AGENDA

NEC Code-Making Panel 1 (NEC P01)
NFPA 70 Second Draft Meeting (Annual 2025)

October 14 - 16, 2024
8:00 a.m. – 5:00 p.m. (PT)

Torrance Marriott Redondo Beach, CA

1. **Call to order.** Kenneth McKinney.
2. **Introductions.** See committee roster attached.
3. **Chair Report.** Kenneth McKinney.
4. **Staff liaison report/presentation.** Ken Holland.
5. **Previous meeting minutes.** January 2024, Charleston, SC. See attached.
6. **NFPA 70 Second Draft.**
   a. **Review of Public Comments.** See attached.
      i. **Task group report(s).**
   b. **Extract updates (if applicable)**
7. **Other Business.**
8. **Future meetings.**
9. **Adjournment.**

Address List No Phone

09/27/2024
Jeffrey S. Sargent
NEC-P01

Code-Making Panel 1

National Electrical Code®

Kenneth L. McKinney, Jr. **RT** 08/17/2017
Chair **NEC-P01**
UL LLC
12 Laboratory Drive
Research Triangle Park, NC 27709-3995
UL Solutions
Alternate: Michael A. Slowinske

Lance Ash **E** 08/23/2023
Principal **NEC-P01**
State of Michigan/LARA/BCC
611 W. Ottawa Street
Lansing, MI 48933
NFPA Electrical Inspection Section (EIS)

Louis A. Barrios **U** 10/6/2000
Principal **NEC-P01**
Shell Global Solutions
3333 Highway 6 South
Houston, TX 77082-3101
American Chemistry Council
Alternate: Joseph Marquardt

Ernest J. Gallo **U** 7/19/2002
Principal **NEC-P01**
NEBScore, Inc.
37 Elmwood Road
Florham Park, NJ 07932
Alliance for Telecommunications Industry Solutions
Alternate: Trevor N. Bowmer

Fritz Gunther **E** 08/24/2021
Principal **NEC-P01**
New York Electrical Inspection Agency
2767 Dewey Avenue
Rochester, NY 14616

Palmer L. Hickman **L** 1/10/2002
Principal **NEC-P01**
Electrical Training Alliance
5001 Howerton Way, Suite N
Bowie, MD 20715-4459
International Brotherhood of Electrical Workers
Alternate: Mark Christian

Mark R. Hilbert **E** 03/20/2023
Principal **NEC-P01**
MR Hilbert Electrical Inspections & Training
14 Beach Pond Road
Wolfeboro, NH 03894
International Association of Electrical Inspectors
Alternate: Greg Chontow

David L. Hittinger **IM** 7/22/1999
Principal **NEC-P01**
Independent Electrical Contractors
2900 South Quincy Street
Suite 720
Arlington, VA 22206
Independent Electrical Contractors, Inc.
Alternate: Matt Hittinger

Jack L. Lyons **M** 12/06/2019
Principal **NEC-P01**
National Electrical Manufacturers Association (NEMA)
12 Ireland Street Extension
West Chesterfield, MA 01084
National Electrical Manufacturers Association
Alternate: Michael C. Stone

Joseph Pavia **M** 04/12/2022
Principal **NEC-P01**
Eaton Bussmann Business
14167 Jamie Drive
Carmel, IN 46033
Alternate: Daniel R. Neeser

James F. Pierce **RT** 10/28/2008
Principal **NEC-P01**
Field Representative-Intertek
545 East Algonquin Road
Arlington Heights, IL 60005
Alternate: Christine T. Porter

Harry J. Sassaman **IM** 5/30/2008
Principal **NEC-P01**
Forest Electric Corporation
206 McGaw Drive
Edison, NJ 08837-3637
National Electrical Contractor Association (NECA)
Alternate: Larry Geyer

Address List No Phone

09/27/2024
Jeffrey S. Sargent
NEC-P01

Code-Making Panel 1

National Electrical Code®

Christopher R. Vance **UT** 08/23/2023
Principal **NEC-P01**
National Grid
300 Erie Boulevard West
Syracuse, NY 13202-4201
Electric Light & Power Group/EEI
Alternate: Roger D. McDaniel

Frank E. Tyler **U** 08/17/2015
Voting Alternate **NEC-P01**
The DuPont Company, Inc.
200 Powder Mill Road
Wilmington, DE 19803
IEEE-IAS/PES JTCC

Trevor N. Bowmer **U** 12/07/2021
Alternate **NEC-P01**
Bunya Telecom Consulting, LLC
1792 Finntown Road
Waldoboro, ME 04572
Alliance for Telecommunications Industry Solutions
Principal: Ernest J. Gallo

Greg Chontow **E** 08/11/2020
Alternate **NEC-P01**
Borough of Hopatcong
111 River Styx Road
Hopatcong, NJ 07843
International Association of Electrical Inspectors
Principal: Mark R. Hilbert

Mark Christian **L** 4/14/2005
Alternate **NEC-P01**
Electrical Training Alliance
306 Jeanne Lane
Hixson, TN 37343
International Brotherhood of Electrical Workers
Principal: Palmer L. Hickman

Larry Geyer **IM** 08/17/2018
Alternate **NEC-P01**
Quality Electric Inc.
5272 W Irving Street
Boise, ID 83706
National Electrical Contractor Association (NECA)
Principal: Harry J. Sassaman

Matt Hittinger **IM** 04/02/2020
Alternate **NEC-P01**
Independent Electrical Contractors of Greater Cincinnati
586 Kings Run Drive
Cincinnati, OH 45232
Independent Electrical Contractors, Inc.
Principal: David L. Hittinger

Joseph Marquardt **U** 8/9/2011
Alternate **NEC-P01**
ExxonMobil
22777 Springwoods Village Pkwy
Spring, TX 77389-1425
American Chemistry Council
Principal: Louis A. Barrios

Roger D. McDaniel **UT** 08/10/2022
Alternate **NEC-P01**
Pinnacle Power Solutions, LLC.
331 Godsey Road
Jackson, GA 30233
Electric Light & Power Group/EEI
Principal: Christopher R. Vance

Daniel R. Neeser **M** 04/12/2022
Alternate **NEC-P01**
Eaton’s Bussmann Division
873 Burgundy Lane
Manchester, MO 63011
Principal: Joseph Pavia

Christine T. Porter **RT** 04/14/2021
Alternate **NEC-P01**
Intertek Testing Services
13421 Rocky Ridge Road NW
Silverdale, WA 98383-1511
Principal: James F. Pierce

Michael A. Slowinske **RT** 12/07/2022
Alternate **NEC-P01**
UL LLC
333 Pfingsten Road
Northbrook, IL 60062-2096
UL Solutions
Principal: Kenneth L. McKinney, Jr.

Address List No Phone

09/27/2024
Jeffrey S. Sargent
NEC-P01

Code-Making Panel 1

National Electrical Code®

Michael C. Stone **M** 08/23/2023

Alternate **NEC-P01**
National Electrical Manufacturers Association
10394 Old Dobbins Road
PO Box 227
Dobbins, CA 95935
National Electrical Manufacturers Association
Principal: Jack L. Lyons

Jeffrey S. Sargent 08/31/2019

Staff Liaison **NEC-P01**
National Fire Protection Association
1 Batterymarch Park
Quincy, MA 02169-7471

Ark Tsisserev **SE** 4/28/2000

Nonvoting Member **NEC-P01**
AES Engineering
505 Burrard Street
Suite 950, Box 91
Vancouver, BC V7X 1M4 Canada
CSA/Canadian Electrical Code Committee

MINUTES

NFPA NEC Code-Making Panel 1
NFPA 70 First Draft Meeting (Annual 2025)

January 24-26
8:00 AM – 3:46 PM (ET)

Charleston, SC

1. **Call to order.** Kenneth McKinney, chair, called the meeting to order at 8:00 AM on 1/24/2024.
2. **Introductions.** Attendees introduced themselves and identified their affiliation and NFPA staff took attendance.
3. **Chair report.** Kenneth McKinney welcomed attendees and provided an overview of the meeting.
4. **Staff liaison report.** Nicole Cassels provided an overview of the standards development process and the revision cycle schedule.
5. **Previous meeting minutes.** The minutes from October 2021/virtual meeting were approved without revision.
6. **NFPA 70 First Draft.**
   a. **Review of Public Inputs.** The Technical Committee reviewed the Public Inputs and developed First Revisions and Committee Inputs as necessary. These will be available in the First Draft Report at www.nfpa.org/70.
   b. **Task group reports.** The following task groups provided their reports and recommendations.
      i. **CMP 1 Task Group 1**. David Hittinger-Chair. The task group provided a report, and revisions were made. The task group was reconstituted to continue work. See attached.
      ii. **CMP 1 Task Group 2.** Mark Hilbert-Chair. The task group provided a report, and revisions were made. The task group was reconstituted to continue work. See attached.
      iii. **CMP 1 Task Group 3.** Jack Lyons-Chair. The task group provided a report, and revisions were made. The task group was reconstituted to continue work. See attached.
      iv. **CMP 1 Task Group 4.** Mark Christian-Chair. The task group provided a report, and revisions were made. The task group was reconstituted to continue work. See attached.
   c. **Presentation(s).** The committee heard presentations from the following individuals.

i. **110.14 and Dissimilar Metals**. Chuck Mello, CDCMello Consulting, LLC. Approximately 10 minutes including Q&A. Presentation attached.

ii. **Committee Input on 110.23.** Palmer Hickman, IBEW. Approximately 10 minutes including Q&A. Verbal only.

iii. **Public Input 3338-Annex J.** Dan Buuck, NAHB. Approximately 10 minutes including Q&A. Verbal only.

iv. **Informational Note for 110.20.** Christel Hunter, Cerrowire. Approximately 10 minutes including Q&A. Verbal only.

v. **Proposed Reorganization of NEC®.** Alan Manche and Ernie Gallo. Approximately 45 minutes including Q&A. Presentation attached.

7. **Other Business.** There was no other business taken up by the CMP.

8. **Future meetings.** The next committee meeting will be October 14-26/2024. A meeting notification will be posted at www.nfpa.org/70next when the meeting is scheduled.

9. **Adjournment.** The meeting was adjourned at 3:46 on 1/26/2024.

Attendees

Committee Members:

✓	**Kenneth McKinney**	Chair	UL Solutions
✓	**Lance Ash**	Principal	NFPA Electrical Inspection Section
✓	**Louis Barrios**	Principal	American Chemistry Council
✓	**Fritz Gunther**	Principal	New York Electrical Inspection Agency
✓	**Palmer Hickman**	Principal	IBEW
✓	**Mark Hilbert**	Principal	IAEI
✓	**David Hittinger**	Principal	IEC, Inc.
✓	**Jack Lyons**	Principal	NEMA
✓	**Joseph Pavia**	Principal	Eaton Bussmann Business
✓	**James Pierce**	Principal	Intertek Testing Service
	Harry Sassaman	Principal	NECA
✓	**Kent Sayler**	Principal	IEEE-IAS/PES JTCC
✓	**Christopher Vance**	Principal	Electric Light & Power Group/EEI
✓	**Trevor Bowmer**	Voting Alternate	ATIS
✓	**Greg Chontow**	Alternate	IAEI
✓	**Mark Christian**	Alternate	IBEW
	Larry Geyer	Alternate	NECA

✓	**Matthew Hittinger**	Alternate	IEC, Inc.
✓	**Joseph Marquardt**	Alternate	American Chemistry Council
✓	**Roger McDaniel**	Alternate	Electric Light & Power Group/EEI
✓	**Daniel Neeser**	Alternate	Eaton Bussmann Business
✓	**Christine Porter**	Alternate	Intertek Testing Service
✓	**Michael Slowinske**	Alternate	UL Solutions
✓	**Michael Stone**	Alternate	NEMA
	Frank Tyler	Alternate	IEEE-IAS/PES JTCC
	Ark Tsisserev	Nonvoting Member	CSA/Canadian Electrical Code Committee
✓	**Nicole Cassels**	Staff	NFPA
✓	**Patrick Foley**	Staff	NFPA

Guests:

Paul Dobrowsky	Innovative Technology Solutions
Chad Roberts	Flour-BWXT
Steve Chutka	Siemens
Dave Mercier	UL Standards & Engagement
Ernie Gallo	ATIS
Keith Wilson	Strata-G
Tim Porter	Self
Dan Buuck	NAHB
Mario Valdes	MHE
Joe Andre	STI
Ward Judson	nVent
Randy Hunter	Hunter Technical Services
Christel Hunter	Cerro Wire
Brian Baughman	NEMA
Dean Austin	NFPA
Corey Hannahs	NFPA
Tim McClintock	NFPA

Total number in attendance: 41

NEC® Code-Making Panel 1 First/Second Draft Chair Report

Signature: Ken McKinney

Date of Meeting: January 24 – 26, 2024 – Charleston, South Carolina

1. List names of NEC® Code-Making Panel Members in Attendance:

   Ken McKinney (C) representing UL Solutions; Louis Barrios (P) representing ACC; Palmer Hickman (P) representing IBEW; David Hittinger (P) representing IEC; Jim Pierce (P) representing Intertek; Jack Lyons (P) representing NEMA; Kent Saylor (P) representing IEEE; Christopher Vance (P) representing EEI; Fritz Gunter (P); Lance Ash (P) representing EIS; Mark Hilbert (P) representing IAEI; Joseph Pavia (P); Greg Chontow (A) representing IAEI; Mark Christian (A) representing IBEW; Matthew Hittinger (A) representing IEC; Joe Marquardt (A) representing ACC; Roger McDaniel (A) representing EEI; Mike Stone (A) representing NEMA; Trevor Bowmer (A) representing ATIS; Christine Porter (A) representing Intertek; Daniel Nesser (A); Mike Slowinske (A) representing UL Solutions.

2. List names of Guests in Attendance:

   Paul Dobrowsky (Innovation Technology Services); Chad Roberts (BWXT); Tim McClintock (NFPA); Steve Chutka (Siemens); Dave Mercier (UL Standards & Engagement); Ernie Gallo (ATIS); Keith Wilson (Strata-G); Tim Porter; Dean Austin (NFPA Staff); Dan Buuck (NAHB); Mario Valdes (MHE); Patrick Foley (NFPA Staff); Nicole Cassels (NFPA Staff); Joe Andre (STI); Ward Judson (nVent Electric); Randy Hunter (Hunter Technical Services); Corey Hannahs (NFPA); Christel Hunter (Cerrowire); Brian Baughman (NEMA).

3. List names of Guests who addressed the Panel, the subject of their presentation and the length of time they spoke:

   a. Chuck Mello, representing CDMello Consulting, LLC addressed the Panel on behalf of Peter Graser on Public Input (PI) 907 on the topic of Copper Clad Aluminum regarding 110.14. Duration: 5 minute presentation and 5 minute question and answer session.

   b. Palmer Hickman, CMP-1 Member, representing IBEW addressed the Panel related to Committee Input on 110.23. Duration: 5 minute presentation and 5 minute question and answer session.

   c. Dan Buuck from the National Association of Home Builders addressed the Panel related to Public Input (PI) 3338 on Annex J. Duration: 5 minute presentation and 5 minute question and answer session.

d. Christal Hunter from Cerrowire and also a member of CMP-6 addressed the Panel on a recommendation to add an Informational Note to Section 110.20. Duration: 5 minute presentation and 5 minute question and answer session.

e. Alan Manche & Ernie Gallo addressed the Panel on the Long Term Road Map for the reorganization of the Code. The presentation revolved around Section 90.3 for Public Inputs (PI): 1559, 191, 3314, 3465, 4099, 919 and 920. Duration: 45 minutes, including question and answer session.

4. Number of Public Inputs/Comments acted upon: 231

5. Number of First/Second Revisions Created: 48

6. List any Task Groups appointed to work subsequent to the First/Second Draft Meeting, along with the names of Task Group Chair/members: N/A

7. List any Public Input/Comment or First/Second Revision that may need to be referred to another Panel for information or correlation:

- PI 778 was transferred to CMP-8.
- PI 4050 was transferred to CMP-10.
- Please also see additional content below for specific references to other Panels.

8. List any Public Input/Comment that requires NEC® Correlating Committee attention:

- PIs 3085 and 4075 were Global Public Inputs related to the latest edition of the NEC Style Manual that resulted in First Revisions.

- PI 1557 updating 90.2 requiring Qualified Persons to be trained in the arrangement and application of the Code was resolved. Several companion PI's were submitted to other Panels and correlation might be needed.

- A First Revision was created based on PI's: 1559, 191, 3314, 920, 919, 4099, and 3465 which modifies the requirements in Section 90.3 on Code Arrangement. This revision will have an impact on Chapter 8 under the purview of CMP-16.

- PI 543 was resolved. This would have changed the term "Code" to "Standard" in 90.1. This was requested as a global change throughout NFPA 70.

- CMP-1 did not remove the second sentence in 90.5 (C) about standards references being considered the latest edition if the date is not included. This is a correlating issue that will need to be addressed.

- Annex A was revised based on PI's 2589 and 2579 to update the standards list and also add Publication/Revision dates to align with NFPA requirements.

- First Revision was made to delete Annex J per PI 8898. A reference to IICC A1117.1-2017, Accessible and Usable Building and Facilities was added as an Informational Note in 110.1. There may be other references to Annex J that will need to be reviewed by the Correlating Committee.

- PI 1596, which sought to change the title of 110.12 to "Workmanship" was Resolved. Several companion PI's were submitted to other Panels and correlation might be needed.

- A First Revision was created based on PI's: 1191, 1216 and 746 which deleted the definition for "In Sight From (Within Sight From)(Within Site) to correlate with the creation of 110.29 in the 2023 NEC®. This was also duplicated in Part III for over 1000 Volts, Nominal. Although duplication of requirements is not ideal, the Panel felt this was the best way to address the situation.

- A First Revision was created based on PI's 527 and 233 adding the word "enclosed" panelboards in 110.25(E). It appears that CMP-9 removed the definition for "enclosed panelboards." Review by the Correlating Committee is requested.

- A First Revision was created based on PI 3881 for 110.72. A reference is made to 726.121. It is requested that the Correlating Committee and CMP-3 confirm this is the appropriate section.

- A First Revision was created based on PI 3883 for 110.75. A reference is made to 726.121. It is requested that the Correlating Committee and CMP-3 confirm this is the appropriate section.

9. List any general requests for information or assistance from the NEC® Correlating Committee: None.

10. List any issues that should be brought to the attention of the NFPA Research Foundation:

Cybersecurity was retained in 110.3(A)(8), although there were to PI's that were submitted to delete it. Other Panels may have had a different action.

Recognizing that the safety threats from cyberattacks are real for installations under the scope of the NEC as well as other NFPA standards such as NFPA 72, there might be significant benefit from research by the NFPA Research Foundation in advancing the ways the risks can be identified, classified and mitigated going forward.

11. List any additional information that would be helpful to the NEC® Correlating Committee, NFPA Staff, or process in general:

We welcomed Mark Hilbert, Lance Ash, Joseph Pavia, Daniel Nesser, Chris Vance and Mike Slowinske as new members of Panel 1 and each made contributions to the work of the Panel. Ernie Gallo had to leave the Panel prior to the meeting due to a job change, so Trevor Bowmer acted as the voting member representing ATIS.

Larry Geyer, Frank Tyler and Ark Tsisserev were not in attendance.

Four Task Groups were formed in advance of the First Draft Meeting to facilitate completion of the work by the Panel during the meeting. Ernie Gallo/David Hittinger, Mark Hilbert, Jack Lyons and Mark Christian put in significant effort and did a good job of leading the Task Groups through the work; their efforts are much appreciated. Panel members were generally engaged in the Task Group work.

Nicole Cassels and Pat Foley from the NFPA staff were diligent in supporting the Panel in conducting its work and their efforts are appreciated. The speed with which the First Revisions were available in Terra was impressive and drew a favorable response from the Panel.

The movement to an online meeting through the Microsoft Teams platform overall allowed us to complete our work in a safe and appropriate manner. Although there was some latency, it did not affect the meeting. Having two monitors was helpful, but not every Panel member took advantage of that. It is my personal preference that a large screen with a projector be used for the Second Draft Meeting. I think this keeps everyone focused on what we are working on and it is easier to see the Task Group recommendation along with the revised legislative text on one big screen as opposed to split screen on a laptop computer.

Overall Panel 1 had an engaging and effective meeting and we are looking forward to our role in the completion of the 2023 National Electrical Code.

There were several PI's submitted by "John Doe" to many different Code Making Panels. None of these PI's were serious and Task Groups, along with the entire CMP had to waste valuable time addressing each of these submissions. Doing so would only seem to encourage this behavior in the future. Additionally, it doesn't appear that any of these submissions met the NFPA requirements in terms of proper identification by the submitter. It would be appreciated if NFPA could remove these types of submissions during the Public Comment phase, if they occur.

2026 NEC® Public Input Task Group Report

Updated after 11-13-2023 meeting

CMP # 1			
TG# 1	**Globals and Article 90 (40 PI's) and Annexes**		
TG Chair	**Ernie Gallo**		
TG Members	**David Hittinger, Christine Porter, Trevor Bowmer, Ark Tsisserev, Roger McDaniel**		
Article/Section	**Public Input #**	**PI Report Page #**	**TG Recommendation & Statement**
Global David Williams	4050	1	**Action: Resolve** **Panel Statement** The committee reviewed the defined terms regarding overcurrent protection within our articles and found no discrepancies.
Global Robert Osborne	2422	1	**Action: Accept** **Action**: TG4 will need to create FRs **Panel Statement** The changes identified by PI 2422 related to voltage demarcation were reviewed and accepted by TG1, but the identified FR changes need to be implemented by CMP 1 TG 4 in Article 110 See PI 4287 This needs to be shared with the TG4 working on article 110 (CMP 1 TG 4)
Global David Williams	3085	2	**Action** : Create FR CMP1-TG1-1 **Panel Statement** The Panel reviewed the informational notes within their purview to comply with the NEC Style Manual Section 2.1.10. and made the following revisions. Delete the Informational Note in 90.2(D)(1) that does support or improve usability of the associated requirement. 110.11 Informational Note No. 4 is updated to See NFPA 5000-2024 Building Construction

			and Safety Code. The 2019 version had specific references that are no longer located in the revised edition. 110.14(D) Informational Note No.3 is updated to See NFPA 70B-2023 Standard for Electrical Equipment Maintenance. See (PI 4075) 110.26(A) Informational Note is updated to See NFPA 70E-2024 Standard for Electrical Safety in the Workplace. 110.31 Enclosure for Electrical Installations Informational Note is updated to See ANSI C2-2023 National Electrical Safety Code® (NESC®) (C2-2023). 110.71 Strength Informational Note is updated to See ANSI C2- 2023 National Electrical Safety Code® (NESC®) (C2-2023).
Global Kyle Krueger	4075	4	**ACTION**: RESOLVE **DH Statement** The panel concludes that the date of the standard will remain to comply with 3.3.7.1.1 of the Regulations Governing the Development of NFPA Standards and the document name was changed to NFPA 70B-2023, Standard for Electrical Equipment Maintenance, see FR-TG1-1. **Task Group Statement**

			Section 3.3.7.4 of the Style Manual requires reference shall contain the title, date or edition, name of the developing organization, and preferably the specific parts of the NFPA Standard or other publication to which reference is made. Technical committees shall include such references only after review of such NFPA Standards or other publications, satisfying themselves that the references are adequate and appropriate.
Global Gaye Chapman	4085	4	**Action: Resolve** **Task Group Panel Statement** Replacing shall with must is a violation of 3.1.1 of The NEC Style Manual.
Global Danish Zia	4287	5	**Action**: Refer to CMP1-TG3 This was addressed in 110.4 Voltages.
90.1 Palmer Hickman	543	6	**Action: Resolve *(Is this the correct action?)DH*** **Recommend FR** **Change "Code" to "Standard" in the first sentence of 90.1.** **DH Panel Statement** **Per the definition of "standard" (NFPA Standard) from 1.4, Defined Terms, in the "Regulations Governing the Development of NFPA Standards," a standard (NFPA Standard or Standard) is "[a]ny NFPA Standard processed through these regulations. There are four types of NFPA Standards: codes, standards, recommended practices, and guides (see Section 3.3.6.1).** **Task Group Panel Statement**

			The NEC is a voluntary code that will be adopted by an AHJ. On the NFPA web site of list of codes and standards, the NFPA 70 is listed as "National Electrical **Code**". From the NFPA website the explanation given is that · A code is a model, a set of rules that knowledgeable people recommend for others to follow. It is not a law, but can be adopted into law. · A standard tends be a more detailed elaboration, the nuts and bolts of meeting a code. Given 90.2A states that the NEC is not an instruction manual (i.e., a more nuts and bolts elaboration), it seems appropriate to keep the current description as the Code. Furthermore, the statement that a code can be adopted as a law better fits the current and intended use of the NEC.
90.2(A) Kyle Krueger	1557	7	***Action: Resolve*** **Panel Statement** The definition for qualified persons does not address training requirements specific to the proper use and application of the Code.
90.2(A) Holt	2261	9	***Action: Resolve*** **DH Panel Statement** **Resolve Statement: The Public Input does not meet 4.3.4.1(d) of the Regulations Governing the Development of NFPA Standards which requires the submitter to provide a statement of the problem and substantiation for Public Input. Stating "this language is more explanatory" has not been substantiated.**

			Task Group Panel Statement The proposed text does not add clarity to the purpose of the Code. The addition of the proposed explanatory phrase would have unintended consequences of limiting the scope of code. "…..as a source of electric shock and as a potential source of fires and explosions due to electrical Installations…". For example, optical fiber systems have no (zero) potential for electric shock, source of fire or explosions would therefore be outside of scope of the NEC. The low energy circuits found in other communications systems would also not be an electric shock hazard or create a fire potential. Another example would be any rule concerned with physical protection, abrasion resistance, or corrosion resistance of components may not be seen as contributing to the electrical shock or fire potential.
90.2(A) Hollander	3538	10	***Action: Resolve (Is this the correct action?)DH*** **Panel Statement** The Code contains provisions that are considered necessary for safe electrical installations. Compliance will result in an installation essentially free from hazard. The code does not "establish" the minimum requirements – the AHJ or applicable regulatory body does that when it adopts the complete NEC or with optional exemptions or specific additions appropriate for the local environment and circumstances. **DH Recommendation** **Create FR-1 provisional change**

			Panel Statement **The modified language clarifies that the *Code* provides the minimum installation requirements for the practical safeguarding of persons and property.**
90.2(A) No Organization John Doe	4	11	***Action: Resolve*** **DH Panel Statement** **The substantiation does not meet 4.3.4.1(d) of the Regulations Governing the Development of NFPA Standards. The statements that "people with inadequate qualifications are adding medium voltage rules" and "inspectors don't know how to inspect medium voltage" have not been substantiated.** **Task Group Panel Statement** The proposed revised text adding language about an "inspection guide" is in conflict with the current second sentence of 90.2A – "T*his Code is not intended as design specification or an instruction manual for untrained persons*". The addition of phrase "..medium voltage inspection guide for untrained inspectors…" is not appropriate or necessary. These concerns and guidelines about inspection and inspectors training aspects of the AHJ belong more appropriately in the Informative Annex H and not in Article 90 under purpose of the code.

