According to the final ballot results, all ballot items received the necessary affirmative votes to pass ballot with the exception of SR No. 319. As a result, the revision is now designated as Committee Comment No. 319 and the text of SR No. 319 will not be included in the Second Draft. In accordance with the Regs. 4.4.10.2, a supplemental ballot on FR 329 will be processed.

The attached report contains Committee Comment No. 319 and the SRs created by Panel 2 with final ballot counts and voting comments.

To pass ballot, each revision requires: (1) a simple majority of those eligible to vote and (2) an affirmative vote of $\frac{2}{3}$ of ballots returned. See Sections 3.3.4.3 (c) and 4.3.10.1 of the Regulations Governing the Development of NFPA Standards.
Committee Comment No. 319-NFPA 70-2015 [Section No. 210.12(A)]

This was a Second Revision that failed ballot.

(A) Dwelling Units.

All 120-volt, single-phase, 15- and 20-ampere branch circuits supplying outlets or devices installed in dwelling units shall be protected by any of the means described in 210.12(A)(1) through (6):

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A listed combination-type arc-fault circuit breaker, installed to provide protection of the entire branch circuit.</td>
</tr>
<tr>
<td>2</td>
<td>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 breaker 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.</td>
</tr>
<tr>
<td>3</td>
<td>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 breaker installed at the first outlet box on the branch circuit where all of the following conditions are met:</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>a</td>
<td>The branch-circuit wiring shall be continuous from the branch-circuit overcurrent device to the outlet branch-circuit arc-fault circuit breaker.</td>
</tr>
<tr>
<td>b</td>
<td>The maximum length of the branch-circuit wiring from the branch-circuit overcurrent device to the first outlet shall not exceed 15.2 m (50 ft) for a 14 AWG conductor or 21.3 m (70 ft) for a 12 AWG conductor.</td>
</tr>
<tr>
<td>c</td>
<td>The first outlet box in the branch circuit shall be marked to indicate that it is the first outlet of the circuit.</td>
</tr>
<tr>
<td>4</td>
<td>A listed outlet branch-circuit-type arc-fault circuit breaker 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:</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>a</td>
<td>The branch-circuit wiring shall be continuous from the branch-circuit overcurrent device to the outlet branch-circuit arc-fault circuit breaker.</td>
</tr>
<tr>
<td>b</td>
<td>The maximum length of the branch-circuit wiring from the branch-circuit overcurrent device to the first outlet shall not exceed 15.2 m (50 ft) for a 14 AWG conductor or 21.3 m (70 ft) for a 12 AWG conductor.</td>
</tr>
<tr>
<td>c</td>
<td>The first outlet box in the branch circuit shall be marked to indicate that it is the first outlet of the circuit.</td>
</tr>
<tr>
<td>5</td>
<td>If RMC, IMC, EMT, Type MC, or steel- armored Type AC cables meeting the requirements of 250.118, metal wireways, metal auxiliary gutters, and metal outlet and junction boxes are installed for the portion of the branch circuit between the branch-circuit overcurrent device and the first outlet, it shall be permitted to install a listed outlet branch-circuit-type AFCI at the first outlet to provide protection for the remaining portion of the branch circuit.</td>
</tr>
<tr>
<td>6</td>
<td>Where a listed conduit or tubing or Type MC cable is encased in not less than 50 mm (2 in.) of concrete for the portion of the branch circuit between the branch-circuit overcurrent device and the first outlet, it shall be permitted to install a listed outlet branch-circuit-type AFCI at the first outlet to provide protection for the remaining portion of the branch circuit.</td>
</tr>
</tbody>
</table>
Exception: Where an individual branch circuit to a fire alarm system installed in accordance with 760.41(B) or 760.121(B) is installed in RMC, IMC, EMT, or metal wireways or auxiliary gutters or steel-sheathed cable, Type AC or Type MC, meeting the requirements of 250.118, with metal outlet and junction boxes, AFCI protection shall be permitted to be omitted.

Informational Note No. 1: For information on combination-type and branch/feeder-type arc-fault circuit interrupters, see UL 1699-2011, Standard for Arc-Fault Circuit Interrupters. For information on outlet branch-circuit type arc-fault circuit interrupters, see UL Subject 1699A, Outline of Investigation for Outlet Branch Circuit Arc-Fault Circuit-Interrupters. For information on system combination AFCIs, see UL Subject 1699C, Outline of Investigation for System Combination Arc-Fault Circuit Interrupters.

Informational Note No. 2: See 29.6.3(5) of NFPA 72:2011, National Fire Alarm and Signaling Code, for information related to secondary power-supply requirements for smoke alarms installed in dwelling units.

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

Submitter Information Verification

Submitter Full Name: CMP 2
Organization: [ Not Specified ]
Street Address:
City:
State:
Zip:
Submittal Date: Tue Nov 10 19:22:34 EST 2015

Committee Statement

Committee: The standards have been updated to the current edition. UL 1699C has been deleted since the document has been withdrawn.

Response Message:

Public Comment No. 93-NFPA 70-2015 [Section No. 210.12(A)]

Ballot Results

This item has failed ballot

15 Eligible Voters
0 Not Returned
7 Negative with Comments
3 Affirmative All
3 Affirmative with Comments
2 Abstention

Negative with Comment

Buuck, Daniel
My negative vote is based on the intent to return to the 2014 edition language for the charging paragraph only. I voted in favor of the removal of the system combination requirement at the Second Draft Meeting and continue to support that change. I also have no problems with the
other changes to the section. Reasons for my position against the expansion of AFCI requirements remain the same. No data was provided for expanding the requirements of AFCI devices throughout dwelling units based on loss of life or reducing the number of fires. No proof was given to the panel that an AFCI device has prevented a fire in the past 15 years, either. Reports show that since AFCIs were introduced, they have not made a positive impact on the number of fires. Builders continue to have substantial problems with AFCI devices which add unforeseen costs to the home buyers. Expensive callbacks for repairs such as rewiring outlets for certain equipment, such as high-end vacuum cleaners or treadmills, are a major inhibitor to the acceptance of these devices.

Domitrovich, Thomas A.

While NEMA finds the revisions in 210.12(A), (A)(5), (A)(6), the exception, and the informational note acceptable, the change to (4) is not; therefore this SR should be rejected. NEMA’s Public Comment 822 which requested retention of the “Listing” requirement, should have been accepted. CMP-2’s panel statement for the resolution of this comment states: “The Panel is aware that this is a reduction in parallel arc protection in the home run…” There is no need for this reduction in safety! There is no technical reason to reduce the level of safety afforded by the listed solutions in the other five installation options by deleting the requirement for a listed system combination AFCI in option 4. There is a need to verify that the circuit breaker and OBC AFCI can together provide arc fault protection for the entire branch circuit. NEMA supports the existing 2014 NEC text in 210.12(A)(4). Standard thermal-magnetic circuit breakers are not designed, tested or listed to detect and interrupt low level arcing faults. There is no NEMA circuit breaker manufacturer that supports these claims being made about their products. By not accepting this comment, the permitted AFCI protection method in 210.12(A)(4) will require the use of a standard thermal-magnetic circuit breaker to provide protection for which it is not designed, tested or Listed to provide.

Duren, Ronald E.

The listing requirement for a combination-type AFCI device has been eliminated with the removal of 210.12(A)(4)d. This action does not improve the safety of the installation.

Manche, Alan

I am voting negative on SR-319. The 210.12(A)(4) language in SR-319 will permit a system combination which consists of a standard circuit breaker and an OBC AFCI device to provide Arc Fault protection. The system combination, without a listing requirement that is being deleted from the 2014 NEC in 210.12(A)(4)(d), may not provide protection as acknowledged by the UL voting comment on FR-329 and the panel statement on PCs-439, 822 and 855. Standard thermal-magnetic circuit breakers are not designed, Listed or intended to protect against low level arcing faults as required for AFCI protection in accordance with the UL 1699 performance requirements. When the arc fault protection method in 210.12(A)(4) of SR-319 is selected as the protection means, it requires a standard thermal magnetic circuit breaker to perform a safety function for which it is not designed, tested or Listed. Circuit breakers that do not include an arc-fault protection function have not been tested or evaluated to provide protection against arcing faults. As a manufacturer of circuit breakers, an NEC requirement to use our product for which it is not intended nor listed is unacceptable and is a misapplication of our product.

Mitchem, James E.

The IEEE supports the revisions in 210.12(A), (A)(5), (A)(6), the exception and the Informational Note, but the deletion of the text in 210.12(A)(4)(d) in the 2014 edition is not acceptable. Public Comments 439, 822 and 855 calling for the reinstatement of the listed system combination AFCI requirement should have been accepted. The Panel statement for the resolution of these comments states: “The Panel is aware that this is a reduction in parallel arc protection in the home run…” There is no need for this reduction in safety! There is no technical reason to reduce the level of safety afforded by the listed solutions in the other five installation options by deleting the requirement for a listed system combination AFCI in option 4. There is a need to verify that the circuit breaker and OBC AFCI can together provide arc
fault protection for the entire branch circuit. Standard thermal-magnetic circuit breakers are not designed, tested or listed to detect and interrupt low level arcing faults.

Thorwegen, Jr., Stephen J.

A standard thermal magnetic circuit breaker cannot provide arc-fault protection as in NEC 210.12. By removal of the language, the homerun circuit conductors remain unprotected in the event of an arc-fault.

Wood, Thomas H.

I am voting to not accept this revision because section 210-12(4)d has been deleted that required a branch circuit overcurrent devise to be listed to work with an AFCI devise. The panel statement in PC855 was “The panel is aware that this is a reduction in parallel arc protection in the “home run” and considers the trade off in protection, for the sake of making alternative protection devises available in the market place”

X

Affirmative All

Boynton, Charles L.
Harman, Thomas L.
Hilbert, Mark R.

X

Affirmative with Comment

Campolo, Steve

It is important to accept SR 319, which has been shown will result in increased safety and more acceptable alternatives to meet the code rule. Additionally (to my original comments below, which should remain with these new ones); I must point out the inaccuracies in the statements made by UL. Specifically, the statement “it allows any two components, with broad ranges of performance…..”, which implies OBC AFCIs have broad ranges of performance, is wrong. OBC AFCIs are held to the same performance level as AFCI breakers because they are evaluated to the same applicable requirements of the same standard. Let’s not discount the fact that OBC AFCIs’ provide upstream series arc protection that extends to the circuit breaker line stab connections, which is above and beyond what is required of AFCI breakers. The whole idea of pairing OBC AFCI with mag trip breakers (and criticizing the pairing) IS NO LONGER A VIABLE ARGUMENT BECAUSE THE NMB STUDY DISCOUNTS THE MAG TRIP ISSUE ALL TOGETHER, AND SPEAKS TO THE LACK OF IGNITION EVEN AFTER A SHORT-LIVED ARC. CMP-2 understood this simple fact that removed the mag-trip response from the argument. Simply, the arcs will not ignite nearby combustibles because there are short-lived. Continuing to rely on the mag/trip argument is an error as UL’s own report shows AND CMP-2 correctly stated in FR329 panel statement. However, if there is a concern with magnetic/instantaneous trip performance, and it has been discussed when considering UL listed/certified products that are evaluated with either fuses or thermal-magnetic circuit breakers during the short circuit testing. This testing relies mainly on the thermal-magnetic breakers’ magnetic trip property to terminate the test. After all if magnetic trip response is going to be criticized, it should be done uniformly and investigated broadly. Original affirmative comment: CMP-2 unanimously voted in favor of SR319 which resulted from Public Comment 93, and correctly so, The Panel should maintain that position. CMP-2 has twice voted in favor of the changes made to 210.12(A)(4). Initially by producing a First Draft that eliminated the Listed System Combination requirement as there is no standard to List to, and secondly by voting to reject Public Comments to reinstate what was correctly removed in the First Revision. Additionally, the Panel correctly realized that the action of removing the Listed System Combination (and allowing a Listed OBC AFCI to meet the Code rule) will result in increased safety by allowing acceptable alternative AFCI products to be installed instead of just one type. The submitter of the Public Comment 93 that resulted in this Second Revision solely sought to correct edition dates for standards and to remove a reference to a withdrawn standard, as well as editorial correction. This is correct and appropriate and CMP-2 voted unanimously in support at the meeting. However, some panel members may choose to vote against this Second Revision now, as a vehicle to undo what the panel twice agreed to; namely, the
removal of the Listed System Combination. This issue of the removal of the Listed System Combination and the Public Comments that sought to re-instate it ARE NOT up for yet a third vote. Only those editorial changes referenced in Public Comment 93 that resulted in SR319 are to be considered and the Panel should fulfill its duty in making sure that standard edition dates are up-to-date and references to non-existent standards are removed. Voting Affirmative on SR319 accomplishes this. The removal of the Listed System Combination requirement of 210.12(A)(4) is NOT RELATED whatsoever to any editorial change suggested by SR319 and should not be associated with it. Allowing SR319 to become a vehicle to reopen what the Panel has twice made its intentions clear on would be a mistake and a violation of “The Rules Governing The Development of NFPA Standards”.

