major electrical renovations annually, we can also describe the aggregate discounted benefits and costs associated with these renovations over the expected useful lives of the installed AFCIs. While the average age of this housing is unknown, it is likely that they are older residences. If AFCIs were incorporated in these older housing as renovations were conducted, and if such renovations involved housing over 20 years old, the aggregate discounted benefits (i.e., the reduction in societal costs) could be in the range of $286 to $336[6] each, or $543 to $638 million for all 1.9 million houses. The total cost of the addition of AFCIs would total $175 per housing unit, or $332 million for all renovated houses. Thus, in this scenario, the total benefits of such an action are almost double the expected costs.

[6] Based on 50% effectiveness and 3% discount rate, and 30-year and 40-year expected life.

South Carolina Department of Labor, Licensing and Regulation
South Carolina Building Codes Council
110 Centerview Dr • Columbia • SC • 29210
P.O. Box 11329 • Columbia • SC • 29211-1329
Phone: 803-896-4688 • contact.bcc@llr.sc.gov • Fax: 803-896-4814
llr.sc.gov/bcc

IRC 2021-71

2021 BUILDING CODE MODIFICATION REQUEST FORM

Requirements:

- All requests must be submitted by September 22, 2021.
- Each request for code modification must be submitted separately.
- A cover letter from the local jurisdiction or professional association stating that the individual is authorized to present the proposed amendment; and verification that the proposed amendment has the support of at least a majority of the members of the board or council governing the local jurisdiction or professional association proposing the modification.
- Sufficient test information, studies, data, or other documentation that would be necessary to fully explain and justify the proposed amendment
- For local modification requests only: the physical or climatological basis for the request and the reason that the suggested change would correct the condition.
- A local jurisdiction or professional association shall not propose a modification which will amend, suspend, eliminate or supersede an existing statute, policy, rule or regulation of any state or federal agency per S.C. Regulation 8-240 (H).
- **A completed modification request must be received with all required documentation before it will be reviewed.**

☒ Statewide Modification

☐ Local Modification: _____
(List all jurisdictions that apply.)

Association/Jurisdiction: Home Builders Association of South Carolina

Address: 625 Taylor Street (Street) Columbia (City) SC (State) 29201 (Zip)

Name: Mark Nix Title/Position: Executive Director

Phone No.: [redacted] Email Address: [redacted]

Please select the applicable code to be modified:

2021 International Residential Code

Please list the exact code section, table, figure, or appendix to be modified, and attach a photocopy of the applicable code section: E3902.5 Basement Receptacles

Code section as modified:
(Please strike through language being removed, and put language to be added in parentheses. Use additional pages as needed.)

E3902.5 Basement Receptacles

Add Exception *Receptacles in walk-out basements are excluded from this requirement.*

9/28 Study Committee Recommendation: Support approval

In 200 characters or less, please briefly describe the justification for this modification request.

Explanation: A finished basement is not noted as a wet area and their addition is not needed or required.

Per Regulation 8-240(E)(5), please list the persons with their titles and affiliations, known at the time of submittal, who will provide testimony in favor of the amendment. Due to the possibility of virtual hearings, **all information is the table below is required** to ensure proper notification. Use additional pages as needed.

Name	Title	Affiliation	Phone Number	Email Address
Mark Nix	Executive Director	HBA of SC	[redacted]	
Andy Barber	HBASC Codes Chairman	HBA of SC		

Affirmation

I certify that all information in this form, including all supplementary documents submitted with this form, are true and correct to the best of my knowledge after undertaking due diligence to determine their accuracy.

Signature: Mark Nix Digitally signed by Mark Nix Date: 2021.08.10 16:03:59 -04'00' Date: _____

Title: Executive Director

South Carolina Department of Labor, Licensing and Regulation
South Carolina Building Codes Council
110 Centerview Dr • Columbia • SC • 29210
P.O. Box 11329 • Columbia • SC • 29211-1329
Phone: 803-896-4688 • contact.bcc@llr.sc.gov • Fax: 803-896-4814
llr.sc.gov/bcc

2021 BUILDING CODE MODIFICATION REQUEST FORM

Requirements:

- All requests must be submitted by September 22, 2021.
- Each request for code modification must be submitted separately.
- A cover letter from the local jurisdiction or professional association stating that the individual is authorized to present the proposed amendment; and verification that the proposed amendment has the support of at least a majority of the members of the board or council governing the local jurisdiction or professional association proposing the modification.
- Sufficient test information, studies, data, or other documentation that would be necessary to fully explain and justify the proposed amendment
- For local modification requests only: the physical or climatological basis for the request and the reason that the suggested change would correct the condition.
- A local jurisdiction or professional association shall not propose a modification which will amend, suspend, eliminate or supersede an existing statute, policy, rule or regulation of any state or federal agency per S.C. Regulation 8-240 (H).
- **A completed modification request must be received with all required documentation before it will be reviewed.**

☒ Statewide Modification

☐ Local Modification: _____
(List all jurisdictions that apply.)

Association/Jurisdiction: Home Builders Association of South Carolina

Address: 625 Taylor Street (Street) Columbia (City) SC (State) 29201 (Zip)

Name: Mark Nix Title/Position: Executive Director

Phone No.: [redacted] Email Address: [redacted]

Please select the applicable code to be modified:

2021 International Residential Code

Please list the exact code section, table, figure, or appendix to be modified, and attach a photocopy of the applicable code section: E3902.10 Indoor damp and wet locations.

Code section as modified:
(Please strike through language being removed, and put language to be added in parentheses. Use additional pages as needed.)

Delete section

~~**E3902.10 Indoor damp and wet locations.** 125-volt through 250-volt receptacles installed in indoor damp and wet locations and supplied by single-phase branch circuits rated 150 volts or less to ground shall have ground-fault circuit-interrupter protection for personnel. [210.8(A)(11)]~~

Reason:

GFCIs are shown to be effective where a corded product is plugged into a standard "convenience" receptacle in a wet or damp location. However, this requirement is for condenser units, which are hardwired.

Data was not provided to supports expanding the use of GFCI protection on these circuits. The event used as substantiation was a result of an unqualified individual performing an electrical installation they never should have attempted. The NEC should not mandate GFCI protection for all outdoor outlets based on very specific unfortunate circumstances.

This requirement is extremely broad and will result in many unintended consequences. For example, it has not been determined if all A/C condenser units will operate on a GFCI protected circuit as sufficient testing has not been conducted. If the condenser unit is affected by high humidity and trips the GFCI, it could result in unhealthy conditions and property damage inside the home due to heat, humidity and mold growth, especially where the home is unoccupied for an extended period. There is also the potential for unwanted tripping and compatibility issues with heat pumps.

Branch circuit extensions or modifications would require the addition of GFCI protection for old condenser units, and it is not known whether the existing equipment is compatible with GFCI This requirement also applies to hardwired connections for effluent pumps and other types of lift station pumps with outdoor connections.

9/28 Study Committee Recommendation: Do not support approval

In 200 characters or less, please briefly describe the justification for this modification request.

Reason: see above

Per Regulation 8-240(E)(5), please list the persons with their titles and affiliations, known at the time of submittal, who will provide testimony in favor of the amendment. Due to the possibility of virtual hearings, **all information is the table below is required** to ensure proper notification. Use additional pages as needed.

Name	Title	Affiliation	Phone Number	Email Address
Mark Nix	Executive Director	HBA of SC	[redacted]	
Andy Barber	HBASC Codes Chairman	HBA of SC		

Affirmation

I certify that all information in this form, including all supplementary documents submitted with this form, are true and correct to the best of my knowledge after undertaking due diligence to determine their accuracy.

Signature: Mark Nix Digitally signed by Mark Nix Date: 2021.08.10 15:59:59 -04'00' Date: _____

Title: Executive Director

2021 International Residential Code
South Carolina Building Codes Council
Modification Continuations from 2018

2021 Code Section: ~~E3902.16~~ E3902.17 Arc Fault Circuit Interrupted Protection

Modification: Deleted "kitchen & laundry rooms" and Add Language.

In areas other than kitchen and laundry areas, branch circuits that supply 120-volt single-phase, 15- and 20-ampere outlets installed in family rooms, dining rooms, living rooms, parlors, libraries, dens, bedrooms, sunrooms, recreations rooms, closets, hallways, and similar rooms or areas shall be protected by any of the following: [210.12(A)]

1. A listed combination-type arc-fault circuit-interrupter, installed to provide protection of the entire branch circuit. [210.12(A)(1)]

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. [210.12(A)(2)]

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:

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

3.2 The maximum length of the branch-circuit wiring from the branch-circuit overcurrent device to the first outlet shall not exceed 50 feet (15.2 m) for 14 AWG conductors and 70 feet (21.3 m) for 12 AWG conductors.

3.3 The first outlet box on the branch circuit shall be marked to indicate that it is the first outlet on the circuit. [210.12(A)(3)].

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:

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

4.2 The maximum length of the branch-circuit wiring from the branch-circuit overcurrent device to the first outlet shall not exceed 50 feet (15.2 m) for 14 AWG conductors and 70 feet (21.3m) for 12 AWG conductors.

4.3 The first outlet box on the branch circuit shall be marked to indicate that it is the first outlet on the circuit.

4.4 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. [210.12(A)(4)]

Reason: N/A

Proponent: Home Builders Association of South Carolina

Previous Code Cycles	Previous Modification Number	Previous Code Section
IRC 2018	IRC 2018 44	3902.16

Comments: 2021 IRC Section changed to 3902.17, no language change.

9/28 Study Committee Recommendation: Support approval

7/27: Tabled for 8/19 meeting.

From: Smith, David A
To: Maggie Smith
Subject: RE: [EXTERNAL] RE: 2021 Building Code Modification Request - ACBMA - E3902.16
Date: Thursday, September 23, 2021 3:14:44 PM
Attachments: image001.png
image002.png

Hey Maggie,

Yes, this amendment is meant for IRC Section E3901.17 for Arc-Fault Circuit-Interrupter Protection. Also, I wish for the language to be read as it is presented.

Feel free to call me at the number below for any additional information.

Thanks!
David A. Smith
Codes & Standards Specialist
Commercial & Residential Distribution Solutions
Electrical Sector, Americas
[redacted]

Powering Business Worldwide

From: Maggie Smith <maggie.smith@llr.sc.gov>
Sent: Thursday, September 23, 2021 3:05 PM
To: Smith, David A [redacted]
Subject: [EXTERNAL] RE: 2021 Building Code Modification Request - ACBMA - E3902.16

David,

It appears that this amendment is meant for IRC Section E3902.17. Can you confirm that this is correct? Please note that the language in the 2021 IRC is different from the text to be modified that was posted in the modification request. Please also confirm that you still wish for the language to read as it is presented.

Thank you,

From:	Smith, David A
To:	Contact.BCC; Teresa Martin
Cc:	Arnold, Kevin S; Don Iverson; Dangelo, Nick; Holland, Bryan; Hewitt, David; [redacted]
Subject:	2021 Building Code Modification Request - ACBMA - E3902.16
Date:	Wednesday, September 22, 2021 8:21:45 AM
Attachments:	image001.png 20210922 - ACBMA - SCLLR - 2021IRCCodeModificationProposal.pdf

---

---- SCDLLR NOTICE (M365) ----

- **This email is from an external email address. Please use caution when deciding whether to open any attachments or when clicking links.**
- **Personally Identifiable Information (PII) should not be included in e-mail text or attachments. Do not save or transmit PII unencrypted.**

Hello,

On behalf of the American Circuit Breaker Manufacturer Association, I submit the attached Code Modification Request to E3902.16 pertaining to Arc-Fault Circuit-Interrupter Protection. The intent of this code modification is the restoration of AFCI requirements in the state to the full 2020 NEC / 2021 IRC language rather than the current exceptions for kitchen and laundry areas.

The attached submittal includes the following forms:

- 2021 Building Code Modification Request Form
- ACBMA Grant of Authorization for Proposed Amendment Presentation to David A. Smith of Eaton
- 2017 Fire Fatality Report by the South Carolina Office of State Fire Marshal Community Loss Education and Response (CLEAR) Team as substantiation to the code modification request

Please let me know if I can provide further information to the Code Study Committee for consideration of this code modification.

Thank you,

David A. Smith
Codes & Standards Specialist
Commercial & Residential Distribution Solutions
Electrical Sector, Americas
[redacted]

Powering Business Worldwide

South Carolina Department of Labor, Licensing and Regulation
South Carolina Building Codes Council
110 Centerview Dr • Columbia • SC • 29210
P.O. Box 11329 • Columbia • SC • 29211-1329
Phone: 803-896-4688 • contact.bcc@llr.sc.gov • Fax: 803-896-4814
llr.sc.gov/bcc

IRC 2021-74

2021 BUILDING CODE MODIFICATION REQUEST FORM

Requirements:

- All requests must be submitted by September 22, 2021.
- Each request for code modification must be submitted separately.
- A cover letter from the local jurisdiction or professional association stating that the individual is authorized to present the proposed amendment; and verification that the proposed amendment has the support of at least a majority of the members of the board or council governing the local jurisdiction or professional association proposing the modification.
- Sufficient test information, studies, data, or other documentation that would be necessary to fully explain and justify the proposed amendment
- For local modification requests only: the physical or climatological basis for the request and the reason that the suggested change would correct the condition.
- A local jurisdiction or professional association shall not propose a modification which will amend, suspend, eliminate or supersede an existing statute, policy, rule or regulation of any state or federal agency per S.C. Regulation 8-240 (H).
- **A completed modification request must be received with all required documentation before it will be reviewed.**

☒ Statewide Modification

☐ Local Modification: _____

(List all jurisdictions that apply.)

Association/Jurisdiction: American Circuit Breakers Manufacturing Association

Address: [redacted] (Street) [redacted] (City) [redacted] (State) [redacted] (Zip)

Name: David Smith Title/Position: Codes & Standards Specialist

Phone No. [redacted] Email Address: [redacted]

Please select the applicable code to be modified:

2021 International Residential Code

Please list the exact code section, table, figure, or appendix to be modified, and attach a photocopy of the applicable code section: 3902.16 Arc-Fault Circuit-Interrupter Protection

Code section as modified:
(Please strike through language being removed, and put language to be added in parentheses. Use additional pages as needed.)

Proposed 2021 IRC Code Modification Language:

Section: 3902.16 Arc Fault Circuit Interrupted Protection

~~**In areas other than kitchen and laundry areas, branch circuits that supply 120-volt single-phase, 15- and 20- ampere outlets installed in**~~ (**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, recreations rooms, closets, hallways, (**laundry areas, or)** ~~**and**~~ similar rooms or areas shall be protected by any of the ~~**following**~~ (**means described in 210.12(A)(1) through (6):)** [210.12(A)]

9/28: Withdrawn

In 200 characters or less, please briefly describe the justification for this modification request.