90.2(A) No Organization John Doe	5	12	***Action: Resolve*** **DH Panel Statement** **Article 512 Cannabis Oil Equipment and Cannabis Oil Systems Using Flammable Materials was added in the Code to provide installation requirements in commercial and industrial facilities. The statement that "the NEC now regulates illegal and immoral drug activity" has not been substantiated.** **Task Group Panel Statement** The code does not purport to be, or is, a judgment on morality of people or the legal status of specific activities. As found on the back cover of the NEC book and in the NFPA web site "Laws and Regulations – Users of NFPA Standards should consult applicable federal, state and local laws and regulations. NFPA does not, by the publication of its codes, standards, recommended practices, and guides, intended to urge action that is not in compliance with applicable laws, and these documents may not be construed as doing so." It is assumed that minors should not be completing work covered by the NEC under various existing child labor federal, state and local laws. The NEC concerns with electrical safeguarding and fire protection of buildings does not purport or sanction any illegal activities inside the buildings to which it applies including prostitution, illegal drug manufacturing, gambling, tax fraud/money laundering, child abuse,

			The activity described in Article 512 is not illegal in the states where it is legal and adopted.
90.2(A) Conrad Ko	714	13	***Action: Resolve*** **DH Panel Statement** **The substantiation does not meet 4.3.4.1(d) of the Regulations Governing the Development of NFPA Standards which requires the submitter to provide a statement of the problem and substantiation for Public Input. The Panel concludes that "what is lawful and what is not" has not been substantiated.** **Task Group Panel Statement** The proposed wording does not add clarity and it is under the purview of the AHJ to adopt the code in its entirety. The adoption process of the NEC and the relationship between NEC, AHJ and enforcement of the code is covered under Informative Annex H.
90.2(B) No Organization John Doe	3	14	***Action: Resolve*** **DH Panel Statement** **Article 512 Cannabis Oil Equipment and Cannabis Oil Systems Using Flammable Materials was added in the Code to provide installation requirements in commercial and industrial facilities. The statement that "NFPA has indicated its interest in regulating illegal activity" has not been substantiated.** **Task Group Panel Statement** The code does not purport to be or is a judgment on morality of people or the legal status of specific activities.

			As found on the back cover of the NEC book and in the NFPA web site "*Laws and Regulations – Users of NFPA Standards should consult applicable federal, state and local laws and regulations. NFPA does not, by the publication of its codes, standards, recommended practices, and guides, intended to urge action that is not in compliance with applicable laws, and these documents may not be construed as doing so.*" It is assumed that minors should not be completing work covered by the NEC under various existing child labor federal, state and local laws. The NEC concerns with electrical safeguarding and fire protection of buildings does not purport or sanction any illegal activities inside the buildings to which it applies including prostitution, illegal drug manufacturing, gambling, tax fraud/money laundering, child abuse, ….. The activity described in Article 512 is not illegal in the states where it is legal and adopted.
90.2(B) Hollander	3539	15	***Action: Resolve*** **Panel Statement** The adequacy of the code is addressed in the fundamental principles of protection for safety that encompass protection against electric shock, protection against thermal effects, protection against overcurrent, protection against fault currents, and protection against overvoltage. All of these potential hazards are addressed by the requirements in this Code.

			The code does not "*establish*" the minimum requirements – the AHJ does that when it adopts the complete NEC or with some optional exemptions, or additions. . As stated in 90.2A -- "*This Code is not intended as a design specification or an instruction manual for untrained persons*…." This includes "minimum" design specifications.
90.2(B) Hollander	3539	15	***Action: Resolve*** ***DH Panel Statement*** **The intent of the submitter was met in panel action on PI 3538.** ***Action: Resolve*** **Task Group Panel Statement**
90.2(C) Alfio Torrisi	3779	16	The inclusion of "utilization equipment" is already covered in the current Article 100 definition of "Equipment". **DH Panel Statement** Equipment is defined as a general term and can include utilization equipment. The added text does not provide clarity.
90.2(C) Michael Anthony	4181	17	**DH Panel Statement** **Signaling and communication conductors and equipment are covered in the main paragraph. The proposed text would conflict with 90.2(D)(4) and (5). The Panel concludes that "state and federal agencies that reference the NEC need some language for flexibility" has not been substantiated.** **Task Group Panel Statement**

			Proposed text for Item (7) covers outside plant and utility network equipment that would conflict with 90.2(D)(4) and (5). The equipment reliability and resiliency (network and community) are outside the scope of a safety code such as the NEC or the NESC. One would need to add multiple detailed design and performance requirements covering network system availability criteria (e.g., less than X mins per year), minimum repair times, detailed restoration plans, backup power reserve times and configurations, and contingencies within the network configuration (multiple network routes, backup channels, portable generator deployments) and many other items that are outside the safety perspective and criteria of NEC.
90.2(C) Palmer Hickman	478	18	**Panel Action *Resolve (Is this the correct action?) I would support a first revision DH*** ***DH Panel Statement if accepted.*** ***Revise the text in 90.2(C) in the main paragraph to add maintenance, reconditioning, and servicing to correlate with such requirements in this Code. Further, delete "installations" in the title. (Remove installations in 90.2(D) Title)*** **Task Group Panel Statement** The title of the 90.2C section is "*Installations*" covering the completed installation and not necessarily the methods by which the maintenance and servicing operations are achieved.

			Although standards such as NFPA 70B are referenced in informational notes such maintenance and servicing schedules are not the focus of the NEC Safety Code. An informational note as to some other inspectable aspects of operational, servicing and maintenance of electrical installations are already covered as appropriate within the NEC.
90.2(C),90.2D) Conrad KO	718	19	***Panel Action: Resolve*** **DH Panel Statement** **The recommendation does not adequately substantiate that what is covered and not covered by the NEC is not clear. Further, the recommendation does not improve clarity or usability.** **Task Group Panel Statement** Adding "*unless exempted by 90 (D)*" is an expansion of the scope in that the language seems imply that everything is covered unless it is explicitly excluded in 90.2(D) The expansion of item (6) is confusing as written and may be clearer if these various items separated by "or" were broken out as new list items. The inclusion of multiple descriptors of items in this revised (6) such as "*watercraft, …ships, …boats… aircraft.. spacecrafts, and any other vehicle that does not have electrical phase of its internal circuitry synchronized with the grid….*" is confusing. The proposed language expands beyond marinas and boat yard. This level of detail may be better included within the scope statements of the individual applicable special occupancies within Chapter 5.
90.2(D) Kyle Krueger	1558	22	***Panel Action: Resolve*** **DH Panel Statement** **Inadequate substantiation has been provided to justify the need for a general requirement**

			and an Informational Note that specifies how maintenance must be accomplished. **Task Group Panel Statement:** The Code provides multiple references to maintenance related industry standards and NFPA 70B. The term "*industry standards*" for maintenance is vague and may be confusing for users and applications. There are (a) manufacturer's recommended service and maintenance instructions, manufacturer's warranty periods, and design life times, as well as (b) internal company service and inspection programs for operational reliability of components and networks as well as system resiliency, in addition to (c) industry groups (ATIS, IEEE, etc…) guidelines that have been issued for guidance and general best practices for industries, and (d) governmental and regulatory guidelines from FCC and DHS on recovery from disaster and emergency events. NFPA 70B is only one of these.
90.2(D) Kevin Cheong	1715	23	***Panel Action: Resolve*** **DH Panel Statement** The proposed text conflicts with 90.2(C)(6) and the installation requirements for AC Receptacle outlets used for EVPE covered in 625.60(A)(B)(C) and (D). The Panel concludes that the added text would add confusion to the Code. **Task Group Panel Statement** The proposed text conflicts with the installation requirements for AC Receptacle outlets used for EVPE covered in 625.60(A)(B)(C) and (D). As proposed, adding this language "….., and receptacles for off-board utilization equipment

			of electric vehicles " to Item (1) of 90.2D will imply that these receptables are not covered which is contrary to the content of Article 625.
90.2(D) Eric Stromberg	411	25	***Panel Action: Resolve*** **DH Panel Statement** **Installations not covered that are under the exclusive control of an electric utility where "service drops" and "service laterals" are defined as conductors between the utility electric supply and the service point. Stating that "items that are customer owned would clear up much confusion" has not been substantiated.** **Task Group Panel Statement** "*service drop*" is a defined term in Article 100 that is clear and well understood for the purposes of the NEC.
90.2(D) Michael Anthony	4162	29	***Panel Action: Resolve*** **DH Panel Statement** **The proposed text "except as required by the Authority having jurisdiction" conflicts with what the Code does not cover. The panel concludes that "expanding the scope of the NEC to supplement state and federal regulatory actions on improving community resiliency" has not been substantiated.** **Task Group Panel Statement** What is covered in 90.2 (A) is sufficient. The proposed wording did not add any additional clarity. The scope of the NEC is electrical safeguarding and does not extend to include network resiliency, system reliability, community responses and expectation provisions,

			repair contingency plans, and other aspects that contribute to the recovery time from emergencies. There is a strong interdependency between backup systems for utility power supply and communications services that would need to be included. The proposed exception for 90.2D4 would need to be also extended to 90.2D5. This is too large a topic for inclusion in the NEC. It includes and would require requirements and enforcement criteria on systems designs with discussions of battery backup criteria, communication network designs (dual circuity routes), repair/recovery protocols between power utilities, communications companies, and community emergency response members, regulatory (including FCC, FEMA and Homeland security) considerations.
90.2(F)Palmer Hickman	190	30	***Panel Action:*** ***Accept Create First Revision - FR-CMP1 TG1-2*** **Panel Statement** List item (F) is deleted as these requirements are addressed in 90.4.
90.3 Kyle Krueger	1559	31	***Panel Action: Resolve*** ***Panel Statement*** ***The recommendations are unnecessary due tp the rewording of 90.3. See FR-TG-1-3 (PI 3314)***
90.3 Mark Christian	191	33	***Panel Action: Resolve*** ***Panel Statement*** ***The recommendations are unnecessary due tp the rewording of 90.3. See FR-TG-1-3 (PI 3314)***
90.3 Scott Harding	3314	34	***Panel Action: Accept Create First Revision FR CMP1-TG1-3*** **DH Panel Statement**

			The text in 90.3 is modified to remove the independence of Chapter 8 to allow the reorganization of the limited energy articles. The reorganization no longer requires that the communications systems articles be independent from Chapters 1-7. **90.3 Code Arrangement.** **This Code is divided into the introduction and nine chapters, as shown in Figure 90.3. Chapters 1, 2, 3, and 4 apply generally. Chapters 5, 6, 7, and 8 may supplement or modify the requirements in Chapters 1 through 8** **The figure in 90.3 is modified to reflect the changes of wording in the text.** **Add the phrase "in Chapters 1 through 8" at the end of the Figure 90.3 explanation of the bracket to read "Applies generally to all electrical installations in Chapters 1 through 8".** Task Group Panel Statement The Figure for 90.3 was modified to reflect the changes of wording in the text. The modified text allows for the reorganization of the limited energy articles and no longer requires that the communications systems articles be independent from Chapters 1-7. Remove the word other before special conditions.

			This Code is divided into the introduction and nine chapters, as shown in Figure 90.3. Chapters 1, 2, 3, and 4 apply generally. Chapters 5, 6, 7 and 8 apply to special occupancies, special equipment, or special conditions and may supplement or modify the requirements in Chapters 1 through 8. This Code is divided into the introduction and nine chapters, as shown in Figure 90.3. Chapters 1, 2, 3, and 4 apply generally. Chapters 5, 6, 7 and 8 apply to special occupancies, special equipment, or special conditions and may supplement or modify the requirements in Chapters 1 through 8. Add the phrase “in Chapters 1 through 8” at the end of the Figure 90.3 explanation of the bracket to read “Applies generally to all electrical installations in Chapters 1 through 8”. The proposed revisions are intended to include the term “application” in the title and to revise some of the chapter titles to remove the term “special” and more accurately reflect what is covered within those chapters. At the time these chapter titles were developed in the 1930s and 1940s, these chapters did cover items that were considered “special.” This is no longer the case and these requirements in these chapters are now commonplace. The proposed revisions are not intended to impact the functional aspects of applying the NEC in any way, but rather to enhance it and promote

			clarity. The changes proposed to the titles of chapters 5, 6, and 7 are intended to also reflect global revisions to change these titles in the table of contents for correlation. The revisions to these titles will also more accurately reflect what is included within each chapter while simultaneously continuing to allow for growth and expansion of the Code in the future. Accept that 90.3 needs revision for clarity. Chapters 5 through 8 need to retain the ability to amend or modify the general requirements of current Chapters1 through 4 as their applications demand. For example, Chapter 8 stand-alone status and the ability to modify or amend the general rules in Chapters 1 to 4 are necessary to accommodate the many technical requirements that must be addressed. For example, in power circuits a conductor with green colored or white insulation identifies a grounding or grounded conductor; whereas communications signal-carrying (ungrounded) conductors frequently use green colored insulation. Article 770 requires flexibility in certain requirements since the non-conductive optical fiber cables are often the safest communications cables in certain air-handling ducts and hazardous classified environments.
90.3 Donny Cook	3465	35	***Panel Action: Resolve*** **Panel Statement** **The Panel action taken on PI 3314 that removed the text and modified the main paragraph meets the intent of the submitter.**
90.3 Dean Hunter	4099	37	***Panel Action: Resolve (Is this the correct action)?*** **DH Panel Statement**

			The recommendations that are proposed to be deleted are unnecessary due to the rewording of 90.3. The creation of Chapter 13 and 14 does not show the intended content for public review. The Panel recognizes that additional chapters are under the purview of the Correlating Committee. ***Resolve but see PI 3314 and PI 191*** Task Group Panel Statement The new proposed articles X00 and X50 and the creation of chapter 14 and 13 have not been reviewed by the CMPs or by the public. There are no PIs for the deletion of the whole Chapter 8 and its articles as envisioned by this proposal. This proposal is premature and will create correlation issues across the code.
90.3 Palmer Hickman	919	39	**Action: Resolve** **Panel Statement** **The panel revised the text at the end of Figure 90.3 to read "in chapters 1 through 8" and the explanation of the bracket to apply generally to Chapters 1 through 8 to coordinate the action on PI's 3314, 191 and 1559.**
90.3 Palmer Hickman	920	40	**Action: Resolve** **Panel Statement** **The panel revised the text at the end of Figure 90.3 to read "in chapters 1 through 8" and the explanation of the bracket to apply generally to Chapters 1 through 8 to**

			coordinate the action on PI's 3314, 191 and 1559.
90.4(A) Kyle Krueger	1560	42	***Panel Action: Resolve*** ***DH Panel Statement*** **This Code, when adopted by governmental bodies for legal jurisdiction over electrical installations, would apply to prefabricated electrical systems whether installed on or off site and subject to approval by the AHJ. The informational note does not support 90.4(A) Application.** **Task Group *Panel Statement:*** Click here to enter text.The applications to prefabricated electrical installations are already covered under the existing terminology of "electrical installations" in 90.4AThe applications to prefabricated electrical installations are already covered under the existing terminology of "electrical installations" in 90.4A
90.4(B) Laurie Myers	337	43	***Panel Action: Resolve*** ***DH Panel Statement*** **The general application of 90.4(B) for deciding on the approval of equipment and materials applies to prefabricated whether the installation is remote or onsite. The statements "project delays" and "AHJ's not able to schedule" have not been substantiated.** **Task Group Panel Statement** The applications to field installed equipment and prefabricated electrical installations are already covered under the existing general terminology of "equipment and materials installations" in 90.4B.

90.4(D) Mather Abbassis	4165	44	***Panel Action: Resolve*** **DH Panel Statement** **Guidance for evaluating and determining suitability of new equipment, installation and use, and listing is in 110.3(A)(B) and (C).** ***Panel Statement:*** The proposed list of ways to determine suitability of new products, constructions or materials are already covered in 110.3(A)(B) and (C).
90.7 Anthony Apfelbeck	1351	45	***Panel Action: Resolve*** **DH Panel Statement:** **Errata and TIA amendments are posted on the NFPA website.** **Panel Statement** There may well be changes in NFPA or Standards Council policies that could change the management of these processes and disposition of Tentative Interim Amendments, Errata, and Formal Interpretations of the NEC. Such process details belong in administrative documents and not in the technical mandatory sections of the NEC
90.7 Kyle Krueger	1563	47	***Panel Action: Resolve*** **DH Panel Statement** **The concerns of the submitter are addressed in 110.3(A). Accordingly, the addition of 90.7(B) Prefabricated Equipment or Installations is unnessary and does not add clarity. Informational Note No. 6 does not support or improve usability of the associated requirement.**

			The statement "challenges of obtaining approvals have been identified" has not been substantiated. See FR-TG-1-3 **Panel Statement** The installation of prefabricated equipment will still require inspection of the wiring, cabling and other connections necessary for interconnection to power and communications utility networks as well as quality inspections on the professional and skillful manner of the electrical work required to connect power and communications to the structure. Compliance with some of the NEC rules may possibly be accomplished through reference to certified documentation on equipment design and prefabrication assembly records.
90.7 David Hittinger	3174	49	***Action: Accept*** ***Create First Revision FR CMP1-TG1-4*** ***Panel Statement:*** Prior to the inclusion of 110.3(C) in the 2017 NEC, there was not a mandatory requirement covering who performs product certification and how the product certification is to align with the NEC. This recommended revision connects 90.7 with 110.3(C). By doing so, some of the language currently in 90.7 is no longer necessary and can be deleted.
90.9(B) Ryan Jackson	683	50	***Action: Resolve*** **DH Panel Statement** **The deletion of 90.9(B) would create contextual confusion when applying 90.9(C)(1) through 90.9(C)(4). Repeating a rule from the NEC Style Manual in the Code is not prohibited.**

			Task Group Panel Statement Deletion of 90.9B would create contextual confusion for 90.9C. Could accept as long as confusion does not occur between metric and traditional (feet inches) that could lead to a safety issue. If accepted, Rule 90.9(C) language would need to be revised since the soft conversion versus hard conversion options discussed there would be without adequate context
Annex A Informational Note and Table A	2589, 2579		Refer to UL review for acceptance
DARAC Annex_J	3338	367	**Action Resolve** **DH Committee Statement** Annex J only contains select parts of the 2010 ADA Standards for Accessible Design and should use the 2017 edition of International Code Council (ICC) A117.1 referenced in the 2021 Edition of the International Building Code. That document is copywritten by the ICC that would require an agreement to extract the material from A117.1. Therefore, Annex J is deleted. Further, the Panel added a new Informational Note No.2 in 90.2(E) to see ICC A117.1-2017 Accessible and Usable Buildings and Facilities. **Create *FR CMP1-TG1-5*** **Panel Statement**

			Delete the outdated Annex J and create an informational note to reference the correct standard. See 90.2. E informational note 2. Note to NFPA Staff :
Krueger Annex L	4125	368	Resolve – **DH Panel Statement** Proposed Committee Statement for a Resolve: The information provided in the table, which is intended to be helpful, has the potential for misapplication. Specifically, the information is associated with requirements in specific UL Product Standards. The potential misapplication can result due to the fact that this information is specific to one set of UL Product Standards; however, requirements for how terminations are marked vary between standards, making the details in this table incomplete. In addition, UL product standards, similar to the NEC, are routinely updated. Changes to the product standard may result in the information in the NEC becoming inaccurate. In accordance with Section 110.3(B), listed equipment shall be installed and used in accordance with the listing. see Action to TG3 PI 4115

2026 NEC® Public Input Task Group Report

CMP #	**1**
TG#	**2**
TG Chair	Mark Hilbert
TG Members	Mike Stone, Matt Hittinger, Joe Marquardt, Harry Sassaman, Jim Pierce

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
100	**3901**	**57**	Resolve The terms are not currently used in the NEC and therefore, the definitions are not necessary at this time. **DH Panel Statement** **Terms defined in the NEC shall have a meaning that is unique to an application. These terms are not used in the Code. Therefore, defining these terms is not necessary.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
100	**1492**	**58**	Resolve The proposed text does not provide additional clarity. **DH Panel Statement** **Per 4.3.4.1 (c), the recommendation shall include the proposed text of the Public Input, including the wording to be added, revised (and how revised), or deleted.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
100	**4507**	**60**	Resolve The proposed text is not appropriate for the NEC. As the submitter has correctly pointed out,

			3.3.6.1 of the Regulations Governing the Development of NFPA Standards already provides that defined terms commonly found in the NFPA technical committee standards cannot be altered unless approved by the Standards Council.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
100	**1232**	**62**	Resolve The proposed text does not add additional clarity and is redundant. The conditions added are already included in the current version of the definition. **DH Panel statement** **The application of the definition is correct as written.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
100	**1233** **1398** **2134** **760** **Suggest resolve for these 3 PI's**	**63** **64** **65** **66**	FR (TG2 FR-1) Statement: The term "inspections" was editorially changed to "inspection." PI 1233: The use of "and so forth" is necessary to include other portable means of access.

			PI 1398: "Reached quickly" was retained to convey the sense of ready access. PI 2134: The current text is adequate. The proposed revisions do not add clarity nor has substantiation been provided the current text is being misunderstood. PI 760: The proposed text was not accepted as Electronic Tags such as RFID fobs or cards are not considered as tools by other codes or standards as keys are. **DH Suggested Panel Statements to Resolve.** PI 1398 **The use of "and so forth" is necessary to include other portable means of access. "Reached quickly" was retained to convey the sense of ready access.** **PI 2134: The suggested revision does not comply with 2.1.2.5 of the NEC Style Manual.** **PI 760: The proposed text was not accepted as Electronic Tags such as RFID fobs or cards are not considered equivalent to keys.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
100	**2134**	**65**	Resolve The current text is adequate. The proposed revisions do not add clarity. This PI was acted on see above.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
100	**1085**	**67**	Resolve The current wording is well understood in the industry. The AHJ definition adequately describes the role.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
100	**4386**	**68**	Resolve The proposed definition is not necessary. The NEC does not have a requirement that is concerned with a percentage of time.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
100	**1082**	**69**	Resolve A component, IP or not, can be a device and therefore is already included in the term. **DH Panel Statement** **The Panel understands that "I.P." was intended as an abbreviation for Informational Note. Further, per 2.1.10.1 of the NEC Style manual, if an informational note is needed to explain the text of the document, consideration shall be given to rewriting the text of the document to make the rule clear.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
100	**1744**	**70**	Resolve A device can be part of the "outlet" but is not always an "outlet."

			DH Panel Statement **Per 2.1.10.1 of the NEC Style manual, this informational note contains explanatory information to support or improve usability of the associated definition.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
100	**1742**	**71**	Resolve The load side of a disconnecting means is not always the “outlet.” **DH Panel Statement** **Per 2.1.10.1 of the NEC Style manual, this informational note contains explanatory information to support or improve usability of the associated definition.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
100	**793**	**72**	FR (TG-2, FR 2) The comma after “apparatus” was removed to clarify the phrase "to prevent personnel from accidentally contacting energized parts or to protect the equipment from physical damage" applies to both the case or housing of apparatus and the fence or walls surrounding an installation.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
100	**1989**	**73**	Resolve

			It is not necessary to add one more example to "such as."

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
100	**900**	**74**	Resolve What "support hardware" is not clear. **DH Panel Statement** **What is meant by "support hardware" is unclear.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
100	**684**	**75**	Resolve "Recognizable as suitable" is clear as is. The recommended text does not increase usability or clarity.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
100	**1191** **1216** **746**	**76** **77** **81**	FR (TG-2, FR 3) The definition and its associated informational note were deleted as they are no longer necessary. The requirement is provided in 110.29.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
100	**2005** **2383** **586**	**78** **79** **80**	Resolve The definition and its associated informational note were deleted as they are no longer necessary. The requirement is provided in 110.29. See FR XX.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
100	**3399**	**82**	Resolve The concerns of the submitter are already addressed in 110.3(B). Further, the proposed definition contains a requirement which is in violation of 2.1.2.5 of the NEC Style Manual.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
100	**3293**	**83**	Resolve The information provided in the proposed informational note is already included in the definition.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
100	**1071** **1141** **1217**	**84** **85** **86**	FR (TG-2, FR 4) The revision makes it clear that a wet location can be one with only water or only other liquids or a combination of both.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
100	**2463**	**87**	Resolve The submitter's concern is addressed in 300.9. Further, definitions cannot contain a requirement per 2.1.2.5. of the NEC Style Manual. **DH Panel Statement** **The proposed definition has mandatory requirements in violation of 2.1.2.5 of the NEC Style Manual.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
100	**174**	**88**	Resolve The proposed text does not add clarity or usability. **DH Panel Statement** **The submitter has not adequately substantiated that the present definition is unclear.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
100	**452**	**89**	Resolve The proposed informational note does not support the definition. Further, an informational note cannot contain a requirement or make

			interpretations per 2.1.10.2 of the NEC Style Manual.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
100	**904**	**90**	FR (TG-2, FR 5) The word “where” was editorially changed to “if” and “power source” was removed from (1) as it is addressed in (2).