Coluccio, Frank
I agree with the panel

King, Donald M.
Panel 2 should give further consideration to accepting SR319. 210.12 as written in the 2014 NEC is not clear and imposes impractical criteria on the use of OBC devices that in many cases unnecessarily precludes their use. The purpose of the code is “practical safeguarding” and providing an “installation essentially free from hazard” as described in Article 90. This premise has been the foundation for many advances in technology that provide the end user with practical and reliable protection from the hazards that arise from the use of electricity. One example is the many panel deliberations that occurred regarding the reliability of circuit breakers with respect to fuses. The reliability of fuses in many fault conditions exceeds that of circuit breakers, but circuit breakers have been accepted as a practical alternative that provides an acceptable tolerance of reliability in protecting feeders and branch circuits. The same could be said for the use of OBC Arc Fault Circuit interrupters as a reliable means of meeting the requirements of 210.12. The limited run of branch circuit that is upstream from the device is effectively protected by a standard overcurrent device. Also, OBC Arc Fault Circuit Interrupters have the added benefit of protecting against series arcing faults on the line side of the branch circuit overcurrent device. Neither device provides 100% reliability. Standard overcurrent devices have an 80% reliability rating for the criterion of their use in FR329. AFCI overcurrent devices only have an 89% reliability rating for current protection. If it is the panel’s intent to fully protect all branch circuits from arcing faults, then the focus should not be on arc protection devices but rather on the wiring methods used that greatly increase the risk of arcing events. Listed wiring methods are available that provide superior physical protection of the branch circuit conductors as compared to those permitted with the use of arc fault circuit interrupters. It further should be noted that this 9% delta in reliability is debated and applies to only a small portion of the branch circuit as already limited in length by 210.12 (A)4 (b) and only for parallel arcing faults and that factors such as available fault current at the service contribute to more reliable operation of the standard overcurrent device in an arcing condition.

Abstention
McGovern, William J.
There is no harm in the NEC’s permitting something that does not yet exist. There have been many examples of similar permissive rules in the past. As of this writing, there is no published or proposed standard for combination AFCI/circuit breaker protection. Thus, there is little reason to vote for or against including these combinations in the Code. As a testing agency we chose to remain neutral on the subject.

Reyes, Frederick P.
UL continues to abstain on the issue of 210.12(A)(4) and need for a system combination AFCI. See our comments on FR-329 during the first draft stage. After seeing the second revision ballot comments, we again find the panel very divided on this issue of removing 210.12(A)(4)(d). Most who do not agree with the removing of 210.12(A)(4)(d) correctly note that this will result in a reduction of parallel arc protection in the home run, and therefore have voted negative on SR-319 for that reason. However, others who continue to support the removing of 210.12(A)(4)(d) appear willing to accept some level of arc protection less than that
provided by a combination AFCI as a trade-off for the wider availability of alternate arc fault protection means. Both sides make valid points, however until such time as the panel can reach consensus on the definition of the acceptable level of protection and understand the risk associated with that, we will continue to abstain.
Second Revision No. 321-NFPA 70-2015 [Detail]

Make the following changes to 210.8(B):

**(B) Other Than Dwelling Units.** All 125-volt, single-phase, 15- and 20-ampere receptacles, single-phase receptacles rated 150 volts to ground or less, 50 amperes or less and three-phase receptacles rated 150 volts to ground or less, 100 amperes or less, installed in the locations specified in 210.8(B)(1) through (B)(10) shall have ground-fault circuit-interrupter protection for personnel.

   (a) All single-phase receptacles rated 150 volts to ground or less, 50 amperes or less, shall have GFCI protection for personnel.
   (b) All three-phase receptacles rated 150 volts to ground or less, 100 amperes or less, shall have GFCI protection for personnel.

Submitter Information Verification

Submitter Full Name: CMP 2
Organization: [Not Specified]
Street Address:
City:
State:
Zip:
Submittal Date: Tue Nov 10 20:27:13 EST 2015

Committee Statement

Committee Statement: Receptacles of the higher voltage and current ratings in the locations identified in 210.8(B) present the similar shock hazards as those of lower voltage and current ratings. The numbering in the introductory paragraph was changed to correlate with the revisions to the section. Item (1)(a) and (1)(b) were incorporated into the opening paragraph.

Response Message:

Public Comment No. 819-NFPA 70-2015 [Section No. 210.8(B)]
Public Comment No. 642-NFPA 70-2015 [Section No. 210.8(B)]

Ballot Results

- ✔ This item has passed ballot

  15 Eligible Voters
  0 Not Returned
  11 Affirmative All
  0 Affirmative with Comments
  4 Negative with Comments
  0 Abstention
Affirmative All
Boynton, Charles L.
Buuck, Daniel
Campolo, Steve
Domitrovich, Thomas A.
Duren, Ronald E.
Harman, Thomas L.
King, Donald M.
Manche, Alan
Mitchem, James E.
Reyes, Frederick P.
Wood, Thomas H.

Negative with Comment
Coluccio, Frank

There is lack of substantiation to include 3 phase receptacle outlets up to 100 amps and single phase receptacle outlets up to 50 amps

Hilbert, Mark R.

The substantiation provided for expanding the current Class A GFCI requirements to include single phase receptacle outlets up to 50 amperes and three phase receptacle outlets up to 100 amperes was extremely insufficient to say the least. In fact the only substantiation was these receptacle outlets present similar hazards to 125 volt, 15 or 20 ampere receptacle outlets which I disagree with. Receptacle outlets at these expanded levels would only be installed for specific purpose equipment or applications. Specific-purpose ground-fault protection requirements should be located in the applicable article for the equipment or the conditions such as Article 422 or Article 590 as opposed to Article 210 which clearly is intended to cover general branch circuit requirements. Locating requirements for special purpose branch circuit equipment or applications in Article 210 is inconsistent with 210.1, which states Article 210 provides general requirements for branch circuits, and the Panel's actions to relocate other specific equipment such EV charging (former 210.17) to the article covering the specific equipment.

McGovern, William J.

The lack of sufficient substantiation for receptacles rated 150 volts to ground single phase, 50 amps or less, and 3-phase receptacles rated 150 volts to ground, 100 amps or less should have been cause for this second revision to be rejected. The vast majority of this type of equipment is fixed in place and there has been no documentation of hazards to persons presented to warrant the expansion of GFCI protection to these types of receptacles.

Thorwegen, Jr., Stephen J.

There is no substantiation for the expansion of GFCI protection beyond 125 volts, single-phase, 15 and 20 ampere receptacles in "other than dwelling units"
Ground-Fault Circuit Interrupter, Special Purpose (SPGFCI).

A device intended for the protection of personnel that functions to de-energize a circuit or portion of a circuit within an established period of time when a current to ground exceeds the values established for Class C, D, and E devices.

Informational Note: Classes C, D, and E ground-fault circuit interrupters trip when the current to ground is 20 mA or higher and do not trip when the current to ground is less than 15 mA. For further information, see UL 943C, Outline of Investigation for Special Purpose Ground-Fault Circuit Interrupters.

Submitter Information Verification

Submitter Full Name: CMP 2
Organization: [ Not Specified ]
Street Address: 
City:
State:
Zip: 
Submittal Date: Tue Nov 10 12:47:33 EST 2015

Committee Statement

Committee Statement: Requirements for these devices have not been added to Articles 210 and 215, thus the definition is unnecessary.

Response Message:

Public Comment No. 859-NFPA 70-2015 [Definition: Ground-Fault Circuit Interrupter, Special Purpo...]

Ballot Results

✔ This item has passed ballot

15 Eligible Voters
0 Not Returned
14 Affirmative All
1 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All
Boynton, Charles L.
Buuck, Daniel
Campolo, Steve
Domitrovich, Thomas A.
<table>
<thead>
<tr>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duren, Ronald E.</td>
</tr>
<tr>
<td>Harman, Thomas L.</td>
</tr>
<tr>
<td>Hilbert, Mark R.</td>
</tr>
<tr>
<td>King, Donald M.</td>
</tr>
<tr>
<td>Manche, Alan</td>
</tr>
<tr>
<td>McGovern, William J.</td>
</tr>
<tr>
<td>Mitchem, James E.</td>
</tr>
<tr>
<td>Reyes, Frederick P.</td>
</tr>
<tr>
<td>Thorwegen, Jr., Stephen J.</td>
</tr>
<tr>
<td>Wood, Thomas H.</td>
</tr>
</tbody>
</table>

**Affirmative with Comment**

Coluccio, Frank

I agree with the panel
Second Revision No. 302-NFPA 70-2015 [Definition: Show Window.]

Show Window.
Any window, including windows above doors, used or designed to be used for the display of goods or advertising material, whether it is fully or partly enclosed or entirely open at the rear and whether or not it has a platform raised higher than the street floor level.

Submitter Information Verification

Submitter Full Name: CMP 2
Organization: [Not Specified]
Street Address:
City:
State:
Zip:
Submittal Date: Mon Nov 09 11:46:27 EST 2015

Committee Statement

Committee Statement: The window above doors has been added to the definition for show windows since they may require power similar to a show window under certain use conditions.
Response Message:

Public Comment No. 414-NFPA 70-2015 [Definition: Show Window.]

Ballot Results

✔ This item has passed ballot

15 Eligible Voters
0 Not Returned
13 Affirmative All
0 Affirmative with Comments
2 Negative with Comments
0 Abstention

Affirmative All
Boynton, Charles L.
Buuck, Daniel
Campolo, Steve
Domitrovich, Thomas A.
Duren, Ronald E.
Harman, Thomas L.
King, Donald M.
Manche, Alan
Negative with Comment

Coluccio, Frank

"Including windows above doors" already exists when reading the section. But adding this wording does not add further clarity.

Hilbert, Mark R.

Adding the text “including windows above doors” is unnecessary and therefore will only cause confusion. The current wording already states the requirements apply to “any window used for the display of goods or advertising material” so a window used as a “show window” above a door is already covered.
### Second Revision No. 303-NFPA 70-2015 [ Section No. 210.3 ]

**210.3** Other Articles for Specific-Purpose Branch Circuits.

Table 210.3 lists branch circuit requirements and references for specific equipment and applications not located in Chapters 5, 6, and 7 that amend or supplement the requirements of this article.