This modification would enhance electrical safety in single family homes to help prevent one of the leading causes of residential fires in South Carolina.

Per Regulation 8-240(E)(5), please list the persons with their titles and affiliations, known at the time of submittal, who will provide testimony in favor of the amendment. Due to the possibility of virtual hearings, **all information is the table below is required** to ensure proper notification. Use additional pages as needed.

Name	Title	Affiliation	Phone Number	Email Address
David Smith	Codes & Standards Specialist	American Circuit Breaker Manufacturers Association	[redacted]	

Affirmation

I certify that all information in this form, including all supplementary documents submitted with this form, are true and correct to the best of my knowledge after undertaking due diligence to determine their accuracy.

Signature:_____ Date: 09/20/2021

Title: Codes & Standards Specialist

ACBMA®
American Circuit Breaker Manufacturers Association®

South Carolina Department of
Labor, Licensing, and Regulation
110 Centerview Drive
Columbia, SC 29210
contact.bcc@llr.sc.gov

September 20th, 2021

RE: ACBMA Grant of Authorization for Proposed Amendment Presentation to David A. Smith of Eaton

The American Circuit Breaker Manufacturers Association mission is to advise and make recommendations to code authorities on circuit protection issues and to advise the public on issues relating to electrical safety. We represent the major circuit breaker manufacturers in North America.

The ACBMA is dedicated to advancing the understanding and use of circuit breakers to promote electrical safety. Specific purposes of the association include:

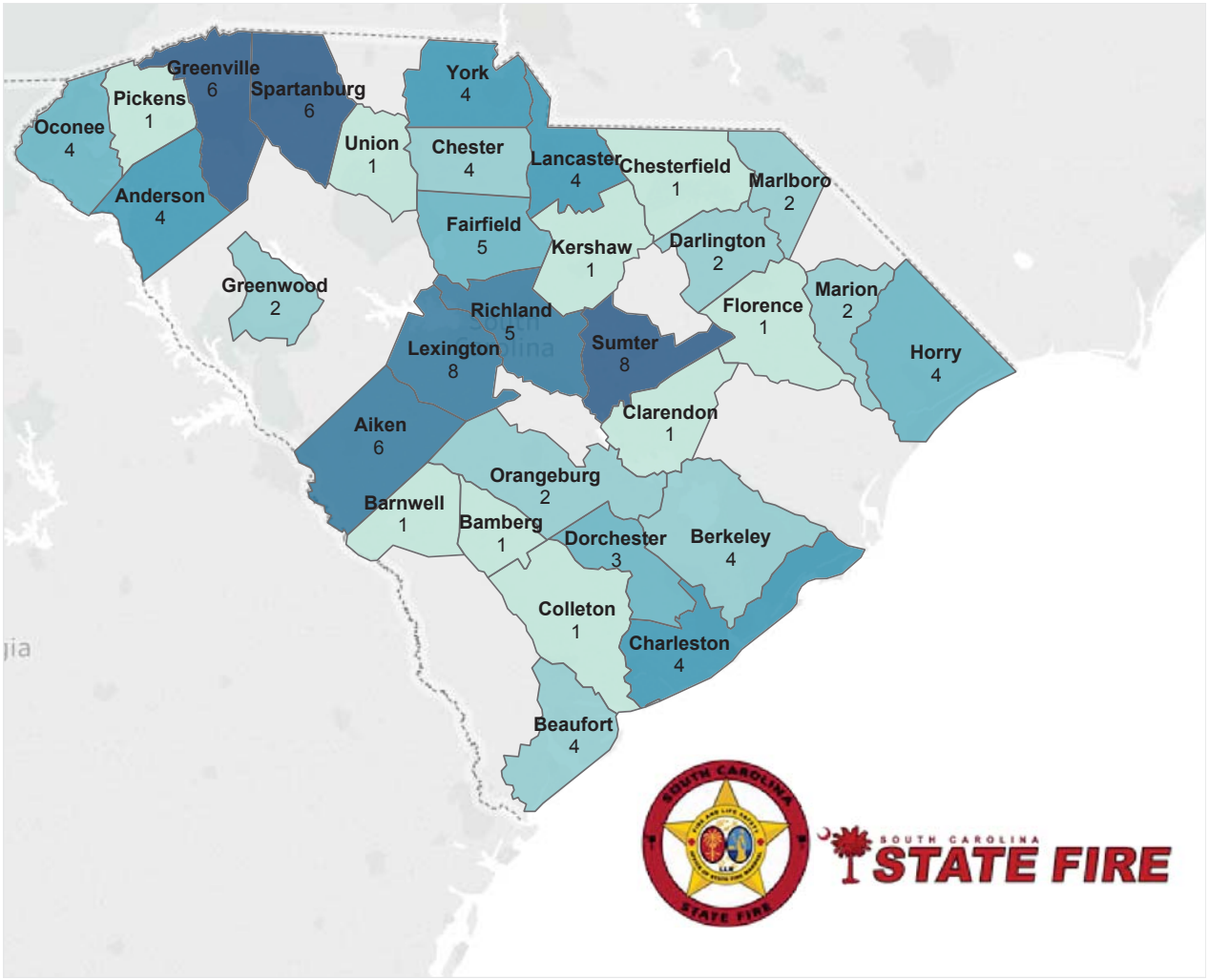
- To identify and discuss common industry issues
- To represent and promote the interests of American manufacturers of circuit breakers (as currently defined by UL 489)
- To educate members of the American circuit breaker industry
- To promote consumer safety and educate consumers as to the features and benefits of circuit breakers
- To serve as an information clearinghouse and provide a medium for exchange of experiences, and common interests
- To present industry views to governmental and standard-setting entities
- To conduct research
- To assist in the training, education and professional development of all persons involved in the circuit breaker industry
- To act consistently with its nonprofit tax-exempt status and to observe the letter and spirit of all applicable laws and regulations, including those in antitrust and trade regulation areas

We encourage the South Carolina Department of Labor, Licensing, and Regulation to adopt the 2020 edition of the National Electrical Code® with minimal amendment. To further that cause, we hereby grant authorization of proposed amendment presentation to David A. Smith of Eaton.

Sincerely,
Kevin S. Arnold, P.E.
Chair, ACBMA Code Adoption Committee

2017 Fire Fatality Summary Report

South Carolina Office of State Fire Marshal
Community Loss Education and Response (CLEAR) Team



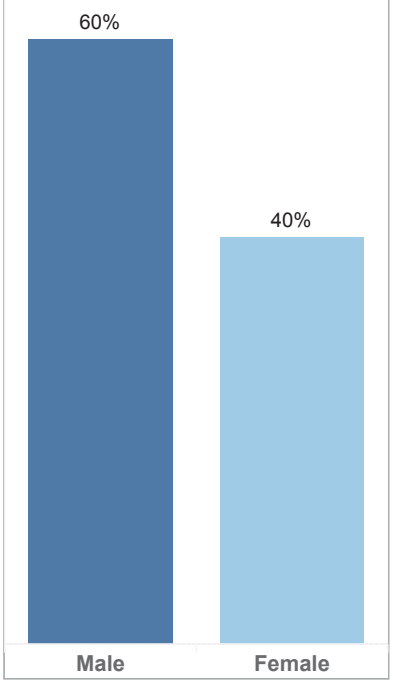
These findings are made possible by the research efforts of the CLEAR Team. In some cases, the percentages may not add up to 100% due to rounding. If you would like more information or outreach ideas based on the findings, please call South Carolina State Fire at (803) 896-9895.

This report version was last updated on April 5, 2018.

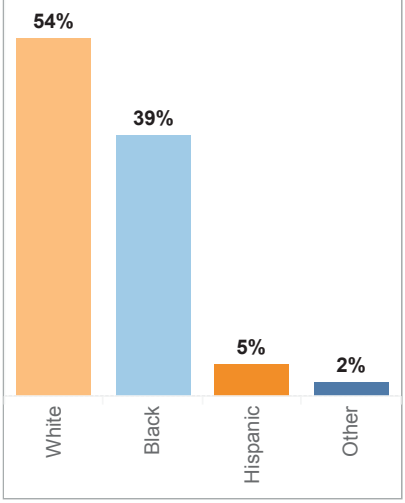
Fire Fatality Victim Profile

In 2017, there were 102 deaths from 86 incidents. The victims of fatal fires were reported in 31 of 46 counties, with the most incidents happening in Greenville, Spartanburg, and Sumter counties. Aiken and Lexington counties had a fewer number of incidents but more victims per incident. Most incidents had one victim; however, four incidents had three or more fatalities. Victims were mostly male, and 61 percent were older than the age of 50. White victims accounted for approximately half of all victims, followed by black victims at 39 percent. Victims were typically found in residences, specifically single-family dwellings and mobile homes.

Victim Gender



Victim Race



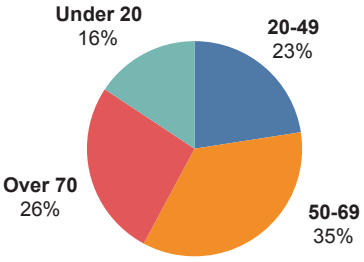
Incidents and Victims per County

	Incidents	Victims
Aiken	5	6
Anderson	4	4
Bamberg	1	1
Barnwell	1	1
Beaufort	2	4
Berkeley	2	4
Charleston	4	4
Chester	2	4
Chesterfield	1	1
Clarendon	1	1
Colleton	1	1
Darlington	2	2
Dorchester	3	3
Fairfield	3	5
Florence	1	1
Greenville	6	6
Greenwood	2	2
Horry	3	4
Kershaw	1	1
Lancaster	4	4
Lexington	5	8
Marion	2	2
Marlboro	2	2
Oconee	3	4
Orangeburg	2	2
Pickens	1	1
Richland	5	5
Spartanburg	6	6
Sumter	6	8
Union	1	1
York	4	4
Grand Total	**86**	**102**

Occupancy Type

Single Family Dwelling	42%
Mobile Home	37%
Vehicle	7%
Multi-Family Dwelling	7%
Open Area	3%
Recreational Vehicle	2%
Other	1%

Victim Age



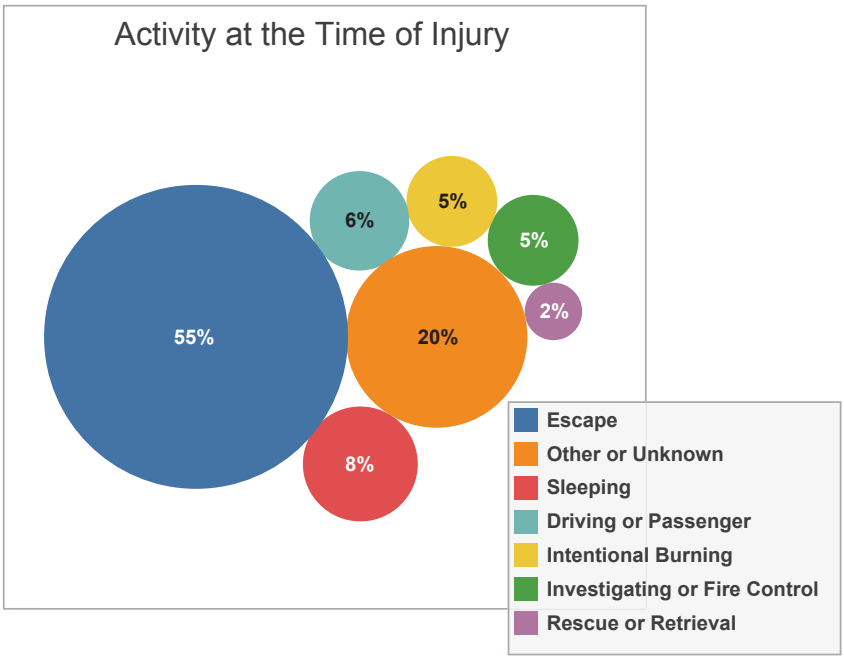
Median Age of Victims = 56

Multiple Fatality Incidents

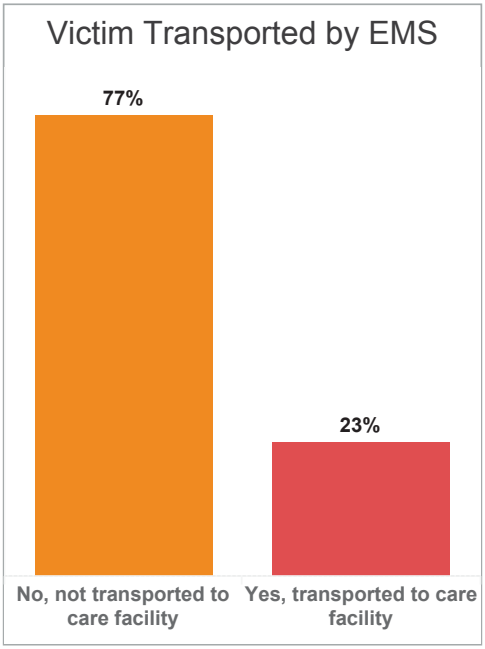
One Victim	87%
More than One Victim	13%

Fire Fatality Victim Profile

Activity at the Time of Injury



Victim Transported by EMS



On-Scene Medical Treatment

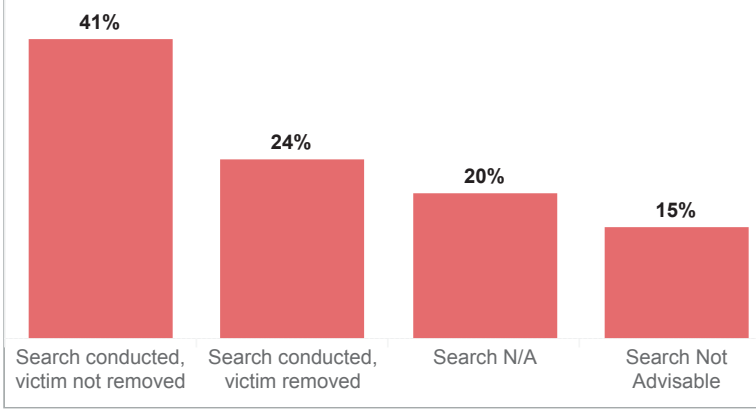
Victims were generally found to be attempting escape when they were injured. Fifty-five percent of victims attempted an escape, while only four percent of victims were successful in their attempt. Eight percent did not awaken to an emergency before succumbing. In three out of four cases, the victim was pronounced deceased at the fire scene. In 39 cases (38%), citizens attempted to rescue victims. Prior to fire department arrival, unsafe conditions did not allow for citizens to assist the victim in escaping. In 15 percent of cases, the fire department could not search for the victim due to conditions. Victims were only removed during search and rescue operations in one out of every four fatal fires.

The CLEAR Team was notified about fire fatalities within 24 hours of the death 87 percent of the time, and responded on-scene 55 percent of the time. This allows us to understand more about why some fires are fatal and connect with fire departments and their communities to prevent further tragedies.