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
100	**3634**	**91**	Resolve It is unclear what the “end user” is or why it matters if the equipment changes hands.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
100	**2513**	**92**	Resolve The substantiation does not support the recommendation as the term is used in the Code.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
100	**3053** **537**	**93** **94**	FR (TG-2, FR 6) The definition was revised to clarify that supports for equipment should not fall under the definition of a structure.

			Suggest a Resolve to PI 3053 and PI 537 **DH Panel Statement for Resolve** **The Panel concludes that supports are part of the structure per the definition.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
100	**520**	**96**	Resolve No substantiation was submitted that this has been a source of misunderstanding.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
100	**1352**	**97**	Resolve These terms are described elsewhere in NFPA procedural documents. **DH Suggested additional sentence.** **Errata and TIA amendments are posted on the NFPA website.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
100	**1202**	**98**	Resolve This term is used in electrical theory and does not need to be defined in the NEC. It is not clear why the term is misunderstood in the industry. **DH Panel Statement** **The recommended term is colloquial. There is no need to add additional jargon as a definition.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
100	**1203**	**99**	Resolve This term is used in electrical theory and does not need to be defined in the NEC. It is not clear why the term is misunderstood in the industry. **DH Panel Statement** **The recommended term is colloquial. There is no need to add additional jargon as a definition.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
100	**4305**	**100**	Resolve The term “load side” is not only affiliated with a disconnecting means where overcurrent is provided. For examples, see the definition for Type 2 SPD, Exception No. 2 to 210.13 and Exception No. 2 to 215.10. **DH Panel Statement** **The recommended definition does not accurately encompass all load side scenarios.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
100	**1371**	**101**	Resolve “Physical damage” is a subjective term that is not enforceable.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement

100	**1566**	**102**	Resolve The term is not currently used in the NEC. Not all prefabrication is a manufacturing or construction process. **DH suggested additional sentence.** **The proposed definition has mandatory requirements in violation of 2.1.2.5 of the NEC Style Manual.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
100	**4307**	**103**	Resolve The term “supply side” is not only affiliated with a disconnecting means where overcurrent is provided. For examples, see 110.30, 215.10, Ex. No. 2, and 230.70, Ex. No. 1. **DH Panel Statement** **The recommended definition does not accurately encompass all line side scenarios.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
100	**3480**	**104**	Resolve The term “piping system” is not always used as indicated in the substantiation or the proposed definition. For examples see 280.24(A)(1), 427.13 and 514.3(C)(1). The proposed definition does not add clarity. “Sleeves” and “supports” do not align with the proposed term.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
100	**4088**	**105**	Resolve The proposed definition has mandatory requirements in violation of 2.1.2.5 of the NEC Style Manual. **DH suggested additional sentence.** **The proposed informational notes are in violation of the NEC Style Manual. Per 2.1.10.2, informational notes shall not be written in mandatory language and shall not contain requirements, make interpretations, or make recommendations.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
100	**1208**	**106**	FR (TG-2, FR 7) The definition was added to clarify voltage ranges currently used in the NEC. The term “prevalent” is not used in the Code and was changed to “nominal standard voltage” which aligns with ANSI C84.1, Voltage Ranges (60 Hertz).

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
100	**1571**	**107**	Resolve The term “workmanship” is not used in the Code.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
100	**3632**	Reassigned from CMP 12	Resolve The proposed definition does not add clarity. It is unclear why it matters if the equipment changes hands. **DH** **Correlate this action with resolve PI 3634 earlier in this report.** **It is unclear what the "end user" is or why it matters if the equipment changes hands.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
100	**1046**	Reassigned from CMP 4	Resolve The definition does not enhance usability. Adding this definition would not prevent feeders (SER cable) from passing through a building or other structure. The proposed definition included requirements which is prohibited by 3.2.3.2 of the NEC Style Manual. **DH Proposed revised reference** **Change the NEC Style Manual reference to 2.1.2.5.** **There is no 3.2.3.2. in the NEC Style Manual.**

2026 NEC® Public Input Task Group Report

CMP # 1	
TG# 3	
TG Chair:	**Jack Lyons**
TG Members:	**Palmer Hickman, Mike Slowinske, Fritz Gunther, Joe Pavia, Chris Vance, Frank Tyler**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.1	3882	102	3882 Resolve Statement: There seems to be a word missing in the recommendation. Regardless, per 2.1.10.1 of the NEC Style Manual, if an informational note is needed to explain the text of the document, consideration shall be given to rewriting the text of the document to make the rule clear. CMP1 concludes that the rule is

			clear and the recommended informational note is not needed to explain the text of the document.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.X (New)	**4271**	**103**	Resolve Statement: The proposed text is a design consideration. See 90.2(A) and (B) regarding practical safeguarding and adequacy where it states, in part, that this Code is not intended as a design specification and compliance therewith is not necessarily adequate for good service. The proposed input language does not align with the Style Manual per 4.2.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.2	**2958**	**104**	**Resolve** **The definition of approval is clear and the listing requirement is only part of the approval process and would only make this section unclear or incomplete. See section 110.3 for listing requirements.** **DH** **The definitions of listed and approval meet the intent of the submitter.**

			May want to reconsider the action-possible FR listen to the AHJ's.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.(new)	1057	105	Resolve Statement: The submitter has not adequately substantiated why a requirement for rounding a calculation involving amperes needs to be a general requirement in Article 110.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement DH See TG-1 Resolve Action on Prefabrication in PI 1563 for correlation (Do not accept adding new (E) Prefabricated Equipment)
110.3	1573 1576 3403 3375	106 123 112 110	Create FR-X TG3 CMP1 PI 1573 The revision includes a change in the title of 110.3 to reflect a new sub-sections (D) Cybersecurity and (E) Prefabricated Equipment. These subsections address the evaluation of prefabricated assemblies and cybersecurity which was removed from line item 110.3(A)8 and moved to subsection (D) to make it clearer for the user of the Code. The additional I.N. #2 in Part (D) gives the user additional guidance in the evaluation process of Cybersecurity. The term "and additional network controllable" was inserted to ensure all equipment that provides electrical safety and is networked controlled should be

			evaluated for cybersecurity protection to ensure their safety aspect to life and property. **DH recommendation** **Delete 1576 and resolve does not correlate with the action taken on PI 1560 and 337 task group #1**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.3	1242	108	Resolve Critical infrastructure application articles may have additional requirements and are more specific to those systems and therefore should not be covered by the general rules in Article 110

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.3	7	115	Resolve Although Ghosts are real, they do not affect electrical systems. **DH Panel Statement** **The existence of ghosts has not been adequately substantiated by the submitter.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.3	502	114	Resolve The redundant language in other critical infrastructure subject to cybersecurity attacks may be more specific than the general rule. DH suggest FR for PI 502 Panel Statement The text was removed.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.3	4428	113	Resolve 70B does not address Cybersecurity. NFPA 70 addresses the installation of network connected equipment that is associated with life safety systems.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.3(B)	2160	120	**Resolve** **The current guide card resource which gives all product uses and restrictions and product standard information is online and available to all users at no cost.** **DH Panel Statement** **The revised text does not add clarity to the rule. Stating "a general user does not have access to instructions and only has access to the owner's manual" has not been substantiated and does not support the suggested revision. The Panel concludes that the Informational Note provides several options for users to access installation instructions for this information.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.3(B)	1896 2401 4259	119 121 122	CMP1 TG3 FRX PI 1896 The revision makes it clear that product installation and use instructions shall not compromise safety and must also conform to the requirements of this Code. **DH FR text** **DH Refer to PI 1896 alternate FR text:** **The installation and use instructions shall not be less than the minimum requirements within this Code.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.3(X)	2471	125	**Resolve** The term Field Label as it relates to evaluation of equipment is a well understood term and is not necessary for the general terms in Sect 110.3 **DH Panel Statement** **The submitter has not adequately substantiated why the proposed new list item (D) is necessary due to e expanded use of this term in the Code.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.3((B) /exc	1865	117	**Resolve** Statement: This recommended new exception is unclear and does not belong here in Section 110.3(B) **See PI 1866** **DH Panel Statement** **Public Input shall comply with 4.3.4.1(c) of the Regulations. The proposed text of the Public Input must include the wording to be added.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.3((B) /exc	1866	118	**Resolve**

			Statement: This recommended new exception is unclear and does not belong here in Section 110.3(B) **See PI 1865** **DH Panel Statement** **Public Input shall comply with 4.3.4.1(c) of the Regulations. The proposed text of the Public Input must include the wording to be added.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.4	1592	126	**Resolve** The voltage classifications are not correlated with the use of voltages with this code. The term 1000V or less Or Over 1000 V Are the terms used throughout the code.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.4	1593	129	**Resolve** The voltage classifications are not correlated with the use of voltages with this code. The term 1000V or less Or Over 1000 V Are the terms used throughout the code.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.4	1577	132	**Resolve** The voltage classifications are not correlated with the use of voltages with this code. The term 1000V or less Or Over 1000 V Are the terms used throughout the code.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.4	3054 3055 427 4287 Should this stay in the cart?	133 134 135 5	FR(X) CMP1 TG3 PI 3055 The revision clarifies the application of equipment that is rated under the nominal voltage can operate safely within specific tolerances, and clarifies voltage values when AC or DC is not specified. **DH Revised text** **Delete the first and last sentence of the committee action.** **Revised Panel statement** **The revision clarifies the suitability of equipment when rated for the nominal voltage. See the definition of nominal voltage and informational note No. 1.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.5	2275	136	Resolve

			The material is not always stated in the requirements throughout the code.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.X(new) After (5)	4263	137	Resolve The information would be more relevant to the rules in Article 220 and not in the general requirements of Art 110

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.8	2243	138	Resolve The wiring methods recognized in this section (110,8) are not limited to Chapter 3 wiring methods.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.9	3885	139	Resolve The methods of calculating faults in a circuit are not limited to the method proposed. Alternative methods are readily available. ~~and understood~~.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.10	2450	140	Resolve The replacement of fuses based on current limited characteristics should be decided by the manufacturers of the equipment.

			DH Panel Statement **The suggested Informational Note is a violation of the NEC Style Manual 2.1.10.2.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.10	**3624**	**141**	**FR (X) CMP1 TG3** **The removal of the language in the section and placing it into an I.N. helps clarify the requirement. The language did not have a clear requirement, it was just added as information.** **Resolve** **DH Panel Statement** **The submitter has not substantiated why the current wording is "long and confusing."** **Note** **(Moving the requirement to an informational note is a violation of the NEC Style Manual.)**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.10	**4147**	**142**	**Resolve**

			Reliability is outside the scope of the general requirement; it may be appropriate in emergency system power supplies. **DH Panel Statement** **Per 90.2(A), this Code is not intended as a design specification. Further, per 2.1.10.1 of the NEC Style manual, if an informational note is needed to explain the text of the document, consideration shall be given to rewrite the text of the document to make the rule clear. The rule is clear. There is no need to add this information.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.11	356	143	Resolve Enclosure Types 7 & 9 can be listed to both indoor and outdoor locations. These references would only create confusion when evaluating the general requirement for enclosures referenced in 110.28

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.12	138 139	144 148	CMP1 TG3 FRX PI 138 The additional sub-section will apply requirements to address all abandoned wiring throughout the Code. **DH Recommendation Resolve**

			Panel Statement **Adding a general requirement without removal of related abandoned wiring requirements elsewhere in the Code as described in the substantiation would create a redundant requirement. Further, 110.12 addresses installation rather than removal.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.12	1596	145	CMP1 TG3 FR-X The reference to NECA 1 was updated to 2023. The current language in this section is clear and understandable and complies with the Style Manual.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.12	1942	153	Resolve The current language in this section is clear and understandable and complies with the Style Manual on terms to be avoided **DH recommended FR text** **The installation of electrical conductors and equipment covered by this code shall be approved and shall comply with 110.12(A) through (C).** **Panel Statement** **The revised text removes unnecessary language.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.12	3188	147	CMP1 TG3 FR-X The additional language addresses the integrity evaluation of equipment that has been influenced by Fire, Water (saturation or submergence) **DH recommendation Resolve** **Panel Statement** **The concerns of the submitter are addressed in the last sentence of the existing requirement.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.12(C)	15 ~~Resolve 15~~ 252	150 152	CMP1 TG3 FR-X PI 252 The removal of Sub-Section (C) and the related I.N. eliminates repetitive requirements throughout the Code. The proposed I. N. for this sub-section may be appropriate in another section. ~~And may be addressed in a companion PI 138.~~ **DH Recommendation Resolve PI 252** **Panel Statement** **The Panel reiterates the general requirement in Article 110 rather than redundant requirements elsewhere in the Code.** **Recommend FR for PI 15**

			ActionRemove Informational Notes No. 1 and 2. **Panel Statement** **Per 2.1.10.1 of the NEC Style manual, if an informational note is needed to explain the text of the document, consideration shall be given to rewriting the text of the document to make the rule clear.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.13(B)	3220	154	Resolve The current language and structure are clear and understandable regarding ventilation around equipment. **DH Panel Statement** **The proposed restructuring changes the application of the requirement.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.14	4115	155	Resolve A general listing of terminations is not appropriate at this time, as a range of terminations are unlisted. All equipment with terminations do not always have a listing requirement. **DH Panel Statement**

			The submitter has not substantiated that "the need for listed wire connectors and splicing devices is long overdue."

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.14	**2411**	**170**	**Resolve** **The application of a watertight or airtight seal of a termination is dependent on the environment and the listing of the product should address the robustness of the termination.** **The current language is clear.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.14	**251**	**172**	**Resolve** **There are products that are specific to Copper Only for their termination whether it is a device or connector. The current is language is clear.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.14	**3640**	**173**	**Resolve** **The current language and structure are clear.** **DH Panel Statement** **The proposed restructuring changes the application of the requirement.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.14	907	174	Resolve The proposal cites a similarity with Copper and Copper Clad aluminum. There are products that are specific to Copper Only for their termination. Having a statement of similarity can be confusing to the user of the code. Ampacities are also different between the two types of conductors. The current is language is clear.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.14(C)	1342	158	Resolve The current language is clear about terminations equipment and the temperature limitation of the terminals and conductors. **DH Panel Statement** **The proposed Table does not add clarity to the application of this requirement.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.14(C)	382	162	Resolve The current language is clear about terminations equipment and the temperature limitation of the terminals and conductors.

			DH Panel Statement **The proposed text does not provide clarity to the application of the requirement.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.14(C)	**449**	**164**	**Resolve** **The current language is clear about terminations equipment and the temperature limitation of the terminals and conductors.** **DH Panel Statement** **The proposed text does not provide clarity to the application of the requirement. Further, the statement that "110.14(C) has historically been a source of confusion" has not been substantiated.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.14(C)	**48**	**166**	**Resolve** **The current language is clear about terminations equipment and the temperature limitation of the terminals and conductors.** **DH Panel Statement** **The proposed text does not provide clarity to the application of the requirement.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.14(D)	1093	168	Resolve The annex is informative for Torque guidance. The AHJ already has the final approval if the product information is not available per 90.4(B) **DH Panel Statement** **The concerns of the submitter are already addressed in Informational Note No. 2.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.14(D)	2904	169	Create FR-X CMP-X TG3 The standard version in I.N. #2 should reference the Standard and the correct edition. **DH Panel Statement** **The Informational Note is revised to update the name and date of the Standard.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.15	755	176	Resolve the current language in the requirement is an industry practice that is understood. **DH suggested FR**

			On a 4-wire, delta-connected system where the midpoint of one phase winding is grounded, only the conductor or busbar having the higher phase voltage to ground shall be durably and permanently marked by an outer finish that is orange in color or by other effective means ensuring that orange is visible at all access points or terminations. **DH Panel Statement** **Additional text clarifies the application of the requirement. The color orange must be included in any other effective marking means.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.16	3819 4207 71 891	177 179 180 181	Create FR X CMP1 TG3 PI 4207 The reorganization of 110.16 will clarify the marking requirements of electrical equipment on the hazards of arc flash. The expansion of all equipment better correlates with recognized industry practices.
Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.16	70	178	Resolve Dwelling unit electrical equipment does not correlates with recognized industry practices DH Panel Statement

			The submitter has not substantiated why the person in the dwelling unit would benefit from such a generic label.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.17	**2402**	**182**	**Resolve** **Replacement of a piece of equipment is not relevant to Servicing and Maintenance unless it is part of the Servicing and maintenance requirements where parts are allowed to be replaced.** **DH Panel Statement** **The submitter has not adequately substantiated why there should be a general rule that, unless the Code says otherwise, any electrical equipment that is replaced should be installed to the latest edition of the NEC. Further, the NEC, per 90.5(A), "should" is not mandatory and is therefore not suitable as a requirement. It is also unclear what is intended by "the latest edition of the NEC." Is it the most current edition that is published by NFPA, the most current edition adopted by the jurisdiction where the installation is being inspected, or is it something else?**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.17	3823	184	Resolve The marking requirement is best suited for the Electrical Maintenance Plan developed by the facility in accordance with NFPA 70B

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.17	501	186	Create FRx CMP1 TG3 Update the title and edition to the reference Standard in the Informational Note No. 2

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.17	4205	185	Resolve Servicing and Maintenance was placed in this Section as it is addressed in this Code and is within the scope of the NEC. The Servicing

			and maintenance requirements differentiate it from reconditioning. **DH Panel Statement** **See the action on PI 478 that created a First Revision to 90.2(C).**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.17	256	183	Resolve Servicing and Maintenance was placed in this Section as it is addressed in this Code and is within the scope of the NEC. The Servicing and maintenance requirements differentiate it from reconditioning. **DH Panel Statement** **See the action on PI 478 that created a First Revision to 90.2(C).**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.21	89	187	Resolve The working space is covered in current requirement in 110.26. The facility is responsible for clear workspace. The marking requirement is outside the installation requirement of equipment

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.21	467	188	Resolve The manufacturer cannot assume or control the orientation for the installation of the equipment. **DH alternate action create FR** **Revise the last sentence to read** **"...environment involved and shall be visible."** **Panel Statement** **This action clarifies that the label must be both installed and visible.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.21(B)	3056	189	Resolve Adequate guidance is already provided in the current Informational Notes.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.22(A)	1121	190	Create FR x CMP1 TG3

	~~3057~~ 179	192 191	PI 1121 The revision clarifies the marking requirements for disconnects and references 110.21(B) and marking criteria for the environment and field applied label. ~~Adequate guidance for text is already provided in the current Informational Notes in section 110.21(B).~~ **DH suggested Panel Statement to resolve PI 3057** **The submitter has not substantiated why detailed marking information must be provided as a requirement in this first level subdivision.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.23	CI	TG4 CMP1	Consider deletion or relocate 110.23 and possibly move 110.29 into 110.23 as a general requirement or repeat the language in Part III for equipment that is within sight of?

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.24(A)	69	193	Resolve The current and I.N. gives proper guidance for marking of equipment The IN remains relevant to the application of the requirement **DH Panel Statement**

			Per 2.1.10.1 of the NEC Style manual, this informational note contains explanatory information to support or improve usability of the associated requirement. The Panel notes that the edition date is updated from 2021 to 2024.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.24(A)	3058	197	Create FRx CMP1 TG3 ~~The redundant language was removed and a reference to 110.21(B) was inserted and~~ ~~T~~he edition date was modified in Informational Note No. #1.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.24(A)	245	196	Resolve Current language addresses the appropriate equipment to be marked as a general requirement

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.24(A)	776	195	Resolve Current language addresses the appropriate equipment to be marked as a general requirement

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.24(B)	3198	198	**Resolve** **The change to the system by the Utility cannot be addressed in the original installation. When modifications of existing installations are made, assurances that 110.9 are met is reasonable.** **DH Panel Statement** **The submitter has not adequately substantiated that changing the word "installation" to "system" will "ensure the Code includes any changes like this" as described in the recommendation.**

2026 NEC® Public Input Task Group Report

CMP #	**1**
TG#	**4**
TG Chair	**Mark Christian**
TG Members	**Dan Neeser, Kent Saylor, Lance Ash, Greg Chontow, Larry Geyer, Louis Barrios**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
Global PI Article 110	**2422**	**2**	**FR TG4-1 (Multiple Sections)** **CS:** Sections of Article 110 have been revised to clarify the voltage rating of "not over 1000 volts ac, 1500 volts dc, nominal" where a voltage range is indicated. Voltage range was deleted where not necessary due to time of the Part of the Article.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.26(A)	**2159**	**248**	**Resolve** **CS:** Special permission is permitted per NEC 90.4. No technical substantiation is provided per the Regulations Governing Developing NFPA Standards 4.3.4.1d and 4.3.4.2.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.26(A)(1)	**2038**	**250**	**Resolve** **CS:** Regarding proposed (d), meter socket enclosures are not likely to require examination, adjustment, servicing, or maintenance while energized. Accordingly, per 110.26(A), 110.26(A)(1) is not applicable. Further,

			per the proposed (e), electrical equipment containing sections that have no serviceable or operable parts are not likely to require examination, adjustment, servicing, or maintenance while energized. Accordingly, per 110.26(A), 110.26(A)(1) is not applicable.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.26(A)(1)	**207**	**252**	**Resolve** **CS:** This PI would not add any additional safety when servicing existing equipment. There is no adequate technical substantiation to warrant this change. The Panel does not recognize inconvenience as substantiation to dilute a safety requirement.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.26(A)(1)	**215**	**254**	**Resolve** **CS:** Inadequate technical substantiation to warrant this change has been provided. This change decreases the safety factor by increasing the voltage to allow for a less minimum clear distance. Perhaps a FR to change the voltage to ground to Nominal Voltage.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.26(A)(1)	**2385**	**256**	**Resolve** **CS:** A conductive surface does not necessarily complete a circuit due to it not being grounded or energized.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.26(A)(1)	**42** **504**	**257** **259**	**TG4- FR2** **CS: (42)** Correlates with similar requirements of 110.34(A) and improves clarity. **DH additional FR text for PI 504** **Add the text as submitted in PI 504.** **Panel Statement** **This revision logically accounts for the fact that enclosed equipment will need to meet the distances in each condition when equipment that is enclosed becomes exposed.** **Condition 1 — Exposed or enclosed live parts on one side of the working space and no exposed or enclosed live or grounded parts on the other side of the working space, or exposed or enclosed live parts on both sides of the working space that are effectively guarded by insulating materials.** **Condition 2 — Exposed or enclosed live parts on one side of the working space and grounded parts on the other side of the working space. Concrete, brick, or tile walls shall be considered as grounded.** **Condition 3 — Exposed or enclosed live parts on both sides of the working space.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.26(A)(2)	**2437**	**261**	**Resolve** **CS:** 110.26(A)(2) only address the width of the working space. This PI would be better served in 110.26(A)(1) Depth of Working Space. No technical substantiation is provided per the Regulations Governing Developing NFPA Standards 4.3.4.1d and 4.3.4.2.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.26(A)(4)	**210**	**262**	**Resolve** **CS:** Deleting the word "to ground" would not add clarity or usability to the Code. ~~There have been no statements as to the problem since the 2017 Code.~~ There is no technical substantiation to warrant this change.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.26(A)(4)	**3297** **1521**	**263** **264**	**Resolve** **CS:** Adding solid surface as a type of suspended ceiling could create confusion as this term is not defined. **DH suggested FR** **Accept as revised in PI 3297 and PI 1521.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.26(A)(4)	**4300**	**266**	**Resolve** **CS:** No technical substantiation is provided per the Regulations Governing Developing NFPA Standards 4.3.4.1(d) and 4.3.4.2.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.26(A)(6)	**350**	**267**	**Resolve** **CS:** Equipment pads within the working space are addressed in 110.26(A)(3).

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.26(A)(6)	351	268	**TG4- FR3** **CS:** Deleting "the floor, grade, or platform in the working space shall be" eliminates redundant language and increases clarity.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.26(A)	1088 1089	269 270	**Resolve** **CS:** Per the NEC style Manual 2.1.10.2, informational notes shall not make interpretations. A transformer, regardless of voltage or KVA rating, is electrical equipment and requires adequate working space and is likely to require examination, adjustment, servicing, or maintenance while energized.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.26(A)	3757	271	**Resolve** **CS:** Working clearance is not required for equipment located within a listed assembly. No technical substantiation is provided per the Regulations Governing Developing NFPA Standards 4.3.4.1(d) and 4.3.4.2.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.26(A)	4453	272	**Resolve** **CS:** The proposed revision does not improve clarity.

			DH suggested FR action **Accept the deletion of "while energized".** **Panel Statement** **This revision will require working space whether equipment is energized or not.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.26(B)	**685**	**273**	**Resolve** **CS:** The existing language in 110.26(A)(6) does not make a clear statement as to the storage issue. Leaving the language in 110.26(B) will keep the area clear of storage/debris, as well as providing proper guarding. This PI does not contain technical substantiation as required by the Regulations Governing the Development of NFPA Standards 4.3.4.1d. and 4.3.4.2 **DH Panel Statement** **The requirements in 110.26(A)(6) and 110.26(B) are not redundant.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.26(C)(2)	**1751** **1943**	**274** **276**	**Resolve** **CS:** Adding a requirement where the combined ampere rating of multiple pieces of equipment and the combined width of equipment requires increased working space is overly restrictive. **DH alternative action create FR** **Accept the revision in PI 1943**

			Reduce 1200 to 1000 to correlate with 110. 16(B) **The intent of PI 1751 is met with the action on PI 1943.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.26(C)(2)	**2090**	**277**	**Resolve** **CS:** The service disconnect for modular meter centers is already required per 110.26(C)(2)(2). **DH question. Is the correct reference to 110.26(C)(2) or 110.26(C)(2)(2)?**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.26(D)	**1906** **3540** **3541**	**279** **280** **281**	**TG4- FR3** (based on PI 3541) **CS:** Illumination is required for safety both indoors and outdoors.
110.26(D)	**3933**	**284**	**TG4- FR4** **CS:** The revised wording improves clarity that the control is for the luminaire(s), not to control illumination of the working space.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.26(D)	**3633**	**282**	**Resolve**

			CS: Requiring a minimum of 1 footcandle would not be sufficient. The automatic means would be restrictive and would allow a worker to forget to bypass the automatic means thus leaving the worker in the dark.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.26(D)	**3641**	**283**	**Resolve** **CS:** Revising the requirement into a list format does not increase usability and clarity.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
New Section after 110.26(E)(1)	**380**	**285**	**Resolve** **CS:** The proposed language is in conflict with 110.26(E)(1)(b).