Table 210.3 Specific-Purpose Branch Circuits

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Article</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air-conditioning and refrigerating equipment</td>
<td>440.6, 440.31,</td>
<td>440.32</td>
</tr>
<tr>
<td><strong>Audio signal processing, amplification, and reproduction equipment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Busways</td>
<td>368.17</td>
<td></td>
</tr>
<tr>
<td>Circuits and equipment operating at less than 50 volts</td>
<td>720</td>
<td></td>
</tr>
<tr>
<td>Central heating equipment other than fixed electric space-heating equipment</td>
<td>422.12</td>
<td></td>
</tr>
<tr>
<td><strong>Class 1, Class 2, and Class 3 remote-control, signaling, and power-limited circuits</strong></td>
<td>726</td>
<td></td>
</tr>
<tr>
<td>Cranes and hoists</td>
<td>610.42</td>
<td></td>
</tr>
<tr>
<td>Electric signs and outline lighting</td>
<td>600.6</td>
<td></td>
</tr>
<tr>
<td><strong>Electric welders</strong></td>
<td>630</td>
<td></td>
</tr>
<tr>
<td>Electrified truck parking space</td>
<td>626</td>
<td></td>
</tr>
<tr>
<td>Elevators, dumbwaiters, escalators, moving walks, wheelchair lifts, and</td>
<td>620.61</td>
<td></td>
</tr>
<tr>
<td>stairway chair lifts</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Fire alarm systems</strong></td>
<td>760</td>
<td></td>
</tr>
<tr>
<td>Fixed electric heating equipment for pipelines and vessels</td>
<td>427.4</td>
<td></td>
</tr>
<tr>
<td>Fixed electric space-heating equipment</td>
<td>424.3</td>
<td></td>
</tr>
<tr>
<td>Fixed outdoor electrical deicing and snow-melting equipment</td>
<td>426.4</td>
<td></td>
</tr>
<tr>
<td><strong>Information technology equipment</strong></td>
<td>645.5</td>
<td></td>
</tr>
<tr>
<td>Infrared lamp industrial heating equipment</td>
<td>422.48, 424.3</td>
<td></td>
</tr>
<tr>
<td><strong>Induction and dielectric heating equipment</strong></td>
<td>665</td>
<td></td>
</tr>
<tr>
<td>Marinas and boatyards</td>
<td>555.19</td>
<td></td>
</tr>
<tr>
<td><strong>Mobile homes, manufactured homes, and mobile home parks</strong></td>
<td>550</td>
<td></td>
</tr>
<tr>
<td><strong>Motion picture and television studios and similar locations</strong></td>
<td>530</td>
<td></td>
</tr>
<tr>
<td>Motors, motor circuits, and controllers</td>
<td>430</td>
<td></td>
</tr>
<tr>
<td><strong>Pipe organs</strong></td>
<td>650.7</td>
<td></td>
</tr>
<tr>
<td><strong>Recreational vehicles and recreational vehicle parks</strong></td>
<td>551</td>
<td></td>
</tr>
<tr>
<td>Switchboards and panelboards</td>
<td>408.52</td>
<td></td>
</tr>
<tr>
<td>Theaters, audience areas of motion picture and television studios, and</td>
<td>520.41, 520.52,</td>
<td>520.62</td>
</tr>
<tr>
<td>similar locations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>X-ray equipment</td>
<td>660.2, 517.73</td>
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### Supplemental Information

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<th>File Name</th>
<th>Description</th>
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<td>SR_303_attachment_for_table_changes.docx</td>
<td>attachment for SR 303. For staff use.</td>
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Submitter Information Verification

Submitter Full Name: CMP 2
Organization: [ Not Specified ]
Street Address:
City:
State:
Zip:
Submittal Date: Mon Nov 09 12:08:45 EST 2015

Committee Statement

Committee Statement: Section 210.3 is revised to clarify the application of the table. Other than for listing specific purpose requirements in Chapters 2, 3 & 4, Table 210.3 is not necessary nor is it all inclusive as it exists. Section 90.3 already provides the guidance that specific equipment and applications in Chapters 5, 6 & 7 can amend or supplement the branch circuit requirements in Article 210, so the sections referencing branch circuit requirements in those chapters can been removed.

Response Message:

Public Comment No. 1431-NFPA 70-2015 [Section No. 210.3]

Ballot Results

✓ This item has passed ballot

15 Eligible Voters
0 Not Returned
14 Affirmative All
1 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All
Boynton, Charles L.
Buuck, Daniel
Campolo, Steve
Dmitrovich, Thomas A.
Duren, Ronald E.
Harman, Thomas L.
Hilbert, Mark R.
King, Donald M.
Manche, Alan
McGovern, William J.
Mitchem, James E.
Reyes, Frederick P.
Thorwegen, Jr., Stephen J.
Wood, Thomas H.
Affirmative with Comment
Coluccio, Frank
I agree with the panel
(1) Branch Circuits Supplied from More Than One Nominal Voltage System.

Where the premises wiring system has branch circuits supplied from more than one nominal voltage system, each ungrounded conductor of a branch circuit shall be identified by phase or line and system at all termination, connection, and splice points in compliance with 210.5(C)(1)(a) and (b).

(a) **Means of Identification.** The means of identification shall be permitted to be by separate color coding, marking tape, tagging, or other approved means.

(b) **Posting of Identification Means.** The method utilized for conductors originating within each branch-circuit panelboard or similar branch-circuit distribution equipment shall be documented in a manner that is readily available or shall be permanently posted at each branch-circuit panelboard or similar branch-circuit distribution equipment. The label shall be of sufficient durability to withstand the environment involved and shall not be handwritten.

*Exception: In existing installations where a voltage system(s) already exists and a different voltage system is being added, it is permissible to mark only the new system voltage. Existing unidentified systems shall not be required to be identified at each termination, connection, and splice point in compliance with 210.5(C)(1)(a) and (b). Labeling is required at each voltage system distribution equipment to identify that only one voltage system has been marked for a new system(s). The new system label(s) shall include the words "other unidentified systems exist on the premises."*

---

**Submitter Information Verification**

Submitter Full Name: CMP 2  
Organization: [ Not Specified ]  
Street Address:  
City:  
State:  
Zip:  
Submittal Date: Mon Nov 09 12:15:48 EST 2015

**Committee Statement**

Committee Statement: The revised text clarifies that the existing unidentified installations must have been made prior to the adoption of the 2005 NEC, when 210.5(C) first appeared, to be excluded from new system identifications and where that identification is required.

Response Message:  
Public Comment No. 877-NFPA 70-2015 [Section No. 210.5(C)(1)]

**Ballot Results**

- This item has passed ballot

  - 15 Eligible Voters  
    - 0 Not Returned  
    - 14 Affirmative All  
      - 1 Affirmative with Comments  
      - 0 Negative with Comments  

---

National Fire Protection Association Report
http://submittals.nfpa.org/TerraViewWeb/ContentFetcher?commentPara...
0 Abstention

**Affirmative All**
Boynton, Charles L.
Buuck, Daniel
Campolo, Steve
Domitrovich, Thomas A.
Duren, Ronald E.
Harman, Thomas L.
Hilbert, Mark R.
King, Donald M.
Manche, Alan
McGovern, William J.
Mitchem, James E.
Reyes, Frederick P.
Thorwegen, Jr., Stephen J.
Wood, Thomas H.

**Affirmative with Comment**
Coluccio, Frank
I agree with the panel
(2) Branch Circuits Supplied from Direct-Current Systems.

Where a branch circuit is supplied from a dc system operating at more than 60 volts, each ungrounded conductor of 4 AWG or larger shall be identified by polarity at all termination, connection, and splice points by marking tape, tagging, or other approved means; each ungrounded conductor of 6 AWG or smaller shall be identified by polarity at all termination, connection, and splice points in compliance with 210.5(C)(2)(a) and (b). The identification methods utilized for conductors originating within each branch-circuit panelboard or similar branch-circuit distribution equipment shall be documented in a manner that is readily available or shall be permanently posted at each branch-circuit panelboard or similar branch-circuit distribution equipment.

(a) Positive Polarity, Sizes 6 AWG or Smaller. Where the positive polarity of a dc system does not serve as the connection point for the grounded conductor, each positive ungrounded conductor shall be identified by one of the following means:

1. A continuous red outer finish
2. A continuous red stripe durably marked along the conductor's entire length on insulation of a color other than green, white, gray, or black
3. Imprinted plus signs (+) or the word POSITIVE or POS durably marked on insulation of a color other than green, white, gray, or black and repeated at intervals not exceeding 610 mm (24 in.) in accordance with 310.120(B)
4. An approved permanent marking means such as sleeving or shrink-tubing that is suitable for the conductor size, at all termination, connection, and splice points, with imprinted plus signs (+) or the word POSITIVE or POS durably marked on insulation of a color other than green, white, gray, or black

(b) Negative Polarity, Sizes 6 AWG or Smaller. Where the negative polarity of a dc system does not serve as the connection point for the grounded conductor, each negative ungrounded conductor shall be identified by one of the following means:

1. A continuous black outer finish
2. A continuous black stripe durably marked along the conductor's entire length on insulation of a color other than green, white, gray, or red
3. Imprinted minus signs (–) or the word NEGATIVE or NEG durably marked on insulation of a color other than green, white, gray, or red and repeated at intervals not exceeding 610 mm (24 in.) in accordance with 310.120(B)
4. An approved permanent marking means such as sleeving or shrink-tubing that is suitable for the conductor size, at all termination, connection, and splice points, with imprinted minus signs (–) or the word NEGATIVE or NEG durably marked on insulation of a color other than green, white, gray, or red
Committee Statement

Committee Statement: An additional list item is added to the identification means of positive and negative polarity conductors. This addition supports the re-use of branch conductors for dc applications.

Response Message:

Public Comment No. 720-NFPA 70-2015 [Section No. 210.5(C)(2)]
Public Comment No. 1653-NFPA 70-2015 [Sections 210.5(C)(1), 210.5(C)(2)]
Public Comment No. 1376-NFPA 70-2015 [Section No. 210.5(C)(2)]
Public Comment No. 1453-NFPA 70-2015 [Section No. 210.5(C)(2)]

Ballot Results

✔ This item has passed ballot

15 Eligible Voters
0 Not Returned
14 Affirmative All
1 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All
Boynton, Charles L.
Buuck, Daniel
Campolo, Steve
Domitrovich, Thomas A.
Duren, Ronald E.
Harman, Thomas L.
Hilbert, Mark R.
King, Donald M.
Manche, Alan
McGovern, William J.
Mitchem, James E.
Reyes, Frederick P.
Thorwegen, Jr., Stephen J.
Wood, Thomas H.

Affirmative with Comment
Coluccio, Frank
I agree with the panel
210.7 Multiple Branch Circuits.

Where two or more branch circuits supply devices or equipment on the same yoke or mounting strap, a means to simultaneously disconnect the ungrounded supply conductors supplying those devices or equipment shall be provided at the point at which the branch circuits originate.

Submitter Information Verification

Submitter Full Name: CMP 2  
Organization: [ Not Specified ]  
Street Address:  
City:  
State:  
Zip:  
Submittal Date: Mon Nov 09 13:16:49 EST 2015

Committee Statement

Committee Statement: This revision removes the redundant reference to "devices and equipment."

Response Message:

Public Comment No. 1750-NFPA 70-2015 [Section No. 210.7]  
Public Comment No. 882-NFPA 70-2015 [Section No. 210.7]

Ballot Results

This item has passed ballot

15 Eligible Voters  
0 Not Returned  
14 Affirmative All  
1 Affirmative with Comments  
0 Negative with Comments  
0 Abstention

Affirmative All

Boynton, Charles L.  
Buuck, Daniel  
Campolo, Steve  
Domitrovich, Thomas A.  
Duren, Ronald E.  
Harman, Thomas L.  
Hilbert, Mark R.  
King, Donald M.
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<tr>
<td>Manche, Alan</td>
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<td>McGovern, William J.</td>
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<td>Mitchem, James E.</td>
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<td>Reyes, Frederick P.</td>
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<tr>
<td>Thorwegen, Jr., Stephen J.</td>
</tr>
<tr>
<td>Wood, Thomas H.</td>
</tr>
</tbody>
</table>

**Affirmative with Comment**

Coluccio, Frank

I agree with the panel
Ground-fault circuit-interrupter protection for personnel shall be provided as required in 210.8(A) and 210.8(B) through (E). The ground-fault circuit interrupter shall be installed in a readily accessible location.