Civilian Entry Attempt

Yes- Civilians made an attempt, but no entry was made	27%
No- No civilians were around	26%
No- Civilians were around, but no attempts to enter were made	25%
Not Applicable or Unknown	11%
Yes- Civilians were able to successfully enter	11%

Fire Department Primary Search of Victim



Human Factors Profile

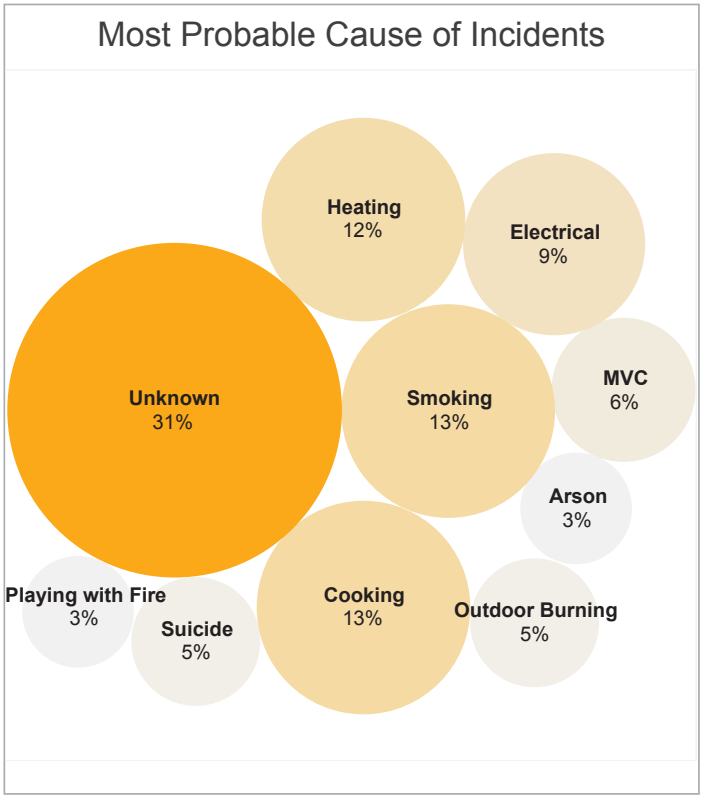
Human factors were deemed present in 84 percent of all incidents, with 56 percent of incidents having more than one human factor present. The human factors below account for some of the factors seen in this year's incidents. An inability to be notified of an emergency, an inability to go to a safe area, and risky behaviors can contribute to a person's demise in the event of a fire.

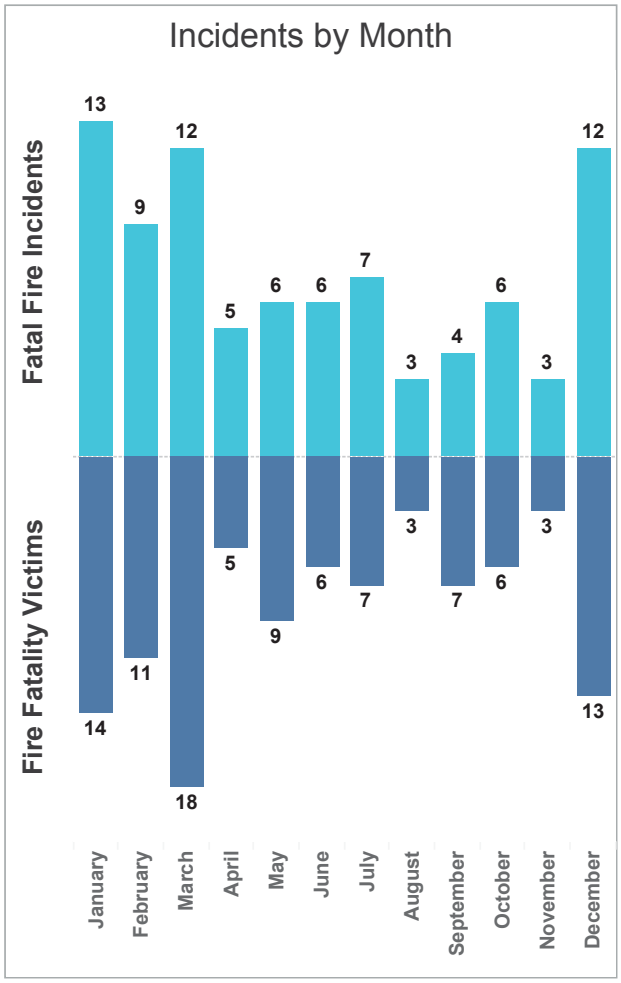
All vehicle-related and open area-related fire fatalities had at least one human factor which contributed to an improper response to the emergency.

Nine incidents had medical oxygen as a known human factor, and eighty-nine percent of those incidents had smoking as an additional human factor present.

Fatal Incidents Profile

When cause could be determined, fatal incidents were most likely caused by improperly discarded smoking materials, unattended cooking, or malfunctioning or improperly-used heaters. Incidents occured on all days of the week, with an above average amount of Sunday and Monday. Fatal incidents generally occured during overnight hours, from 9 p.m. to 6 a.m., and in January, March, and December.



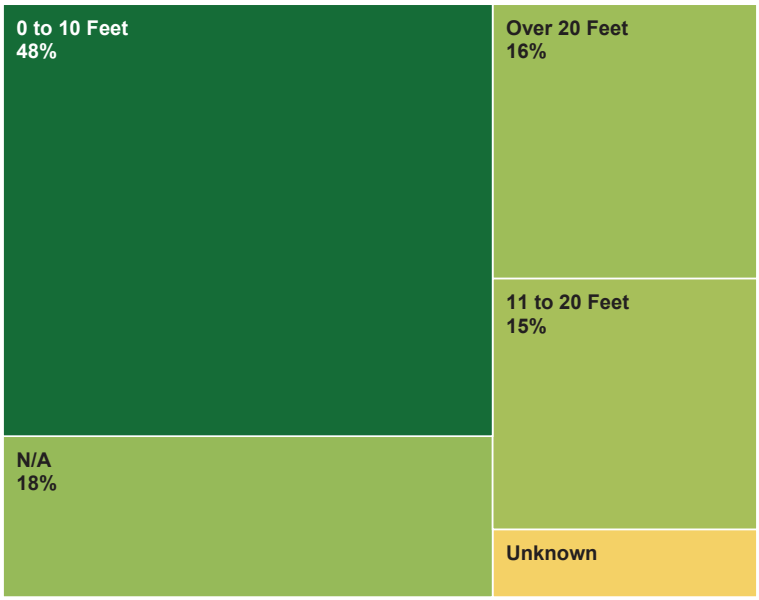


Days and Times of Incidents Occurring

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Grand Total
12 AM to 3 AM	5	4	2	2	1	1		15
3 AM to 6 AM	3	1		1	1	4		10
6 AM to 9 AM	2	1		1	1		2	7
9 AM to 12 PM	3		1	1	2	2	4	13
12 PM to 3 PM	1	2	3	1	2		1	10
3 PM to 6 PM		1		1	1	2	3	8
6 PM to 9 PM	1	3	1	1	1	2	1	10
9 PM to 12 PM	4	2	1	2	2	2		13
Grand Total	19	14	8	10	11	13	11	86

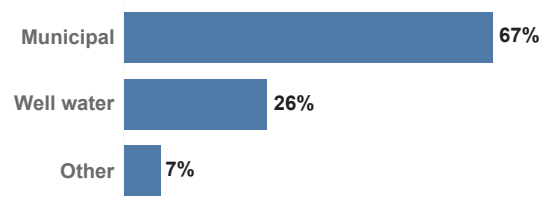
Homes with Fatal Incidents Profile

Victim's Distance from an Egress

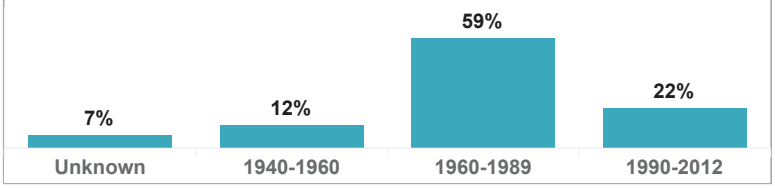


Eighty-five percent of fatal fires occurred in residences. These homes, which are mostly owned, tend to be 30-50 years old, with most being smaller than 1,500 square feet. These homes are often supplied with city or municipal water. Smoke alarms were not always determined to be present, and if they were (38% of the time), they did not necessarily alert the occupants to an emergency. Only in eight percent of fatal fires did an alarm that was present also alerted the occupants. Notification by an alarm saved four occupants in three separate fires. Code and safety issues were present in 59 percent of incidents,with 17 percent of incidents having more than one issue present. 24 percent of the incidents known to not have any smoke alarms.

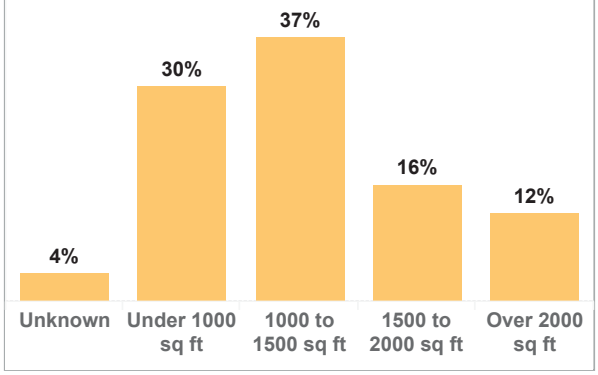
Water Source



Age of Homes



Size of Homes



Ownership Status of Homes

Known Code & Safety Issues

No Smoke Alarms	24%
Blocked Exits	15%
Improper Storage of Materials	12%
Issues with Egress	12%
Trip Hazards	10%
Electrical Risk	8%
No Power to Property	6%
Derelict Conditions	3%

Survivors in Fatal Home Incidents

No survivors	66%
1 survivor	14%
2 survivors	7%
3 survivors	7%
More than 3 survivors	7%

Detailed Fatality Information

January

Incident Date	County	Most Probable Cause	Occupancy	Age	Gender	Race
1/8/17	Greenville	Heating	Single Family Dwelling	89	Male	White
	Sumter	Electrical	Single Family Dwelling	81	Male	Black
1/11/17	York	Heating	Single Family Dwelling	73	Male	Black
1/12/17	Sumter	Electrical	Single Family Dwelling	82	Female	Black
				88	Female	Black
1/19/17	Greenville	Outdoor Burning	Open Area	84	Male	White
1/20/17	Spartanburg	Undetermined	Mobile Home	71	Male	White
1/27/17	Dorchester	Undetermined	Single Family Dwelling	46	Male	White
	Greenville	Cooking	Single Family Dwelling	38	Male	Black
	Spartanburg	Arson	Single Family Dwelling	13	Female	White
		Heating	Mobile Home	75	Male	White
1/29/17	Anderson	MVC	Vehicle	36	Male	Hispanic
1/30/17	Richland	Arson	Multi-Family Dwelling	80	Female	White
	Union	Heating	Mobile Home	88	Male	Black

February

Incident Date	County	Most Probable Cause	Occupancy	Age	Gender	Race
2/4/17	York	Cooking	Mobile Home	63	Male	White
2/6/17	Greenville	Undetermined	Recreational Vehicle	27	Male	White
	Greenwood	Heating	Mobile Home	54	Male	White
2/10/17	Chester	Cooking	Mobile Home	62	Female	White
					Male	White
	Greenville	Smoking	Mobile Home	70	Male	White
2/20/17	Marlboro	Smoking	Mobile Home	70	Male	White
2/22/17	Anderson	Cooking	Single Family Dwelling	41	Male	White
2/26/17	Oconee	Undetermined	Mobile Home	49	Male	White
				53	Male	Hispanic

March

Incident Date	County	Most Probable Cause	Occupancy	Age	Gender	Race
3/2/17	Berkeley	Smoking	Mobile Home	14	Female	Black
				24	Male	White
				44	Female	Black
3/4/17	Lancaster	Undetermined	Single Family Dwelling	56	Male	Black
	Lexington	Undetermined	Single Family Dwelling	64	Female	White
3/6/17	Beaufort	Smoking	Mobile Home	53	Female	White
3/7/17	Sumter	Outdoor Burning	Open Area	67	Female	Black
3/8/17	Aiken	Electrical	Single Family Dwelling	66	Female	Black
3/16/17	Darlington	Heating	Mobile Home	61	Male	White
3/19/17	Marion	Cooking	Single Family Dwelling	84	Female	Black
3/20/17	Marion	Outdoor Burning	Mobile Home	71	Male	White
3/21/17	Lexington	Undetermined	Single Family Dwelling	0	Male	White
				9	Female	White
				34	Female	White
				42	Male	White
3/25/17	Chester	MVC	Recreational Vehicle	23	Male	White
				53	Male	White
3/29/17	York	Outdoor Burning	Open Area	71	Male	White

April

Incident Date	County	Most Probable Cause	Occupancy	Age	Gender	Race
4/8/17	Lancaster	Smoking	Single Family Dwelling	57	Female	White
4/14/17	Sumter	Smoking	Single Family Dwelling	65	Female	White
4/16/17	Spartanburg	MVC	Vehicle	43	Male	Black
4/23/17	Oconee	MVC	Vehicle	18	Male	White
4/30/17	Bamberg	Undetermined	Mobile Home	58	Male	White

May

Incident Date	County	Most Probable Cause	Occupancy	Age	Gender	Race
5/7/17	Fairfield	Arson	Single Family Dwelling	6	Male	Black
				8	Female	Black
				29	Male	Black
5/9/17	Horry	Undetermined	Mobile Home	37	Male	White
				62	Female	White
5/12/17	Lexington	Undetermined	Mobile Home	7	Male	Biracial
5/25/17	Florence	Suicide	Mobile Home	71	Male	Hispanic
5/27/17	York	Suicide	Single Family Dwelling	57	Female	White
5/29/17	Richland	MVC	Vehicle	6	Female	Black

June

Incident Date	County	Most Probable Cause	Occupancy	Age	Gender	Race
6/6/17	Lexington	Playing with Fire	Single Family Dwelling	6	Female	Black
6/10/17	Spartanburg	Smoking	Mobile Home	57	Female	White
6/11/17	Chesterfield	Electrical	Multi-Family Dwelling	90	Male	White
6/19/17	Aiken	Undetermined	Mobile Home	54	Male	White
6/24/17	Charleston	Undetermined	Mobile Home	12	Male	White
6/27/17	Orangeburg	Undetermined	Single Family Dwelling	62	Female	Black