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.26(E)(1)	**246**	**286**	**Resolve** **CS:** The proposed revision does not improve clarity or usability. **DH Panel Statement** **The proposed revision to the title of (1)(d) conflicts with the requirements of (1)(d).**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.26(E)(1)	**738**	**290**	**Resolve** **CS:** The proposed revision does not improve clarity. No technical substantiation is provided per Regulations Governing the Development of NFPA Standards 4.3.4.1d. and 4.3.4.2

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.26(E)(1)	**794**	**291**	**Resolve** **CS:** The proposed revision does not improve clarity or usability. **DH suggested panel statement** **The revision does not improve the understanding or application of the requirement.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.26(E)(2)	**3481**	**292**	**Resolve** **CS:** The proposed revision does not increase clarity. **DH suggested added sentence** **“Piping and Piping Systems” are synonymous terms.** **Possible FR? Delete (4)?**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement

110.26(E)(2)	**3543**	**293**	**Resolve** **CS:** See PI 3541 (FR TG4XX) which addresses the concern of the submitter.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.26(E)(2)	**644**	**294**	**Resolve** **CS:** 110.26(E)(2) is specifically for outdoor equipment. The removal of this language may be seen as deleting the requirements for working clearance for outdoor equipment.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.26(E)	**233** **527**	**295** **296**	**TG4- FR5** **CS:** Enclosed panelboards is the correct term to use as a panelboard would be required to be installed in a cabinet, cutout box, or enclosure suitable for a panelboard application.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.26	**2313**	**297**	**Resolve** **CS:** This recommendation drastically reduces safety for the electrical worker and others who may be present and unable to egress as presently required. Using “tremendous cost” as substantiation for decreasing safety has not been adequately substantiated.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.26	**4234**	**298**	**Resolve** **CS:** Personnel doors do not prevent entrance to or egress from the working space.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.28	**1631**	**299**	**TG4- FR6** **CS:** Informational note No. 6 referencing UL 508A for evaluating type 4, 4X and 12 ventilated enclosures is not needed as requirements have been added to UL 50E.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.28	**3059**	**302**	**Resolve** **CS:** Adding the term “cable” does not improve clarity or usability. **DH alternate action create FR** **Add “cable” to the last sentence of 110.28.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.28	**357**	**306**	**Resolve** **CS:** The proposed revision does not improve clarity. No technical substantiation is provided per Regulations

			Governing the Development of NFPA Standards 4.3.4.1d. and 4.3.4.2 **DH proposed action** **Delete the first sentence of the panel statement.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.29	**1597**	**310**	**Resolve** **CS:** The proposed revision does not improve clarity. No technical substantiation is provided per Regulations Governing the Development of NFPA Standards 4.3.4.1d. and 4.3.4.2

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.29	**2006** **2384** **3459**	**311** **312** **313**	**TG4- FR7** **(2006 PI)** **CS:** The term "within sight" is used in several sections of the NEC where the reference is a building or structure as opposed to equipment. **Potential FR:** Delete 110.23 and move 110.29 to 110.23 – Full Committee

			DH Point of discussion **Are we saying "something" has to be within sight of "something else"?**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.31(A)(5)	**1356** **2622**	**314** **315**	**First Revision with TG4- FR8** **CS: (PI 3156)** Reference to ANSI has been removed as all ASTM standards are ANSI standards and edition date of the standard has been revised. **(PI 2622)** Text has been revised to comply with the NEC style manual.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.31(C)(1)	**2623**	**316**	**Resolve with TG4- FR9** **CS:** Text has been revised to comply with the NEC style manual.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.34	**505**	**317**	**Resolve** **CS:** See action taken on FR (PI 42). **DH alternative action create FR** **Accept the revised text as submitted in PI 505** **Panel Statement** **This revision logically accounts for the fact that enclosed equipment will need to meet the distances in each condition when equipment that is enclosed becomes exposed.** **Condition 1 — Exposed <u>or enclosed</u> live parts on one side of the working space and no <u>exposed or enclosed</u> live or grounded parts on the other side of the working space, or ~~exposed~~ or enclosed live parts on both sides**

			of the working space that are effectively guarded by insulating materials. **Condition 2 — Exposed or enclosed live parts on one side of the working space and grounded parts on the other side of the working space. Concrete, brick, or tile walls shall be considered as grounded.** **Condition 3 — Exposed or enclosed live parts on both sides of the working space.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.34(C)	**1599**	**318**	**Resolve** **CS:** Compliance with ANSI C84 is not mandatory in the NEC. Mandatory references to other standards are prohibited in the NEC per the NEC Style Manual. 4.2

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.34(E)	**78**	**319**	**Resolve** **CS:** Per 2.1.10.1 Usage of the NEC style Manual: If an informational note is needed to explain the text of the document, consideration shall be given to rewriting the text of the document to make the rule clear.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.40	**3965** **958**	**320** **324**	**Create FR TG4- FR10** **CS: (PI 3965)** Section 110.40 has been revised to point to 110.14 as it applies to conductors up to

			2000V. Appropriate Information related to Type MV conductors, which was not previously included in the requirement, has been added. **(PI 958)** The new section in 110.40(D) addresses the submitters concern.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.41	**3685**	**325**	**Resolve** **CS:** The requirement for documentation is sufficiently addressed in 110.41(A).

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.51(A)	**3769**	**326**	**Resolve** **CS:** The voltage stated in the title of Part IV is over 1000V, Nominal. The addition of "medium voltage" does not add additional usability or clarity. **DH suggested FR** **This part shall apply to the installation and use of ~~high-voltage~~ power distribution and utilization equipment that is portable, mobile, or both, such as substations, trailers, cars, mobile shovels, draglines, hoists, drills, dredges, compressors, pumps, conveyors, underground excavators, and the like <u>for tunnel installations over 1000 Volts, Nominal</u>.** **Panel Statement** **This correlates the requirement of what is covered in 110.51(A) with the title of Part IV of Article 110.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.52	**2624**	**327**	**Resolve with FR** **CS:** Text has been revised to comply with the NEC style manual. **DH revised panel action** **110.52 Overcurrent Protection.** **Motor-operated equipment shall be protected from overcurrent in accordance with Article 430, Parts III, IV, and V ~~of Article 430.~~ Transformers shall be protected from overcurrent in accordance with 450.3.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.54(B)	**739**	**328**	**Resolve** **CS:** The proposed revision does not improve clarity or usability. It is unclear what is the "inside of an outer surface of a metal raceway."

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.58	**2625**	**329**	**Resolve with TG4- FR11** **CS:** The text is revised to comply with the NEC Style Manual Section 4.1.4, regarding the use of Parts.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.70	**1679**	**330**	**Resolve** **CS:** Working clearance is not required for equipment located within a listed assembly. No technical substantiation is provided per the Regulations Governing Developing NFPA Standards 4.3.4.1d and 4.3.4.2. **DH question** **Does/should part II and III apply to Part V** **What is "sufficient size"? Is it 110.26 and 110.34?**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.72	**3881**	**331**	**Resolve as an TG4- FR12** **CS:** Class 4 circuits have at least the same fire and life safety requirements as a Class 2 circuits. As such, Class 4 circuits have been added to the exception.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
New Section after 110.74(B)	**3760**	**332**	**Resolve** **CS:** All listed equipment, including enclosed wiring, is already required to be used in accordance with its listing and labeling per 110.3(B)and 310.10(C)(3).

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.74(B)	**1680**	**333**	**Resolve with TG4- FR13** **CS:** Reference to 314.71(A) an (B) has been corrected to 305.5 for the sizing of a box. Note: Global PI also modifies this section.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.75(A)	**3883**	**334**	**Resolve as an TG4- FR14** **CS:** Class 4 circuits have at least the same fire and life safety requirements as a Class 2 circuits. As such, Class 4 circuits have been added to the exception.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.75(C)	**3765**	**335**	**Resolve** **CS:** Proposed revision does not improve clarity. **DH Suggested FR** **Accept the revised text as shown in PI 3765.** **Panel Statement** **The revised text clarifies the application of the requirement.**

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.76(A)	**3761**	**336**	**Resolve** **CS:** The proposed revision would not add clarity and no technical substantiation is provided. DH suggested FR Revise the text as shown. "Access openings for personnel shall be located where they ~~are not directly above~~ do not inhibit access to the electrical equipment or conductors in the enclosure. Other openings shall be permitted over equipment to facilitate installation, maintenance, or replacement of equipment." Panel Statement The revised text clarifies the application of the requirement.

Article/Section	Public Input #	PI Report Page #	TG Recommendation & Statement
110.77	**3759**	**337**	**Resolve** **CS:** The proposed revision would not add clarity or improve usability.

110.14 and Dissimilar Metals

Presented by Chuck Mello
cdcmello Consulting LLC

1951 NEC

New text added similar to a FPN to Section 1117:

> "Because of different characteristics of copper and aluminum the devices and fittings, such as pressure connectors, splice, solder lugs, solders, and fluxes, employed where making connections, should be suitable for the material of the connector."

This seems to arise from concerns about galvanic interaction of copper and aluminum. Current carrying capability and related heating is covered elsewhere in the code.

No change in this language until the 1965 Edition

1965 NEC

Revised text to Section 110.14 still similar to a FPN:

> "Because of different characteristics of copper and aluminum, the devices, such as pressure connectors and soldering lugs, shall be suitable for the material of the connector and shall be properly installed and used. Materials such as solder, fluxes, inhibitors, and compounds, where employed, shall be suitable for the use and shall be of a type which will not adversely affect the conductors, installation, or equipment. "

No change in this language until the 1971 Edition

1971 NEC

Revised text to Section 110.14 as mandatory text:

"Because of different characteristics of copper and aluminum, the devices, such as pressure terminal or pressure splicing connectors and soldering lugs shall be suitable for the material of the connector and shall be properly installed and used. Conductors of dissimilar metal shall not be intermixed in terminal or splicing connector where physical contact occurs between dissimilar conductors **(such as copper and aluminum, copper and copper-clad aluminum, or aluminum and copper-clad aluminum),** unless the device is suitable for the purpose and conditions of use. Materials such as solder, fluxes, inhibitors, and compounds, where employed, shall be suitable for the use and shall be of a type which will not adversely affect the conductors, installation, or equipment. "

No change in this language until the 1999 Edition

1999 NEC

Revised text to Section 110.14:

"Because of different characteristics of dissimilar metals, the devices, such as pressure terminal or pressure splicing connectors and soldering lugs shall be suitable for the material of the connector and shall be properly installed and used. Conductors of dissimilar metal shall not be intermixed in terminal or splicing connector where physical contact occurs between dissimilar conductors **(such as copper and aluminum, copper and copper-clad aluminum, or aluminum and copper-clad aluminum),** unless the device is suitable for the purpose and conditions of use. Materials such as solder, fluxes, inhibitors, and compounds, where employed, shall be suitable for the use and shall be of a type which will not adversely affect the conductors, installation, or equipment. "

No change in this language until the 2020 Edition

2020 NEC

Revised text to Section 110.14:

"Because of different characteristics of dissimilar metals, the devices, such as pressure terminal or pressure splicing connectors and soldering lugs shall be suitable for the material of the connector and shall be properly installed and used. Conductors of dissimilar metal shall not be intermixed in terminal or splicing connector where physical contact occurs between dissimilar conductors **(such as copper and aluminum, ~~copper and copper-clad aluminum~~, or aluminum and copper-clad aluminum),** unless the device is suitable for the purpose and conditions of use. Materials such as solder, fluxes, inhibitors, and compounds, where employed, shall be suitable for the use and shall be of a type which will not adversely affect the conductors, installation, or equipment. "

CMP-1 Statement

CMP-1 panel statement from PC 1361

"Copper and copper-clad aluminum has been deleted from the dissimilar metal list for the application of this requirement."

2023 NEC

Revised text to Section 110.14:

"Because of different characteristics of dissimilar metals, the devices, such as pressure terminal or pressure splicing connectors and soldering lugs shall be suitable for the material of the connector and shall be properly installed and used. Conductors of dissimilar metal shall not be intermixed in terminal or splicing connector where physical contact occurs between dissimilar conductors **~~(such as copper and aluminum, or aluminum and copper-clad aluminum),~~** unless the device is suitable for the purpose and conditions of use. Materials such as solder, fluxes, inhibitors, and compounds, where employed, shall be suitable for the use and shall be of a type which will not adversely affect the conductors, installation, or equipment. "

CMP-1 Statement

PI 3618 Resolve

"Although the two metals may be similar, the submitter's statement is incorrect. UL 486A-B, the Standard for Wire Connectors and UL 486-C, the Standard for Splicing Wire Connectors requires connectors to be marked with "CU" (copper only), "AL" (aluminum only), "CU-AL", or "AL-CU"."

PC 331 Rejected but See SR

"The parenthetical phrase is being deleted to comply with 3.3.1.2 of the NEC Style Manual which states, in part, to "[u]se simple declarative sentence structure and keep sentences short. Writing rules in long sentences full of commas, dependent clauses, and parenthetical expressions often creates confusion and misunderstanding. The requirement can be written in two or more short sentences, expressed using a list or table, or both."

"SR-7690-NFPA 70-2021 While the statement that copper and copper-clad aluminum are considered similar metals, this will cause confusion without proper context. Terminals are only suitable for use with copper-clad aluminum conductors if they have been evaluated for both copper and aluminum. The proposed text implies that terminals suitable for copper are also suitable for copper-clad aluminum."

Request to Consider PI 907

- For 70 years the NEC provided guidance on not intermixing copper and aluminum (now dissimilar metals) in direct contact. **This is critical information for installers to have.**
- The 2023 NEC deleted all specific guidance but leaves the undefined "dissimilar metals" based on a Style Manual reference which leaves a technical void for installers.
- Copper and aluminum, or copper-clad aluminum (CCA) and aluminum should never be intermixed unless the connector or terminal is rated for the intermixed combination in a dry location.
- PI 907 reiterates what CMP-1 concluded in the 2020 cycle and clarifies that copper and aluminum or CCA and aluminum should not be intermixed unless the connector is specifically listed for that combination.

Thank You

CMP-6 request to CMP-1

January 2024

Background – CMP6

Task Group 3

Wes Wheeler – Chair, Jerry Kent, Dave Watson, Eugene Santiago, Lee Summers, Todd Crisman, Shane Custer, Chris Hunter

Reconditioned equipment proposals

Resolve

Wiring methods are not equipment. Section 110.20 does not apply to wiring methods, and this should be reflected in an informational note associated with that section. Insufficient substantiation was submitted to indicate that there are reconditioned conductors or cables in existence. While wiring methods are not equipment and the reconditioning language in the NEC does not apply to wiring methods, there is a concern about wiring methods that have been involved in floods or fires, damaged, or otherwise unsuitable for continued use. Therefore, the code-making panel suggests that Article 300 include a general statement that wiring methods that are no longer suitable for safe use shall be replaced.

Requests to CMP-1 and CMP-3

*Send to CMP-1

Section 110.20 Informational Note: Wiring methods, such as Type NM Cable, are not equipment as the term is defined in the NEC.

*Send to CMP-3

300.2(C) Conductors and wiring that are no longer suitable for use due to damage, such as overheating, fire damage, or flood damage, shall be replaced with products that comply with this code.

CMP-3 Action (FR 8702)

300.2(C) Damaged Conductors.

Conductors and wiring methods that are no longer suitable for use due to damage, such as overheating, fire damage, corrosive influences, or water, shall be replaced with products that comply with this code.

Informational Note 1: See NEMA GD 1-2019, *Evaluating Water-Damaged Electrical Equipment*, for information on electrical equipment and wiring methods damaged by water.

Informational Note 2: See NEMA GD 2-2021, *Evaluating Fire- and Heat-Damaged Electrical Equipment*, for information on electrical equipment and wiring methods damaged by fire or heat.

Request to CMP-1

Panel 6 Chair Susan Newman Scearce:

"CMP-1 -- We believe it would be valuable to add an Informational Note or language within your discretion to clearly state Conductors and cables are not equipment."

*Send to CMP-1

Section 110.20 Informational Note: Wiring methods, such as Type NM Cable, are not equipment as the term is defined in the NEC.

- CMP-6 task group was concerned the suggested language would not comply with the NEC Style Manual 2.1.10.2, but we ran out of time to develop further.
- CMP-1 committee members have expressed the same concern.

First Revisions in Article 100

Modify the definition of “Equipment” and add a new definition for “Wiring Methods”

1) Equipment. A general term for items~~, including fittings, devices, appliances, luminaires, apparatus, machinery, and the like~~ used as a part of~~,~~ or in connection with~~,~~ an electrical installation, such as fittings, devices, appliances, luminaires, apparatus, machinery, and the like, other than wiring methods. (CMP-1)

CS: Wiring methods (like raceway, cable, and cable tray) are not equipment, so the definition was revised to exclude wiring methods.

2) Wiring Methods. Raceways, cables, and support methods that provide protection or support for premises wiring system conductors.

CS: A definition for wiring methods was added to clarify the special use of the phrase in the NEC.

Adding Definitions - Benefits

- Help differentiate between equipment (like panelboards) and wiring methods (like NM cable)

- Adding in the First Draft gives an opportunity for public comment and an analysis of the effect and interaction of the definitions with requirements in the NEC

Correlation throughout NEC

- 214 references to “wiring methods”
- 69 references to “wiring method”

- Many references to in the NEC referring to
  - Equipment and wiring methods
  - Equipment or wiring methods

- Not a perfect delineation, but quite consistent in recognizing the difference between wiring methods and equipment

Equipment or wiring method?

- 6653.76-G.-7.%Ymj%rfwpnsl%xmfqq%gj%ujwrfsjsyq~%fkknjji%yt%ymj% jvznurjsy%tw%|nwnsl%rjymti%fsi%xmfqq%sty%gj%mfsi|wnyyjs3
- 6653=%\nwnsl%Rjymtix3%Tsq~%|nwnsl%rjymtix%wjhtlsn~ji%fx% xznyfgqj%fwj%nshqzeji%ns%ymnx%Htij3%

110 Scope

- Are wiring methods included in the scope of Article 110?
  - Yes, because the scope covers installation and approval of conductors. One example of specific requirements that are related is in 300.3, which requires single conductors to installed as part of a recognized wiring method.

- 110.1 Scope. This article covers general requirements for the examination and approval, installation and use, access to and spaces about electrical conductors and equipment; enclosures intended for personnel entry; and tunnel installations.

- 300.3(A) Single Conductors. Single conductors specified in Table 310.4(1) shall only be permitted where installed as part of a recognized wiring method specified in Chapter 3.

Action requested

Motion to create a First Revision to modify the definition of "Equipment" and add a new definition for "Wiring Methods"

1) Equipment. A general term for items~~, including fittings, devices, appliances, luminaires, apparatus, machinery, and the like~~ used as a part of~~,~~ or in connection with~~,~~ an electrical installation, such as fittings, devices, appliances, luminaires, apparatus, and machinery, other than wiring methods. (CMP-1)

CS: Wiring methods (like raceway, cable, and cable tray) are not equipment, so the definition was revised to clarify that wiring methods are excluded.

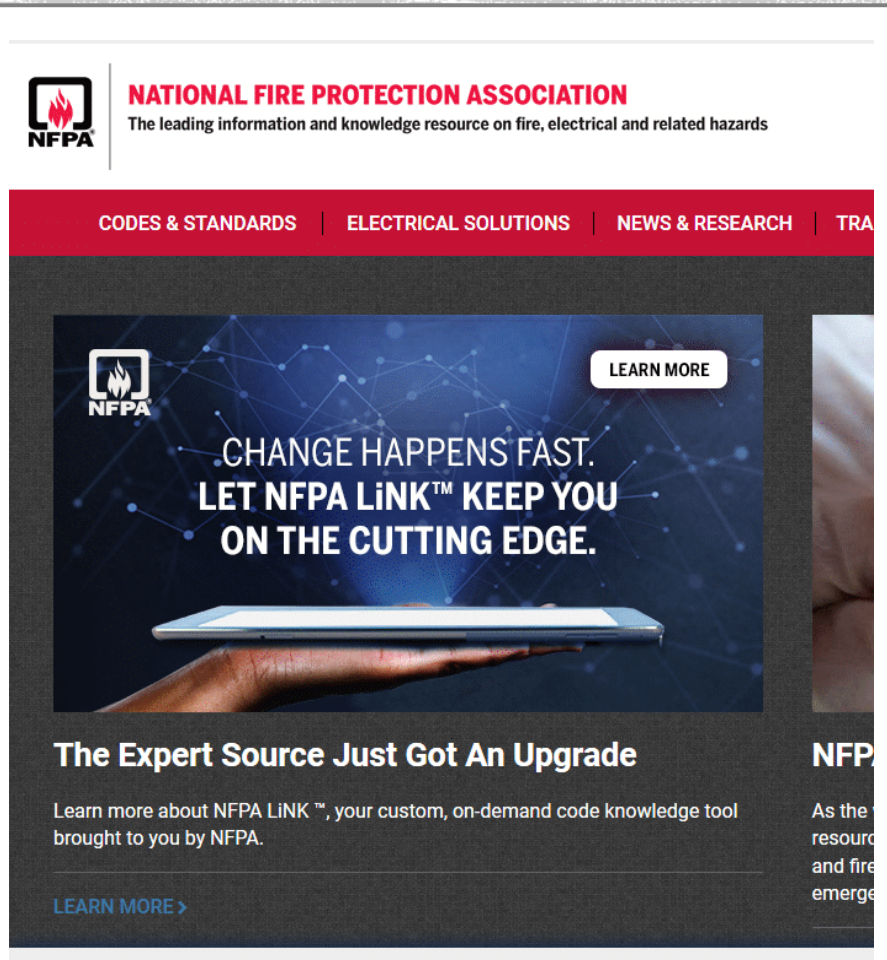
2) Wiring Methods. Raceways, cables, and support methods that provide protection or support for premises wiring system conductors.

CS: A definition for wiring methods was added to clarify the special use of the phrase in the NEC.

Founded to sell watches; evolved to sell everything	Founded to sell books; evolved to sell everything
1972	2017
sears	amazon
2 of every 3 Americans shopped in last 3 months	2 of every 3 Americans shopped in last 3 months
1987 Sales = 1% of GDP	2017 Sales = 1% of GDP

Merriam Associates

Source: Chicago Tribune



March 2020

Chapter 1

General

Chapter 2

Wiring & Protection

Chapter 3

Wiring Methods & Materials

Chapter 4

Equipment for General Use

Chapter 5

Special Occupancies

Chapter 6

Special Equipment

Chapter 7

Special Conditions

Chapter 8

Communications Systems

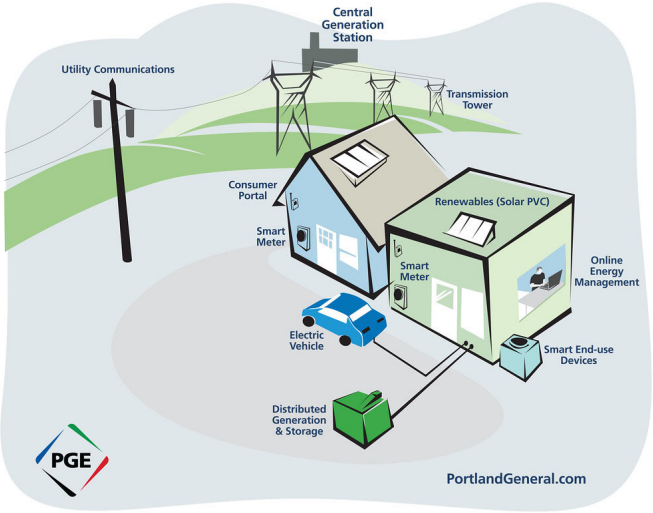
1937-2023 (35 editions):

Introduction (Identified as Article 90 starting in the 1959 edition)	Chapter 1 – General	Chapter 2 – Wiring Design and Protection	Chapter 4 has grown from 10 articles in the 1937 edition to 22 articles in the 2023 edition
Chapter 5 has grown from 5 articles in the 1937 edition to 27 articles in the 2023 edition	Chapter 6 has grown from 7 articles in the 1937 edition to 27 articles in the 2023 edition	Chapter 7 has grown from 4 articles in the 1937 edition to 15 articles in the 2023 edition	Chapter 8 has grown from 2 articles in the 1937 edition to 6 articles in the 2023 edition

What Else is Coming Down the Pike?

By: MTA Construction and Development

By: Portland General Electric



By:National Renewable Labs

Where do we want to go?

- Remain relevant with the quickly evolving electrical industry
- Improve usability
  - Place content where it makes sense
  - Logical/parallel structure
    - Systems below 1000V
    - Limited Energy
    - Medium Voltage
  - Eliminate “Special Equipment”/ “Special Conditions”
  - Leverage the past to make the future even better
- Create a structure that looks to the future

NATIONAL FIRE PROTECTION ASSOCIATION

The leading information and knowledge resource on fire, electrical and related hazards

National Electrical Code® Correlating Committee White Paper

Keeping the NEC® Relevant - Is Now the Time to Modernize?

The National Electrical Code® (NEC®) is the foundation of the electrical installation regulatory infrastructure for the United States, Mexico, and numerous other jurisdictions around the world. Growing demand for safe, reliable, resilient, and efficient use of electrical power to support society and the economy is aligning with technological advancement of power generation sources, electrical distribution, and new electrical power loads. It is critical the NEC be revised and implemented by the electrical community every three years to support the accelerating pace of change and technological advancement.