Informational Note No. 1: See 215.9 for ground-fault circuit-interrupter protection for personnel on feeders.

Informational Note No. 2: See 422.5(A) for GFCI requirements for appliances.

For the purposes of this section, when determining distance from receptacles the distance shall be measured as the shortest path the cord of an appliance connected to the receptacle would follow without piercing a floor, wall, ceiling, or fixed barrier, or passing through a door, doorway, or window.

Submitter Information Verification

Submitter Full Name: CMP 2
Organization: [ Not Specified ]
Street Address: 
City: 
State: 
Zip: 
Submittal Date: Tue Nov 10 16:55:49 EST 2015

Committee Statement

Committee Statement: Text has been revised due to incorporating the additional requirements for boat hoists, kitchen dishwashers, and crawl space lighting outlets.

Response Message:

Ballot Results

This item has passed ballot

- 15 Eligible Voters
- 0 Not Returned
- 13 Affirmative All
- 2 Affirmative with Comments
- 0 Negative with Comments
- 0 Abstention

Affirmative All
Boynton, Charles L.
Buuck, Daniel
Campolo, Steve
Domitrovich, Thomas A.
<table>
<thead>
<tr>
<th>Name</th>
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<tr>
<td>Duren, Ronald E.</td>
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<td>Harman, Thomas L.</td>
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<td>King, Donald M.</td>
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<td>Manche, Alan</td>
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<td>McGovern, William J.</td>
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<td>Mitchem, James E.</td>
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<td>Reyes, Frederick P.</td>
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<td>Thorwegen, Jr., Stephen J.</td>
<td></td>
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<tr>
<td>Wood, Thomas H.</td>
<td></td>
</tr>
<tr>
<td><strong>Affirmative with Comment</strong></td>
<td></td>
</tr>
<tr>
<td>Coluccio, Frank</td>
<td>I agree with adding ground fault protection for crawl space lighting outlets, but protection for appliances belongs in article 422 for boat hoists and dishwashers</td>
</tr>
<tr>
<td>Hilbert, Mark R.</td>
<td>I agree with revising this opening paragraph to reflect the addition of crawl space lighting outlets but I disagree with adding the reference to dishwashers and boat hoists ((B) and (C)) which were relocated to Article 422 in the First Draft. The references may need to be adjusted if these do not pass ballot.</td>
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Second Revision No. 316-NFPA 70-2015 [ Section No. 210.8(A) ]

(A) Dwelling Units.

All 125- and 250-volt, single-phase, 15- and 20-ampere receptacles installed in the locations specified in 210.8(A)(1) through (10) shall have ground-fault circuit-interrupter protection for personnel.

(1) Bathrooms

(2) Garages, and also accessory buildings that have a floor located at or below grade level not intended as habitable rooms and limited to storage areas, work areas, and areas of similar use

(3) Outdoors

Exception to (3): Receptacles that are not readily accessible and are supplied by a branch circuit dedicated to electric snow-melting, deicing, or pipeline and vessel heating equipment shall be permitted to be installed in accordance with 426.28 or 427.22, as applicable.

(4) Crawl spaces — at or below grade level

(5) Unfinished basements — for purposes of this section, unfinished basements are defined as portions or areas of the basement not intended as habitable rooms

Exception to (5): A receptacle supplying only a permanently installed fire alarm or burglar alarm system shall not be required to have ground-fault circuit-interrupter protection.

Informational Note: See 760.41(B) and 760.121(B) for power supply requirements for fire alarm systems.

Receptacles installed under the exception to 210.8(A)(5) shall not be considered as meeting the requirements of 210.52(G).

(6) Kitchens — where the receptacles are installed to serve the countertop surfaces

(7) Sinks — where receptacles are installed within 1.8 m (6 ft) of from the outside top inside edge of the bowl of the sink

(8) Boathouses

(9) Bathtubs or shower stalls — where receptacles are installed within 1.8 m (6 ft) of the outside edge of the bathtub or shower stall

(10) Laundry areas

Submitter Information Verification

Submitter Full Name: CMP 2
Organization: [ Not Specified ]
Street Address:
City:
State:
Zip:
Submittal Date: Tue Nov 10 13:24:08 EST 2015

Committee Statement

Committee Statement: The requirement for 250 volt ground fault protection was deleted because there was insufficient substantiation to support expanding the requirement to these circuits.

The text regarding unfinished basements has been revised such that a definition for unfinished basements is unnecessary.
The text regarding sinks has been revised to clarify how the measurement is made.

Response
Message:

Public Comment No. 1060-NFPA 70-2015 [Section No. 210.8(A)]
Public Comment No. 623-NFPA 70-2015 [Section No. 210.8(A)]
Public Comment No. 884-NFPA 70-2015 [Section No. 210.8(A)]
Public Comment No. 598-NFPA 70-2015 [Section No. 210.8(A)]
Public Comment No. 545-NFPA 70-2015 [Section No. 210.8(A)]

Ballot Results

☑️ This item has passed ballot

15 Eligible Voters
  0 Not Returned
  13 Affirmative All
  2 Affirmative with Comments
  0 Negative with Comments
  0 Abstention

Affirmative All
Boynton, Charles L.
Buuck, Daniel
Campolo, Steve
Domitrovich, Thomas A.
Duren, Ronald E.
Harman, Thomas L.
King, Donald M.
Manche, Alan
McGovern, William J.
Mitchem, James E.
Reyes, Frederick P.
Thorwegen, Jr., Stephen J.
Wood, Thomas H.

Affirmative with Comment
Coluccio, Frank
There is lack of substantiation to include 3 phase receptacle outlets up to 100 amps and single phase receptacle outlets up to 50 amps

Hilbert, Mark R.
I am voting affirmative as I agree with removing the reference to 250 volt single phase 15 and 20 amperereceptacle outlets in 210.8(A) and with the revision of the text regarding unfinished basements in 210.8(A)(5). The substantiation to raise the voltage level to 250 volts in the First Draft was insufficient and the revisions to 210.8(A)(5) add clarity by removing unnecessary text. I do not agree the exception for rooftops is necessary or
that it adds clarity to the section. The receptacle on the rooftop is provided for servicing of equipment on the rooftop and therefore only has to be readily accessible to those who would be servicing the equipment on the rooftop. I agree with the changes in 210.8(A)(7) to clarify the measurements from a sink are from the top of the sink. However, I do not agree with making the measurement only from the bowl of the sink. The measurement method now overlooks the basic reason for the original requirement which was related to being able to contact a conductive surface associated with a sink and the conductive surface of an appliance supplied from a receptacle outlet for the countertop wall space at the same time. In fact the photo of the stainless steel sink and its contiguous drying area/work surface submitted with the public comment depicts the exact reason why measuring from the sink bowl only is a problem. Assuming the stainless steel sink is attached to some type of conductive water or drain piping that is grounded, why would the contiguous conductive drying/work surface portion which poses exactly the same hazard as the conductive sink bowl now be overlooked? I did not vote negative as the other changes have greater merit and most piping attached to dwelling unit sinks today is nonmetallic. In my opinion, the text referencing the bowl of the sink and the exception for rooftop receptacle outlets should be removed for the 2020 NEC.
(C) Boat Hoists.
GFCI protection shall be provided for outlets not exceeding 240 volts that supply boat hoists installed in dwelling unit locations.

(D) Kitchen Dishwasher Branch Circuit.
GFCI protection shall be provided for outlets that supply dishwashers installed in dwelling unit locations.

Submitter Information Verification

Submitter Full Name: CMP 2
Organization: [ Not Specified ]
Street Address:
City:
State:
Zip:
Submittal Date: Tue Nov 10 13:06:10 EST 2015

Committee Statement

Committee Statement: GFCI protection for boat hoists and dishwashers needs to remain in the branch circuit or outlet. Section 422.5 First Revisions allow the option of providing GFCI protection for boat hoists and dishwashers in the attachment plug, the supply cord or installed within the appliance. There is no UL standard that requires GFCI protection integral with appliances or their cords. For new construction, GFCI protection afforded in the outlet or in the circuit breaker is the best solution for safety as this solution pays no regard to whether or not GFCI protection is provided for in the cord of the appliance.

Response Message:

Public Comment No. 856-NFPA 70-2015 [Section No. 210.8]
Public Comment No. 1463-NFPA 70-2015 [Section No. 210.8(B)(3)]

Ballot Results

✅ This item has passed ballot

15 Eligible Voters
0 Not Returned
10 Affirmative All
2 Affirmative with Comments
3 Negative with Comments
0 Abstention

Affirmative All
Boynton, Charles L.
Buuck, Daniel
Domitrovich, Thomas A.
Duren, Ronald E.
King, Donald M.
Manche, Alan
McGovern, William J.
Mitchem, James E.
Thorwegen, Jr., Stephen J.
Wood, Thomas H.

**Affirmative with Comment**

Campolo, Steve

This change protects the connected product as well a different product that may be powered from the outlet in the future. The location is protected. However a cord style GFCI seems reasonable for dishwashers and boat hoists installed well after the original outlet.

Reyes, Frederick P.

During the first draft stage, CMP-2 and CMP-17 made corresponding first revisions to move the requirements for GFCI protection for boat hoists and kitchen dishwasher branch circuits from Sec. 210.8(C) and (D) respectively to Sec. 422.5. The revisions to Sec. 422.5 also allowed the option of providing GFCI protection for boat hoists and dishwashers in the attachment plug, the supply cord or installed within the appliance, in addition to the branch circuit overcurrent device or outlet. This second revision (SR-315) reinstates the GFCI requirement back into 210.8(C) for boat hoists and 210.8(D) for dishwashers. This obviously now creates a correlation issue with Sec. 422.5. UL recommends that the GFCI requirements for boat hoists remain only in Sec. 210.8(C), as Art. 210 (branch circuits) addresses the electric shock hazard of the environment being used by personnel when interacting with electric utilization equipment. We also recommend that the GFCI requirements for dishwashers be included only in Sec. 422.5 rather than 210.8(D), as Art. 422 (appliances) addresses the electric shock hazard due to user interaction with the appliance. It is suggested that the correlating committee revise the Second Draft by making the necessary second correlating revisions to Sections 210.8 and 422.5 as needed to accomplish this action.

**Negative with Comment**

Coluccio, Frank

Ground fault protection for permanently connected appliances belongs in article 422 as cmp2 did in the first draft

Harman, Thomas L.

Rules for appliances should be in one of the sections of Article 422.

Hilbert, Mark R.

I do not agree these requirements should only be in the branch circuit or the outlet nor do I agree they belong in Article 210. The reason for the GFCI protection for a dishwasher is clearly related to an individual making contact with the dishwasher so what difference does it make if the GFCI protection was part of the dishwasher? Including the requirements for specific purpose equipment in Article 210 is in direct conflict with the scope of the article. Section 210.1 clearly states that Article 210 provides the requirements for general purpose branch circuits. CMP 2 voted to relocate these requirements to Article 422 in the First Draft and no additional substantiation was provided for the Second Draft to support bringing them back to Article 210 or for including them in both Articles. In fact there are now conflicting requirements as Panel 17 rejected the comments recommending the GFCI protection be provided only for the branch circuit or outlet. If 210.8(C) and (D) are reinserted in 210.8 we will have one rule that mandates the GFCI protection for the branch circuit or outlet and another that permits it to be part of the appliance.
Second Revision No. 317-NFPA 70-2015 [ New Section after 210.8(B) ]

(E) Crawl Space Lighting Outlets.
GFCI protection shall be provided for lighting outlets not exceeding 120 volts installed in crawl spaces.