July

Incident Date	County	Most Probable Cause	Occupancy	Age	Gender	Race
7/2/17	Pickens	Electrical	Single Family Dwelling	61	Female	White
7/5/17	Richland	Cooking	Single Family Dwelling	62	Male	Black
7/6/17	Charleston	Playing with Fire	Single Family Dwelling	2	Female	Black
7/13/17	Lexington	Undetermined	Mobile Home	56	Male	White
7/21/17	Marlboro	Smoking	Other	73	Female	Black
7/25/17	Spartanburg	Undetermined	Multi-Family Dwelling	43	Male	White
7/26/17	Kershaw	Playing with Fire	Vehicle	5	Male	White

August

Incident Date	County	Most Probable Cause	Occupancy	Age	Gender	Race
8/11/17	Anderson	Smoking	Mobile Home	22	Male	Black
8/14/17	Horry	Electrical	Mobile Home	70	Female	Hispanic
8/16/17	Anderson	Cooking	Single Family Dwelling	74	Male	White

September

Incident Date	County	Most Probable Cause	Occupancy	Age	Gender	Race
9/2/17	Barnwell	Undetermined	Mobile Home	56	Female	White
9/8/17	Beaufort	Undetermined	Mobile Home	4	Female	Black
				10	Male	Black
				23	Male	Black
9/30/17	Aiken	Under Investigation	Single Family Dwelling	38	Female	White
				69	Male	White
	Berkeley	Smoking	Single Family Dwelling	68	Male	Black

October

Incident Date	County	Most Probable Cause	Occupancy	Age	Gender	Race
10/4/17	Aiken	Suicide	Mobile Home	47	Female	Black
10/8/17	Charleston	Cooking	Multi-Family Dwelling	53	Male	Black
	Richland	Undetermined	Single Family Dwelling	61	Female	White
	Sumter	Electrical	Mobile Home	67	Male	Black
10/15/17	Lancaster	Cooking	Single Family Dwelling	33	Male	Black
10/30/17	Orangeburg	Heating	Single Family Dwelling	86	Male	Black

November

Incident Date	County	Most Probable Cause	Occupancy	Age	Gender	Race
11/14/17	Greenville	Undetermined	Mobile Home	56	Female	Hispanic
11/27/17	Lancaster	Undetermined	Single Family Dwelling	83	Female	White
11/30/17	Clarendon	Heating	Single Family Dwelling	70	Female	Black

December

Incident Date	County	Most Probable Cause	Occupancy	Age	Gender	Race
12/4/17	Darlington	Undetermined	Single Family Dwelling	1	Female	Black
12/5/17	Charleston	Undetermined	Single Family Dwelling	84	Female	Asian
12/7/17	Richland	Cooking	Multi-Family Dwelling	58	Male	Black
12/8/17	Greenwood	Suicide	Vehicle	45	Female	White
12/11/17	Dorchester	Heating	Single Family Dwelling	68	Male	Black
12/13/17	Colleton	Undetermined	Mobile Home	71	Female	White
	Dorchester	Electrical	Mobile Home	29	Male	Black
12/17/17	Aiken	Cooking	Single Family Dwelling	50	Male	White
	Fairfield	Heating	Single Family Dwelling	74	Male	Black
	Horry	Smoking	Multi-Family Dwelling	64	Male	White
12/28/17	Fairfield	Undetermined	Mobile Home	55	Female	White
	Sumter	Undetermined	Single Family Dwelling	68	Female	Black
				71	Male	Black

SCANDAGLIA RYAN LLP

August 17, 2021

VIA E-MAIL

Robert S. Adler
Chairman
U.S. Consumer Product Safety Commission
4330 East West Highway, Bethesda, MD 20814
Radler@cpsc.gov

Douglas Lee
Office of Hazard Identification and Reduction
U.S. Consumer Product Safety Commission
4330 East West Highway, Bethesda, MD 20814
Dlee@cpsc.gov

RE: Nuisance Tripping and AFCI Rollback

Dear Mr. Adler and Mr. Lee:

I am reaching out to you on behalf of the Arc Fault Circuit Interrupter Wiring Device Joint Research and Development Consortium ("AFCI Consortium" or "Consortium") to request the U.S. Consumer Product Safety Commission join with the Consortium in supporting a rollback of expansion of arc-fault circuit interrupter ("AFCI") technology requirements in kitchen and laundry areas of the dwelling unit pending further study and investigation. Kitchens and laundry rooms were added to the 2014 edition of the National Electrical Code (NEC®) to the list of dwelling rooms mandating AFCI protection without a critical examination of technical data to justify such an expansion. The Consortium believes that AFCI technology is an important safety technology. However, the Consortium believes there is a critical lack of technical data that actually justifies the expanded use of AFCI in this part of the home. Moreover, there is broad concern that the expanded use of AFCI may *negatively* impact consumer safety due to an increase in unwanted "nuisance" tripping. The Consortium is preparing Public Comment materials now in connection with these issues. I have been asked to share these materials with CPSC to help describe how we arrived at our position and to request CPSC's explicit support of this modest rollback of AFCI until industry stakeholders and the public can better understand the risks involved.

- **22 States Have Taken Exception to AFCI Requirements**. As you know, the various States have the right to adopt in whole, in part, or not at all, the provisions of the National Electric Code (NEC®). States can also enact amendments to the NEC® as local need and circumstances warrant. Currently, there are 22 States that have amended or reduced the requirements of AFCI protection. Several States have amended their adoption of the NEC® to require AFCI only in bedrooms, which is where AFCIs were originally proposed to reduce fires. Other States have eliminated the AFCI requirement for kitchen and laundry rooms to reduce

complaints from unwanted tripping. (*See* "State-By-State NEC Adoption," Rasky Partners, Inc., Rev. Aug. 2021, **Attachment 1**.) For example, the State of Montana, after its review of evidence and public comment, concluded "[t]here is sufficient evidence that nuisance trips of AFCIs are a problem" to warrant exempting kitchen areas from the AFCI requirements of 210.12. See 2019 MT REG TEXT 532095 (NS), 2019 MT REG TEXT 532095 (NS). Excerpts from the Montana Department of Labor and Industry regulatory history offers a good illustration of how State authorities are appropriately questioning the wisdom of certain NEC® enactments:

> Other jurisdictions have adopted the NEC with amendments providing that AFCIs are not required in kitchens, for refrigeration appliances, etc. to eliminate nuisance trips.
>
> Oregon adopted the 2017 NEC, but the Oregon Electrical Specialty Code (OESC) amended Subsection 210.12 to provide that AFCI protection shall not be required on branch circuits supplying receptacles located in kitchens or laundry areas, for dedicated outlets that supply equipment known to cause unwanted tripping of AFCI devices, or for branch circuits that serve an appliance that is not easily moved or that is fastened in place. See OESC 210.12 in Table 1-E at Or. Admin. R. 918-305-0105.
>
> Both Arkansas and New Jersey adopted the 2014 NEC with amendments to provide that AFCI protection is not required in kitchens or laundry areas. See Ark. Reg. 010.13-008 and N.J.A.C. 5:23-3.16(b).
>
> North Dakota adopted the 2017 NEC but amended Subsection 210.12(A) to provide that AFCI protection is not required for refrigeration appliances provided that a single receptacle on a dedicated circuit is installed. See N.D. Admin. Code § 24.1-06-02-10 (NEC 210 Branch Circuits).
>
> Idaho adopted the 2017 NEC, but amended Subsection 210.12 to provide that, in dwelling units, AFCI protection shall only be required on branch circuits and outlets in bedrooms. All other locations in dwelling units are exempt from the requirements of 210.12. See IDAPA 07.01.06.011.01.r.

2019 MT REG TEXT 532095 (NS) (Response 16) (**Attachment 2**)

- **2020 Research Study Documents Nuisance Tripping**. A research study from East Carolina University reported that 92.8% of residential electrical contractors contacted experienced nuisance tripping first hand. *See* "AFCI and Nuisance Tripping Research Study," East Carolina University (Aug. 24, 2020). Additionally, this study found that 83% of respondents had either replaced or knew someone who had replaced, the AFCI breaker with a standard (non-AFCI) breaker.
- **Recent Notice from the American Society for Health Care Engineering (ASHE) Regarding Nuisance Tripping**. ASHE issued a notice regarding the impact of nuisance tripping in behavioral health settings. In relevant part, that Notice stated:

> Through its advocacy efforts, it has come to the attention of the American Society for Health Care Engineering (ASHE) that the combination of a tamper-resistant receptacle (TRR), ground fault circuit interrupter receptacle (GFCI), and arc fault interrupter breaker (AFCI) has become a major discussion topic when talking about patient safety in a behavior health setting.
>
> ASHE is informing its members and the health care field that it does not advocate for the use of a combination of TRR, GFCI and AFCI as this combination will significantly increase a risk of disruption to patient care through nuisance tripping, which will take staff attention away from the patients.

The ASHE Notice is available at: https://www.ashe.org/tamper-resistant-receptacle-use-patient-settings (last visited Aug. 11, 2021).

- **Canada's Electrical Safety Authority Allows for the Removal of AFCIs that Have Unwanted Tripping**. The ESA is empowered by the Ontario government to administer and enforce the Ontario Electrical Safety Code. The Consortium understands that ESA has an unwritten policy where, upon request of a user, the ESA will allow removal of problematic AFCI devices with unwanted tripping problems. Under this policy, users are allowed to exchange AFCI devices with ordinary (non-AFCI) breakers. We understand that so long as the problematic AFCI device is reported to ESA, the non-AFCI replacement device can be used indefinitely. Per ESA staff, there have been over 200 AFCI units approved for replacement. In effect, the Ontario government is authorizing the removal and replacement of nuisance AFCI breakers with standard breakers. Such an ad-hoc, patchwork of electrical standards enforcement is exactly what the Consortium is seeking to avoid here in supporting the rollback of AFCI requirements in kitchen and laundry areas. Reliable data that actually ties to increased safety outcomes should drive Code development, not ad-hoc, selective enforcement.

- **Nuisance Trips Can Lead to Inadvertent Collateral Removal of GFCI Protection.** As you may be aware, AFCI unwanted trips can lead to the collateral removal of lifesaving GFCI protection when the original breaker is a dual function device. A dual function circuit breaker provides protection against both arc faults and ground faults. GFCI devices are designed to prevent shock in the event an electrical device comes in contact with water. New kitchen and laundry appliances are being introduced that are causing unwanted nuisance AFCI tripping. Contractors are called back to correct the problem, resulting in very significant frustration, and added costs. When faced with unwanted tripping of dual function AFCI/GFCI circuit breakers, many homeowners opt to take matters into their own hands and replace the dual function AFCI/GFCI circuit breaker with a least expensive standard (non-AFCI/non-GFCI) circuit breaker. This results in these areas being left without lifesaving GFCI protection. The inadvertent collateral removal of GFCI protection is a major safety concern of inspectors. For example, the Chief Electrical Inspector from the State of Wyoming said the following about the safety issues regarding nuisance tripping:

> Now, with the request to expand the use of AFCI protection, … it would be required in many areas that require GFCI protection as well. GFCI protection has been around for decades, is very well vetted, and has proven time and again to be a true safety measure for the user of electricity. But, now this will push installers to use the dual AFCI/GFCI breaker, which is still phenomenally expensive, to save time and money when wiring a residence. Now when the AFCI causes nuisance tripping, the homeowner, not being a trained individual but allowed to do his own electrical work nonetheless, will simply remove the offending dual breaker, replace it with a standard breaker, and now they have not only lost the supposed AFCI protection, but they have lost the very valuable GFCI protection. The expansion of these breakers will not alleviate any safety hazard, but will in actuality, create a serious safety hazard.

(Source: 5/28/19 Letter from Wyoming Department of Fire Prevention and Electrical Safety, Jane Allred; **Attachment 3**.)

- **There is No Data to Support Expansion of AFCI.** We can all agree that good Code development requires reliable technical data and substantiation. Yet, when it comes to the technical data to support expansion of AFCI into kitchens and laundry, that data simply does not exist. In its 2018 report entitled, "*Residential Electrical Fire Problem: The Data Landscape*," FIRE PROTECTION RESEARCH FOUNDATION (V. Hutchison, Oct. 2018) ["2018 Foundation Report"], available at: https://www.nfpa.org//-/media/Files/News-and-Research/Fire-statistics-and-reports/Electrical/RFResidentialElectricalFireData.pdf, the Fire Protection Research Foundation made the following candid observations about the lack of reliable data:

  - "[T]here is limited data available on AFCI's impact on residential electrical fires. This is largely due to the fact that fire statistics do not measure the effectiveness of prevention devices. … [T]here is uncertainty regarding the residential electrical fire problem and the effectiveness of branch circuit protection devices, such as AFCI's." (Page 4)
  - "Currently, the existing residential electrical data is generally unrefined and provides limited value to the analysis of determining the effectiveness of electrical branch circuit protection devices." (Page 29)
  - "The most significant problem with residential electrical fire data is that nearly all of the currently available public data is lacking in quality and accuracy, and is relatively unusable for data analytics in its current state." (Page 30)

A Data Summit held November 19-20, 2019 confirmed that the data problem continues. *See* "*Electrical Data Summit: Impact of Data in the Electrical World*," FIRE PROTECTION RESEARCH FOUNDATION, (April 2020) at page 51 of 66 (noting the "lack of quality data available for

assessment" because the data is in "disparate data sources, largely incomplete, or nonexistent"), available at:

https://www.nfpa.org//-/media/Files/News-and-Research/Fire-statistics-and-reports/Proceedings/RFElectricalDataSummitWorkshop.pdf (last visited Aug. 16, 2021).

There is simply no known, reliable data showing that the expansion of AFCI requirements in the NEC® has resulted in a quantifiable reduction of residential fires due to electrical malfunctions. In fact, the trends show either an increase in electrical fires or no appreciable change in fire reductions.

- The 2018 Foundation Report observed that "home fires involving electrical wiring and related equipment have generally been *on the rise* since 2002[.]" (2018 Foundation Report, pg. 3 of 33.)
- Per the U.S. Fire Administration, a 10-year trend from 2010 to 2019 shows no significant decrease or increase in residential building electrical fires. See https://www.usfa.fema.gov/downloads/pdf/statistics/fire-estimate-summary-series.pdf (noting at pages 1 and 9 of 22 a less than 1% decrease in electrical fires) (last visited Aug. 16, 2021).

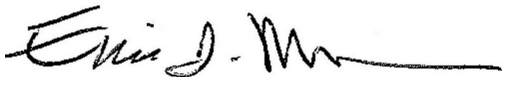
In sum, there is no evidence that shows expanding AFCI into kitchen and laundry areas has proven to increase safety in those dwelling areas.

* * * *

In closing, the Consortium respectfully asks the CPSC to consider the above information and join our efforts to seek a modest rollback of AFCI requirements in the NEC® until industry and other stakeholders can better understand whether increased expansion of AFCI is justified and worth the investment of time and public resources. We note that CPSC has historically supported AFCI Consortium proposals regarding Outlet Branch Circuit (OBC) AFCI, and look forward to the Commission's continuing support. We thank you in advance for your thoughts and consideration on this critical safety issue.