The structure of the NEC plays a critical role for personnel in learning, understanding, applying, and enforcing the requirements established within this regulatory code. While the current structure, first introduced in 1937, has provided tremendous success and stability and continues to be used by engineers, contractors, electricians and training programs, the ability to efficiently learn and quickly apply and inspect advancing technologies and uniquely configured electrical systems is a challenge for all electrical professionals. The existing NEC structure needs modernization to continue to support the advancing electrical infrastructure configurations and technological advancements. Therefore, it is imperative that the electrical industry actively pursue a revised NEC organizational structure to support ease of learning, understanding, and applying the NEC safety provisions in a rapidly advancing new energy landscape.

Keeping the NEC Relevant Now is the Time to Modernize

- Industry Trends
- Medium Voltage
- Limited Energy
- Multi-Directional Power Flow
- Digital Delivery of Content
- Future Vision
- Path Forward
- Feedback

More difficult for AHJ's when inspecting

Less likely to have listed equipment since traditionally geared toward utility.

More likely to have requirements that are antiquated

Depth of knowledge of Technical Committees can be a challenge.

Wiring methods in Chapter 3 for >1000 volt systems are difficult to determine

With renewable energy and microgrids lines of distinction between NESC and NEC are blurred.

Medium Voltage

A Starting Point for Considering a New Approach

Limited Energy

Past

- Confusing
- No more Ma Bell
- Independence Chapter 8 vs Dependence Chapter 1-7
- Cat 5/6 Cable Article 725 and 805
- POE is Article 725 and 840
- How do we maintain relevance?

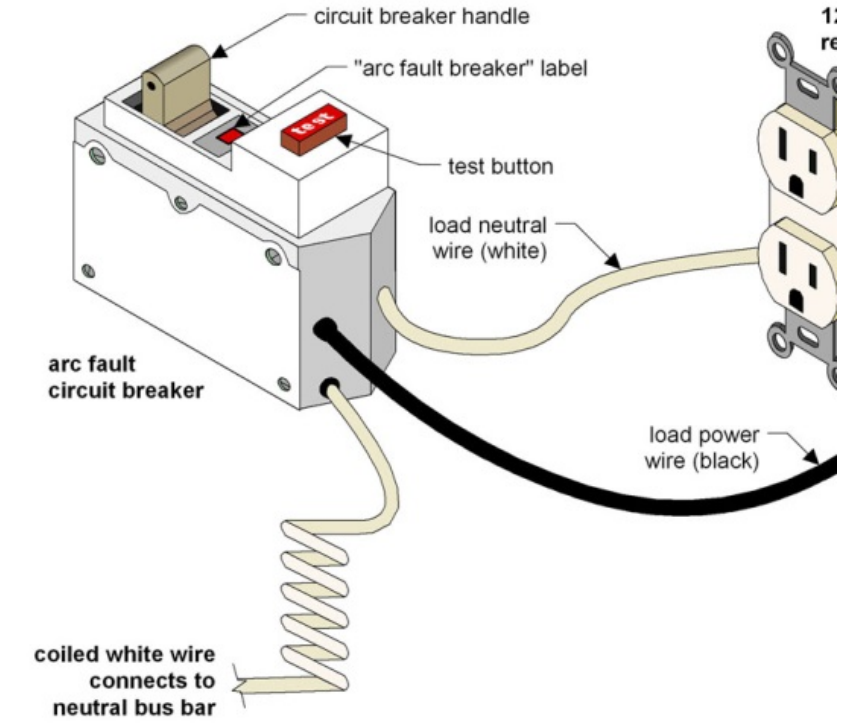
Future

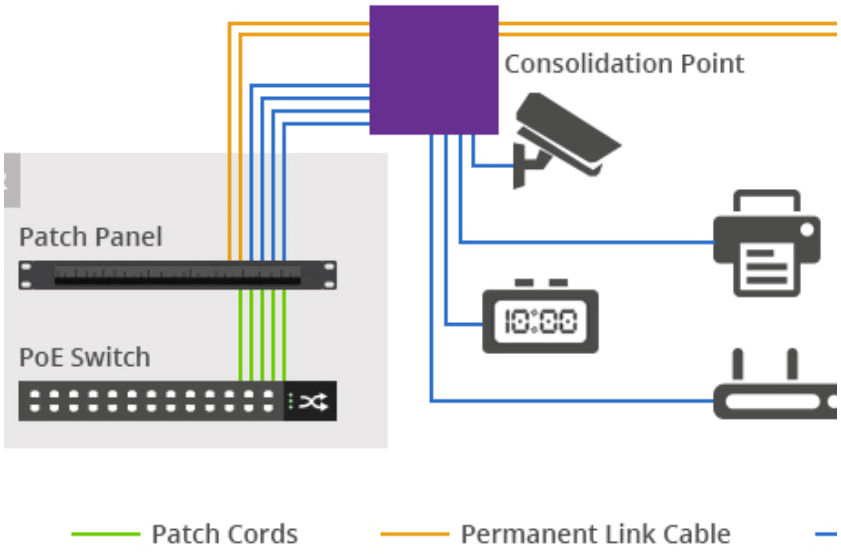
- Improve usability.
- Improve Terminology
- Create structure that is technology agnostic.
- Eliminate redundancy.
- Parallel Structure
- Everything communicates

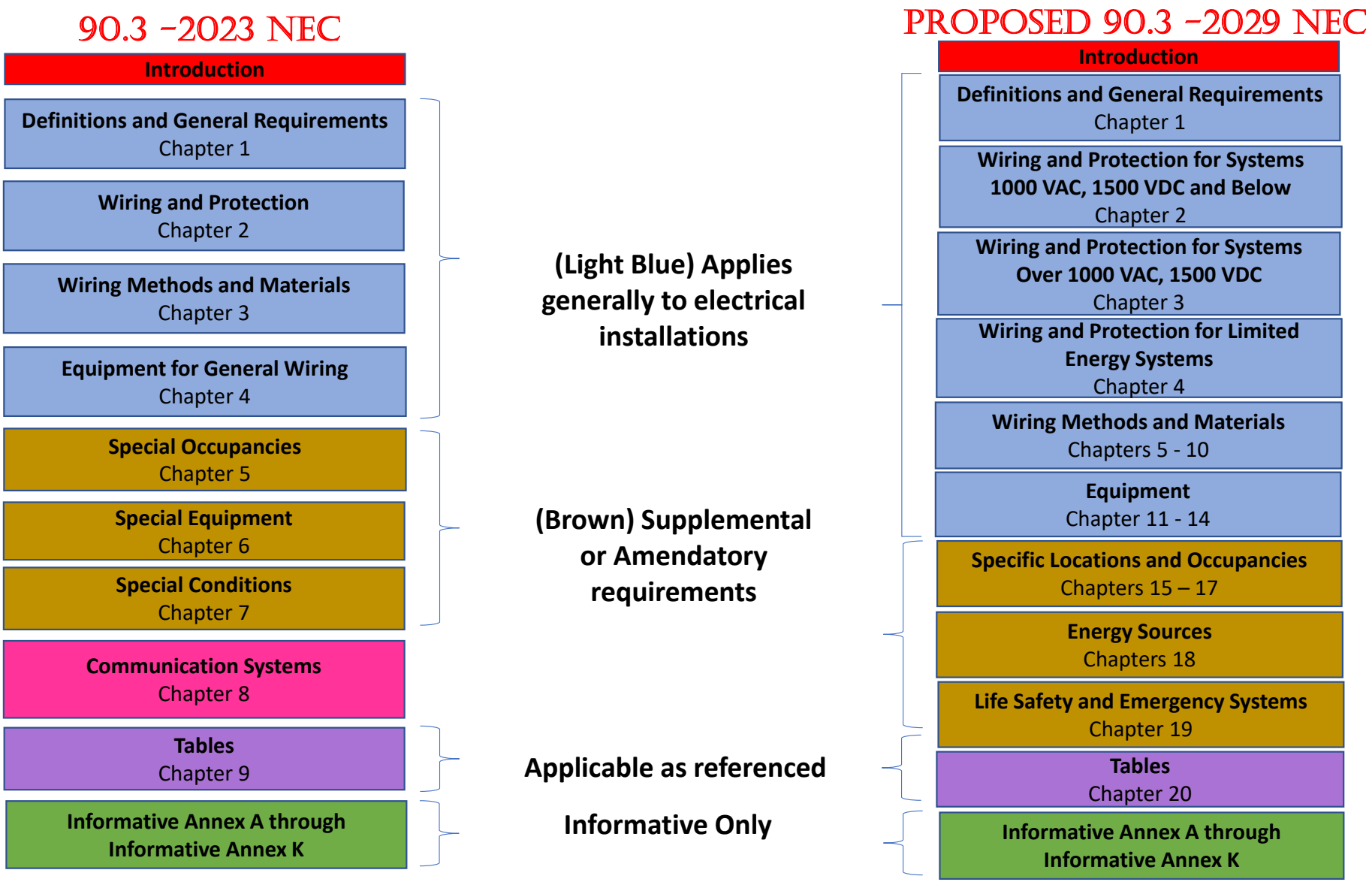
Short-Term Goals (2026)

MV /Limited Energy	• Move from Medium voltage structure to Medium Voltage Technical changes • Work on Limited Energy
Create parallel structure for Limited Energy	• Make it look like the front of the book. • (Protection scheme, wire and a load)
Begin Implementation	• Move certain articles for long-term road map implementation

Arc fault circuit interrupter






90.3 -2023 NEC
Introduction
Definitions and General Requirements
Chapter 1
Wiring and Protection
Chapter 2
Wiring Methods and Materials
Chapter 3
Equipment for General Wiring
Chapter 4
Special Occupancies
Chapter 5
Special Equipment
Chapter 6
Special Conditions
Chapter 7
Communication Systems
Chapter 8
Tables
Chapter 9
Informative Annex A through
Informative Annex K
(Light Blue) Applies generally to electrical installations
(Brown) Supplemental or Amendatory requirements
Applicable as referenced
Informative Only
PROPOSED 90.3 -2029 NEC
Introduction
Definitions and General Requirements
Chapter 1
Wiring and Protection for Systems
1000 VAC, 1500 VDC and Below
Chapter 2
Wiring and Protection for Systems
Over 1000 VAC, 1500 VDC
Chapter 3
Wiring and Protection for Limited
Energy Systems
Chapter 4
Wiring Methods and Materials
Chapters 5 - 10
Equipment
Chapter 11 - 14
Specific Locations and Occupancies
Chapters 15 – 17
Energy Sources
Chapters 18
Life Safety and Emergency Systems
Chapter 19
Tables
Chapter 20
Informative Annex A through
Informative Annex K

Title		2023 Reference	2026 CMP	2029 CMP
90	Introduction	90	1	1
Chapter 1 Definitions and General Requirements				
100	Definitions	100	1	1
110	Requirements for Electrical Installations	110	1	1
120	Load Calculations	220	2	2
130	Energy Management Systems	750	13	13
140	Temporary Installations	590	3	3
Chapter 2 Wiring and Protection for Systems 1000 VAC, 1500 VDC and Below				
200	General Requirements	300	3	3
205	Conductors	310	6	6
206	Use and Identification of Grounded Conductors	200	5	5
210	Branch Circuits	210	2	2
215	Feeders	215	10	10
225	Outside Branch Circuits and Feeders	225	10	10
230	Services	230	10	10
240	Overcurrent Protection	240	10	10
242	Overvoltage Protection (Part I and II)	242	10	10
250	Grounding and Bonding	250	5	5

3

Chapter 3 Wiring and Protection for Systems Over 1000 VAC, 1500 VDC				
300	General Requirements	305	9	9
305	Conductors and Cables	315	9	9
306	Use and Identification of Grounded Conductors	205	5	9
310	Branch Circuits	235	9	9
315	Feeders	235	9	9
325	Outside Branch Circuits and Feeders	235	9	9
330	Services	235	9	9
342	Overvoltage Protection	242 (Part III)	10	9
350	Grounding and Bonding	250 (Part X)	5	5

4

Chapter 4 Wiring and Protection for Limited Energy Systems				
400	Wiring Requirements and Materials		3	3
405	Conductors and Cables (Including Listing and Flammability)	722	3	3
406	Use and Identification of Conductors		3	3
430	Interior Cabling Systems Part I- Class 1 Power-Limited Circuits Part II- Class 2 and Class 3 Part III- Class 4	724, 725, 726	3	3
435	Exterior Cabling Systems (Outside Plant) Part I- Communication Circuits Part II- Antenna Systems Part III- CATV Part IV- Networked-Powered Broadband Communication Systems Part V- Premises-Powered Broadband Communication Systems		16	16
440	Overcurrent Protection Part I- Class 1 Power-Limited Circuits Part II- Class 2 and Class 3 Part III- Class 4	724, 725, 726	3	3
442	Overvoltage Protection		3	3
450	Grounding and Bonding		16	5

5, 6

Chapter 5 Enclosures and Wiring Support Structures				
500	Cabinets, Cutout Boxes, and Meter Socket Enclosures	312	8	8
502	Outlet, Device, Pull, and Junction Boxes; Conduit Bodies; Fittings; and Handhole Enclosures	314	8	8
504	Cable Trays	392	8	8
506	Auxiliary Gutters	366	8	8
508	Metal Wireways	376	8	8
510	Nonmetallic Wireways	378	8	8
512	Nonmetallic Extensions	382	6	8
Chapter 6 Wire and Cable				
600	Armored Cable: Type AC	320	6	6
602	Flat Cable Assemblies: Type FC	322	6	6
604	Flat Conductor Cable: Type FCC	324	6	6
606	Integrated Gas Spacer Cable: Type IGS	326	6	6
608	Metal-Clad Cable: Type MC	330	6	6
610	Mineral-Insulated, Metal-Sheathed Cable: Type MI	332	6	6
612	Nonmetallic-Sheathed Cable: Types NM and NMC	334	6	6
614	Optical Fiber Cables	770	16	16
616	Instrumentation Tray Cable: Type ITC	335	6	6
618	Power and Control Tray Cable: Type TC	336	6	6
620	Type P Cable	337	6	6
622	Service-Entrance Cable: Types SE and USE	338	6	6
624	Underground Feeder and Branch-Circuit Cable: Type UF	340	6	6
626	Flexible Cords and Flexible Cables	400	6	6
628	Fixture Wires	402	6	6

7, 8

Chapter 7 Circular Raceways (Conduit and Tubing)				
700	Intermediate Metal Conduit: Type IMC	342	8	8
702	Rigid Metal Conduit: Type RMC	344	8	8
704	Flexible Metal Conduit: Type FMC	348	8	8
706	Liquidtight Flexible Metal Conduit: Type LFMC	350	8	8
708	Rigid Polyvinyl Chloride Conduit: Type PVC	352	8	8
710	High Density Polyethylene Conduit: Type HDPE Conduit	353	8	8
712	Nonmetallic Underground Conduit with Conductors: Type NUCC	354	8	8
714	Reinforced Thermosetting Resin Conduit: Type RTRC	355	8	8
716	Liquidtight Flexible Nonmetallic Conduit: Type LFNC	356	8	8
718	Electrical Metallic Tubing: Type EMT	358	8	8
720	Flexible Metallic Tubing: Type FMT	360	8	8
722	Electrical Nonmetallic Tubing: Type ENT	362	8	8
724	Raceways for Limited Energy Systems (Communication Raceways)	800, 805, 810, 820, 830, 840	16	16
Chapter 8 Non-Circular Raceways				
800	Cellular Concrete Floor Raceways	372	8	8
802	Cellular Metal Floor Raceways	374	8	8
804	Strut-Type Channel Raceway	384	8	8
806	Surface Metal Raceways	386	8	8
808	Surface Nonmetallic Raceways	388	8	8
810	Underfloor Raceways	390	8	8

9, 10, 11

Chapter 9 Power and Lighting Systems				
900	Busways	368	8/9	8
902	Cablebus	370	8	8
904	Insulated Bus Pipe (IBP) and Tubular Covered Conductors (TCC) (New)	369	8	8
906	Flexible Bus System (New)	371	8	8
908	Multioutlet Assembly	380	8	8
910	Low-Voltage Suspended Ceiling Power Distribution Systems	393	18	18
912	Manufactured Wiring Systems	604	7	7
916	Office Furnishings	605	18	18
Chapter 10 Open Wiring				
1000	Concealed Knob-and-Tube Wiring	394	6	6
1002	Messenger-Supported Wiring	396	6	6
1004	Open Wiring on Insulators	398	6	6
Chapter 11 Devices				
1100	Switches	404	9/10	10
1102	Wiring Devices	406	18	18
1104	Switchboards, Switchgear and Panelboards	408	10	10
1106	Industrial Control Panels	409	11	11
1108	Transformers and Transformer Vaults	450	9	9
1110	Phase Converters	455	13	13
1112	Capacitors	460	9/11	11
1114	Resistors and Reactors	470	9/11	11

12

Chapter 12 Utilization Equipment				
1200	Luminaires, Lampholders and Lamps	410	18	18
1202	Low-Voltage Lighting	411	18	18
1204	Electric Signs and Outline Lighting	600	18	18
1206	Motors, Motor Circuits, and Controller	430	11	11
1208	Cranes and Hoists	610	12	12
1210	Elevators, Dumbwaiters, Escalators, Moving Walks, Platform Lifts, and Stairway Chairlifts	620	12	12
1212	Electrically Driven or Controlled Irrigation Machines	675	7	7
1214	Appliances	422	17	17
1216	Fixed Electric Space Heating Equipment	424	17	17
1218	Fixed Resistance and Electrode Industrial Process Heating Equipment	425	17	17
1220	Fixed Outdoor Electric Deicing and Snow-Melting Equipment	426	17	17
1222	Fixed Electric Heating Equipment for Pipelines and Vessels	427	17	17
1224	Air-Conditioning and Refrigeration Equipment	440	11	11
1226	Induction and Dielectric Heating Equipment	665	12	12
1228	Electric Welders	630	12	12
1230	Pipe Organs	650	12	12
1232	Information Technology Equipment	645	12	12
1234	Sensitive Electronic Equipment	647	12	12
1236	X-Ray Equipment	660	12	12

13, 14

Chapter 13 Systems (Equipment)				
1300	Electric Vehicle Power Transfer System	625	12	12
1302	Electrified Truck Parking Spaces	626	12	12
1304	Audio Signal Processing, Amplification, and Reproduction Equipment	640	12	12
1306	Modular Data Centers	646	12	12
1308	Electrolytic Cells	668	12	12
1310	Electroplating	669	12	12
1312	Industrial Machinery	670	12	12
1314	Integrated Electrical Systems	685	12	12
Chapter 14 Equipment Over 1000 VAC, 1500 VDC				
1400	General	495 (Part I & II)	9	9
1402	Switchgear and Industrial Control Assemblies	495 (Part III)	9	9
1404	Mobile and Portable Equipment	495 (Part IV)	9	9
1406	Boilers	495 (Part V)	9	9
1408	Motors, Motor Circuits, and Controllers	430 (Part XI)	11	9
1410	Capacitors	460 (Part III)	11	9
1412	Resistors and Reactors	470 (Part III)	11	9

15

Chapter 15 Hazardous Locations				
1500	Hazardous (Classified) Locations, Classes I, II, and III, Divisions 1 and 2	500	14	14
1501	Class I Locations	501	14	14
1502	Class II Locations	502	14	14
1503	Class III Locations	503	14	14
1504	Intrinsically Safe Systems	504	14	14
1505	Zone 0, 1, and 2 Locations	505	14	14
1506	Zone 20, 21, and 22 Locations for Combustible Dusts or Ignitible Fibers/Flyings	506	14	14
1511	Commercial Garages, Repair and Storage	511	14	14
1512	Cannabis Oil Equipment and Cannabis Oil Systems Using Flammable or Combustible Materials	512	14	14
1513	Aircraft Hangars	513	14	14
1514	Motor Fuel Dispensing Facilities	514	14	14
1515	Bulk Storage Plants	515	14	14
1516	Spray Application, Dipping, Coating, and Printing Processes Using Flammable or Combustible Materials	516	14	14

16

Chapter 16 Occupancies				
1600	Health Care Facilities	517	15	15
1602	Assembly Occupancies	518	15	15
1604	Theaters, Audience Areas of Motion Picture and Television Studios, Performance Areas, and Similar Locations	520	15	15
1606	Control Systems for Permanent Amusement Attractions	522	15	15
1608	Carnivals, Circuses, Fairs, and Similar Events	525	15	15
1610	Motion Picture and Television Studios and Similar Locations	530	15	15
1612	Motion Picture Projection Rooms	540	15	15
1614	Manufactured Buildings and Relocatable Structures	545	7	7
1616	Agricultural Buildings	547	7	7
1618	Mobile Homes, Manufactured Homes, and Mobile Home Parks	550	7	7
1620	Recreational Vehicles and Recreational Vehicle Parks	551	7	7
1622	Park Trailers	552	7	7

17,

18,

19,

Chapter 17 Installations Associated with Bodies of Water				
1700	Swimming Pools, Fountains, and Similar Installations	680	17	17
1702	Natural and Artificially Made Bodies of Water	682	7	7
1704	Marinas, Boatyards, Floating Buildings, and Commercial and Noncommercial Docking Facilities	555	7	7
Chapter 18 Power Production and Energy Storage Systems				
1800	Interconnected Systems	705	13	13
1802	Generators	445	13	13
1804	Stationary Standby Batteries	480	13	13
1806	Solar Photovoltaic (PV) Systems	690	4	4
1808	Large-Scale Photovoltaic (PV) Electric Supply Stations	691	4	4
1810	Fuel Cell Systems	692	4	4
1812	Wind Electric Systems	694	4	4
1814	Energy Storage Systems	706	13	13
1816	Stand Alone Systems	710	4	4
1818	Optional Standby Systems	702	13	13
Chapter 19 Life Safety and Emergency Systems				
1900	Emergency Systems	700	13	13
1902	Legally Required Standby Systems	701	13	13
1904	Fire Pumps	695	13	13
1906	Fire Alarm Systems	760	3	3
1908	Circuit Integrity Cables and Electrical Protective Systems (Fire- Resistive Cable Systems)	728	3	3
1910	Critical Operations Power Systems (COPS)	708	13	13

Introduction

Definitions and General Requirements
Chapter 1

Wiring and Protection
Chapter 2

Wiring Methods and Materials
Chapter 3

Equipment for General Wiring
Chapter 4

Special Occupancies
Chapter 5

Special Equipment
Chapter 6

Special Conditions
Chapter 7

Communication Systems
Chapter 8

Tables
Chapter 9

Informative Annex A through Informative Annex K

2026 NEC STRUCTURE

2026 NEC		2023 NEC Reference
Chapter 1 Definitions and General Requirements		
100	Definitions	100
110	Requirements for Electrical Installations	110
120	Load Calculations	220
130	Energy Management Systems	750
140	Temporary Installations	590

Takeaways

- Feedback to Jeff Sargent
- Proposed structure is fluid and will continue to evolve as we receive input
- Intent to print proposed structure in Annex for 2026 NEC edition.
- Structure is not intended to impact technical, only the organization and correlation of the technical content
- Intent is to move articles once

Public Comment No. 1641-NFPA 70-2024 [Global Input]

This Global Public Comment is for CMP-1 to review the use of the terms "overcurrent", "overcurrent protective devices" and "overcurrent protection".

Additional Proposed Changes

File Name	Description	Approved
CMP-1_OCPD_TG-4_CMP-10.pdf	CMP-1_OCPD_TG-4 CMP-10	
All_CMP_Comments_Files_from_CMP-10_TG-4.pdf	All CMP Comments Files from CMP-10 TG-4	

Statement of Problem and Substantiation for Public Comment

This Public Comment is submitted on behalf of a Task Group formed under the purview of Code Making Panel 10 consisting of Randy Dollar, Thomas Domitrovich, Jason Doty, Diane Lynch, Alan Manche, Nathan Philips, David Williams, and Danish Zia. This Public Comment, along with other Public Comments, was developed with the goal of improving usability and accuracy on requirements associated with overcurrent protective devices.

The Task Group reviewed all instances of the term "overcurrent", "overcurrent protective devices" and "overcurrent protection" and provided recommended changes to align proposed and current defined terms.

For consistency, the task group chose to use the full defined term "overcurrent protective device" in the title of all sections or subdivisions and the acronym "OCPD" or "OCPDs" when used in the body of each code section.

The term overcurrent protection applies to the application of an overcurrent protective device OCPD, to protect conductors and equipment.

Two documents are attached: One for your specific code panel and the other is a comprehensive document illustrating all of the code-wide comments made by this task group.

The current term "Overcurrent Protective Device, Branch-Circuit" is being deleted and the new defined term "Overcurrent Protective Device (OCPD)" will be used instead.

The following are the proposed terms being submitted to CMP-10.

PC 1639 Overcurrent Protection.
Automatic interruption of an overcurrent

PC 1636 Overcurrent Protective Device (OCPD).
A device capable of providing protection over the full range of overcurrent between its rated current and its interrupting rating. (CMP-10)

Informational Note 1: Prior editions of NFPA 70 included the defined term "branch circuit overcurrent protective device" for overcurrent protective devices suitable for providing protection for service, feeder and branch circuits. This term has been revised to a generalized term of "overcurrent protective device" (OCPD). The specific requirements using this term may include modifiers (such as branch OCPD, feeder OCPD, service OCPD) to specify location or application of the OCPD, or to specify variations (such as supplementary OCPD).

Informational Note 2: See 240.7 for a list of overcurrent protective devices suitable for providing protection for service, feeder, branch circuits and equipment.