Submitter Information Verification

Submitter Full Name: CMP 2
Organization: [ Not Specified ]
Street Address:
City:
State:
Zip:
Submittal Date: Tue Nov 10 16:47:50 EST 2015

Committee Statement

Committee Statement: GFCI protection for crawl space lighting outlets has been relocated from 210.70(C) as it deals with personnel protection from electrical shock and is thus more appropriately located in this section.

Response Message:

Ballot Results

This item has passed ballot

15 Eligible Voters
0 Not Returned
13 Affirmative All
2 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All
Boynton, Charles L.
Buuck, Daniel
Campolo, Steve
Domitrovich, Thomas A.
Duren, Ronald E.
Harman, Thomas L.
King, Donald L.
Manche, Alan
McGovern, William J.
Mitchem, James E.
Reyes, Frederick P.
Thorwegen, Jr., Stephen J.
Wood, Thomas H.

**Affirmative with Comment**

Coluccio, Frank
I agree with the panel

Hilbert, Mark R.
I support adding this requirement but it may need to be renumbered as 210.8(C) if dishwashers and boat hoists are not included as 210.8(C) and (D).
(B) Other Than Dwelling Units.

All single-phase receptacles rated 150 volts to ground or less, 50 amperes or less; and three-phase receptacles rated 150 volts to ground or less, 100 amperes or less, shall have ground-fault circuit-interrupter protection for personnel. (1) Bathrooms
(2) Kitchens
(3) Rooftops

Exception: Receptacles on rooftops shall not be required to be readily accessible other than from the rooftop.

(4) Outdoors
Exception No. 1 to (3) and (4): Receptacles that are not readily accessible and are supplied by a branch circuit dedicated to electric snow-melting, deicing, or pipeline and vessel heating equipment shall be permitted to be installed in accordance with 426.28 or 427.22, as applicable.

Exception No. 2 to (4): In industrial establishments only, where the conditions of maintenance and supervision ensure that only qualified personnel are involved, an assured equipment grounding conductor program as specified in 590.6(B)(3) shall be permitted for only those receptacle outlets used to supply equipment that would create a greater hazard if power is interrupted or having a design that is not compatible with GFCI protection.

(5) Sinks — where receptacles are installed within 1.8 m (6 ft) of from the outside top inside edge of the bowl of the sink.

Exception No. 1 to (5): In industrial laboratories, receptacles used to supply equipment where removal of power would introduce a greater hazard shall be permitted to be installed without GFCI protection.

Exception No. 2 to (e): For receptacles located in patient bed locations of general care (Category 2), or critical care areas (Category 1) spaces of health care facilities other than those covered under 210.8(B)(1), GFCI protection shall not be required.

(6) Indoor wet locations
(7) Locker rooms with associated showering facilities.
(8) Garages, service bays, and similar areas other than vehicle exhibition halls and showrooms.
(9) Crawl spaces — GFCI protection shall be provided for lighting outlets in crawl spaces at or below grade level.
(10) Unfinished basements — for the purposes of this section, unfinished basements are defined as portions or areas of the basement not intended as habitable rooms.


(0) All single-phase receptacles rated 150 volts to ground or less, 50 amperes or less, shall have GFCI protection for personnel.

All three-phase receptacles rated 150 volts to ground or less, 100 amperes or less, shall have GFCI protection for personnel.
Classes C, D, or E Special-Purpose Ground-Fault Circuit-Interrupter Protection (SPGFCI).

(0) All single-phase receptacles rated more than 150 volts to ground and up to 600 volts between grounded conductors, 100 amperes or less, shall have special-purpose ground-fault circuit-interrupter (SPGFCI) protection for personnel.

(0) All three-phase receptacles rated more than 150 volts to ground and up to 600 volts between grounded conductors, 100 amperes or less, shall have special-purpose ground-fault circuit-interrupter (SPGFCI) protection for personnel.

Locations.

Classes C, D, or E Special-Purpose Ground-Fault Circuit-Interrupter Protection (SPGFCI).

(0) All single-phase receptacles rated more than 150 volts to ground and up to 600 volts between ungrounded conductors, 100 amperes or less, shall have special-purpose ground-fault circuit-interrupter (SPGFCI) protection for personnel.

(0) All three-phase receptacles rated more than 150 volts to ground and up to 600 volts between ungrounded conductors, 100 amperes or less, shall have special-purpose ground-fault circuit-interrupter (SPGFCI) protection for personnel.

Locations.

Supplemental Information

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Submitter Information Verification

Submitter Full Name: CMP 2
Organization: [ Not Specified ]
Street Address: 
City: 
State: 
Zip: 
Submittal Date: Tue Nov 10 20:36:10 EST 2015

Committee Statement

Note: The changes within the main paragraph of (B) are being balloted through Detail SR 321.

The requirement for the Class C, D or E special purpose ground fault circuit Interrupter protection was deleted because of a concern for the improper application of this solution as well as insufficient substantiation to support expanding the requirement to these circuits.

An editorial change was made by deleting “locations” section and the sections renumbered as it
was necessary due to the deletion of the items (1) and (2) of this section.

The rooftop exception was re-instated to clarify when the receptacle needs to be readily accessible.

The text regarding sinks has been revised to clarify how the measurement is made.

Patient care categories were added to correlate with Article 517 and NFPA 99.

The text regarding unfinished basements has been revised such that a definition for unfinished basements is unnecessary.

Response Message:

Public Comment No. 357-NFPA 70-2015 [Section No. 210.8(B) [Excluding any Sub-Sections]]
Public Comment No. 358-NFPA 70-2015 [Section No. 210.8(B)(3)]
Public Comment No. 853-NFPA 70-2015 [Section No. 210.8(B)]
Public Comment No. 988-NFPA 70-2015 [Section No. 210.8(B)]
Public Comment No. 94-NFPA 70-2015 [Section No. 210.8(B) [Excluding any Sub-Sections]]
Public Comment No. 1020-NFPA 70-2015 [Section No. 210.8(B) [Excluding any Sub-Sections]]
Public Comment No. 1069-NFPA 70-2015 [Section No. 210.8(B)(2)]
Public Comment No. 1173-NFPA 70-2015 [Section No. 210.8(B)(3)]
Public Comment No. 1751-NFPA 70-2015 [Section No. 210.8(B)]
Public Comment No. 1523-NFPA 70-2015 [Section No. 210.8(B)(3)]
Public Comment No. 1814-NFPA 70-2015 [Section No. 210.8]
Public Comment No. 599-NFPA 70-2015 [Section No. 210.8(B)]
Public Comment No. 616-NFPA 70-2015 [Section No. 210.8(B)]
Public Comment No. 425-NFPA 70-2015 [Sections 210.8(B)(1), 210.8(B)(2)]

Ballot Results

✔ This item has passed ballot

15 Eligible Voters
  0 Not Returned
  14 Affirmative All
    1 Affirmative with Comments
  0 Negative with Comments
  0 Abstention

Affirmative All
Boynton, Charles L.
Buuck, Daniel
Campolo, Steve
Domitrovich, Thomas A.
Duren, Ronald E.
Harman, Thomas L.
<table>
<thead>
<tr>
<th>Affirmative with Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coluccio, Frank</td>
</tr>
<tr>
<td>I agree with the panel</td>
</tr>
</tbody>
</table>
(4) Garage Branch Circuits.

In addition to the number of branch circuits required by other parts of this section, at least one 120-volt, 20-ampere branch circuit shall be provided installed to supply garage receptacle outlet(s) receptacle outlets in attached garages and in detached garages with electric power. This circuit shall have no other outlets.

Exception: This circuit shall be permitted to supply readily accessible outdoor receptacle outlets.

Submitter Information Verification

Submitter Full Name: CMP 2
Organization: [ Not Specified ]
Street Address: [ Not Specified ]
City: [ Not Specified ]
State: [ Not Specified ]
Zip: [ Not Specified ]
Submittal Date: Wed Nov 11 13:32:00 EST 2015

Committee Statement

Committee Statement: Changes were made to clarify that readily accessible outdoor receptacle outlets are to be permitted on the garage branch circuit. These additional outlets provide convenience receptacles similar to those used in the garage.

Response Message:

Public Comment No. 952-NFPA 70-2015 [Section No. 210.11(C)(4)]

Ballot Results

✔ This item has passed ballot

15 Eligible Voters
0 Not Returned
14 Affirmative All
1 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All
Boynton, Charles L.
Buuck, Daniel
Campolo, Steve
Domitrovich, Thomas A.
Duren, Ronald E.
Harman, Thomas L.
Hilbert, Mark R.
King, Donald M.
Manche, Alan
McGovern, William J.
Mitchem, James E.
Reyes, Frederick P.
Thorwegen, Jr., Stephen J.
Wood, Thomas H.

**Affirmative with Comment**

Coluccio, Frank
I agree with the panel
Second Revision No. 320-NFPA 70-2015 [Section No. 210.12(B)]

(B) Dormitory Units.

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

Submitter Information Verification

Submitter Full Name: CMP 2
Organization: [Not Specified]
Street Address:
City:
State:
Zip:
Submittal Date: Tue Nov 10 19:28:07 EST 2015

Committee Statement

Committee Statement: "As appropriate" is a vague and unenforceable term. It has been deleted in accordance with NEC Style Manual Section 3.2.1. As previously worded, the arc-fault circuit-interrupter could be required to meet all of the requirements of 210.12(A)(1) through 210.12(A)(6). Revised wording matches how 210.12(A) expresses the same.

Response Message:

Public Comment No. 36-NFPA 70-2015 [Section No. 210.12(B)]
Public Comment No. 815-NFPA 70-2015 [Section No. 210.12(B)]
Public Comment No. 1752-NFPA 70-2015 [Section No. 210.12(C)]

Ballot Results

☑ This item has passed ballot

15 Eligible Voters
0 Not Returned
14 Affirmative All
1 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All
Boynton, Charles L.
Buuck, Daniel
Campolo, Steve
Domitrovich, Thomas A.
Duren, Ronald E.
Harman, Thomas L.
Hilbert, Mark R.
King, Donald M.
Manche, Alan
McGovern, William J.
Mitchem, James E.
Reyes, Frederick P.
Thorwegen, Jr., Stephen J.
Wood, Thomas H.

**Affirmative with Comment**

Coluccio, Frank
I agree with the panel
(C) Guest Rooms and Guest Suites.

All 120-volt, single-phase, 15- and 20-ampere branch circuits supplying outlets and devices installed in guest rooms and guest suites of hotels and motels shall be protected by a listed arc-fault circuit interrupter meeting the requirements of any of the means described in 210.12(A)(1) through (6) as appropriate.

(D) Branch Circuit Extensions or Modifications — Dwelling Units and Dormitory Units.

In any of the areas specified in 210.12(A) or 210.12(C) (B), where branch-circuit wiring is modified, replaced, or extended, the branch circuit shall be protected by one of the following:

1. A listed combination-type AFCI located at the origin of the branch circuit
2. A listed outlet branch-circuit-type AFCI located at the first receptacle outlet of the existing branch circuit

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

Submitter Information Verification

Submitter Full Name: CMP 2
Organization: [Not Specified]
Street Address:
City:
State:
Zip:
Submittal Date: Wed Nov 11 15:17:36 EST 2015

Committee Statement

Committee Statement: The section has been reorganized to improve the flow. In the Branch Circuit Extensions and Modifications subsections the text has been revised to reflect the reorganization and to correct a circular reference.

“As appropriate” is a vague and unenforceable term. It has been deleted in accordance with NEC Style Manual Section 3.2.1. As previously worded, the arc-fault circuit-interrupter could be required to meet all of the requirements of 210.12(A)(1) through 210.12(A)(6). Revised wording matches how 210.12(A) expresses the same.