Very truly yours,

Counsel for the AFCI Consortium



Eric J. Muñoz

EJM/kj
Attachments

cc: Einstein Miller, emiller@cpsc.gov
Andrew Trotta, atrotta@cpsc.gov
[redacted]

ATTACHMENT 1

IRC 2021-74

STATE-BY-STATE NEC ADOPTION

Revised – August 2021

Overview of AFCI Requirements: 22 states and 3 major municipalities have made amendments to reduce the AFCI requirements. Below is a summary of the changes that have been made:

Montana (2017 NEC*) – Removed requirements to install AFCIs in kitchens.

Idaho (2017 NEC) – AFCI protection is only required in bedrooms.

Oregon (2020 NEC) – AFCI requirements deleted from branch circuits that supply hallways, kitchen or laundry areas, as well as GFCI protected receptacles installed in dining rooms. AFCI protection shall not be required for optional, dedicated outlets that supply equipment known to cause unwanted tripping of AFCI devices and for branch circuits that serve an appliance that is not easily moved or that is fastened in place.

South Dakota (2020 NEC) – Includes an exception which would not require AFCIs on life support and similar equipment.

North Dakota (2020 NEC) – AFCI protection not required for refrigeration appliances if a single receptacle on a dedicated circuit is installed.

Iowa (2020 NEC) – AFCI requirements for branch circuit extensions or modifications in dwelling or dormitory units were deleted.

Wisconsin (2017 NEC) – AFCI requirements do not apply to kitchens.

Michigan (2018 IRC) – AFCI requirements were deleted.

Indiana (2018 IRC) – AFCI requirements were deleted for modifications or renovations of homes. New construction will require AFCIs

Ohio (2017 NEC) – AFCI requirements were deleted for receptacles installed to serve kitchen countertops.

Vermont (2017 NEC) – AFCI requirements for branch circuit extensions or modifications were deleted where the extension of the existing conductors is used solely to hardwire single station smoke and or CO alarms in an existing dwelling or dormitory unit.

New Hampshire (2017 NEC) – AFCI requirements for dormitory unit devices and bathrooms, guest rooms and guest suites, and branch circuit extensions or modifications for dormitory units were deleted.

Connecticut (2015 IRC; 2017 NEC) – AFCI protection not required for replacement receptacles.

New Jersey (2017 NEC) - AFCI requirements for kitchens and laundry areas, as well as for branch circuit extensions or modifications, were deleted.

Delaware (2014 NEC) – Smoke alarms shall not be placed on branch circuits protected by AFCI's.

Virginia (2014 NEC) – AFCI's only required in bedrooms.

North Carolina (2017 NEC) – AFCI requirements for kitchens and laundry areas were deleted, as well as those for dormitory unit bathrooms guest room and guest suites, and extensions or modifications.

West Virginia (2017 NEC) AFCI requirements were reduced on modifications and extensions to any new home, except in bedrooms

South Carolina (2018 IRC) - AFCI's will not be required in kitchens and laundry areas.

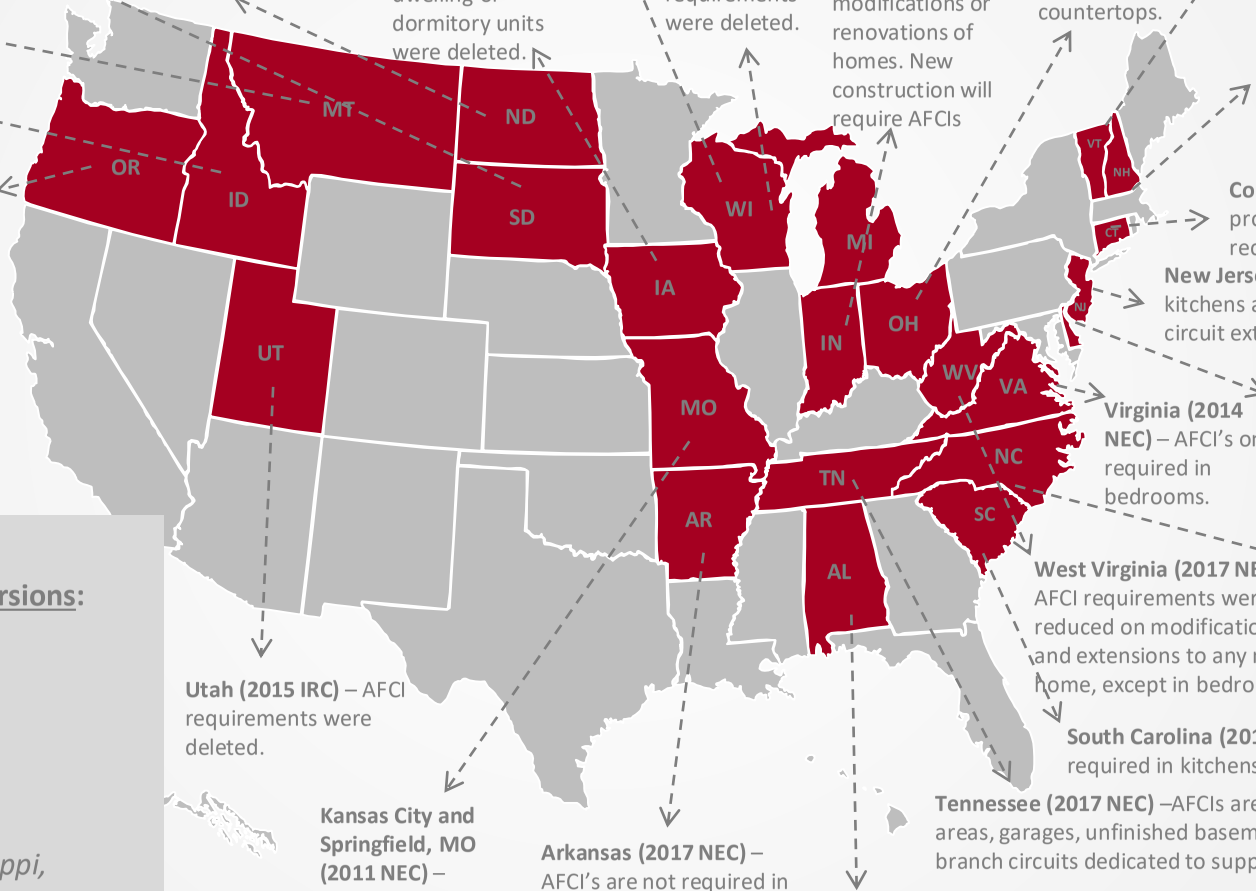
Tennessee (2017 NEC) –AFCIs are optional for bathrooms, laundry areas, garages, unfinished basements, work or similar area, and for branch circuits dedicated to supplying refrigeration equipment.

Mobile, AL (2014 NEC) – AFCI's requirements were deleted for family rooms, dining rooms, living rooms, parlors, libraries, dens, bedrooms, sunrooms, recreation rooms, closets and hallways

Arkansas (2017 NEC) – AFCI's are not required in kitchens and laundry areas.

Kansas City and Springfield, MO (2011 NEC) – AFCI's only required in bedrooms.

Utah (2015 IRC) – AFCI requirements were deleted.



Overview of NEC adopted versions:

- **2020 NEC – 8 States**
- **2017 NEC – 25 States**
- **2014 NEC – 3 States**
- **2011 NEC – 1 State**
- **2008 NEC – 1 State**
- **Local Adoption – 5 States:** *Alabama, Arizona, Mississippi, Missouri and Nevada.*
- **AFCI Requirements Controlled by International Residential Code – 7 States**

* Pending final approval

ATTACHMENT 2

2019 MT REG TEXT 532095 (NS)
2019 MAR p. 2242

Montana Regulation Text - Netscan
ARM 24.301.109, 131, 138, 142, 146, 154, 171, 172, 173, 175, 181, 201, 203, 208, 301, 351, 401, 511, 514, 904
Adopted Rules
December 06, 2019
Effective: December 07, 2019
Labor and Industry

Definitions; Incorporation by Reference of International Building Code; Calculation of Fees; Modifications to the International Building Code Applicable Only to the Department's Code Enforcement Program

In the matter of the amendment of ARM 24.301.109 definitions, 24.301.131 incorporation by reference of International Building Code, 24.301.138 calculation of fees, 24.301.142 modifications to the International Building Code applicable only to the department's code enforcement program, 24.301.146 modifications to the International Building Code applicable to both the department's and local government code enforcement programs, 24.301.154 incorporation by reference of International Residential Code, 24.301.171 incorporation by reference of International Existing Building Code, 24.301.172 incorporation by reference of International Mechanical Code, 24.301.173 incorporation by reference of International Fuel Gas Code, 24.301.175 incorporation by reference of International Swimming Pool and Spa Code, 24.301.181 incorporation by reference of International Wildland-Urban Interface Code, 24.301.201 extent of local programs, 24.301.203 funding of code enforcement program

ARM 24.301.109

ARM 24.301.109

ARM 24.301.131

ARM 24.301.131

ARM 24.301.138

ARM 24.301.138

ARM 24.301.142

ARM 24.301.142

ARM 24.301.146

ARM 24.301.146

ARM 24.301.154

ARM 24.301.154

ARM 24.301.171

ARM 24.301.171

ARM 24.301.172

ARM 24.301.172

ARM 24.301.173

ARM 24.301.173

ARM 24.301.175

ARM 24.301.175

ARM 24.301.181

ARM 24.301.181

ARM 24.301.201

ARM 24.301.201

ARM 24.301.203

ARM 24.301.203

ARM 24.301.208

ARM 24.301.208

ARM 24.301.301

ARM 24.301.301

ARM 24.301.351

ARM 24.301.351

ARM 24.301.401

ARM 24.301.401

ARM 24.301.511

ARM 24.301.511

ARM 24.301.514

ARM 24.301.514

ARM 24.301.904

ARM 24.301.904

BEFORE THE DEPARTMENT OF LABOR AND INDUSTRY

STATE OF MONTANA

In the matter of the amendment of ARM 24.301.109 definitions, 24.301.131 incorporation by reference of International Building Code, 24.301.138 calculation of fees, 24.301.142 modifications to the International Building Code applicable only to the department's code enforcement program, 24.301.146 modifications to the International Building Code applicable to both the department's and local government code enforcement programs, 24.301.154 incorporation by reference of International Residential Code, 24.301.171 incorporation by reference of International Existing Building Code, 24.301.172 incorporation by reference of International Mechanical Code, 24.301.173 incorporation by reference of International Fuel

Gas Code, 24.301.175 incorporation by reference of International Swimming Pool and Spa Code, 24.301.181 incorporation by reference of International Wildland-Urban Interface Code, 24.301.201 extent of local programs, 24.301.203 funding of code enforcement program, 24.301.208 incorporation by reference of Independent Accountant's Reporting Format for Applying Agreed-Upon Procedures During Audits of Certified City, County, or Town Building Code Enforcement Programs, 24.301.301 incorporation by reference of Uniform Plumbing Code, 24.301.351 minimum required plumbing fixtures, 24.301.401 incorporation by reference of National Electrical Code, 24.301.511 definitions, 24.301.514 enforcement generally, and 24.301.904 site accessibility

NOTICE OF AMENDMENT

TO: All Concerned Persons

1. On August 23, 2019, the Department of Labor and Industry (department) published MAR Notice No. 24-301-347 regarding the public hearing on the proposed amendment of the above-stated rules, at page 1273 of the 2019 Montana Administrative Register, Issue No. 16.

2. On September 16, 2019, a public hearing was held on the proposed amendment of the above-stated rules in Helena. Many comments were received by the September 20, 2019 deadline.

3. The department has thoroughly considered the comments received. A summary of the comments and the department's responses are as follows:

COMMENT 1: Several commenters supported amending the rules to adopt more recent versions of nationally recognized building codes.

RESPONSE 1: The department appreciates all comments received during the rulemaking process.

COMMENT 2: One commenter requested the department amend ARM 24.301.351, Minimum Number of Required Plumbing Fixtures. The commenter stated that this rule has not been revised for some time and is not consistent with Subsection 2902.1, Minimum Number of Fixtures, of the 2018 IBC, which includes specific descriptions of certain assembly spaces, i.e., casinos, indoor and outdoor sporting events, and educational spaces, to allow for more reasonable fixture counts than in ARM 24.301.351. The commenter asked the department to consider adopting Subsection 2902.1, Minimum Number of Fixtures, of the 2018 IBC.

RESPONSE 2: The department recognizes that the table at ARM 24.301.351 is not consistent with Subsection 2902.1, Minimum Number of Fixtures, of the 2018 IBC or Subsection 422.0, Minimum Plumbing Fixtures, of the 2018 UPC. While the department did not propose amending ARM 24.301.351 in this rulemaking project, the department appreciates the commenter's point regarding the different types of assembly spaces and the number of fixtures and will review the rule for possible amendment in the future.

COMMENTS 3 THROUGH 7 PERTAIN TO ARM 24.301.146:

COMMENT 3: One commenter proposed deleting or amending Subsection 903.2.1.7, Multiple Fire Areas, of the 2018 IBC, noting that many areas in the state have inadequate water supplies to have properly functioning fire suppression systems. The commenter gave an example of a building with a 200-occupant bowling alley, a 75-occupant bar/casino, and a 75-occupant restaurant that all share the same main lobby entrance or exit. Even if each fire area had two required exits, under Subsection 903.2.1.7 of the 2018 IBC a fire suppression system would be required in all areas or occupancies. If adding to an existing building, this subsection could require adding a fire suppression system to the existing portion of the structure. In areas without a public water supply or with an inadequate private water supply, storage tanks and fire pumps would be required as part of the fire suppression system which will add tens of thousands of dollars to the project's cost. The commenter suggested deleting Subsection 903.2.1.7 or amending it to allow each fire area to be counted separately.

RESPONSE 3: The department notes that Subsection 903.2.1.7 was first added to the 2015 IBC and that comments against adopting this subsection were received during the community listening sessions. Additionally, the department recognizes that

inadequate water supplies can make compliance with this subsection impracticable. Therefore, the department will not adopt Subsection 903.2.1.7 at this time. Instead the department is amending ARM 24.301.146 to delete this subsection which will effectively continue the existing requirements of the 2012 IBC.