Related Item

• Global PI 4050 • PC 1636 • PC 1639

Submitter Information Verification

Submitter Full Name: David Williams
Organization: Delta Charter Township
Street Address:
City:
State:
Zip:

Submittal Date: Sun Aug 25 21:27:17 EDT 2024

Committee: NEC-P01

CMP-10 TG-4 Review of Overcurrent Language for the Articles undeer the purview of CMP-1			
CMP	**NEC Section (using First Draft of 2026 NEC)**	**Current Language**	**"New" Language**
1	**Article 110**		
	110.10.	overcurrent protective devices	OCPDs
	110.10.	circuit protective devices	Fine as is
	110.26(C)(2)	overcurrent devices	OCPD
	110.26(C)(3)	overcurrent devices	OCPD
	110.52	Overcurrent protection	Fine as is
	110.52	Overcurrent	Motor-operated Equipment shall be provided with overcurrent protection
	110.52	Overcurrent	Transformers shall be provided with overcurrent protection

CMP-10 TG-4 Review of Overcurrent Language for the Articles undeer the purview of CMP-1			
CMP	**NEC Section (using First Draft of 2026 NEC)**	**Current Language**	**"New" Language**
1	**Article 110**		
	110.10.	overcurrent protective devices	OCPDs
	110.10.	circuit protective devices	Fine as is
	110.26(C)(2)	overcurrent devices	OCPD
	110.26(C)(3)	overcurrent devices	OCPD
	110.52	Overcurrent protection	Fine as is
	110.52	Overcurrent	Motor-operated Equipment shall be provided with overcurrent protection
	110.52	Overcurrent	Transformers shall be provided with overcurrent protection

CMP-10 TG-4 Review of Overcurrent Language for the Articles undeer the purview of CMP-2			
CMP	**NEC Section (using First Draft of 2026 NEC)**	**Current Language**	**"New" Language**
2	**Article 100**		
	Branch Circuit (Branch-Circuit)	overcurrent device	overcurrent protective device (OCPD)
2	**Article 120**		
	120.5(E)	overcurrent device	OCPD
	120.7(B)	overcurrent protective device	OCPD
	120.87(3)	Overcurrent protection	Fine as is
2	**Article 210**		
	210.4(A)	branch-circuit overcurrent protective device, OCPD	Fine as is
	210.4(C)	branch-circuit OCPD	Fine as is
	210.11(B)	branch-circuit OCPD	Fine as is
	210.12(A)	branch-circuit OCPD (X-8)	Fine as is
	210.18	~~overcurrent device~~ OCPD (X-2)	Fine as is
	210.19(A)(1)EX	branch-circuit OCPD	Fine as is
	210.20.	Overcurrent protection	Fine as is
	210.20.	branch-circuit OCPD	Fine as is
	210.20(A)	branch-circuit OCPD	Fine as is
	210.20(C)	branch-circuit OCPD	Fine as is
	T-210.24	Overcurrent protection	Fine as is
2	**Annex D**		
	D3. (X2)	Overcurrent Protection	CMP-2 To review references to OCPD and the revised terms.
	D3a. (X8)	Branch-Circuit OCPD	CMP-2 to Review
	D3a.	Overcurrent Protection	CMP-2 to Review
	D3a. (X2)	Branch-Circuit OCPD	CMP-2 to Review

CMP-10 TG-4 Review of Overcurrent Language for the Articles undeer the purview of CMP-3			
CMP	**NEC Section (using First Draft of 2026 NEC)**	**Current Language**	**"New" Language**
3	**Article 100**		
	Fault Managed Power.	Overcurrent protection	Fine as is
	Fire Alarm Circuit	Overcurrent device	overcurrent protective device (OCPD)
3	**Article 300**		
	300.5-T	Overcurrent Protection	Fine as is
	300.17(I)	Overcurrent Device	OCPD
	300.28(C)(3). (X5)	Overcurrent Protection	Fine as is
3	**Article 590**		
	590.6(A)	Overcurrent Protection	Fine as is
	590.6(B)	be protected from Overcurrent	shall be provided with overcurrent protection
	590.9. Title	Overcurrent protective device	Fine as is
	590.9(A)	Overcurrent protective devices	OCPDs
	590.9(B) Title	Service Overcurrent protective devices	Fine as is
	590.9(B)	Overcurrent protective devices	OCPDs
3	**Article 721**		
	721.50(A)	Overcurrent	Fine as is
3	**Article 722**		
	722.1	Overcurrent Protection	Fine as is
3	**Article 724**	Class 1	
	724.40(B). (X3)	Overcurrent Devices	OCPDs
	724.40(B). (X2)	Overcurrent Device	OCPD
	724.40(B). (X2)	Overcurrent Protection	Fine as is
	724.43. (X4)	Overcurrent Protection	Fine as is
	724.45	Overcurrent Device	OCPD
	724.45. (X3)	Overcurrent Devices	OCPDs
	724.45(A)	Overcurrent Devices	OCPDs
	724.45(B)	Overcurrent Protection	Fine as is
	724.45(B)	Overcurrent Device	OCPD
	724.45(C). (X2)	Overcurrent protective devices	OCPDs
	724.45(D)	Overcurrent Protection	Fine as is
	724.45(E)	Overcurrent Protection	Fine as is
3	**Article 725**		
	725.1 In	Overcurrent Protection	Fine as is

	725.127	Overcurrent Device	OCPD
3	**Article 760**		
	760.41(B)	Overcurrent protective device	OCPD
	760.41(B)	Overcurrent protection devices	OCPDs
	760.43. (X3)	Overcurrent Protection	Fine as is
	760.45. Title	Overcurrent device	Overcurrent protective device
	760.45	Overcurrent protection devices	OCPDs
	760.45 Ex 1 & 2	Overcurrent Protection	Fine as is
	760.121(B)	Branch-Circuit Overcurrent protective device	OCPD
	760.121(B)	Overcurrent protection devices	OCPDs
	760.127	Overcurrent Protection	Fine as is
	760.127	Overcurrent Device	OCPD
3	**Article 794**		
	794.1	Overcurrent Protection	Fine as is

CMP-10 TG-4 Review of Overcurrent Language for the Articles undeer the purview of CMP-4			
CMP	**NEC Section (using First Draft of 2026 NEC)**	**Current Language**	**"New" Language**
4	**Article 690**		
	690.2	PV dc Overcurrent protective devices	PV dc OCPDs
	690.8	Overcurrent Device	OCPD and OCPDs
	690.9. Title	Overcurrent Protection	Fine as is
	690.9(A). (X2)	be protected from Overcurrent	shall be provided with overcurrent protection
	690.9(A)(1). Title	Overcurrent Protection	Fine as is
	690.9(A)(1).	Overcurrent protective devices	OCPDs
	690.9(A)(2). Title	Overcurrent Protection	Fine as is
	690.9(A) (2)	be protected from Overcurrent	shall be provided with overcurrent protection
	690.9(A) (2) In	Overcurrent protection	Fine as is
	690.9(A) (2) In	Overcurrent device	OCPD
	690.9(A)(3)	Overcurrent	Fine as is
	690.9(B)	shall be permitted to prevent overcurrent of conductors	Fine as is
	690.9(B)	Overcurrent device	OCPD and OCPDs
	690.9(C)	Overcurrent protective device and Devices	OCPD and OCPDs
	690.31(E)	Overcurrent protective devices	OCPDs
	690.45	Overcurrent protective device	OCPD
	690.45	Overcurrent Device	OCPD
4	**Article 692**		
	692.8. Title	Overcurrent Device	Overcurrent Protective Devices
	692.8	Overcurrent protective device	OCPDs
	692.9	Overcurrent Protection	Fine as is
	692.9	Overcurrent Devices	OCPDs
4	**Article 694**		
	694.7(D)	Overcurrent Device	OCPD
	694.12(B). Title	Overcurrent Device	Overcurrent Protective Device
	694.12(B)(2). Title	Overcurrent Devices	Overcurrent Protective Devices
	694.12(B)(2)	Overcurrent Devices	OCPDs
	694.15	Overcurrent Protection	Fine as is
	694.15	Overcurrent Devices	OCPDs
	694.15 In	Overcurrent Protection	Fine as is
	694.15(B)(1)	Overcurrent Protection	Fine as is
	694.15(C)	Overcurrent Devices	OCPDs

4	Article 705		
	705.11(C). Title	Overcurrent Protection	Fine as is
	705.11(C)	be protected from overcurrent	have overcurrent protection
	705.11(C)(1). (1) (2) (3)	Overcurrent protective device	OCPD
	705.11(C)(2)	Overcurrent protection devices	OCPDs
	705.12(A)(2). (X4)	Overcurrent Device	OCPD
	705.12(A)(3)	Overcurrent Devices	OCPDs
	705.12(B)	(Multiple) Overcurrent Device and (s)	OCPD. And OCPDs
	705.12(B)	(Warning labels) Overcurrent Device and (s)	Overcurrent Protective Device and Devices
	705.28(B)Ex.1	Overcurrent Devices	OCPDs
	705.28(B)Ex.3	Overcurrent Device	OCPD
	705.30. Title	Overcurrent Protection	Fine as is
	705.30(A). (X2)	Overcurrent Protection	Fine as is
	705.30(A)	Overcurrent Devices	OCPDs
	705.30.(C)	Overcurrent Devices	OCPDs
	705.30.(F)	Overcurrent Protection	Fine as is
	705.70.	Overcurrent Devices	OCPDs
	705.70.	Overcurrent Protection	Fine as is

CMP-10 TG-4 Review of Overcurrent Language for the Articles undeer the purview of CMP-5			
CMP	**NEC Section (using First Draft of 2026 NEC)**	**Current Language**	**"New" Language**
5	**Article 100**		
	Ground-Fault Current Path, Effective	overcurrent protective device	overcurrent protective device (OCPD)
	Ground-Fault Protection of Equipment	overcurrent device	overcurrent protective device (OCPD)
5	**Article 200**		
	200.10(E)	overcurrent device	OCPD
5	**Article 250**		
	250.4(A)(5). Title	Overcurrent protective Device	Fine as is
	250.4(A)(5)	Overcurrent Device	OCPD
	250.4(B)(4)	Overcurrent Devices	OCPDs
	250.30(A)(1)	Overcurrent Device	OCPD
	250.30(A)(1)	Overcurrent Devices	OCPDs
	250.32(B)(2). (X4)	Overcurrent Protection	Fine as is
	250.32(C)(2). (X4)	Overcurrent Protection	Fine as is
	250.35(B)	Overcurrent Protection	Fine as is
	250.36(D)	Overcurrent Device	Fine as is
	250.36(E)(1)	Overcurrent Device	OCPD
	250.102(B)(2)	Overcurrent Protection	Fine as is
	250.102(D). (X3)	Overcurrent Devices	OCPDs
	250.118(A)(5)	Overcurrent Devices	OCPDs
	250.118(A)(6)	Overcurrent Devices	OCPDs
	250.118(A)(7)	Overcurrent Devices	OCPDs
	250.122(C)	Overcurrent Device	OCPD
	250.122(F)(1). (X3)	Overcurrent protective device	OCPD
	250.122(G)	Overcurrent Device	OCPD
	250.142. (X2)	Overcurrent Device	OCPD
	250.148	Overcurrent Device	OCPD
	250.164	Overcurrent Device	OCPD
	250.166	Overcurrent Protection	Fine as is
	250.169	Overcurrent Devices	OCPD
5	**Article 270**		
	270.4(A)(5)	Overcurrent Device	OCPD
	270.4(B)(4)	Overcurrent Devices	OCPDs
	270.30(A)(1)	Overcurrent Devices	OCPDs

	270.32(B)(2). (X4)	Overcurrent Protection	Fine as is
	270.32(C)(2). (X4)	Overcurrent Protection	Fine as is
	270.35(B)	Overcurrent Protection	Fine as is
	270.35(B)	Overcurrent protective device	OCPD
	270.36(D)	Overcurrent Device	OCPD
	270.36(E)	Overcurrent Devices	OCPDs
	270.102(C)(2)	Overcurrent Protection	Fine as is
	270.102(D)	Overcurrent Device	OCPDs
	270.114(C)(3)	Overcurrent setting	CMP to review Language based on new terms
	270.118	Overcurrent Devices	OCPDs
	270.142	Overcurrent Devices	OCPDs
	270.148(B)	Overcurrent Device	OCPD
	270.164(B)	Overcurrent Device	OCPD
	270.166(A)	Overcurrent Protection	Fine as is
	270.169	Overcurrent Devices	OCPDs

CMP-10 TG-4 Review of Overcurrent Language for the Articles undeer the purview of CMP-6			
CMP	**NEC Section (using First Draft of 2026 NEC)**	**Current Language**	**"New" Language**
6	**Article 310**		
	310.10(G).	Overcurrent Protection	Fine as is
	310.15(A)	Overcurrent Protection	Fine as is
	310.16-T	Overcurrent Protection	Fine as is
	310.17-T	Overcurrent Protection	Fine as is
6	**Article 335**		
	335.90.	Overcurrent Protection	Fine as is
6	**Article 382**		
	382.4	Supplementary Overcurrent Protection	Supplementary Overcurrent Protective Device
6	**Article 400**		
	400.16	Overcurrent Protection	Fine as is
	400.16	protected against Overcurrent	shall be provided with overcurrent protection
6	**Article 402**		
	402.14 (X2)	Overcurrent Protection	Fine as is

CMP-10 TG-4 Review of Overcurrent Language for the Articles undeer the purview of CMP-7			
CMP	**NEC Section (using First Draft of 2026 NEC)**	**Current Language**	**"New" Language**
7	**Article 100**		
	Service Equipment, Mobile Home	overcurrent protective devices	overcurrent protective devices (OCPDs)
7	**Article 545**		
	545.24	Branch-circuit overcurrent protective device	Branch-circuit OCPD
	545.24(B) Title	Branch Circuit Overcurrent Protection Device	Overcurrent protective devices
	545.24(B)	a Branch Circuit Overcurrent Protective Device	an OCPD
7	**Article 547**		
	547.41(A)(6). (X2)	Overcurrent Protection	Fine as is
	547.41(B)	Overcurrent Protection	Fine as is
	547.42	Overcurrent Protection	Fine as is
7	**Article 550**		
	550.11(B). Title	Branch-Circuit protective equipment	Branch-Circuit Overcurrent Protection
	550.11(B)	Overcurrent Protection	Fine as is
	550.11(B)	Branch-Circuit Overcurrent Devices	OCPDs
	550.11(B)	Overcurrent protection size	OCPD rating
	550.15(E)	Branch-circuit overcurrent protective device	OCPD
	550.32	Overcurrent Protection	Fine as is
7	**Article 551**		
	551.31(A)	Overcurrent protective device	OCPD
	551.31(C)	Overcurrent protective device	OCPD
	551.31(D)	Overcurrent Protection	Fine as is
	551.42	Overcurrent Protection	Fine as is
	551.43. Title	Branch-Circuit protection	Branch-Circuit Overcurrent Protection
	551.43(A)	Branch Circuit Overcurrent Devices	Branch-Circuit OCPDs
	551.43(A)(3)	Overcurrent Protection	Fine as is
	551.45(C)	Overcurrent protective device	OCPD
	551.47(Q)	Overcurrent protective device	OCPD
	551.47(R)	Overcurrent Protection	Fine as is
	551.47(S)	Overcurrent Protection	Fine as is
	551.74	Overcurrent Protection	Fine as is
7	**Article 552**		
	552.10.(E) Title	Overcurrent Protection	Fine as is
	552.10(E)(1)	Overcurrent protective devices	OCPDs

	T-552.10(E)(1)	Overcurrent Protection	Fine as is
	552.10(E)(4). (X2)	Overcurrent protective device	OCPD
	552.42(A)	Branch Circuit Overcurrent Devices	OCPDs
	552.42(A)	Overcurrent Protection	Fine as is
	552.45(C)	Overcurrent protective device	OCPD
	552.46(A) IN	Overcurrent Protection	Fine as is
	552.47(P)	Overcurrent protective device	OCPD
	552.47(Q)	Overcurrent Protection	Fine as is
7	**Article 555**		
	555.53	Overcurrent protective device	OCPD
7	**Article 675**		
	675.6	Branch Circuit Overcurrent Protective Device	OCPD
	675.7	Branch Circuit Overcurrent Protective Devices	OCPDs
	675.8	Overcurrent Protection	Fine as is
7	**Article 682**		
	682.15(B)	Feeder Overcurrent protective device	Feeder OCPD

CMP-10 TG-4 Review of Overcurrent Language for the Articles undeer the purview of CMP-8			
CMP	**NEC Section (using First Draft of 2026 NEC)**	**Current Language**	**"New" Language**
8	**Article 312**		
	312.11. Title	Overcurrent Devices	Overcurrent Protective Device
	312.11	Overcurrent Devices	OCPDs
	312.11(A). (X3)	Overcurrent Device	OCPDs
	312.11(B)	Overcurrent Devices	OCPDs
	312.11(B)(1)	Overcurrent Device	OCPD
8	**Article 366**		
	366.12	Overcurrent Devices	OCPDs
	366.56(D)	Overcurrent Protection	Fine as is
8	**Article 368**		
	368.17(A). Title	Overcurrent Protection	Fine as is
	368.17	Overcurrent Protection	Fine as is
	368.17(A)	Protected against Overcurrent	shall be provided with overcurrent protection
	368.17(B). (X2)	Overcurrent Protection	Fine as is
	368.17(B)	Overcurrent Device	OCPD
	368.17(C)	Overcurrent Devices	OCPDs
	368.17(C)Ex.2	Branch-Circuit Overcurrent Device	Branch-Circuit OCPD
	368.17(C)Ex.3	Overcurrent Device	OCPD
	368.17(C)Ex.4	Branch-Circuit overcurrent plug-in device	CMP to review Language based on new terms
	368.17(D). Title	Overcurrent Protection	Fine as is
	368.17(D)	Protected against Overcurrent	shall be provided with overcurrent protection
8	**Article 370**		
	370.23. Title	Overcurrent Protection	Fine as is
	370.23	Protected against Overcurrent	shall be provided with overcurrent protection
8	**Article 371**		
	371.17. Title	Overcurrent Protection	Fine as is
	371.17	Overcurrent Protection	Fine as is
	371.17 (A)-(C). Titles	Overcurrent Protection	Fine as is
	371.17(A)-(C)	Protected against Overcurrent	shall be provided with overcurrent protection
	371.17(D)	Protected against Overcurrent	shall be provided with overcurrent protection
	371.17(F)	Overcurrent	shall be provided with overcurrent protection
	371.17(G)	Overcurrent Protection	
	371.17(G)Ex	Overcurrent Protection	Fine as is
	371.17(G)Ex	Overcurrent Device	OCPD

CMP-10 TG-4 Review of Overcurrent Language for the Articles undeer the purview of CMP-9			
CMP	NEC Section (using First Draft of 2026 NEC)	Current Language	"New" Language
9	**Article 265**		
	265.18	Overcurrent Device	OCPD
	265.20.	Overcurrent Protection	Fine as is
	265.20.	Overcurrent protective devices	OCPDs
	265.20.	Overcurrent Devices	OCPDs
9	**Article 266**		
	266.1	Overcurrent Protection	Fine as is
	266.5	Overcurrent Protection	Fine as is
	266.5	Protected against overcurrent	shall be provided with overcurrent protection
	266.5	Overcurrent Device	OCPD
9	**Article 268**		
	268.2. (X2)	Overcurrent Protection	Fine as is
	268.70(F)	Overcurrent Devices	OCPDs
	268.82. (X4)	Overcurrent Protection	Fine as is
	Art. 268 Part VII	Overcurrent Protection	Fine as is
	268.90.	Overcurrent Device	OCPD
	268.90.	Overcurrent Devices	OCPDs
	268.91	Overcurrent Device	OCPD
	268.92	Overcurrent Devices	OCPDs
	268.93	Overcurrent Device	OCPD
9	**Article 450**		
	450.5 (previously 450.3). (X3)	overcurrent protection	Fine As Is
	450.5(A) and Table. (X3)	overcurrent protection	Fine As Is
	Table 450.5(A) Footnote 2. (X4)	overcurrent device	OCPD
	450.5(B)	overcurrent protection	Fine As Is
	Table 450.5(B) and Table (X2)	overcurrent protection	OCPD
	Table 450.5(B) Footnote 2. (X3)	overcurrent device	OCPD
	Table 450.5(B) Footnote 3	overcurrent protection	OCPD
	450.6(A) Title	overcurrent protection	Fine As Is
	450.6(A) (X3)	overcurrent device	OCPD
	450.6(A) Exception	overcurrent device	OCPD
	450.7(A)(1). (X2)	overcurrent protection	OCPD
	450.7(A)(2). Title	overcurrent protection	Fine As Is

	450.7(A)(2)	overcurrent sensing device	Fine As Is
		overcurrent protection	OCPD
		overcurrent device	OCPD
		branch or feeder protective devices	branch or feeder OCPDs
	450.7(A)(3)	overcurrent device	OCPD
	450.7(B)(2)	overcurrent protection	Fine As Is
	450.7(B)(2)(a)	overcurrent protective device	OCPD
	450.7(B)(2)(b)	overcurrent protection	OCPD
	450.7(B)(2)(b)	overcurrents	Fine As Is
	450.7(B)(2)(b) Exception	overcurrent device	OCPD
	450.8(A). (X2)	overcurrent protection	Fine As Is
	450.8(A)(1)	overcurrent protection	Fine As Is
	450.8(A)(2)	overcurrent protection	Fine As Is
	450.8(A)(3)	protective device	OCPD
	450.8(A)(4)(a)	protective device	OCPD
	450.8(B). Title	Overcurrent Protection	Fine As Is
	450.8(B)	overcurrent device	OCPD
	450.9	overcurrent protection	Fine As Is
	450.9	protective devices (2x)	OCPDs
	450.23(A)(1)(d) Informational Note	overcurrent protection	OCPD
	450.23(B)(1) Informational Note 2	overcurrent protection	OCPD
9	**Article 495**		
	495.62. Title	Overcurrent Protection	Fine As Is
	495.72	Overcurrent Relay	Fine As Is

CMP-10 TG-4 Review of Overcurrent Language for the Articles undeer the purview of CMP-10			
CMP	**NEC Section (using First Draft of 2026 NEC)**	**Current Language**	**"New" Language**
10	**Article 100**		
	Circuit Breaker	Overcurrent	Fine as is
	Coordination, Selective. (Selective Coordination)	Overcurrent condition	Fine as is
	Coordination, Selective. (Selective Coordination)	overcurrent protective devices	overcurrent protective devices (OCPDs)
	Coordination, Selective. (Selective Coordination)	overcurrents	Fine as is
	Coordination, Selective. (Selective Coordination)	overcurrent protective device	overcurrent protective device (OCPD)
	Current Limiting (as applied to overcurrent protection devices)	overcurrent protection devices	overcurrent protective devices (OCPDs)
	Feeder	final branch-circuit overcurrent protective device	overcurrent protective device (OCPD)
	Fuse	overcurrent protective device	overcurrent protective device (OCPD)
	Fuse	overcurrent	Fine as is
	Fuse, Electronically Actuated	overcurrent protective device	overcurrent protective device (OCPD)
	Fuse, Electronically Actuated	overcurrent	Fine as is
	Overcurrent	Overcurrent protection	Fine as is
	Overcurrent Protective Device, Branch-Circuit	Revise with the term Overcurrent Protective Device. (OCPD)	
	Overcurrent **Protective** Device, Supplementary (need to Revise term with acronym)	overcurrent protective device	overcurrent protective device (OCPD)
	Panelboard	overcurrent devices	overcurrent protective devices (OCPDs)
	Surge-Protective Device (SPD). (X2)	overcurrent device. (X2)	overcurrent protective device (OCPD)
	Switchboard	overcurrent	overcurrent protective devices (OCPDs)
	Tap Conductor	Overcurrent protection	Fine as is
10	**Article 215**		
	215.1	Overcurrent protection	Fine as is
	215.4(A)(1)Ex.1	overcurrent devices protecting the feeders	feeder OCPD
	215.4(A)(1)Ex.3	overcurrent device	OCPD
	215.5 Title	Overcurrent protection	Fine as is
	215.5	Feeders shall be protected against overcurrent	Feeders shall be provided with overcurrent protection in accordance with Article 240, Parts I
	215.5	overcurrent device	OCPD
	215.5Ex	overcurrent device protecting the feeders	feeder OCPDs
	215.5Ex	overcurrent device	OCPD

	215.18(B)	branch circuit overcurrent devices	OCPDs
10	**Article 225**		
	225.40. Title	Overcurrent protective devices	Fine as is
	225.40.	feeder overcurrent device (x2)	feeder OCPD
	225.40.	branch circuit overcurrent devices	Branch circuit OCPDs
	225.42(B)	branch circuit overcurrent devices	OCPDs
10	**Article 230**		
	230.7 Ex.2	Overcurrent protection	Fine as is
	230.42(A)(1)	overcurrent device (X3)	OCPD
	230.82(6)	Overcurrent protection	Fine as is
	230.82(7)	Overcurrent protection	Fine as is
	230.82(8)	Overcurrent protection	Fine as is
	230.82(9)	Overcurrent protection	Fine as is
	230.82(10)	Overcurrent protection	Fine as is
	230 Part VII	Overcurrent protection	Fine as is
	230.90(A)	overcurrent device	OCPD
	230.90(A)Ex.3	overcurrent device	OCPD
	230.90(B)	overcurrent device	OCPD
	230.91	overcurrent device (X2)	OCPD
	230.92	overcurrent device (X4)	OCPDs and OCPD
	230.93	overcurrent device	OCPD
	230.94	overcurrent device (X3)	OCPD
	230.94	Overcurrent protection (X2)	Fine as is
	230.95(A)	overcurrent device	OCPD
	230.95(B)	overcurrent device	OCPD
10	**Article 240**		
	240	Overcurrent Protection	Fine as is
	240.1 (X3)	Overcurrent protection	Fine as is
	240.2	branch-circuit Overcurrent protective devices	~~branch-circuit~~ Overcurrent protective devices
	240.4. Title	Protection of Conductors	Overcurrent Protection of Conductors
	240.4	Protected against overcurrent	shall be provided with overcurrent protection in accordance with
	240.4(B). Title	Overcurrent devices	Overcurrent protective Devices
	240.4(B)	Overcurrent device	OCPD
	240.4(B)	Overcurrent protective device	OCPD