Response Message:

Public Comment No. 682-NFPA 70-2015 [Section No. 210.12(C)]
Public Comment No. 683-NFPA 70-2015 [Section No. 210.12(D)]
Public Comment No. 816-NFPA 70-2015 [Section No. 210.12(C)]
Public Comment No. 818-NFPA 70-2015 [Section No. 210.12(D)]

Ballot Results

☑ This item has passed ballot
15 Eligible Voters
0 Not Returned
13 Affirmative All
  1 Affirmative with Comments
  1 Negative with Comments
0 Abstention

Affirmative All
Boynton, Charles L.
Buuck, Daniel
Campolo, Steve
Domitrovich, Thomas A.
Duren, Ronald E.
Harman, Thomas L.
Hilbert, Mark R.
King, Donald M.
Manche, Alan
McGovern, William J.
Mitchem, James E.
Reyes, Frederick P.
Thorwegen, Jr., Stephen J.

Affirmative with Comment
Coluccio, Frank
  I agree with the panel

Negative with Comment
Wood, Thomas H.
  There has been not substantiation that a hazard exists in guest rooms. Hotel and motel rooms are wired and managed differently than dwelling units and should not be subject to the same requirements
(2) Wall Space.

As used in this section, a wall space shall include the following:

(1) Any space 600 mm (2 ft) or more in width (including space measured around corners) and unbroken along the floor line by doorways and similar openings, fireplaces, and fixed cabinets that do not have countertops or similar work surfaces.

(2) The space occupied by fixed panels in walls, excluding sliding panels.

(3) The space afforded by fixed room dividers, such as freestanding bar-type counters or railings.

(3) Floor Receptacles.

Receptacle outlets in or on floors shall not be counted as part of the required number of receptacle outlets unless located within 450 mm (18 in.) of the wall.

(4) Countertop Receptacles and Similar Work Surface Receptacle Outlets.

Receptacles installed for countertop and similar work surfaces as specified in 210.52(C) shall not be considered as the receptacles outlets required by 210.52(A).
2 Negative with Comments
0 Abstention

Affirmative All
Boynton, Charles L.
Buuck, Daniel
Campolo, Steve
Domitrovich, Thomas A.
Duren, Ronald E.
Harman, Thomas L.
King, Donald M.
Manche, Alan
McGovern, William J.
Mitchem, James E.
Reyes, Frederick P.
Thorwegen, Jr., Stephen J.
Wood, Thomas H.

Negative with Comment
Coluccio, Frank
Adding the wording "similar work spaces" does not add further clarity to these sections and can create confusion for enforcement when performing inspections
Hilbert, Mark R.
I do not agree that adding the text "similar work surfaces" adds clarity as it is not defined anywhere in the NEC. What is a similar work surface? Additionally, by adding similar work surfaces to 210.52(A)(4) the receptacle outlets installed above a fixed desk top that happens to be located in a kitchen or dining area will not qualify as the receptacle outlets required by 210.52(A). No substantiation was submitted to restrict those receptacle outlets from qualifying under 210.52(A).
(1) Receptacle Outlets Served.

In the kitchen, pantry, breakfast room, dining room, or similar area of a dwelling unit, the two or more 20-ampere small-appliance branch circuits required by 210.11(C)(1) shall serve all wall and floor receptacle outlets covered by 210.52(A), all countertop outlets covered by 210.52(C), and receptacle outlets for refrigeration equipment.

Exception No. 1: In addition to the required receptacles specified by 210.52, switched receptacles supplied from a general-purpose branch circuit as defined in 210.70(A)(1), Exception No. 1, shall be permitted.

Exception No. 2: The receptacle outlet for refrigeration equipment in addition to the required receptacles specified by 210.52, a receptacle outlet to serve a specific appliance shall be permitted to be supplied from an individual branch circuit rated 15 amperes or greater.

Submitter Information Verification

Submitter Full Name: CMP 2
Organization: [ Not Specified ]
Street Address: 
City: 
State: 
Zip: 
Submittal Date: Mon Nov 09 13:40:22 EST 2015

Committee Statement

Committee Statement: This change made to Exception No. 2 recognizes that an individual branch circuit supplied specifically for any single appliance is allowed to be a 15-ampere receptacle outlet.

Response Message:

Public Comment No. 1031-NFPA 70-2015 [Section No. 210.52(B)(1)]

Ballot Results

☑ This item has passed ballot

15 Eligible Voters
0 Not Returned
14 Affirmative All
1 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All
Boynton, Charles L.
Buuck, Daniel
Campolo, Steve
Domitrovich, Thomas A.
Duren, Ronald E.
Harman, Thomas L.
Hilbert, Mark R.
King, Donald M.
Manche, Alan
McGovern, William J.
Mitchem, James E.
Reyes, Frederick P.
Thorwegen, Jr., Stephen J.
Wood, Thomas H.

Affirmative with Comment
Coluccio, Frank
I agree with the panel
(C) Countertops and Work Surfaces.

In kitchens, pantries, breakfast rooms, dining rooms, and similar areas of dwelling units, receptacle outlets for countertop and work surface spaces shall be installed in accordance with 210.52(C)(1) through (C)(5).

(1) Wall Countertop and Work Surface Spaces.

A receptacle outlet shall be installed at each wall countertop and work surface space that is 300 mm (12 in.) or wider. Receptacle outlets shall be installed so that no point along the wall line is more than 600 mm (24 in.) measured horizontally from a receptacle outlet in that space.

Exception: Receptacle outlets shall not be required on a wall directly behind a range, counter-mounted cooking unit, or sink in the installation described in Figure 210.52(C)(1).

Figure 210.52(C)(1) Determination of Area Behind a Range, or Counter-Mounted Cooking Unit or Sink.

(2) Island Countertop Spaces.

At least one receptacle shall be installed at each island countertop space with a long dimension of 600 mm (24 in.) or greater and a short dimension of 300 mm (12 in.) or greater.
(3) Peninsular Countertop Spaces.

At least one receptacle outlet shall be installed at each peninsular countertop long dimension space with a long dimension of 600 mm (24 in.) or greater and a short dimension of 300 mm (12 in.) or greater. A peninsular countertop is measured from the connected perpendicular wall.

A receptacle in a wall countertop space shall be permitted to serve as the receptacle for a peninsular countertop space where the spaces are contiguous and the receptacle is located within 1.8 m (6 ft) of the outside edge of the peninsular countertop.

(4) Separate Spaces.

Countertop spaces separated by rangetops, refrigerators, or sinks shall be considered as separate countertop spaces in applying the requirements of 210.52(C)(1). If a range, counter-mounted cooking unit, or sink is installed in an island or peninsular countertop and the depth of the countertop behind the range, counter-mounted cooking unit, or sink is less than 300 mm (12 in.), the range, counter-mounted cooking unit, or sink shall be considered to divide the countertop space into two separate countertop spaces. Each separate countertop space shall comply with the applicable requirements in 210.52(C).

(5) Receptacle Outlet Location.

Receptacle outlets shall be located on or above, but not more than 500 mm (20 in.) above, the countertop or work surface. Receptacle outlet assemblies listed for use in countertops or work surfaces shall be permitted to be installed in countertops or work surfaces. Receptacle outlets rendered not readily accessible by appliances fastened in place, appliance garages, sinks, or rangetops as covered in 210.52(C)(1), Exception, or appliances occupying dedicated space shall not be considered as these required outlets.

Informational Note: See 406.5(E) and 406.5(G) for requirements for installation of receptacles in countertops and 406.5(F) and 406.5(G) for requirements for installation of receptacles in work surfaces.

Exception to (5): To comply with the following conditions specified in (1) or (2), receptacle outlets shall be permitted to be mounted not more than 300 mm (12 in.) below the countertop or work surface. Receptacles mounted below a countertop or workspace in accordance with this exception shall not be located where the countertop or work surface extends more than 150 mm (6 in.) beyond its support base.

(1) Construction for the physically impaired

(2) On island and peninsular countertops or work space where the countertop surface is flat across its entire surface (no backsplashes, dividers, etc.) and there are no means to mount a receptacle within 500 mm (20 in.) above the countertop or workspace, such as an overhead cabinet

Submitter Information Verification

Submitter Full Name: CMP 2
Organization: [ Not Specified ]
Street Address:
City:
State:
Zip:
Submittal Date: Mon Nov 09 13:53:31 EST 2015

Committee Statement

Committee Statement: The addition of “work surfaces” was made to align with changes in 210.52(A) and to add clarity.

The language in 210.52(C)(3) was modified to not create language that reduces the coverage of receptacles but rather to better define how a peninsular countertop is measured for clarity or when additional receptacles to serve the peninsular countertop space should be provided.
Response
Message:
Public Comment No. 56-NFPA 70-2015 [Section No. 210.52(C)]
Public Comment No. 58-NFPA 70-2015 [Section No. 210.52(C)(5)]
Public Comment No. 572-NFPA 70-2015 [Section No. 210.52(C)(3)]
Public Comment No. 820-NFPA 70-2015 [Section No. 210.52(C)(5)]

Ballot Results

✔️ This item has passed ballot

15 Eligible Voters
0 Not Returned
13 Affirmative All
0 Affirmative with Comments
2 Negative with Comments
0 Abstention

Affirmative All
Boynton, Charles L.
Buuck, Daniel
Campolo, Steve
Domitrovich, Thomas A.
Duren, Ronald E.
Harman, Thomas L.
King, Donald M.
Manche, Alan
McGovern, William J.
Mitchem, James E.
Reyes, Frederick P.
Thorwegen, Jr., Stephen J.
Wood, Thomas H.

Negative with Comment
Coluccio, Frank

Adding the wording "work spaces" does not add further clarity and possibly create confusion for enforcement when performing inspections. If a kitchen or dining room table is installed with one side of the table against the wall will receptacle outlets be required to be installed every 24" on the wall where the table meets the wall, the same goes for a desk located in these locations

Hilbert, Mark R.

I do not agree that adding the text “similar work surfaces” adds clarity. In fact it will likely add confusion as it is not defined anywhere in the NEC. Expanding the Informational Note to 210.52(C)(5) for the First Draft to identify to readers there are new requirements for mounting of receptacles in countertops for seating areas in 406.5(F) is not substantiation to support mandating a receptacle outlet every 24 inches over a fixed desk top that happens to be in a kitchen or dining area.
Second Revision No. 310-NFPA 70-2015 [Section No. 210.52(D)]

(D) Bathrooms.

At least one receptacle outlet shall be installed in bathrooms within 900 mm (3 ft) of the outside edge of each basin. The receptacle outlet shall be located on a wall or partition that is adjacent to the basin or basin countertop, located on the countertop, or installed on the side or face of the basin cabinet. In no case shall the receptacle be located more than 300 mm (12 in.) below the top of the basin or basin countertop. Receptacle outlet assemblies listed for the application use in countertops shall be permitted to be installed in the countertop.

Informational Note: See 406.5(E) and 406.5(G) for requirements for installation of receptacles in countertops.

Submitter Information Verification

Submitter Full Name: CMP 2
Organization: [Not Specified]
Street Address: 
City: 
State: 
Zip: 
Submittal Date: Mon Nov 09 14:24:25 EST 2015

Committee Statement

Committee Statement: For clarity, "listed for the application" was replaced with "listed for use in countertops".

The addition of 406.5(G) in the informational note correlates with changes made in the First Revision for requirements that were separated into a new 406.5(G)

Response Message:

Public Comment No. 59-NFPA 70-2015 [Section No. 210.52(D)]
Public Comment No. 821-NFPA 70-2015 [Section No. 210.52(D)]

Ballot Results

☑ This item has passed ballot

15 Eligible Voters
0 Not Returned
14 Affirmative All
1 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All
Boynton, Charles L.
Buuck, Daniel
Campolo, Steve
Domitrovich, Thomas A.
Duren, Ronald E.
Harman, Thomas L.
Hilbert, Mark R.
King, Donald M.
Manche, Alan
McGovern, William J.
Mitchem, James E.
Reyes, Frederick P.
Thorwegen, Jr., Stephen J.
Wood, Thomas H.