COMMENT 4: One commenter proposed amending ARM 24.301.146(12) to require fire sprinklers in all residential occupancies as in Subsection 903.2.8 of the 2018 IBC. Since 2003, the IBC has required fire sprinklers in all residential occupancies; however, the department adopted a modified residential sprinkler requirement. The commenter stated that, under this modified residential sprinkler requirement, fire sprinklers can be eliminated in certain residential occupancies without requiring any other fire protection in the building. The commenter further stated that depending on the definition of the term "transient guestroom," a building used as a bed and breakfast would require fire sprinklers and the same building would not if used as a short-term rental. The commenter provided statistics attributed to the U.S. Fire Administration, National Fire Incident Reports System, that since 2003, 156 civilians have died in fires in residential occupancies in Montana and that 26 of those died in buildings covered by the International Building Code and fire codes. Without fire sprinklers in all residential occupancies, occupants are without protection while they are sleeping and most vulnerable. The commenter asserted that by allowing exemptions from the fire sprinklers in certain residential occupancies, the department is not fulfilling the intent of the IBC to safeguard life and property from fire and to provide for the safety of firefighters and emergency responders during emergency operations.

RESPONSE 4: The department only proposed renumbering this subsection and updating the references to the 2018 IBC, with no substantive changes. Further, the department received no comments during the community listening sessions around the state or from the Building Codes Council in favor of requiring fire sprinklers in all residential occupancies.

COMMENT 5: One commenter stated that the proposed change to ARM 24.301.146(16) is unnecessary because Subsection 1006.3.3. of the 2018 IBC pertains to R-1 and R-2 occupancies, not R-3 and R-4 occupancies. The commenter further stated that the tables and footnotes to Subsection 1006.3.3 of the 2018 IBC meet the original intent of the proposed amendment and therefore the proposed amendment should be withdrawn.

RESPONSE 5: The department agrees and will withdraw the proposed amendment.

COMMENT 6: One commenter proposed amending ARM 24.301.146(18) to revise Table 1020.1, associated with Subsection 1020.1 of the 2018 IBC, for R occupancies to: change the Occupant Load Served by a Corridor from "Greater than 10" to "All"; and change the Required Fire-Resistance Rating (hours) for R occupancies without a sprinkler system from "Not Permitted" to "1" (hour).

RESPONSE 6: The department reviewed the corridor provisions in Table 1020.1 and determined these requirements are not consistent with the automatic sprinkler provisions for "R" occupancies in ARM 24.301.146(12). The department is therefore striking "greater than 10" in the "Occupant Load Served by Corridor" column for R occupancy and inserting "greater than 8". The commenter's proposed amendment would require any corridor in an R occupancy to have both an automatic sprinkler system and a fire rated corridor. It is not practical to require fire rated corridors in all R occupancies, specifically those with an occupant load of 8 or fewer occupants.

COMMENT 7: Two commenters suggested amending ARM 24.301.146(24) that amends Subsection 3001.2 of the 2018 IBC regarding emergency elevator communication equipment systems for the deaf, hard of hearing, and speech impaired. The commenters stated that the language in the subsection is too vague because it lacks technical criteria and could result in a wide variety of communication systems. The commenters stated that the National Elevator Industry, Inc. (NEII) has worked closely with the American Society of Mechanical Engineers (ASME) Emergency Operations Committee to develop technical standards for a communication system to meet the intent of the Subsection 3001.2 of the 2018 IBC and that these standards have been approved for the 2019 edition of ASME A17.1/CSA B44 Safety Code for Elevators and Escalators. The commenters proposed amending Subsection 3001.2 of the 2018 IBC to reference the provisions of ASME A17.1/CSA B44 and National Fire Protection Association (NFPA) 72, National Fire Alarm and Signaling Code.

RESPONSE 7: The department recognizes that Subsection 3001.2 of the 2018 IBC does not reference a technical standard and therefore elevator owners, the department, and the public will lack consistency in emergency elevator communication equipment for the deaf, hard of hearing, and speech impaired. The department appreciates that the NEII and ASME have

developed technical standards for a communication system to implement Subsection 3001.2 and that these standards will be included in the 2019 edition of the ASME A17.1/CSA B44 Safety Code for Elevators and Escalators. Therefore, instead of delaying the effective date of Subsection 3001.2, the department will amend the rule to reference ASME A17.1/CSA B44 and NFPA 72 as suggested.

COMMENTS 8 THROUGH 11 PERTAIN TO ARM 24.301.154:

COMMENT 8: One commenter asked the department to adopt the plumbing provisions of the 2018 IRC, specifically chapters 25 through 33. The commenter stated that the IRC plumbing provisions recognize new and innovative technologies which result in quicker installation and more flexibility in design which reduces the time and cost of construction.

RESPONSE 8: The department did not propose adopting the plumbing provisions of the 2018 IRC in the proposal notice and cannot do so in the final notice. Additionally, the Building Codes Council did not support adopting the IRC plumbing provisions.

COMMENT 9: One commenter asked the department to adopt both the 2018 UPC and 2018 IRC plumbing provisions, at Part VII and including chapters 25 through 33, and allow local jurisdictions to choose which plumbing code to adopt and enforce. The IRC plumbing provisions have been adopted in 29 other states. The commenter stated that complying with the IRC plumbing provisions would lower the cost of installing plumbing by three to nine percent for materials and eight to ten percent for labor.

RESPONSE 9: The department did not propose adopting the plumbing provisions of the 2018 IRC in the proposal notice and cannot do so in the final notice. Additionally, the Building Codes Council did not support adopting the IRC plumbing provisions.

COMMENT 10: Two commenters asked the department to adopt Appendix F, Radon Control Methods, of the 2018 IRC. The commenters noted that adoption by the department is necessary before local building code enforcement authorities could adopt and enforce Appendix F. One commenter believed that, based on the community listening sessions conducted by the department, the department intended to adopt Appendix F until the Building Codes Council recommended omitting Appendix F.

RESPONSE 10: The department did not propose adopting Appendix F, Radon Control Methods, in the proposal rulemaking notice and is unable to do so in the final notice. The Building Codes Council considered the issue and advised the department against adopting Appendix F due to the anticipated increased construction costs of complying with it. While local building code enforcement authorities cannot require compliance with Appendix F, individual property owners may choose to utilize those radon control methods in construction.

COMMENT 11: Two commenters supported the department's adoption of Appendix Q, Tiny Houses, of the 2018 IRC.

RESPONSE 11: The department is adopting Appendix Q as proposed.

COMMENT 12 PERTAINS TO ARM 24.301.175:

COMMENT 12: Two commenters asked the department to adopt Chapter 8, Permanent Inground Residential Swimming Pools, of the 2018 ISPSC. One commenter stated that residential pools are a known hazard to health and safety and that local building code enforcement authorities should permit and inspect them during construction. Without the adoption of Chapter 8, the local building codes enforcement authority cannot apply these standards. The commenter further stated that while Title 50, chapter 53, part 1, MCA, pertains to public swimming pools, the chapter does not exclude residential swimming pools and therefore should not be construed to exempt residential swimming pools from construction standards.

RESPONSE 12: The current rule at (3) provides that the ISPSC is not applicable to residential occupancies. The implemented statutes in Title 50, chapter 53, part 1, MCA, specifically state that the statutes apply to public swimming pools. Accordingly, the statute does not grant authority over private swimming pools. The department did not propose adopting Chapter 8 of the 2018 ISPSC in the proposal notice and is unable to do so in the final notice.

COMMENT 13 PERTAINS TO ARM 24.301.203:

COMMENT 13: One commenter asked that the department not amend ARM 24.301.203(2) and noted that department certified city building code enforcement programs have "life-safety inspectors" that conduct both construction inspections and also "occupancy inspections" to ensure existing buildings are maintained to the building code under which they were permitted. The commenter opined that certificates of occupancy do not guarantee that a building meets all building code provisions because modifications often begin with the first tenant and that city building code enforcement programs' life-safety inspectors often identify building code deficiencies requiring correction and permits. The commenter believed the city has a collaborative and team-focused life-safety inspection program and to artificially dictate responsibilities based solely on funding would be inefficient and ineffective.

RESPONSE 13: The current rule prohibits a certified city, county, or town building program from using building permit fees for any purpose other than building plan review, inspection, and code enforcement of new construction or alteration requiring a building permit. This rule implements 50-60-106, MCA, which provides that building permit fees charged by a certified city, county, or town must be used for the enforcement of building codes as adopted by the department. The statute does not grant authority to use permit fees for occupancy or maintenance inspections of existing buildings.

The department understands that occupants may modify a building to deviate from the building codes; however, certified cities must stop using building permit fees for occupancy or maintenance inspections of existing buildings. The department notes that this comment demonstrates the need for additional clarification to the rule and the department is amending the rule as proposed.

COMMENT 14 PERTAINS TO ARM 24.301.301:

COMMENT 14: One commenter supported the department adopting the UPC as proposed, stating the UPC is progressive, innovative, increasingly conservation- and sustainability-oriented, and has a demonstrated history of protecting the public health and safety for decades in Montana and for nearly 100 years since its inception.

The commenter attended all six of the department's community listening sessions around the state and believed that the plumbing industry consistently advocated for continued UPC adoption.

The commenter disagreed that adoption of the IRC plumbing provisions, known as the International Plumbing Code (IPC), or dual adoption of both the UPC and the IPC, would result in a significant savings and believed that adopting two different plumbing codes would cause confusion, tend to increase costs, and be counterproductive.

RESPONSE 14: The department agrees and is amending the rule as proposed.

COMMENTS 15 THROUGH 17 PERTAIN TO ARM 24.301.401:

COMMENT 15: One commenter supported the department's proposed exclusion of kitchens from adoption of Subsection 210.12, Arc-Fault Circuit-Interrupter (AFCI) Protection, as set out in the 2017 NEC.

RESPONSE 15: The Building Codes Council advised the department to exclude kitchens from the areas required to have AFCIs due to numerous "nuisance trips." The Building Codes Council noted that AFCIs were not required in kitchens prior to the 2014 NEC and that appliance technology may lag behind the AFCI's resulting in the nuisance trips.

COMMENT 16: Several commenters asked the department to adopt Subsection 210.12, Arc-Fault Circuit-Interrupter (AFCI) Protection, as set out in the 2017 NEC. The commenters opposed the department's proposed amendment to delete all references to "kitchen" or "kitchens," and thereby not require AFCIs in kitchens. The commenters stated excluding kitchens from AFCI protection was unnecessary and created a safety hazard.

Several commenters noted AFCIs distinguish between harmless arcs (incidental to normal operation of switches and plugs) and potentially dangerous arcs (i.e., a lamp cord which has a broken conductor) and will stop arcing before a fire can occur.

They noted kitchens are a common place for electrical fires.

One commenter stated that AFCIs were first required in the 1999 NEC in bedrooms and have since expanded to include most outlets in dwelling units. Another commenter (Smith at Eaton) stated that the U.S. Fire Administration and the Federal Emergency Management Agency (FEMA) has recorded a 22% reduction nationally in residential electrical fires since the adoption and expansion of AFCI technology in the NEC.

One commenter noted that Underwriters Laboratories, LLC (UL) is a safety testing and certification company approved by the U.S. Occupational Safety and Health Administration as a Nationally Recognized Testing Laboratory. The commenter stated that UL first issued a standard for AFCIs, UL 1699, twenty years ago and that AFCIs have been widely recognized for contributing to fire safety in homes. UL 1699 addresses four different types of arcing events, including series and parallel arcing with different types of supply/load conductors and electrical insulation failure conditions. There are comprehensive unwanted operation tests, also known as “nuisance tripping” tests, such as challenging the AFCI with inrush currents, normal operation arcing, non-sinusoidal waveforms, and light bulb burnouts. Additionally, there are tests of the AFCI representing operation inhibition, environmental conditioning, overloads, and short circuits. To earn UL certification, AFCIs must pass all these tests. If there are concerns regarding the performance of a UL-certified AFCI, a Product Incident Report (PIR) may be filed with UL at www.ul.com/ahjreport allowing UL to confirm the facts and determine if any corrective actions are warranted. In 2018 through September 10, 2019, UL has received no reports of nuisance tripping of UL-certified AFCIs in household kitchens.

Two commenters stated that the National Electrical Manufacturers Association (NEMA) collaborates with both UL and the Association of Home Appliance Manufacturers (AHAM) to field reports of unwanted tripping of branch circuits protected by AFCI technology. One commenter stated that, although there are an estimated 50,000+ branch circuits in Montana protected with AFCI technology, they have not received any reports of unwanted tripping.

Two commenters stated that there is a web resource, www.afcisafety.org, for installers and homeowners to report unwanted AFCI tripping to AFCI manufacturers. After a report is made, the specific AFCI manufacturer will follow up appropriately until the problem is solved. One commenter speculated that Montana homebuilders may not be aware of this resource.

One commenter stated that there is a free web-based course, www.afcisafety.org/ul-training-course/, developed by NEMA and UL and updated by UL that provides information and troubleshooting methods for AFCIs.

RESPONSE 16: The department notes that the Building Codes Council provided anecdotal information about nuisance trips. Specific information regarding any attempts to report nuisance trips to UL, NEMA, or AHAM and the outcome of those attempts was not provided.

Other jurisdictions have adopted the NEC with amendments providing that AFCIs are not required in kitchens, for refrigeration appliances, etc. to eliminate nuisance trips.

Oregon adopted the 2017 NEC, but the Oregon Electrical Specialty Code (OESC) amended Subsection 210.12 to provide that AFCI protection shall not be required on branch circuits supplying receptacles located in kitchens or laundry areas, for dedicated outlets that supply equipment known to cause unwanted tripping of AFCI devices, or for branch circuits that serve an appliance that is not easily moved or that is fastened in place. See OESC 210.12 in Table 1-E at Or. Admin. R. 918-305-0105.

Both Arkansas and New Jersey adopted the 2014 NEC with amendments to provide that AFCI protection is not required in kitchens or laundry areas. See Ark. Reg. 010.13-008 and N.J.A.C. 5:23-3.16(b).

North Dakota adopted the 2017 NEC but amended Subsection 210.12(A) to provide that AFCI protection is not required for refrigeration appliances provided that a single receptacle on a dedicated circuit is installed. See N.D. Admin. Code § 24.1-06-02-10 (NEC 210 Branch Circuits).

Idaho adopted the 2017 NEC, but amended Subsection 210.12 to provide that, in dwelling units, AFCI protection shall only be required on branch circuits and outlets in bedrooms. All other locations in dwelling units are exempt from the

requirements of 210.12. See IDAPA 07.01.06.011.01.r.

Also, the National Association of Home Builders (NAHB) developed proposed amendments to the 2017 NEC at Subsection 210.12(A) to remove AFCI protection for residential dwelling units while leaving it in place for hotels, motels, and dormitories. NAHB noted that, when AFCIs initially appeared in the 1999 NEC, including AFCIs was largely based on several U.S. Consumer Product Safety Commission (CPSC) reports which appeared to overstate the number of incidents because it was several times higher than in later reports. Additionally, NAHB noted that while the AFCI protection requirement applies predominately in new homes, the highest incidence of electrical distribution fires was in dwellings over 40 years old according to the June 2015 issue of the U.S. Fire Administration's Topical Fire Report Series. The NAHB stated that the data did not show that AFCIs were necessary when they were first introduced in the NEC and has not supported the continued expansion of AFCIs in successive versions of the NEC. See NAHB 2017 National Electrical Code Suggested Amendments issued 5/1/2017.