	240.4(C). Title	Overcurrent devices	Overcurrent protective Devices
	240.4(C). (X2)	Overcurrent device.	OCPD
	240.4(D)	Overcurrent Protection	Fine as is
	240.4(D)(1)	Overcurrent protection	Fine as is
	240.4(D)(1)(2)		(a) OCPDs in accordance with 240.7 shall be marked for use with 18 AWG copper conductor (b) Delete (c) change to (b)
	240.4(D)(2)	Overcurrent protection	Fine as is
	240.4(D)(2)(2)		(a) OCPDs in accordance with 240.7 shall be marked for use with 16 AWG copper conductor (b) Delete (c) change to (b)
	240.4(D)(3)	Overcurrent protection	Fine as is
	240.4(D)(3)(2)		~~(a) Fuses and circuit breakers in accordance with 240.7 marked for use with 14 AWG copper-clad aluminum conductor~~ ~~(b) Delete~~
	240.4(D)(3)(2)		OCPDs in accordance with 240.7 shall be marked for use with 14 AWG copper-clad aluminum conductor
	240.4(E)	Protected against overcurrent	shall be permitted to have overcurrent protection in accordance with the following
	240.4(F)	Overcurrent protection	Fine as is
	240.4(F)	Overcurrent protective device	OCPD
	240.4(G). (X2)	Overcurrent protection	Fine as is
	240.4(H)	Protected against overcurrent	shall be provided with overcurrent protection in accordance with
	240.5	Protected against overcurrent	shall be provided with overcurrent protection in accordance with
	240.5(A)	Overcurrent device	OCPD
	240.5(A)	Protected against overcurrent	Fixture wires shall be provided with overcurrent protection in accordance with
	240.5(A)	Supplementary overcurrent protection	Fine as is
	240.5(B) Title	Branch-circuit overcurrent device.	Branch-Circuit Overcurrent protective Devices

	240.9	Protection of conductors against overcurrent	Fine as is
	240.10. Title	Supplementary Overcurrent protection	Fine as is
	240.10.	Supplementary overcurrent protection	Fine as is
	240.10.	Branch-Circuit overcurrent devices	OCPDs
	240.10.	Supplementary overcurrent devices	Supplementary OCPDs
	240.11. (X2)	Feeder overcurrent protective devices.	Feeder OCPDs
	240.11. (X2)	Service overcurrent protective device.	Service OCPD
	240.15(A). Title	Overcurrent device	Overcurrent protective device required
	240.15(A)	Overcurrent device	OCPD
	240.15(A)	Overcurrent trip. Overcurrent relay	Fine as is
	240.15(B) Title	Overcurrent device	Circuit breaker as Overcurrent protective device
	240.16	Branch circuit overcurrent protective devices	OCPDs
	240.21	Overcurrent Protection	Fine as is
	240.21	overcurrent protective device	OCPD
	240.21 (A)	Overcurrent Protection	Fine as is
	240.21 (B)	Overcurrent Protection	Fine as is
	240.21 (B) (1) (1) (b)	Overcurrent device(s)	OCPDs
	240.21 (B) (1) (1) (b)	overcurrent protective device	OCPD
	240.21 (B)(1) (1) (4)	Overcurrent device	OCPD
	240.21 (B) (1)(1) (4) In	Overcurrent Protection	Fine as is
	240.21 (B) (2) (1)	Overcurrent device	OCPD
	240.21 (B) (2) (2)	Overcurrent devices	OCPDs
	240.21 (B) (3) (1)	Overcurrent device	OCPD
	240.21 (B) (3) (2)	Overcurrent device	OCPD
	240.21 (B) (4) (3)	Overcurrent device	OCPD
	240.21 (B) (4) (4)	Overcurrent device	OCPD
	240.21 (B) (4) (4)	Overcurrent devices	OCPDs
	240.21 (B) (5) (2)	Overcurrent device	OCPD
	240.21 (B) (5) (2)	Overcurrent devices	OCPDs
	240.21 (B) (5) (3)	Overcurrent device	OCPD
	240.21 (C). (X2)	Overcurrent Protection	Fine As Is
	240.21 (C) (1). Title	Title change	Overcurrent Protective Device
	240.21 (C) (1)	"…protected by overcurrent protection…"	Fine As Is
	240.21 (C) (1)	Overcurrent protective device	OCPD
	240.21 (C) (2) (1) (b)	Overcurrent device(s)	OCPDs

	240.21 (C) (2) (1) (b)	Overcurrent device	OCPD
	240.21 (C) (2) (4)	Overcurrent device	OCPD
	240.21 (C) (2) (4)	Overcurrent device	OCPD
	240.21 (C) (2) (4)	Overcurrent protection	Fine as is
	240.21 (C) (3) (2)	Overcurrent devices	OCPDs
	240.21 (C) (3) (3)	Overcurrent devices	OCPDs
	240.21 (C) (4) (2)	Overcurrent device	OCPD
	240.21 (C) (4) (2)	Overcurrent devices	OCPDs
	240.21 (C) (4) (3)	Overcurrent device	OCPD
	240.21 (C) (5)	Overcurrent Protection	Fine As Is
	240.21 (C) (6) (1)	Overcurrent device	OCPD
	240.21 (D)	Overcurrent devices	OCPDs
	240.21 (E)	.shall be permitted to be protected against overcurrent.	"..shall be permitted to have overcurrent protection.."
	240.21 (F)	.shall be permitted to be protected against overcurrent.	"..shall be permitted to have overcurrent protection.."
	240.21 (H). (X2)	Overcurrent Protection	Fine As Is
	240.22. (X2)	Overcurrent device	OCPD
	240.24(A)	Supplementary overcurrent protection	Fine as is
	240.24(A). (X4)	Overcurrent protective devices	OCPDs
	240.24(B)	Overcurrent devices	OCPDs
	240.24(B)(1). Title	Feeder overcurrent protective devices	Feeder OCPDs
	240.24(B)(1)	Service overcurrent protective devices	Service OCPDs
	240.24(B)(2). TITLE	Branch-circuit overcurrent protective device	Fine as is
	240.24(B)(2).	Branch-circuit overcurrent protective device	Branch-Circuit OCPD
	240.24(C)	Overcurrent protective devices	OCPDs
	240.24(D)	Overcurrent protective devices	OCPDs
	240.24(E)	Overcurrent protective devices	OCPDs
	240.24(E)	Supplementary overcurrent protection	Fine as is
	240.24(E) (X2)	Overcurrent protective devices	OCPDs
	240.24(F)	Overcurrent protective devices	OCPDs
	240.30(A)	Overcurrent devices	OCPDs
	240.32	Overcurrent devices	OCPDs
	240.33	Overcurrent devices	OCPDs
	240.86	Overcurrent device	OCPD
	240.86(B)	Overcurrent device	OCPD
	240.86(C)	Overcurrent device	OCPD

	240.87	Overcurrent device	OCPD
	240.90.	Overcurrent protection	Fine as is
	240.91(B). (X2)	Overcurrent device	OCPD
	240.92	Overcurrent device	OCPD
	240.92(A)	~~be protected~~	shall be provided with overcurrent protection
	240.92(C)	Overcurrent protection	Fine as is
	240.92(C)(1)(1)	Overcurrent device	OCPD
	240.92(C)(1)(2)	protective devices	Fine as is
	240.92(C)(1)(3)	Overcurrent devices	OCPDs
	240.92(C)(2)(1)	Overcurrent device	OCPD
	240.92(C)(2)(2) (X3)	Overcurrent devices	OCPDs
	240.92(C)(2)(3)	Overcurrent relaying	Fine as is
	240.92(C)(2)(4)	Overcurrent device	OCPD
	240.92(D)	Overcurrent protection	Fine as is
	240.92(D)(2). (X3)	Overcurrent devices	OCPDs
	240.92(D)(4)	Overcurrent device	OCPD
	240.92(E)	Overcurrent device	OCPD
	240.92(E)	Overcurrent protection	Fine as is
10	**Article 242**		
	242.14(ABC)	Overcurrent device	OCPD
	242.16	Overcurrent protection	Branch-circuit OCPD
10	**Article 404**		
	404.5	Overcurrent Devices	OCPDs
10	**Article 408**		
	408.4(A)	Overcurrent device	OCPD
	408.6 (X2)	Overcurrent protection devices	OCPDs
	408.36. Title	Overcurrent protection	Fine as is
	408.36. (X2)	Overcurrent protective device	OCPD
	408.36. (X3)	Overcurrent devices	OCPDs
	408.36(A)	Overcurrent protection	Fine as is
	408.36(B)	Overcurrent protection	Fine as is
	408.36(C)	Overcurrent device	OCPD
	408.36(D)	Overcurrent protection devices	OCPDs
	408.52	Overcurrent devices	OCPDs
	408.54	Overcurrent devices	OCPDs

	408.55	Overcurrent devices	OCPDs

CMP-10 TG-4 Review of Overcurrent Language for the Articles undeer the purview of CMP-11			
CMP	**NEC Section (using First Draft of 2026 NEC)**	**Current Language**	**"New" Language**
11	**Article 409**		
	409.21. TITLE	Overcurrent Protection	Fine as is
	409.21(A)	Overcurrent Protection	Fine as is
	409.21(B)	Protection	Overcurrent protection
	409.21(B)	overcurrent protective device	OCPD
	409.21(B)	Overcurrent Protection	Fine as is
	409.21(C). (X2)	overcurrent protective device	OCPD
	409.104	Overcurrent Devices	OCPDs
11	**Article 430**		
	430.10(A) In.	Overcurrent Device	OCPD
	430.22(G)(1)(1)	Overcurrent Protection	Fine as is
	430.22(G)(1)(2)	Overcurrent Protection	Fine as is
	430.22(G)(2)(1)	Overcurrent Protection	Fine as is
	430.22(G)(2)(2)	Overcurrent Protection	Fine as is
	430.28	Branc-Circuit protective device	OCPD
	430.28	Overcurrent Device	OCPD
	430.51	Overcurrent	Fine as is
	430.53(C)(5)	Overcurrent Protection	Fine as is
	430.55	Overcurrent Protection	Fine as is
	430.61	Overcurrents	Fine as is
	430.62(A)Ex.2	Feeder Overcurrent protective device	Feeder OCDP
	430.62(A)Ex.2	Overcurrent Protection	Fine as is
	430.62(B)	Feeder Overcurrent protective device	Feeder OCDP
	430.63Ex.	Feeder Overcurrent device	Feeder OCDP
	430.63Ex.	Overcurrent Protection	Fine as is
	430.72. Title	Overcurrent Protection	Fine as is
	430.72(A)	protected against overcurrent	shall be provided with overcurrent protection in accordance with
	430.72(A)	Branch-circuit overcurrent protective devices	OCPDs
	430.72(A)	protected against overcurrent	shall be provided with overcurrent protection in accordance with
	430.72(B). (X2)	Overcurrent Protection	Fine as is
	430.72(B)	Overcurrent Device	OCPD

	430.72(B)	Overcurrent Protection	Fine as is
	430.72(B)(1) (X3)	Overcurrent Protection	Fine as is
	430.72(B)(2) Title	Branch-circuit overcurrent protective device	Fine as is
	430.72(B)(2) (X2)	protective devices	OCPDs
	430.72(C)Ex.	Overcurrent Protection	Fine as is
	430.72(C)(3)	Overcurrent Devices	OCPDs
	430.72(C)(4)	Overcurrent Device	OCPD
	430.72(C)(5)	Protection	Overcurrent protection
	430.87	Overcurrent Device	OCPD
	430.94. (X2)	Overcurrent Protection	Fine as is
	430.94. (X3)	Overcurrent protective device	OCPD
	430.109(A)(7)	Overcurrent protection	Fine as is
	430.109(B)	Branch-circuit overcurrent device	branch-circuit OCPD
	430.111(A). (X2)	Overcurrent Device	Fine as is
	430.112 Ex.	Branch circuit protective device	Suggest CMP to Review
	430.206. Title	Overcurrent protection	Fine as is
	430.206(B)(2)	considered to have Overcurrent	Overload
	430.206(C)	Fault-Current protection	Suggest CMP to Review
	430.207	Overcurrent (overload)Relays	Fine as is
	430.207	Overcurrent Relays	Fine as is
11	**Article 440**		
	440.21	Overcurrent	Fine as is
	440.21	Overcurrent Protection	Fine as is
	440.22(B)(2)Ex.	Overcurrent device	OCPD
	440.52(B)	Overcurrent	shall be provided with overcurrent protection
11	**Article 460**		
	460.9. Title	Overcurrent Protection	Fine As Is
	460.9. (X3)	Overcurrent Device	OCPD
	460.25	Overcurrent Protection	Fine As Is
	460.28(B)	Overcurrent Device	OCPD

CMP-10 TG-4 Review of Overcurrent Language for the Articles undeer the purview of CMP-12			
CMP	**NEC Section (using First Draft of 2026 NEC)**	**Current Language**	**"New" Language**
12	**Article 610**		
	610. Part V	Overcurrent Protection	Fine as is
	610.41(A)	Overcurrent Devices	OCPDs
	610.43(A)(1)	Branch Circuit Overcurrent Device	OCPD
	610.53 Title	Overcurrent Protection	Fine as is
	610.53	be protected from Overcurrent	shall be provided with overcurrent protection
	610.53	Overcurrent Devices	OCPDs
	610.53(B)	Branch Circuit Overcurrent Devices	OCPDs
12	**Article 620**		
	620.12(A)(4)	Overcurrent Protection	Fine as is
	620.22(A)(2) Title	Overcurrent protective device	Fine as is
	620.22(A)(2)	Overcurrent Device protecting	branch-circuit OCPD
	620.22(A)(2)	Overcurrent Device	OCPD
	620.22(B)	Overcurrent Device protecting	branch-circuit OCPD
	620.22(B)	Overcurrent Device	OCPD
	620.25 Title	Overcurrent Devices	Overcurrent Protective Devices
	620.25. (X2)	Overcurrent Devices	OCPDs
	620.53	Overcurrent protective device	OCPD
	620.54	Overcurrent protective device	OCPD
	620.55	Overcurrent protective device	OCPD
	Art 620 Part VII	Overcurrent Protection	Fine as is
	620.61	Overcurrent Protection	Fine as is
	620.61(A). (X2)	be protected against Overcurrent	shall be provided with overcurrent protection
	620.62(A)	Overcurrent protective devices, (OCPD)	OCPDs
	620.62(B)	OCPDs	Fine as is
	620.62(C)	OCPDs. And. Overcurrent Devices	Fine as is. And. OCPDs
	620.62	Overcurrent protective devices	OCPDs
	620.65. (X3)	Overcurrent Devices	OCPDs
12	**Article 625**		
	625.60(C). (X4)	Overcurrent Protection	Fine as is
12	**Article 627**		
	627.41	Overcurrent Protection	Fine as is
	627.41(A)	Overcurrent Protection	Fine as is

	627.41(B)	Overcurrent Devices	OCPDs
12	**Article 630**		
	630.12	Overcurrent Protection	Fine as is
	630.12	Overcurrent Device	OCPD
	630.12(A). (X2)	Overcurrent Protection	Fine as is
	630.12(A). (X5)	Overcurrent Device	OCPD
	630.13	Overcurrent Protection	Fine as is
	630.32	Overcurrent Protection	Fine as is
	630.32	Overcurrent Device	OCPD
12	**Article 640**		
	640.9(C)	Overcurrent Protection	Fine as is
	640.22	Overcurrent protection devices	OCPDs
	640.22	Overcurrent Devices	OCPDs
	640.43	Overcurrent protection devices	OCPDs
12	**Article 645**		
	645.27	Overcurrent protective devices, (OCPD)	OCPDs
	645.27	Overcurrent protective devices	OCPDs
12	**Article 646**		
	646.7. (X11)	Overcurrent Protection	Fine as is
12	**Article 647**		
	647.5	Overcurrent Protection	Fine as is
12	**Article 650**		
	650.9	Overcurrent Protection	Fine as is
	650.9	Overcurrent Device	OCPD
12	**Article 660**		
	660.7	Overcurrent Protection	Fine as is
	660.7(A)	Overcurrent protective devices	OCPDs
	660.7(B)	Overcurrent Devices	OCPDs
	660.7(B)	Overcurrent Protection	Fine as is
	660.9	Overcurrent Devices	OCPDs
12	**Article 665**		
	665.24	Overcurrent Protection	Fine as is
12	**Article 668**		
	668.4(C)(2)	Overcurrent Protection	Fine as is
	668.21	Overcurrent Protection	Fine as is

	668.21	Overcurrent Device	OCPD
12	**Article 669**		
	669.9	Overcurrent Protection	Fine as is
	669.9	be protected from Overcurrent	shall be provided with overcurrent protection
12	**Article 670**		
	670.1	Overcurrent Protection	Fine as is
	670.4(B). (X3)	Overcurrent Protection	Fine as is
	670.5. (X4)	Overcurrent Protection	Fine as is
	670.5(C). (X2)	Overcurrent protective device	OCPD
12	**Article 685**		
	685.10.	Overcurrent Devices	OCPDs

CMP-10 TG-4 Review of Overcurrent Language for the Articles undeer the purview of CMP-13			
CMP	**NEC Section (using First Draft of 2026 NEC)**	**Current Language**	**"New" Language**
13	**Article 100**		
	Emerg.Power Supply Systems (EPSS)	overcurrent protection devices	overcurrent protective devices (OCPDs)
	Transfer-Switch B-C Emerg. Ltg.	branch-circuit overcurrent device	branch-circuit overcurrent protective device (OCPD)
13	**Article 130**		
	130.80(C)	overcurrent devices	OCPDs
	130.80(C)	branch-circuit overcurrent device	OCPD
13	**Article 445**		
	445.11	Overcurrent protective Relay	Fine as is
	445.12. Title	Overcurrent Protection	Fine as is
	445.12(A)	Overcurrent protective means	Overcurrent protection means
	445.12(B)	Overcurrent Protection	Fine as is
	445.12(B) (X2)	Overcurrent Device	OCPD
	445.12(C)	Overcurrent Device	OCPD
	445.12(D)	Overcurrent Devices	OCPDs
	445.12(E). (X3)	Overcurrent Devices	OCPDs
	445.13(A). (X2)	Overcurrent Protection	Fine as is
	445.13(B). Title	Overcurrent protection	Fine as is
	445.13(B).	Overcurrent protective device	OCPD
	445.13(B)	Overcurrent Relay	Fine as is
13	**Article 455**		
	455.7	Overcurrent Protection	Fine As Is
	455.7	protected from Overcurrent	shall be provided with overcurrent protection in accordance with
	455.7(A)	Overcurrent Protection	Fine As Is
	455.7(B)	Overcurrent Protection	Fine As Is
13	**Article 480**		
	480.4(B) IN.2	Overcurrent Protection	Fine As Is
	480.6. (X2)	Overcurrent Protection	Fine As Is
	480.7	Overcurrent Device	OCPD
13	**Article 695**		
	695.4(C)	Overcurrent protective devices	OCPDs
	695.4(H). Title	Overcurrent Device Selection	Overcurrent Protective Device Selection
	695.4(H)	Overcurrent Devices	OCPDs

	695.5	Overcurrent Device	OCPD
	695.5	Overcurrent protective devices	OCPDs
	695.5	Overcurrent Protection	Fine as is
	695.6	Overcurrent protective devices	OCPDs
	695.6	Overcurrent Devices	OCPD
	695.6	Overcurrent Protection	Fine as is
	695.7(A)(2)	Overcurrent Devices	OCPDs
	695.7	Overcurrent Protection	Fine as is
13	**Article 700**		
	700.4(F)(8)	Overcurrent protective devices, (OCPD)	OCPDs
	700.6(E)	Overcurrent protective device	OCPD
	700.10(B). (X6)	Overcurrent Protection	Fine as is
	700.10(B)(6)(b)(ii)	Overcurrent protective device	OCPD
	700.10(B)(6)(e)	Overcurrent protective devices	OCPDs
	Art. 700 Part VI	Overcurrent Protection	Fine as is
	700.30.	Branch-circuit overcurrent devices	OCPDs
	700.32(A)	Overcurrent protective devices, (OCPDs)	OCPDs
	700.32(A) In	Overcurrent Protection	Fine as is
	700.32(C)	Overcurrent Devices	OCPDs
13	**Article 701**		
	701.6(C)	Overcurrent protective device	OCPD
	701.10(B)(1). (X5)	Overcurrent Protection	Fine as is
	701.10(B)(1)	Overcurrent protective device	OCPD
	Art. 701. Part IV	Overcurrent Protection	OCPDs
	701.30.	Branch-Circuit Overcurrent devices	Branch-Circuit OCPDs
	701.32(A). (X2)	Overcurrent protective devices, OCPDs	OCPDs
	701.32(B). (X3)	OCPDs	Fine as is
	701.32(C). (X2)	OCPDs	Fine as is
	701.32(C)Ex	Overcurrent Devices	OCPDs
	701.32(C) In 2	OCPD and OCPDs	Fine as is
13	**Article 702**		
	702.5(C)	Overcurrent protective device	OCPD
13	**Article 706**		
	706.15(E)(1)	Overcurrent Device	OCPD
	706.30(B)	Overcurrent Devices	OCPDs

	706.31 Title	Overcurrent Protection	Fine as is
	706.31(A)	shall be protected at the source from overcurrent.	shall be provided with overcurrent protection at the source
	706.31(A)	shall be protected from overcurrent.	shall be provided with overcurrent protection
	706.31(A) In	Overcurrent Device	OCPD
	706.31(B). Title	Overcurrent Device	Overcurrent Protective Device
	706.31(B)	Overcurrent protective devices	OCPDs
	706.31(B)	Overcurrent devices	OCPDs
	706.31(C)	Overcurrent protective devices	OCPDs
	706.31(E)	Overcurrent Protection	Fine as is
	706.33(B)(2)	Overcurrent Device	OCPD
13	**Article 708**		
	708.10(B)	Overcurrent Protection	Fine as is
	708.24(E)	Overcurrent protective device	OCPD
	Art. 708. Part IV	Overcurrent Protection	Fine as is
	708.50.	Feeder- and Branch-circuit overcurrent devices	Feeder- and Branch-circuit OCPDs
	708.52(B)	Overcurrent Devices	OCPDs
	708.54(A)	Overcurrent protective devices, (OCPD)	OCPDs
	708.54(A). (B). (C)	OCPDs	Fine as is
	708.54	Overcurrent Devices	OCPDs

CMP-10 TG-4 Review of Overcurrent Language for the Articles undeer the purview of CMP-14			
CMP	**NEC Section (using First Draft of 2026 NEC)**	**Current Language**	**"New" Language**
14	**Article 500**		
	500.30(A)(2)	Branch Circuit Overcurrent Protection	OCPD
	500.30.	Overcurrent Protection	Fine as is
14	**Article 501**		
	501.105(B)(5)	Overcurrent Protection	Fine as is
	501.125(B)(2)	Motor Overcurrent	Fine as is
14	**Article 502**		
	502.120(A)	Overcurrent Devices	OCPDs
	502.120(B)(1)	Overcurrent Devices	OCPDs
	502.125	Motor Overcurrent	Fine as is
14	**Article 505**		
	505.30(A)(2)	Branch Circuit Overcurrent Protection	OCPD
	505.30.	Overcurrent Protection	Fine as is
14	**Article 506**		
	506.30.	Branch Circuit Overcurrent Protection	OCPD
	506.30.	Overcurrent Protection	Fine as is

CMP-10 TG-4 Review of Overcurrent Language for the Articles undeer the purview of CMP-15			
CMP	**NEC Section (using First Draft of 2026 NEC)**	**Current Language**	**"New" Language**
15	**Article 100**		
	Bull Switch	Overcurrent protection	Fine as is
15	**Article 517**		
	517.17(B)	Overcurrent protective devices	OCPDs
	517.31(G). (X5)	Overcurrent protective devices	OCPDs
	517.31(G)	Overcurrent	Fine as is
	517.33((C). (X5)	Overcurrent protective devices	OCPDs
	517.42(F)	Overcurrent protective devices	OCPDs
	517.42(F)	Overcurrent	Fine as is
	517.73	Overcurrent Protection	Fine as is
	517.73(A)	Overcurrent protective devices	OCPDs
	517.73(B)	Overcurrent protective devices	OCPDs
	517.73(B)	Overcurrent Protection	Fine as is
	517.74(B)	Overcurrent protective devices	OCPDs
	517.160(A)(2)	Overcurrent Protection	Fine as is
	517.160(A)(2)	Overcurrent protective device	OCPD
	517.160(A)(2)	be protected against Overcurrent	be provided with overcurrent protection
	517.160(A)(3)	Overcurrent protective devices	OCPDs
	517.160(B)(1)	Overcurrent protective devices	OCPDs
15	**Article 518**		
	518.7(A)(1)	Overcurrent Protection	Fine as is
	518.17(A)(1) and (2)	Overcurrent Devices	OCPDs
15	**Article 520**		
	520.9	Branch Circuit Overcurrent Device	OCPD
	520.21	Overcurrent protective devices	OCPDs
	520.25. (X3)	Overcurrent Protection	Fine as is
	520.26	Overcurrent protective devices	OCPD
	520.26. (X3)	Overcurrent Protection	Fine as is
	520.27. (X2)	Overcurrent Device	OCPD
	520.44-T	Overcurrent Devices	OCPD
	520.50(C)	Overcurrent Protection	Fine as is
	520.50.	Branch-circuit overcurrent protective device	OCPDs
	520.52	Overcurrent Protection	Fine as is