**Affirmative with Comment**

Coluccio, Frank
I agree with the panel
Garages.
In each attached garage and in each detached garage with electric power, the branch circuit supplying this receptacle(s) shall not supply outlets outside of the garage. At least one receptacle outlet shall be installed in each vehicle bay and not more than 1.7 m (5 1/2 ft) above the floor.

Submitter Information Verification

Submitter Full Name: CMP 2
Organization: [ Not Specified ]
Street Address:
City:
State:
Zip:
Submittal Date: Wed Nov 11 14:16:20 EST 2015

Committee Statement

Committee Statement: The language related to outlets outside of the garage has been deleted from this section to correlate with changes made to 210.11(C)(4).
Response Message:
Public Comment No. 954-NFPA 70-2015 [Section No. 210.52(G)(1)]
Public Comment No. 929-NFPA 70-2015 [Section No. 210.52(G)(1)]
Public Comment No. 1549-NFPA 70-2015 [Section No. 210.52(G)(1)]

Ballot Results

✔ This item has passed ballot

15 Eligible Voters
0 Not Returned
14 Affirmative All
1 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All
Boynton, Charles L.
Buuck, Daniel
Campolo, Steve
Domitrovich, Thomas A.
Duren, Ronald E.
Harman, Thomas L.
Hilbert, Mark R.
King, Donald M.
Manche, Alan
McGovern, William J.
Mitchem, James E.
Reyes, Frederick P.
Thorwegen, Jr., Stephen J.
Wood, Thomas H.

**Affirmative with Comment**
Coluccio, Frank
I agree with the panel
Additional Locations.

Additional lighting outlets shall be installed in accordance with (A)(2)(a), (A)(2)(b), (A)(2)(c), and (A)(2)(d), the following:

1. At least one wall switch–controlled lighting outlet shall be installed in hallways, stairways, attached garages, and detached garages with electric power.

2. For dwelling units, attached garages, and detached garages with electric power, at least one wall switch–controlled lighting outlet shall be installed to provide illumination on the exterior side of outdoor entrances or exits with grade-level access. A vehicle door in a garage shall not be considered as an outdoor entrance or exit.

3. Where one or more lighting outlet(s) are installed for interior stairways, there shall be a wall switch at each floor level, and landing level that includes an entryway, to control the lighting outlet(s) where the stairway between floor levels has six risers or more.

   Exception to (A)(2)(1), (A)(2)(2), and (A)(2)(3): In hallways, in stairways, and at outdoor entrances, remote, central, or automatic control of lighting shall be permitted.

4. Outlets supplying lighting for stairs meeting the requirements of Lighting outlets controlled in accordance with 210.70(A)(2)(3) shall not be controlled by use of a dimmer switch unless they provide the full range of dimming control at each location.

Submitter Information Verification

Submitter Full Name: CMP 2
Organization: [ Not Specified ]
Street Address: 
City: 
State: 
Zip: 
Submittal Date: Wed Nov 11 14:10:29 EST 2015

Committee Statement

Committee Statement: Section 210.70(A)(2)(d) has been revised to permit dimmers for outlets supplying lighting for stairs if the full range of dimming control is provided at each switch location. New wording for this section in the First Revision did not address the full range of dimming control at each location.

Response Message:

Ballot Results

✔ This item has passed ballot

15 Eligible Voters
0 Not Returned
14 Affirmative All
1 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All
Boynton, Charles L.
Buuck, Daniel
Campolo, Steve
Domitrovich, Thomas A.
Duren, Ronald E.
Harman, Thomas L.
Hilbert, Mark R.
King, Donald M.
Manche, Alan
McGovern, William J.
Mitchem, James E.
Reyes, Frederick P.
Thorwegen, Jr., Stephen J.
Wood, Thomas H.

Affirmative with Comment
Coluccio, Frank
I agree with the panel
Second Revision No. 311-NFPA 70-2015 [Section No. 210.70(C)]

(C) All Occupancies.

For attics and underfloor spaces, utility rooms, and basements, at least one lighting outlet containing a switch or controlled by a wall switch shall be installed where these spaces are used for storage or contain equipment requiring servicing. At least one point of control shall be at the usual point of entry to these spaces. The lighting outlet shall be provided at or near the equipment requiring servicing.

A lighting outlet installed in a crawl space shall be protected from physical damage or be provided with GFCI protection.

Submitter Information Verification

Submitter Full Name: CMP 2
Organization: [Not Specified]
Street Address:  
City:  
State:  
Zip:  
Submittal Date: Mon Nov 09 16:40:22 EST 2015

Committee Statement

Committee Statement: Lighting outlets installed in crawl spaces shall be provided with GFCI protection. This requirement has been moved to 210.8. Physical protection does not provide the appropriate shock protection.

Response Message:

Public Comment No. 985-NFPA 70-2015 [Section No. 210.70(C)]

Ballot Results

✓ This item has passed ballot

15 Eligible Voters
0 Not Returned
14 Affirmative All
1 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All
Boynton, Charles L.
Buuck, Daniel
Campolo, Steve
Domitrovich, Thomas A.
Duren, Ronald E.
Harman, Thomas L.
Hilbert, Mark R.
King, Donald M.
Manche, Alan
McGovern, William J.
Mitchem, James E.
Reyes, Frederick P.
Thorwegen, Jr., Stephen J.
Wood, Thomas H.

Affirmative with Comment
Coluccio, Frank
I agree with the panel
210.71 Meeting Rooms.

(A) General.

Each meeting room of not more than 93 m$^2$ (1000 ft$^2$), in other than dwelling units shall have outlets for nonlocking-type, 125-volt, 15- and or 20-ampere receptacles. The outlets shall be installed in accordance with 210.71(B) through (E). Where a room or space is provided with movable partition(s), the each room size shall be determined with the partition in the position that results in the smallest size meeting room.

Informational Note No. 1: For the purposes of this section, meeting rooms are typically designed or intended for the gathering of seated occupants for such purposes as conferences, deliberations, or similar purposes, where portable electronic equipment such as computers, projectors, or similar equipment is likely to be used.

Informational Note No. 2: The types of receptacles covered by this requirement are identified as 5-15 and 5-20 in ANSI/NEMA WD 6-2002, National Electrical Manufacturers Association Standard for Dimensions of Attachment Plugs and Receptacles.

Informational Note No. 2: Examples of rooms that are not meeting rooms include auditoriums, schoolrooms, and coffee shops.

(B) Receptacle Outlets Required.

The total number of receptacle outlets, including floor outlets and receptacle outlets in fixed furniture, shall not be less than as determined in (1) and (2). These receptacle outlets shall be permitted to be located as determined by the designer or building owner.

(1) Receptacle Outlets in Fixed Walls.

In meeting rooms having a floor area of 70 m$^2$ (760 ft$^2$) or less, receptacle outlets shall be installed in accordance with 210.52(A)(1) through (A)(4). These receptacle outlets shall be in addition to any receptacle outlets that are located within cabinets or cupboards, or located more than 1.7 m (5 1/2 ft) above the floor.

(2) Floor Receptacle Outlets.

A meeting room that is at least 3.6 3.7 m (12 ft) wide and that has a floor area of at least 24 20 m$^2$ (225 215 ft$^2$) and not more than 70 m$^2$ (760 ft$^2$) shall have at least one duplex- or quadruplex-type receptacle outlet located in the floor at a distance not less than 1.8 m (6 ft) from any fixed wall for each 20 m$^2$ (215 ft$^2$) or major portion of floor space.

Informational Note No. 1: See Section 314.27(B) for floor boxes used for receptacles located in the floor.

Informational Note No. 2: See Article 518 for assembly occupancies designed for 100 or more persons.

(C) Receptacle Outlets at Moveable Room Partitions.

At least one floor receptacle outlet shall be installed for each 3.7 linear m (12 linear ft) or major fraction thereof of movable wall measured horizontally along the floor line. These receptacle outlets shall be located within 450 mm (18 in.) of the partition.

(C) Receptacle Outlet Placement.

In applying the provisions of this section, the total number of receptacle outlets shall not be less than as determined in (B), (C), and (D). The receptacle outlets required by this section shall be permitted to be located in accordance with municipal, state, federal, or other codes and regulations, or as determined by the designer/building owner.
Submitter Full Name: CMP 2
Organization: [ Not Specified ]
Street Address:  
City:  
State:  
Zip:  
Submittal Date: Thu Nov 12 17:27:36 EST 2015

Committee Statement

Committee Statement:

Changes were made to 210.71(A) for clarity. The square footage was increased to accommodate a reasonable sized meeting room without including convention halls. These requirements apply to meeting rooms not more than 1000 ft2 in area. Informational Note No. 2 was deleted and replaced with a new Informational note to give examples of rooms that are not intended to be meeting rooms.

New 210.71(B) clarifies the number and type of receptacle outlets to be installed. Receptacle outlets in fixed wall and floors are now included in 210.71B(1) and B(2) respectively. These changes also clarify that the building designer or owner is allowed to locate these receptacle outlets to best suit the anticipated use of the meeting room.

Section 210.71(D) for moveable room partitions has been deleted. Section 210.71(E) was also deleted as it is no longer needed.

Response Message:

Public Comment No. 762-NFPA 70-2015 [Section No. 210.71(D)]
Public Comment No. 828-NFPA 70-2015 [Section No. 210.71]
Public Comment No. 1188-NFPA 70-2015 [Section No. 210.71(D)]
Public Comment No. 1761-NFPA 70-2015 [Section No. 210.71(E)]

Ballot Results

✅ This item has passed ballot

15 Eligible Voters
0 Not Returned
12 Affirmative All
  1 Affirmative with Comments
  2 Negative with Comments
0 Abstention

Affirmative All
Buuck, Daniel
Campolo, Steve
Domitrovich, Thomas A.
Duren, Ronald E.
Harman, Thomas L.
Hilbert, Mark R.
King, Donald M.
Manche, Alan
McGovern, William J.
Mitchem, James E.
Reyes, Frederick P.
Thorwegen, Jr., Stephen J.

Affirmative with Comment
Coluccio, Frank
I agree with the panel

Negative with Comment
Boynton, Charles L.
There are too many variations in conference and meeting rooms to dictate how and where to place receptacles. Therefore, this should be a design function. No substantiation has been given to the panel of fires or tripping incidents in this environment.

Wood, Thomas H.
This is a design issue. Architects designers and owners need to address the locations of outlets in meeting rooms and conference rooms with the consumer based on the proposed use of the space. There is no good reason to add all of this wording to accomplish very little.
Feeders Supplied from Direct-Current Systems.

Where a feeder is supplied from a dc system operating at more than 50 volts, each ungrounded conductor of 4 AWG or larger shall be identified by polarity at all termination, connection, and splice points by marking tape, tagging, or other approved means; each ungrounded conductor of 6 AWG or smaller shall be identified by polarity at all termination, connection, and splice points in compliance with 215.12(C)(2)(a) and (b). The identification methods utilized for conductors originating within each feeder panelboard or similar feeder distribution equipment shall be documented in a manner that is readily available or shall be permanently posted at each feeder panelboard or similar feeder distribution equipment.