There is sufficient evidence that nuisance trips of AFCIs are a problem. Accordingly, the department is amending the rule as proposed and as consistent with the Building Codes Council recommendation.

COMMENT 17: Two commenters asked the department to consider requiring a dedicated branch circuit for a receptacle outlet in a kitchen if an AFCI would not be required. The commenters stated the dedicated circuit should use rigid metal conduit, intermediate metal conduit, electrical metallic tubing, Type MC or steel armored Type AC cables meeting the requirements of Subsection 250.118 of the 2017 NEC with metal outlet and junction boxes between the branch-circuit over current device and the dedicated receptacle outlet to prevent damage to the circuit during construction and the use of the dwelling.

RESPONSE 17: Using dedicated branch circuits instead of AFCIs is allowed under the 2014 NEC as adopted by the department and would be allowed under the proposed adoption of the 2017 NEC. Additionally, requiring dedicated branch circuits for receptacle outlets in kitchens will increase the cost of construction without a significant showing of improved safety for the public.

As stated in Responses 15 and 16, the Building Codes Council advised the department to exclude kitchens from the areas required to have AFCIs due to numerous nuisance trips. Additionally, several other states have adopted the NEC with amendments to exclude AFCIs from kitchens, refrigeration appliances, etc. The NAHB noted that the data did not show that AFCIs were necessary when they were first included in the NEC and has not supported the continued expansion of AFCIs in successive versions of the NEC. See NAHB 2017 National Electrical Code Suggested Amendments issued 5/1/2017.

The department will continue to monitor the situation but is amending the rule as proposed.

4. The department has amended ARM 24.301.109, 24.301.131, 24.301.138, 24.301.142, 24.301.154, 24.301.171, 24.301.172, 24.301.173, 24.301.175, 24.301.181, 24.301.201, 24.301.203, 24.301.208, 24.301.301, 24.301.351, 24.301.401, 24.301.511, 24.301.514, and 24.301.904 exactly as proposed.

5. The department has amended ARM 24.301.146 with the following changes, stricken matter interlined, new matter underlined:

24.301.146 MODIFICATIONS TO THE INTERNATIONAL BUILDING CODE APPLICABLE TO BOTH THE DEPARTMENT'S AND LOCAL GOVERNMENT CODE ENFORCEMENT PROGRAMS (1) through (11) remain as proposed.

(12) Subsection 903.2.1.7, Multiple Fire Areas, is deleted in its entirety.

(12) through (15) remain as proposed but are renumbered (13) through (16).

~~(16) Subsection 1006.3.3, Single Exits, item 4, is amended to read: "4. Group R-3 and R-4 occupancies shall be permitted to have one exit or access to a single exit if equipped throughout with an automatic sprinkler system or there are no sleeping rooms above or below the level of the exit discharge."~~

(17) remains as proposed.

(18) For "R" occupancies that are exempt from the requirements of a fire sprinkler system, pursuant to ARM 24.301.146~~(15)~~(16), Table 1020.1, referenced in subsection 1020.1, shall be amended in regard to "R" occupancies by the deletion of the language "Greater than 10" and insertion of the language "Greater than 8" under the heading "Occupant Load Serviced By Corridor." ~~"Not Permitted" under the heading "Required Fire Resistive Rating (hours) Without sprinkler system" for "R" occupancies with an occupant load served by corridor of greater than ten. Under that same location where "Not Permitted" is to be deleted, the language "1" shall be inserted instead, which will require those corridors to have one hour fire resistive ratings.~~

(19) through (23) remain as proposed.

(24) Subsection 3001.2, Emergency elevator communication equipment systems for the deaf, hard of hearing, and speech impaired, is amended as follows: "Emergency elevator communication systems for the deaf, hard of hearing and speech impaired. An emergency two-way communication system shall be provided in accordance with the provisions of ASME A17.1/CSA B44 and NFPA 72." ~~shall become effective on January 1, 2021.~~

(25) through (44) remain as proposed.

/s/ DARCEE L. MOE /s/ GALEN HOLLENBAUGH

Darcee L. Moe Galen Hollenbaugh, Commissioner

Rule Reviewer DEPARTMENT OF LABOR AND INDUSTRY

Certified to the Secretary of State November 26, 2019.

End of Document

ATTACHMENT 3

MARK GORDON
GOVERNOR

MICHAEL REED
STATE FIRE MARSHAL

THE STATE OF WYOMING

Department of Fire Prevention and Electrical Safety

5/28/19

To whom it may concern,

I am writing this letter on behalf of the State of Wyoming Department of Fire Prevention and Electrical Safety. I am Jane Allred and I am the Chief Electrical Inspector for the State. I have over 15 years experience as an electrical inspector. I am a Master Electrician in Wyoming and a Journeyman in the state of Idaho. I hold ICC certifications as residential and commercial electrical inspector and residential and commercial building inspector. I also hold a master electrical inspector certification from the International Association of Electrical Inspectors. I have, in addition to the 15 years as an inspector, 20 years' experience as an electrical contractor and installer with a major portion of my experience being in residential installations. I also serve as the Secretary/Treasurer to the Eastern Idaho Division of the IAEI.

Since the advent of the AFCI breaker and its introduction into the NEC, there have been numerous issues. Some of those were addressed with the introduction of the combination AFCI breaker, but overall, the technology has not proven to measure up to the complicated ways that electricity is being used in modern homes. Due to harmonics, motor inrush current, heating elements, LED lighting and other energy saving advances, these devices have cost the consumer, the electrical contractor, and the general contractor massive amounts of money with nuisance tripping and call backs. There are those who will claim that the appliances being used are the problem and not the breaker and the appliance manufacturers need to be forced into compliance. I feel that the manufacturer of the AFCI is the one at fault and they need to be brought into compliance before we force electrical contractors to install a device in order to be code compliant. These devises have not proven to be effective. They are costly and damage the reputation of the electrical contractor when they have constant nuisance tripping. The supposed protection the devices are designed to provide, is not being provided because the homeowner, when confronted with nuisance tripping, simply removes the $35.00 breaker and replaces it with a $3.00 non-afci type breaker. Now, with the request to expand the use of AFCI protection, and I use that term "protection" very loosely, it would be required in many areas that require GFCI protection as well. GFCI protection has been around for decades, is very well vetted, and has proven time and again to be a true safety measure for the user

of electricity. But, now this will push installers to use the dual AFCI/GFCI breaker, which is still phenomenally expensive, to save time and money when wiring a residence. Now when the AFCI causes nuisance tripping, the homeowner, not being a trained individual but allowed to do his own electrical work none the less, will simply remove the offending dual breaker, replace it with a standard breaker, and now they have not only lost the supposed AFCI protection, but they have lost the very valuable GFCI protection. The expansion of these breakers will not alleviate any safety hazard, but will in actuality, create a serious safety hazard. In my many years in this business as an installer I can attest to the cost, lost time, and frustration of chasing ghosts from nuisance tripping of AFCI breakers. As an inspector, I can honestly say the first words out of the mouths of every General Contractor, Real Estate Agent, and Electrical Contractor I have spoken to are, "what can we do to get rid of the AFCI breaker? It's a nuisance, affords zero degree of safety that a standard breaker will not provide, we are paying through the nose chasing down non safety tripping issues and the manufacturers are making bank because we are forced to install them by code, even though they don't work." Until the technology of the AFCI becomes advanced enough to deal with the differing types of appliances so that they do not cause nuisance tripping, they should not be forced upon the consumer or the contractor.

Thank you for your time and sincere consideration of the issue of AFCI and its expansion.

South Carolina Department of Labor, Licensing and Regulation
South Carolina Building Codes Council
110 Centerview Dr • Columbia • SC • 29210
P.O. Box 11329 • Columbia • SC • 29211-1329
Phone: 803-896-4688 • contact.bcc@llr.sc.gov • Fax: 803-896-4814
llr.sc.gov/bcc

IRC 2021-75

2021 BUILDING CODE MODIFICATION REQUEST FORM

Requirements:

- All requests must be submitted by September 22, 2021.
- Each request for code modification must be submitted separately.
- A cover letter from the local jurisdiction or professional association stating that the individual is authorized to present the proposed amendment; and verification that the proposed amendment has the support of at least a majority of the members of the board or council governing the local jurisdiction or professional association proposing the modification.
- Sufficient test information, studies, data, or other documentation that would be necessary to fully explain and justify the proposed amendment
- For local modification requests only: the physical or climatological basis for the request and the reason that the suggested change would correct the condition.
- A local jurisdiction or professional association shall not propose a modification which will amend, suspend, eliminate or supersede an existing statute, policy, rule or regulation of any state or federal agency per S.C. Regulation 8-240 (H).
- **A completed modification request must be received with all required documentation before it will be reviewed.**

☒ Statewide Modification
☐ Local Modification: _____
(List all jurisdictions that apply.)

Association/Jurisdiction: Home Builders Association of South Carolina

Address: 625 Taylor Street (Street) Columbia (City) SC (State) 29201 (Zip)

Name: Mark Nix Title/Position: Executive Director

Phone No.: [redacted] Email Address: [redacted]

Please select the applicable code to be modified:

2021 International Residential Code

Please list the exact code section, table, figure, or appendix to be modified, and attach a photocopy of the applicable code section: E4002.14 Tamper-resistant receptacles.

Code section as modified:
(Please strike through language being removed, and put language to be added in parentheses. Use additional pages as needed.)

Delete mention of 250 volt

E4002.14 Tamper-resistant receptacles. In areas specified in Section E3901.1, 15- and 20-ampere, 125- ~~and 250-~~volt nonlocking-type receptacles shall be listed tamper-resistant receptacles. [406.12]

9/28 Study Committee Recommendation: Support approval

In 200 characters or less, please briefly describe the justification for this modification request.

see attached

Per Regulation 8-240(E)(5), please list the persons with their titles and affiliations, known at the time of submittal, who will provide testimony in favor of the amendment. Due to the possibility of virtual hearings, **all information is the table below is required** to ensure proper notification. Use additional pages as needed.

Name	Title	Affiliation	Phone Number	Email Address
Mark Nix	Executive Director	HBA of SC	[redacted]	
Andy Barber	HBASC Codes Chairman	HBA of SC		

Affirmation

I certify that all information in this form, including all supplementary documents submitted with this form, are true and correct to the best of my knowledge after undertaking due diligence to determine their accuracy.

Signature: Mark Nix Digitally signed by Mark Nix Date: 2021.08.10 15:59:33 -04'00' Date: _____

Title: Executive Director

Reason:

This amendment retains the provisions of the 2017 NEC. This requirement was added in the 2008 edition of the National Electrical Code (NEC) and is not based on sound technical information which adequately substantiates that it will result in protecting small children from burns or injury. During the revision cycle leading up to the 2008 edition 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.

Public comment from electrical contractors criticized the conclusions drawn from the report. They stated that the report did not identify if the incidents were occurring in newer or older homes. Older homes generally have more electrical hazards which can lead to a higher incidence of shocks.

The NEISS reports also did 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 (TR) 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. However, the Consumer Product Safety Commission (CPSC) suggests the use of outlet safety covers on their website Childproofing Your Home- 12 Safety Devices to Protect Your Children, and safety covers available in stores today are large enough not to constitute a choking hazard. It's fair to say CPSC would not advocate their use if there were safety concerns.

Another concern that was shared by many on the technical review committee was the amount of force that must be applied to insert plugs 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 concern 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.

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 of concerns that were raised:

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.

10. Scarcity of product.

IRC 2021-76

American Concrete Institute

[redacted]

South Carolina Department of Labor, Licensing and Regulations
South Carolina Building Codes Council
Attention: South Carolina Building Codes Council Board Members
110 Centerview Drive
Columbia, South Carolina 29211

June 29, 2021

Re: Code Change Proposal – 2021 Building Code, Section 101.4.7

Dear SC BCC Board Members,

Please find included with this letter a copy of the code change proposal form and supporting information submitted by ACI on behalf of the ACI Carolinas Chapter, as well as other local industry supporters.

Please contact me directly if you have any questions.

Sincerely,

Kerry Sutton, PE
American Concrete Institute
Code Advocacy Engineer
[redacted]

Attachment 1 - Letter of Support from ACI Carolinas Chapter
Attachment 2 – Photocopy of applicable code section
Attachment 3 – Justification for proposed modification
Attachment 4 – Additional letters of support

AIR-CONDITIONING, HEATING, & REFRIGERATION INSTITUTE
we make life better®

2311 Wilson Boulevard Suite 400 Arlington VA 22201 USA
Phone 703 524 8800 | Fax 703 562 1942
www.ahrinet.org

IRC 2021-76

September 20, 2021

Dear South Carolina Department of Labor, Licensing and Regulation,

The Air-Conditioning, Heating, and Refrigeration Institute (AHRI) is writing in support of proposed amendments to the South Caroline State Building Codes. AHRI represents more than 300 equipment, component, and refrigerant manufacturers in the Heating, Ventilation, Air Conditioning, and Refrigeration (HVACR) industry that must now transition to next generation refrigerants due to new federal legislation. AHRI has the support of our member companies to prepare and submit proposed code changes which will enable the HVAC industry to meet new federal regulations.

The *American Innovation and Manufacturing (AIM) Act was* signed into law by President Trump on December 27, 2020. The AIM Act mandates that the U.S. Environmental Protection Agency (EPA) phase down the supply of hydrofluorocarbons (HFCs), including refrigerants.[i]

Together with the U.S. Department of Energy and other stakeholders, AHRI and its members have invested over $7 million in research carefully analyzing refrigerant and equipment behavior related to this transition.[ii] In fact, AHRI completed a project with the standard-setting organization Underwriter Laboratories (UL) and fire service representatives to develop training for first responders to ensure that they have the information needed for this transition.[iii] In light of the passage of the AIM Act, AHRI believes that it is prudent for all stakeholders to start preparing for the transition.[iv]

It is essential that State building codes enable the use of next generation refrigerants required by the AIM Act. If State building codes are not properly amended to accommodate next generation refrigerants, then manufacturers, distributors, and end-users may find themselves unable to simultaneously comply with both federal and state law. It is important for building code changes to be addressed through the amendment process so that all stakeholders know how to comply with state building codes as soon as reasonably possible.

---

[i] American Innovation and Manufacturing Act of 2020, H.R. 133, sec. 103, 116th Cong. (2021) (passed as part of Consolidated Appropriations Act of 2021 (P.L. 116-260)), https://www.epa.gov/sites/default/files/2021-03/documents/aim_act_section_103_of_h.r._133_consolidated_appropriations_act_2021.pdf

[ii] *See* AHRI, Flammable Refrigerants Research Initiative, https://www.ahrinet.org/resources/research/ahri-flammable-refrigerants-research-initiative.