(a) Positive Polarity, Sizes 6 AWG or Smaller. Where the positive polarity of a dc system does not serve as the connection for the grounded conductor, each positive ungrounded conductor shall be identified by one of the following means:

(1) A continuous red outer finish
(2) A continuous red stripe durably marked along the conductor’s entire length on insulation of a color other than green, white, gray, or black
(3) Imprinted plus signs (+) or the word POSITIVE or POS durably marked on insulation of a color other than green, white, gray, or black, and repeated at intervals not exceeding 610 mm (24 in.) in accordance with 310.120(B)
(4) An approved permanent marking means such as sleeving or shrink-tubing that is suitable for the conductor size, at all termination, connection, and splice points, with imprinted plus signs (+) or the word POSITIVE or POS durably marked on insulation of a color other than green, white, gray, or black

(b) Negative Polarity, Sizes 6 AWG or Smaller. Where the negative polarity of a dc system does not serve as the connection for the grounded conductor, each negative ungrounded conductor shall be identified by one of the following means:

(1) A continuous black outer finish
(2) A continuous black stripe durably marked along the conductor’s entire length on insulation of a color other than green, white, gray, or red
(3) Imprinted minus signs (–) or the word NEGATIVE or NEG durably marked on insulation of a color other than green, white, gray, or red, and repeated at intervals not exceeding 610 mm (24 in.) in accordance with 310.120(B)
(4) An approved permanent marking means such as sleeving or shrink-tubing that is suitable for the conductor size, at all termination, connection, and splice points, with imprinted minus signs (–) or the word NEGATIVE or NEG durably marked on insulation of a color other than green, white, gray, or red

Supplemental Information

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<th>Description</th>
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<td>SR_327_attachment_for_POS_and_NEG_signs.docx</td>
<td>For staff use.</td>
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Submitter Information Verification

Submitter Full Name: CMP 2
Organization: [ Not Specified ]
Street Address: 
City: 
Committee Statement

Committee Statement: A list item has been added to the identification means of positive and negative polarity conductors. This addition supports the re-use of feeder conductors for DC applications.

Section 215.12(C)(2) is revised to support consistency in moving from 50V to 60V.

Response Message:

Public Comment No. 1048-NFPA 70-2015 [Section No. 215.12(C)(2)]
Public Comment No. 1372-NFPA 70-2015 [Section No. 215.12(C)(2)]
Public Comment No. 1378-NFPA 70-2015 [Section No. 215.12(C)(2)]
Public Comment No. 1454-NFPA 70-2015 [Section No. 215.12(C)(2)]
Public Comment No. 1678-NFPA 70-2015 [Section No. 215.12(C)(2)]

Ballot Results

✔ This item has passed ballot

15 Eligible Voters
  0 Not Returned
  14 Affirmative All
  1 Affirmative with Comments
  0 Negative with Comments
  0 Abstention

Affirmative All
Boynton, Charles L.
Buuck, Daniel
Campolo, Steve
Domitrovich, Thomas A.
Duren, Ronald E.
Harman, Thomas L.
Hilbert, Mark R.
King, Donald M.
Manche, Alan
McGovern, William J.
Mitchem, James E.
Reyes, Frederick P.
Thorwegen, Jr., Stephen J.
Wood, Thomas H.
Affirmative with Comment

Coluccio, Frank

I agree with the panel
220.3 Application of Other Articles for Specific-Purpose Calculations

In other articles applying to the calculation of loads in specialized applications, there are requirements provided in Table 220.3 that are in addition to, or modifications of, those listed references for specific equipment and application calculation requirements not located in Chapters 5, 6, or 7 that amend or supplement the requirements of this article.

Table 220.3 Additional Load Specific-Purpose Calculation References

<table>
<thead>
<tr>
<th>Calculation</th>
<th>Article</th>
<th>Section (or Part)</th>
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<tbody>
<tr>
<td>Air-conditioning and refrigerating equipment, branch-circuit conductor sizing</td>
<td>440</td>
<td>Part IV</td>
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<tr>
<td>Cranes and hoists, rating and size of conductors</td>
<td>640</td>
<td>610.14</td>
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<td>Electric vehicle charging system branch-circuit and feeder calculations</td>
<td>625</td>
<td>625.41</td>
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<td>Electric welders, ampacity calculations</td>
<td>630</td>
<td>630.11, 630.31</td>
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<td>Electrically driven or controlled irrigation machines</td>
<td>675</td>
<td>675.7(A), 675.22(A)</td>
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<td>Electrified truck parking space</td>
<td>626</td>
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<tr>
<td>Electrolytic cell lines</td>
<td>668</td>
<td>668.3(C)</td>
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<td>Electroplating, branch-circuit conductor sizing</td>
<td>669</td>
<td>669.5</td>
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<tr>
<td>Elevator feeder demand factors</td>
<td>620</td>
<td>620.14</td>
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<tr>
<td>Fixed electric heating equipment for pipelines and vessels, branch-circuit sizing</td>
<td>427</td>
<td>427.4</td>
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<td>Fixed electric space-heating equipment, branch-circuit sizing</td>
<td>424</td>
<td>424.3</td>
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<tr>
<td>Fixed outdoor electric deicing and snow-melting equipment, branch-circuit sizing</td>
<td>426</td>
<td>426.4</td>
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<td>Industrial machinery, supply conductor sizing</td>
<td>670</td>
<td>670.4(A)</td>
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<td>Marinas and boatyards, feeder and service load calculations</td>
<td>555</td>
<td>555.12</td>
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<td>Mobile homes, manufactured homes, and mobile home parks, total load for determining power supply</td>
<td>550</td>
<td>550.18(B)</td>
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<td>Mobile homes, manufactured homes, and mobile home parks, allowable demand factors for park electrical wiring systems</td>
<td>550</td>
<td>550.31</td>
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<tr>
<td>Motion picture and television studios and similar locations — sizing of feeder conductors for television studio sets</td>
<td>530</td>
<td>530.19</td>
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<td>Motors, feeder demand factor</td>
<td>430</td>
<td>430.26</td>
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<td>Motors, multimotor and combination-load equipment</td>
<td>430</td>
<td>430.25</td>
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<tr>
<td>Motors, several motors or a motor(s) and other load(s)</td>
<td>430</td>
<td>430.24</td>
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<tr>
<td>Over 600-volt branch-circuit calculations</td>
<td>210</td>
<td>210.19(B)</td>
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<td>Over 600-volt feeder calculations</td>
<td>215</td>
<td>215.2(B)</td>
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<td>Phase converters, conductors</td>
<td>455</td>
<td>455.6</td>
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<tr>
<td>Recreational vehicle parks, basis of calculations</td>
<td>551</td>
<td>551.73(A)</td>
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<tr>
<td>Storage-type water heaters</td>
<td>422</td>
<td>422.11(E)</td>
</tr>
</tbody>
</table>
| Theaters, stage-switchboard feeders                                | 520     | 520.27               

Supplemental Information

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Submitter Information Verification

Submitter Full Name: CMP 2
Organization: [ Not Specified ]
Street Address:
City:
State:
Zip:
Submittal Date: Mon Nov 09 19:04:50 EST 2015

Committee Statement

Committee Statement: Section 220.3 is revised to clarify the application of the table. Other than for listing specific purpose requirements in Chapters 2, 3 & 4, Table 220.3 is not necessary nor is it all inclusive as it exists. Section 90.3 already provides the guidance that specific equipment and applications in Chapters 5, 6 & 7 can amend or supplement the feeder requirements in Article 220, so the sections referencing feeder requirements in those chapters can be removed.

Response Message:

Public Comment No. 1442-NFPA 70-2015 [Section No. 220.3]

Ballot Results

✓ This item has passed ballot

15 Eligible Voters
0 Not Returned
14 Affirmative All
1 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All
Boyon, Charles L.
Buuck, Daniel
Campolo, Steve
Domitrovich, Thomas A.
Duren, Ronald E.
Harman, Thomas L.
Hilbert, Mark R.
King, Donald M.
Manche, Alan
McGovern, William J.
Mitchem, James E.
Reyes, Frederick P.
Thorwegen, Jr., Stephen J.
Wood, Thomas H.

**Affirmative with Comment**

Coluccio, Frank
I agree with the panel
220.12 Lighting Load for Specified Occupancies.
A unit load of not less than that specified in Table 220.12 for occupancies specified shall constitute the minimum lighting load. The floor area for each floor shall be calculated from the outside dimensions of the building, dwelling unit, or other area involved. For dwelling units, the calculated floor area shall not include open porches, garages, or unused or unfinished spaces not adaptable for future use.

Informational Note: The unit values are based on minimum load conditions and 100 percent power factor and may not provide sufficient capacity for the installation contemplated.

Exception No. 1: Where the building is designed and constructed to comply with an energy code adopted by the local authority, the lighting load shall be permitted to be calculated at the values specified in the energy code where the following conditions are met:

1. A power monitoring system is installed that will provide continuous information regarding the total general lighting load of the building.
2. The power monitoring system will be set with alarm values to alert the building owner or manager if the lighting load exceeds the values set by the energy code.
3. The demand factors specified in 220.42 are not applied to the general lighting load.

Exception No. 2: Where a building is designed and constructed to comply with an energy code adopted by the local authority and specifying an overall lighting density of less than 13.5 volt-amperes/13.5 m$^2$ (1 volt-amperes/1.2 ft$^2$), the unit lighting loads in Table 220.12 for office and bank areas within the building shall be permitted to be reduced by 11 volt-amperes/11 m$^2$ (1 volt-amperes/1 ft$^2$).

### Table 220.12 General Lighting Loads by Occupancy

<table>
<thead>
<tr>
<th>Type of Occupancy</th>
<th>Unit Load</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Volt-Amperes/ m$^2$</td>
</tr>
<tr>
<td>Armories and auditoriums</td>
<td>11</td>
</tr>
<tr>
<td>Banks</td>
<td>39$^b$</td>
</tr>
<tr>
<td>Barber shops and beauty parlors</td>
<td>33</td>
</tr>
<tr>
<td>Churches</td>
<td>11</td>
</tr>
<tr>
<td>Clubs</td>
<td>22</td>
</tr>
<tr>
<td>Courtrooms</td>
<td>22</td>
</tr>
<tr>
<td>Dwelling units$^a$</td>
<td>33</td>
</tr>
<tr>
<td>Garages — commercial (storage)</td>
<td>6</td>
</tr>
<tr>
<td>Hospitals</td>
<td>22</td>
</tr>
<tr>
<td>Hotels and motels, including apartment houses without provision for cooking by tenants$^a$</td>
<td>22$^a$</td>
</tr>
<tr>
<td>Industrial commercial (loft) buildings</td>
<td>22</td>
</tr>
<tr>
<td>Lodge rooms</td>
<td>17</td>
</tr>
<tr>
<td>Office buildings</td>
<td>39$^b$</td>
</tr>
<tr>
<td>Restaurants</td>
<td>22</td>
</tr>
<tr>
<td>Schools</td>
<td>33</td>
</tr>
<tr>
<td>Stores</td>
<td>33</td>
</tr>
<tr>
<td>Warehouses (storage)</td>
<td>3</td>
</tr>
</tbody>
</table>

In any of the preceding occupancies except one-family dwellings and individual dwelling units of two-family and multifamily dwellings:

- Assembly halls and auditoriums: 11 volt-amperes/ m$^2$, 1 volt-amperes/ ft$^2$
- Halls, corridors, closets, stairways: 6 volt-amperes/ m$^2$, ½ volt-amperes/ ft$^2$
### Type of Occupancy

<table>
<thead>
<tr>
<th>Storage spaces</th>
<th>Volt-Amperes/ ( \text{m}^2 )</th>
<th>Volt-Amperes/ ( \text{ft}^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3</td>
<td>¼</td>
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</table>

aSee 220.14(J).
bSee 220.14(K).

### Committee Statement

Committee Statement:

The new exception establishes the path by which the energy code will reduce the lighting load to a level of 2.5VA / sq. ft. for office and bank areas.

Response Message:

Public Comment No. 1071-NFPA 70-2015 [Section No. 220.12]

### Ballot Results

- ✔ This item has passed ballot

  - 15 Eligible Voters
  - 0 Not Returned
  - 14 Affirmative All
    - 1 Affirmative with Comments
    - 0 Negative with Comments
    - 0 Abstention

**Affirmative All**

Boynton, Charles L.
Buuck, Daniel
Campolo, Steve
Domitrovich, Thomas A.
Duren, Ronald E.
Harman, Thomas L.
Hilbert, Mark R.
King, Donald M.
Affirmative with Comment
Coluccio, Frank
I agree with the panel