[iii] *See* UL Firefighting Safety Research Institute, Advancing Fire Safety Science, https://ulfirefightersafety.org/.

[iv] *See* AHRI, Safe Refrigerant Transition Task Force, https://www.ahrinet.org/saferefrigerant.

Manufacturers are transitioning away from UL1995 to UL60335-2-40 for new products because UL1995 will be obsolete effective January 1, 2024. The newest 3rd edition of UL 60335-2-40, published November 2019, has many new requirements for electrical and refrigerant safety, including requirements for UV-C germicidal lamp systems, CO2 systems, photovoltaic systems, new marking requirements, water ingress rating system, and allowances for next generation refrigerants. Manufacturers are already working to certify equipment to the new standard.

Additionally, AHRI is supporting proposed changes to sections 1104.3.1 and 1104.3.2 of the Mechanical Code which have been adopted by ICC for the 2024 IMC. These changes are necessary to fully recognize the use of A2L refrigerants in high probability (direct) air conditioning systems for human comfort. Table 1104.3.2 is deleted in its entirety because the requirements are adequately addressed in the modified Section 1104.3.1 and 1104.3.2.

U.S manufacturers have installed manufacturing capacity within South Carolina that could be negatively impacted if these codes are not updated. However, Most importantly, tens of millions of units have been installed and operate internationally without incident (even in developing nations) in compliance with the International Electrical Code (IEC) 60335-2-40, which is much more liberal than UL/CSA 60335-2-40. Significant research has been completed to inform the more restrictive requirements in UL/CSA 60335-2-40 including a project confirming the functionality of the standard. Training has been developed for both first responders and technicians. Stakeholders are solely waiting for direction from state mechanical codes to prepare for this transition.

AHRI greatly appreciates your consideration of this matter and would be happy to provide further information if helpful.

Sincerely,
Mary E. Koban

Mary E. Koban
Sr. Director Regulatory Affairs
Air-Conditioning, Heating and Refrigeration Institute (AHRI)
[redacted]
[redacted]

South Carolina Department of Labor, Licensing and Regulation
South Carolina Building Codes Council
110 Centerview Dr • Columbia • SC • 29210
P.O. Box 11329 • Columbia • SC • 29211-1329
Phone: 803-896-4688 • contact.bcc@llr.sc.gov • Fax: 803-896-4814
llr.sc.gov/bcc

2021 BUILDING CODE MODIFICATION REQUEST FORM

Requirements:

- All requests must be submitted by September 22, 2021.
- Each request for code modification must be submitted separately.
- A cover letter from the local jurisdiction or professional association stating that the individual is authorized to present the proposed amendment; and verification that the proposed amendment has the support of at least a majority of the members of the board or council governing the local jurisdiction or professional association proposing the modification.
- Sufficient test information, studies, data, or other documentation that would be necessary to fully explain and justify the proposed amendment
- For local modification requests only: the physical or climatological basis for the request and the reason that the suggested change would correct the condition.
- A local jurisdiction or professional association shall not propose a modification which will amend, suspend, eliminate or supersede an existing statute, policy, rule or regulation of any state or federal agency per S.C. Regulation 8-240 (H).
- **A completed modification request must be received with all required documentation before it will be reviewed.**

X Statewide Modification

☐ Local Modification: _____

(List all jurisdictions that apply.)

Association/Jurisdiction: Air Conditioning, Heating, Refrigeration Institute (AHRI)

Address: [redacted] [redacted] [redacted] [redacted]

Street City State Zip

Name: Mary E. Koban Title/Position: Senior Director Regulatory Affairs

Phone No.: [redacted] Email Address: [redacted]

Please select the applicable code to be modified: **2021 International Residential Code**

Please list the exact code section, table, figure, or appendix to be modified, and attach a photocopy of the applicable code section: **Chapter 44**

Code section as modified:

Code section as modified:

(Please strike through language being removed, and put language to be added in parentheses. Use additional pages as needed.)

Chapter 44 Referenced Standards

~~**ANCE**~~	~~Association of the Electric Sector~~ ~~Av. Lázaro Cardenas No. 869~~ ~~Col. Nueva Industrial Vallejo~~ ~~C.P. 07700 México D.F.~~
~~NMX-J-521/2-40-ANCE—2014/ CAN/CSA-22.2 No. 60335-2-40—12/ UL 60335-2-40~~	~~Safety of Household and Similar Electric Appliances, Part 2-40: Particular Requirements for Heat Pumps, Air-Conditioners and Dehumidifiers~~ ~~M1403.1, M1412.1, M1413.1~~
CSA	CSA Group 8501 East Pleasant Valley Road Cleveland, OH 44131-5516
~~CAN/~~CSA~~/~~ C22.2 No. 60335-2-40-~~2012~~ 2019	Safety of Household and Similar Electric Appliances, Part 2-40: Particular Requirements for Electrical Heat Pumps, Air-Conditioners and Dehumidifiers-3rd edition M1402.1, M1403.1, M1412.1, M1413.1, M2006.1
UL	UL LLC 333 Pfingsten Road Northbrook, IL 60062
UL/CSA~~/ANCE~~ 60335-2-40-~~2012~~ 2019	Safety of Household and Similar Electrical Appliances, Part 2-40: Particular Requirements for ~~Motor Compressors~~ Electrical Heat Pumps, Air-Conditioners and Dehumidifiers M1402.1, M1403.1, M1412.1, M1413.1, M2006.1

9/28 Study Committee Recommendation: Do not support approval

In 200 characters or less, please briefly describe the justification for this modification request.

Manufacturers are transitioning away from UL1995 to UL60335-2-40 for most new products because UL1995 will be obsoleted effective 1/1/2024. The newest 3rd edition of UL60335-2-40, published November 2019, has many new requirements for electrical and refrigerant safety. The 3rd edition includes requirements for UV-C germicidal lamp systems, CO_2 systems, photovoltaic systems, new marking requirements, water ingress rating system as well as allowances for Low Global Warming Potential (GWP) Group A2L refrigerants. Nationally Recognized Testing Laboratories (or NRTLs), will use the latest version of the UL60335-2-40 for certification testing.

The references to ANCE as a sponsor of this UL/CSA60335-2-40 standard has been removed as ANCE in Mexico withdrew from the 3rd Edition is no longer associated with this standard after the 2nd Edition.

The titles shown in Chapter 44 – Referenced Standards for UL/CSA60335-2-40 have been updated to reflect the current title of the standards.

Per Regulation 8-240(E)(5), please list the persons with their titles and affiliations, known at the time of submittal, who will provide testimony in favor of the amendment. Due to the possibility of virtual hearings, **all information is the table below is required** to ensure proper notification. Use additional pages as needed.

Name	Title	Affiliation	[redacted]	
Mary E. Koban	Sr. Dir. Regulatory Affairs	AHRI		
Helen Walter-Terrinoni	Vice President	AHRI		
Robert Glass	Manager State Regulatory Affairs	Goodman Manufacturing Company		
Andrew Klein	Fire Protection Engineer	AS Klein Engineering, LLC		
Nadja Tremblay	Sr. Mgr, Gov Relations & Stds	Carrier Corp.		

Affirmation

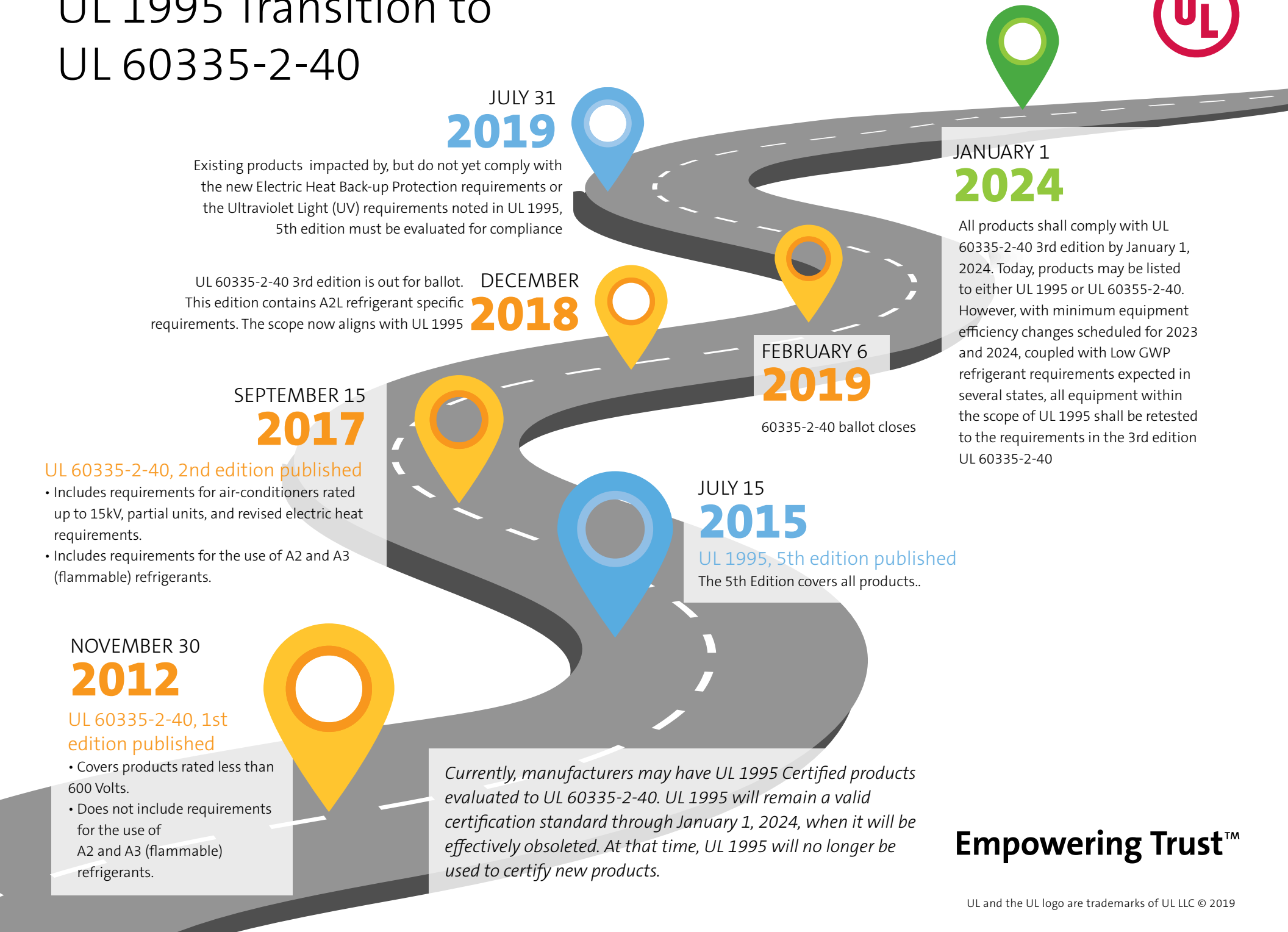
I certify that all information in this form, including all supplementary documents submitted with this form, are true and correct to the best of my knowledge after undertaking due diligence to determine their accuracy.

Signature: _____ Date: 9/09/21

Title: SR. DIRECTOR REGULATORY AFFAIRS, AHRI

UL 1995 Transition to UL 60335-2-40

IRC 2021-76



JULY 31
2019

Existing products impacted by, but do not yet comply with the new Electric Heat Back-up Protection requirements or the Ultraviolet Light (UV) requirements noted in UL 1995, 5th edition must be evaluated for compliance

JANUARY 1
2024

All products shall comply with UL 60335-2-40 3rd edition by January 1, 2024. Today, products may be listed to either UL 1995 or UL 60355-2-40. However, with minimum equipment efficiency changes scheduled for 2023 and 2024, coupled with Low GWP refrigerant requirements expected in several states, all equipment within the scope of UL 1995 shall be retested to the requirements in the 3rd edition UL 60335-2-40

UL 60335-2-40 3rd edition is out for ballot. This edition contains A2L refrigerant specific requirements. The scope now aligns with UL 1995

DECEMBER
2018

FEBRUARY 6
2019

60335-2-40 ballot closes

SEPTEMBER 15
2017

UL 60335-2-40, 2nd edition published

- Includes requirements for air-conditioners rated up to 15kV, partial units, and revised electric heat requirements.
- Includes requirements for the use of A2 and A3 (flammable) refrigerants.

JULY 15
2015

UL 1995, 5th edition published

The 5th Edition covers all products..

NOVEMBER 30
2012

UL 60335-2-40, 1st edition published

- Covers products rated less than 600 Volts.
- Does not include requirements for the use of A2 and A3 (flammable) refrigerants.

Currently, manufacturers may have UL 1995 Certified products evaluated to UL 60335-2-40. UL 1995 will remain a valid certification standard through January 1, 2024, when it will be effectively obsoleted. At that time, UL 1995 will no longer be used to certify new products.

Empowering Trust™

2021 International Residential Code
South Carolina Building Codes Council
Modification Continuations from 2018

2021 Code Section: Appendix ~~H~~ AH Patio Covers

Modification: Appendix H was adopted for use statewide.

Reason: To provide minimum requirements for patio covers for the protection of people and property

Proponent: Structural Engineers Association of South Carolina

Previous Code Cycles	Previous Modification Number	Previous Code Section
IRC 2018	IRC 2018 45	Appendix H
IRC 2015	IRC 2015 36	Appendix H
IRC 2012	IRC 2012 25	Appendix H

Comments: Section is “AH” in 2021 IRC.

7/27 Study Committee Recommendation: Support approval with section title change.

2021 International Residential Code
South Carolina Building Codes Council
Modification Continuations from 2018

2021 Code Section: Appendix ~~J~~ AJ Existing Buildings and Structures

Modification: Appendix J was adopted for use statewide.

Reason: To provide guidance for renovating, modifying or updating residential structures in applying the IRC and to help with uniform enforcement of the IRC on renovation projects across the state.

Proponent: Structural Engineers Association of South Carolina

Previous Code Cycles	Previous Modification Number	Previous Code Section
IRC 2018	IRC 2018 46	Appendix J
IRC 2015	IRC 2015 37	Appendix J

Comments: Section is "AJ" in 2021 IRC.

7/27 Study Committee Recommendation: Support approval with section title change.

2021 International Residential Code
South Carolina Building Codes Council
Modification Continuations from 2018

2021 Code Section: Appendix ~~Q~~ AQ Tiny Houses

Modification: New

Reason: Adopted for use statewide.

Proponent: BOASC

Previous Code Cycles	Previous Modification Number	Previous Code Section
IRC 2018	IRC 2018 47	Appendix Q

Comments: Section is "AQ" in 2021 IRC.

7/27 Study Committee Recommendation: Support approval with section title change.