	520.53(A)	Overcurrent protective devices	OCPDs
	520.53(D)	Overcurrent Protection	Fine as is
	520.54	Overcurrent Devices	OCPDs
	520.54(D)	Overcurrent Device	OCPD
	520.54(D)(1) and (2)	Overcurrent protective devices	OCPD
	520.54(E)	Overcurrent protective device	OCPD
	520.54(E). (X4)	Overcurrent protection device	OCPD
	520.54(E)	Overcurrent Devices	OCPDs
	520.54(K)	Overcurrent Device	OCPD
	520.68	Overcurrent protective device	OCPD
	520.68(3)	Overcurrent Device	OCPD
	520.68(4)	Overcurrent protective device	OCPD
	520.68(6)	Overcurrent Devices	OCPDs
	520.68(C)	Overcurrent Protection	Fine as is
15	**Article 522**		
	522.10(A)(2). (X3)	Overcurrent Devices	OCPDs
	522.10(A)(2	Overcurrent protective device	OCPD
	522.10(B). (X4)	Overcurrent Devices	OCPDs
	522.23. (X3)	Overcurrent Protection	Fine as is
15	**Article 525**		
	525.12	Overcurrent Device	OCPD
	525.23(B)	Overcurrent Device	OCPD
	525.23(C). (X2)	Overcurrent Protection	Fine as is
15	**Article 530**		
	530.9(A)	Branch-circuit overcurrent device	Branch-circuit OCPD
	530.10(C)	Overcurrent Protection	Fine as is
	530.23 and (A)	Overcurrent Protection	Fine as is
	530.23(B)	Overcurrent protective devices	OCPDs
	530.23(D)	Overcurrent Protection	Fine as is
	530.42	Overcurrent Protection	Fine as is
15	**Article 540**		
	540.11(B)	Overcurrent Devices	OCPDs

CMP-10 TG-4 Review of Overcurrent Language for the Articles undeer the purview of CMP-16			
CMP	**NEC Section (using First Draft of 2026 NEC)**	**Current Language**	**"New" Language**
16	**Article 830**		
	830.15. (X4)	Overcurrent Protection	Fine as is

CMP-10 TG-4 Review of Overcurrent Language for the Articles undeer the purview of CMP-17			
CMP	**NEC Section (using First Draft of 2026 NEC)**	**Current Language**	**"New" Language**
17	**Article 422**		
	422.5(C)	Branch-circuit overcurrent protective device	Branch-Circuit OCPD
	422.11. Title	Overcurrent Protection	Fine as is
	422.11	protected against overcurrent	shall be provided with overcurrent protection
	422.11(A)	Overcurrent Protection	Fine as is
	422.11(A)	Branch-circuit overcurrent protective device	Branch-Circuit OCPD
	422.11(B)	Overcurrent Protection	OCPDs
	422.11(C)	Overcurrent Protection	OCPDs
	422.11(D)	Overcurrent protective devices	OCPDs
	422.11(E)	Overcurrent Protection	Fine as is
	422.11(E)(1)	Overcurrent Protection	Fine as is
	422.11(E)(2)	Overcurrent Protection	Fine as is
	422.11(E)(3)	Overcurrent Protection	OCPD
	422.11(E)(3)	Overcurrent Device	OCPD
	422.11(F)(1)	Supplementary Overcurrent Protective Devices	Supplementary OCPDs
	422.11(F)(1)	Overcurrent Protective Devices	OCPDs
	422.11(G)	Overcurrent Protective Devices	OCPDs
	422.13	Overcurrent Protection	Fine as is
	422.31(A)	Branch-circuit overcurrent protective device	Branch-Circuit OCPD
	422.60(A)	Overcurrent Protection	Fine as is
	422.62(B)(1). (X2)	Overcurrent protective device	OCPD
17	**Article 424**		
	424.19	Supplementary Overcurrent Protective Devices	Supplementary OCPDs
	424.19(A)	Supplementary Overcurrent Protection	Fine as is
	424.19(A)	Supplementary Overcurrent Protection	Fine as is
	424.19(A)	Supplementary Overcurrent Protective Device(s)	Supplementary OCPDs
	424.19(B)	Supplementary Overcurrent Protection	Fine as is
	424.22	Overcurrent Protection	Fine as is
	424.22(A)	Overcurrent Protection	Fine as is
	424.22(A)	protected against overcurrent	"..shall be permitted to have overcurrent protection.."
	424.22(B)	Supplementary Overcurrent Protective Device	Supplementary OCPD
	424.22(C). Title	Overcurrent Protective Devices	Fine as is
	424.22(C)	Supplementary Overcurrent Protective Devices	Supplementary OCPDs

	424.22(C)	Overcurrent Protection	Fine as is
	424.22(C)	Supplementary Overcurrent Protection	Fine as is
	424.22(D) (X2)	Supplementary Overcurrent Protective Devices	Supplementary OCPDs
	424.22(E). (X3)	Supplementary Overcurrent Protective Devices	Supplementary OCPDs
	424.72	Overcurrent Protection	Fine as is
	424.72(A)	Overcurrent protective device	OCPD
	424.72(B)	Overcurrent protective device	OCPD
	424.72(C). Title	Supplementary Overcurrent Protective Devices	Fine as is
	424.72(C)	Supplementary Overcurrent Protective Devices	Supplementary OCPDs
	424.72(C)	Overcurrent Protection	Fine as is
	424.72(D). Title	Supplementary Overcurrent Protective Devices	Fine as is
	424.72(D).	Supplementary Overcurrent Protective Devices	Supplementary OCPDs
	424.72(D)	Overcurrent protective device	OCPD
	424.72(E)	Supplementary Overcurrent Protective Devices. (X3)	Supplementary OCPDs
	424.82	Overcurrent protective devices	OCPDs
17	**Article 425**		
	425.19	Supplementary Overcurrent Protective Devices	Supplementary OCPDs
	425.19(A). (X2)	Supplementary Overcurrent Protection	Fine as is
	425.19(A)	Supplementary Overcurrent Protective Devices	Supplementary OCPDs
	425.19(B)	Supplementary Overcurrent Protection	Fine as is
	425.22. Title	Overcurrent Protection	Fine as is
	425.22(A)	Overcurrent Protection	Fine as is
	425.22(A)	protected against overcurrent	"..shall be permitted to have overcurrent protection.."
	425.22(B)	Supplementary Overcurrent Protective Device	Supplementary OCPD
	425.22(C). Title	Overcurrent Protective Devices	Fine as is
	425.22(C)	Supplementary Overcurrent Protective Devices	Supplementary OCPDs
	425.22(C). (X2)	Supplementary Overcurrent Protection	Fine as is
	425.22(D). Title	Supplementary Overcurrent Protective Devices	Fine as is
	425.22(D). (X2)	Supplementary Overcurrent Protective Devices	Supplementary OCPDs
	425.22(E) (X3)	Supplementary Overcurrent Protective Devices	Supplementary OCPDs
	425.72	Overcurrent Protection	Fine as is
	425.72(A)	Overcurrent protective device	OCPD
	425.72(B)	Overcurrent protective device	OCPD
	425.72(C). Title	Supplementary Overcurrent Protective Devices	Fine as is
	425.72(C)	Supplementary Overcurrent Protective Devices	Supplementary OCPDs

	425.72(C)	Overcurrent Protection	Fine as is
	425.72(D)	Overcurrent protection	Fine as is
	425.72(E). Title	Supplementary Overcurrent Protective Devices	Fine as is
	425.72(E)	Supplementary Overcurrent Protective Devices	Supplementary OCPDs
	425.72(E)	Overcurrent Protective Devices	OCPD
	425.72(F). (X3)	Supplementary Overcurrent Protective Devices	Supplementary OCPDs
	425.82	Overcurrent protective devices	OCPDs
17	**Article 427**		
	427.57	Overcurrent Protection	Fine as is
	427.57	considered protected against Overcurrent	considered to have overcurrent protection
17	**Article 680**		
	680.10.(A)& (B)(2)	Overcurrent protective devices	OCPDs
	680.23(F)(2)	Overcurrent Protection	Fine as is

CMP-10 TG-4 Review of Overcurrent Language for the Articles undeer the purview of CMP-18			
CMP	**NEC Section (using First Draft of 2026 NEC)**	**Current Language**	**"New" Language**
18	**Article 393**		
	393.45. Title	Overcurrent ..... Protection	Overcurrent Protection ....
	393.45(A)	Overcurrent Protection	Fine as is
18	**Article 406**		
	406.46(F)	Overcurrent Device	OCPD
18	**Article 410**		
	410.59(A)	Branch-circuit overcurrent devices	Branch-Circuit OCPD
	410.153	Overcurrent Protection	Fine as is
18	**Article 600**		
	600.41	Overcurrent	CMP to Review

Public Comment No. 327-NFPA 70-2024 [Global Input]

CMP 1 has deleted the definition for “In Sight From”, and the requirements that were part of that definition are now located in 110.29. This global Correlating Committee Note directs all CMP’s to review occurrences of the phrase “in sight from”, “within sight from”, and “within sight” and consider whether references to 110.29 or 110.39 should be included.

Additional Proposed Changes

File Name	Description	Approved
CN_26.pdf	NEC_CN26	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 26 appeared in the First Draft Report on First Revision No. 9187.

CMP 1 has deleted the definition for “In Sight From”, and the requirements that were part of that definition are now located in 110.29. This global Correlating Committee Note directs all CMP’s to review occurrences of the phrase “in sight from”, “within sight from”, and “within sight” and consider whether references to 110.29 or 110.39 should be included.

Related Item

• First Revision No. 9187

Submitter Information Verification

Submitter Full Name: CC Notes
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jul 29 17:05:29 EDT 2024
Committee: NEC-P01

Correlating Committee Note No. 26-NFPA 70-2024 [Global Input]

Submitter Information Verification

Committee: NEC-AAC

Submittal Date: Tue May 07 14:23:07 EDT 2024

Committee Statement and Meeting Notes

Committee Statement: CMP 1 has deleted the definition for “In Sight From”, and the requirements that were part of that definition are now located in 110.29. This global Correlating Committee Note directs all CMP’s to review occurrences of the phrase “in sight from”, “within sight from”, and “within sight” and consider whether references to 110.29 or 110.39 should be included.

First Revision No. 9187-NFPA 70-2024 [Section No. 225.41]

Ballot Results

✔ **This item has passed ballot**

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

Not Returned

McDaniel, Roger D.

Affirmative All

Ayer, Lawrence S.

Bowmer, Trevor N.

Hickman, Palmer L.

Holub, Richard A.

Jackson, Peter D.

Kendall, David H.

Manche, Alan

Osborne, Robert D.

Porter, Christine T.

Schultheis, Timothy James

Williams, David A.

Public Comment No. 63-NFPA 70-2024 [Global Input]

~~**Equipment, Portable. (Portable Equipment)**~~

~~Equipment fed with portable cords or cables intended to be moved from one place to another. (640) (CMP-12)~~

~~**Equipment, Portable. (Portable Equipment)**~~

~~Equipment with electrical components suitable to be moved by a single person without mechanical aids. (511) (CMP-14)~~

~~**Equipment, Portable. (Portable Equipment)**~~

~~Equipment fed with portable cords or cables intended to be moved from one place to another. (520) (CMP-15)~~

~~**Equipment, Portable. (Portable Equipment)**~~

~~Equipment intended to be moved from one place to another. (530) (CMP-15)~~

Equipment, Portable (portable equipment). Plug and cord connected equipment, or battery powered equipment, that is capable of being relocated with or without mechanical assistance to another location for use. (CMP-1)

~~**Portable.**~~

~~A device intended for indoor or outdoor use that is designed to be hand-carried from location to location, or easily transported without the use of other devices or equipment. (625) (CMP-12)~~

~~**Portable.**~~

~~X-ray equipment designed to be hand-carried. (660) (CMP-12)~~

~~**Portable (as applied to equipment).**~~

~~Equipment that is actually moved or can easily be moved from one place to another in normal use. (680) (CMP-17)~~

Portable.– Capable of being relocated with or without mechanical assistance to another location for use. (CMP-1)

Type your content here ...

Statement of Problem and Substantiation for Public Comment

Currently, the definitions in Article 100 contain multiple definitions for the terms "portable equipment" and Portable." A task group consisting of the CMP chairs from CMP12, CMP14, CMP15, and CMP17 created the combined definitions shown in the public comment to eliminate the redundant definitions and create simple, single definitions of each term that can be utilized throughout the Code. Terms that use "portable" but tied to specific equipment - for example, "portable structure," "portable substation" - are unaffected by this comment as those terms are specific to a piece of equipment and not general in nature.

Related Item

• First Draft Report

Submitter Information Verification

Submitter Full Name: Joseph Bablo
Organization: UL Solutions
Street Address:
City:
State:
Zip:

Submittal Date: Mon Jul 15 10:31:11 EDT 2024
Committee: NEC-P01

Public Comment No. 649-NFPA 70-2024 [Global Input]

Delete the words, "to be installed" everywhere they appear in the First Draft.

Statement of Problem and Substantiation for Public Comment

The term "to be installed" is always redundant. 90.2(C) says, "This code covers the installation and removal of electrical conductors, equipment, and raceways...". Every requirement of the NEC is about installation or removal (and requirements about removal are a very small minority). "Shall be permitted" and "shall not be permitted," as applied to equipment, mean that the subject equipment either is or is not allowed to be installed.
The new First Draft restrictions on reconditioned equipment seem to have overlooked the scope and purpose of the NEC. Adding the superfluous term "to be installed" also does not conform to 3.1.1, 3.1.2, and 3.5.1.1 of the NEC Style Manual.

Related Item

• FR-9197 • FR-9236 • FR-7868 • PI-3713 • FR-8938 • FR-7970 • FR-8831 • FR-8941 • FR-8944 • FR-8947 • FR-7925 • FR-7585 • FR-8136 • FR-8148 • FR-8984 • FR-8293 • FR-8362 • FR-8348 • FR-8360 • FR-7614 • FR-7658 • FR-7734 • FR-7746 • FR-8150 • FR-7717

Submitter Information Verification

Submitter Full Name: William Fiske
Organization: Intertek Testing Services
Street Address:
City:
State:
Zip:

Submittal Date: Fri Aug 02 09:19:44 EDT 2024
Committee: NEC-P01

Public Comment No. 21-NFPA 70-2024 [Section No. 90.2]

90.2 ~~Use and Application~~ 2 Sco **pe and Application of Document .**

~~**(C)** Installations Covered.~~

~~This~~

(A) ~~– Practical Safeguarding.~~

~~The purpose of this code is the practical safeguarding of persons and property from hazards arising from the use of electricity. This code is not intended as a design specification or an instruction manual for untrained persons.~~

~~**(B)** Adequacy.~~

~~This code contains provisions that are considered necessary for safety. Compliance therewith and proper maintenance result in an installation that is essentially free from hazard but not necessarily efficient, convenient, or adequate for good service or future expansion of electrical use.~~

~~Informational Note: Hazards often occur because of overloading of wiring systems by methods or usage not in conformity with this code. This occurs because initial wiring did not provide for increases in the use of electricity. An initial adequate installation and reasonable provisions for system changes provide for future increases in the use of electricity.~~

Document Scope

(1) Covered. This code covers the installation and removal of electrical conductors, equipment, and raceways; signaling and communications conductors, equipment, and raceways; and optical fiber cables for the following:

(1) Public and private premises, including buildings, structures, mobile homes, recreational vehicles, and floating buildings

(2) Yards, lots, parking lots, carnivals, and industrial substations

(3) Installations of conductors and equipment that connect to the supply of electricity

(4) Installations used by the electric utility, such as office buildings, warehouses, garages, machine shops, and recreational buildings, that are not an integral part of a generating plant, substation, or control center

(5) Installations supplying shore power to ships and watercraft in marinas and boatyards, including monitoring of leakage current

(6) Installations used to export electric power from vehicles to premises wiring or for bidirectional current flow

(

~~D~~

2)

~~Installations~~

Not Covered.

~~This code does not cover the following:~~

(1) ~~Installations in ships, watercraft other than floating buildings, railway rolling stock, aircraft, or automotive vehicles other than mobile homes and recreational vehicles~~

~~Informational Note: Although the scope of this code indicates that the code does not cover installations in ships, portions of this code are incorporated by reference into Title 46, Code of Federal Regulations, Parts 110–113.~~

(2) ~~Installations underground in mines and self-propelled mobile surface mining machinery and its attendant electrical trailing cable~~

(3) ~~Installations of railways for generation, transformation, transmission, energy storage, or distribution of power used exclusively for operation of rolling stock or installations used exclusively for signaling and communications purposes~~

(4) ~~Installations of communications equipment under the exclusive control of communications utilities located outdoors or in building spaces used exclusively for such installations~~

(5) ~~Installations under the exclusive control of an electric utility where such installations~~

(6) ~~Consist of service drops or service laterals, and associated metering, or~~

(7) ~~Are on property owned or leased by the electric utility for the purpose of communications, metering, generation, control, transformation, transmission, energy storage, or distribution of electric energy, or~~

(8) ~~Are located in legally established easements or rights-of-way, or~~

(9) ~~Are located by other written agreements either designated by or recognized by public service commissions, utility commissions, or other regulatory agencies having jurisdiction for such installations. These written agreements shall be limited to installations for the purpose of communications, metering, generation, control, transformation, transmission, energy storage, or distribution of electric energy where legally established easements or rights-of-way cannot be obtained. These installations shall be limited to federal lands, Native American reservations through the U.S. Department of the Interior Bureau of Indian Affairs, military bases, lands controlled by port authorities and state agencies and departments, and lands owned by railroads.~~

~~Informational Note to (4) and (5): Examples of utilities may include those entities that are typically designated or recognized by governmental law or regulation by public service/utility commissions and that install, operate, and maintain electric supply (such as generation, transmission, or distribution systems) or communications systems (such as telephone, CATV, Internet, satellite, or data services). Utilities may be subject to compliance with codes and standards covering their regulated activities as adopted under governmental law or regulation. Additional information can be found through consultation with the appropriate governmental bodies, such as state regulatory commissions, the Federal Energy Regulatory Commission, and the Federal Communications Commission.~~

(

~~E)~~

B) ~~Practical Safeguarding.~~

~~The purpose of this code is the practical safeguarding of persons and property from hazards arising from the use of electricity. This code is not intended as a design specification or an instruction manual for untrained persons.~~

(C) Adequacy.

This code contains provisions that are considered necessary for safety. Compliance therewith and proper maintenance result in an installation that is essentially free from hazard but not necessarily efficient, convenient, or adequate for good service or future expansion of electrical use.

Informational Note: Hazards often occur because of overloading of wiring systems by methods or usage not in conformity with this code. This occurs because initial wiring did not provide for increases in the use of electricity. An initial adequate installation and reasonable provisions for system changes provide for future increases in the use of electricity.

(D) Relation to Other International Standards.

The requirements in this code address the fundamental principles of protection for safety contained in Section 131 of International Electrotechnical Commission Standard 60364-1, *Low-voltage Electrical Installations – Part 1: Fundamental Principles, Assessment of General Characteristics, Definitions* .

Informational Note: See IEC 60364-1,. *Low-voltage Electrical Installations – Part 1: Fundamental Principles, Assessment of General Characteristics, Definitions* , Section 131, for fundamental principles of protection for safety that encompass protection against electric shock, protection against thermal effects, protection against overcurrent, protection against fault currents, and protection against overvoltage. All of these potential hazards are addressed by the requirements in this code.

Additional Proposed Changes

File Name	Description	Approved
PLH_Word_Document_Layout_for_Public_Comment_21.docx		

Statement of Problem and Substantiation for Public Comment

This recommendation is in response to direction from the Correlating Committee via Correlating Committee Note No. 91 which was created during its First Draft review of the work of Code Panel 1 and approved unanimously in the related ballot. This recommendation is an editorial restructuring which restores a scope statement for the NEC that was lost by adding a scope for Article 90 in 90.1 to comply with the NEC Style Manual. Terra may not have accurately captured how this recommendation was intended. Accordingly, I also submitted the proposed editorial restructuring in an attached Word document.

Related Item

• CN-91

Submitter Information Verification

Submitter Full Name: Palmer Hickman
Organization: Electrical Training Alliance
Street Address:
City:
State:
Zip:

Submittal Date: Wed Jul 10 11:13:15 EDT 2024
Committee: NEC-P01

PLH Word Document Layout for Public Comment 21

This is the way this proposed revision is intended to appear:

90.2 Scope and Application of Document.

(A) Document Scope

(1) Covered

This code covers the installation and removal of electrical conductors, equipment, and raceways; signaling and communications conductors, equipment, and raceways; and optical fiber cables for the following:

(1) Public and private premises, including buildings, structures, mobile homes, recreational vehicles, and floating buildings

(2) Yards, lots, parking lots, carnivals, and industrial substations

(3) Installations of conductors and equipment that connect to the supply of electricity

(4) Installations used by the electric utility, such as office buildings, warehouses, garages, machine shops, and recreational buildings, that are not an integral part of a generating plant, substation, or control center

(5) Installations supplying shore power to ships and watercraft in marinas and boatyards, including monitoring of leakage current

(6) Installations used to export electric power from vehicles to premises wiring or for bidirectional current flow

(2) Not Covered

This code does not cover the following:

(1) Installations in ships, watercraft other than floating buildings, railway rolling stock, aircraft, or automotive vehicles other than mobile homes and recreational vehicles

Informational Note: Although the scope of this code indicates that the code does not cover installations in ships, portions of this code are incorporated by reference into Title 46, Code of Federal Regulations, Parts 110–113.

(2) Installations underground in mines and self-propelled mobile surface mining machinery and its attendant electrical trailing cable

(3) Installations of railways for generation, transformation, transmission, energy storage, or distribution of power used exclusively for operation of rolling stock or installations used exclusively for signaling and communications purposes

(4) Installations of communications equipment under the exclusive control of communications utilities located outdoors or in building spaces used exclusively for such installations

(5) Installations under the exclusive control of an electric utility where such installations

a. Consist of service drops or service laterals, and associated metering, or

b. Are on property owned or leased by the electric utility for the purpose of communications, metering, generation, control, transformation, transmission, energy storage, or distribution of electric energy, or

c. Are located in legally established easements or rights-of-way, or

d. Are located by other written agreements either designated by or recognized by public service commissions, utility commissions, or other regulatory agencies having jurisdiction for such installations. These written agreements shall be limited to installations for the purpose of communications, metering, generation, control, transformation, transmission, energy storage, or distribution of electric energy where legally established easements or rights-of-way cannot be obtained. These installations shall be limited to federal lands, Native American reservations through the U.S. Department of the Interior Bureau of Indian Affairs, military bases, lands controlled by port authorities and state agencies and departments, and lands owned by railroads.

Informational Note to (4) and (5): Examples of utilities may include those entities that are typically designated or recognized by governmental law or regulation by public service/utility commissions and that install, operate, and maintain electric supply (such as generation, transmission, or distribution systems) or communications systems (such as telephone, CATV, Internet, satellite, or data services). Utilities may be subject to compliance with codes and standards covering their regulated activities as adopted under governmental law or regulation. Additional information can be found through consultation with the appropriate governmental bodies, such as state regulatory commissions, the Federal Energy Regulatory Commission, and the Federal Communications Commission.

(B) Practical Safeguarding.

The purpose of this code is the practical safeguarding of persons and property from hazards arising from the use of electricity. This code is not intended as a design specification or an instruction manual for untrained persons.

(C) Adequacy.

This code contains provisions that are considered necessary for safety. Compliance therewith and proper maintenance result in an installation that is essentially free from hazard but not necessarily efficient, convenient, or adequate for good service or future expansion of electrical use.

(D) Relation to Other International Standards.

The requirements in this code address the fundamental principles of protection for safety contained in Section 131 of International Electrotechnical Commission Standard 60364-1, Low-voltage Electrical Installations – Part 1: Fundamental Principles, Assessment of General Characteristics, Definitions.

Informational Note: See IEC 60364-1, Low-voltage Electrical Installations – Part 1: Fundamental Principles, Assessment of General Characteristics, Definitions, Section 131, for fundamental principles of protection for safety that encompass protection against electric shock, protection

against thermal effects, protection against overcurrent, protection against fault currents, and protection against overvoltage. All of these potential hazards are addressed by the requirements in this code.

Public Comment No. 1129-NFPA 70-2024 [New Section after 90.2(A)]

Qualified Person

Consistently long standing there has been a fundamental issue regarding how an AHJ enforces the scattered qualified persons requirements within the NEC. Licensing, certifications, and training are more important now than they ever have been in the electrical industry. Significant language was added to the NEC in 2023 to accompany the existing 142 uses of “qualified persons” language. While service and maintenance are nothing new to the electrical industry, the addition of 110.17 completes the trilogy of interweaving NFPA 70, NFPA 70E Standard for Electrical Safety in the Workplace and NFPA 70B Standard for Electrical Equipment Maintenance. However, the use and requirement of “qualified persons” is still inconsistent from article to article resulting in the perceived responsibility of the qualified person differing from system to system. Throughout the country, sections and portions of each system are NOT performed by qualified persons and the argument by those unqualified performing the work is based on the language or lack thereof for total inclusion of all “parts” of the system requiring training in the construction and installation of the electrical system.

2026 saw 17 PI’s in an attempt to promote uniformity with qualified persons language across the NEC. The consensus from CMP to CMP was a statement for qualified persons is more appropriate in Article 90 and/or Article 110. To draw a parallel from the enforceable qualified persons language in electrical safety and maintenance, to those in the NEC, a general requirement for qualified persons in Article 90.2(A) or Article 110 would then require that ALL electrical work under the scope of the NEC, including but not limited to the construction, installation, commissioning, and maintenance be performed by qualified persons.

As technology enhances and electrical systems become more complex and interconnected with energy systems outside traditional utility, the verification of construction, installation, commissioning, and maintenance by a qualified person becomes even more imperative.

This public comment is made in support of adding a “general” requirement in Article 90 or Article 110, in reference to all aspects of electrical work covered under the purview of the NEC being performed by qualified persons.

Finally, with the addition of 110.17 in NFPA 70 and the recent evolution of NFPA 70B moving to a standard, I would like to introduce the thought of amending the NEC Article 100 definition of Qualified Person to include commissioning, and at minimum maintenance. Ultimately reading:

Qualified Person. One who has skills and knowledge related to the construction, commissioning, maintenance, and operation of the electrical equipment and installations and has received safety training to recognize and avoid the hazards involved.

Statement of Problem and Substantiation for Public Comment

Consistently long standing there has been a fundamental issue regarding how an AHJ enforces the scattered qualified persons requirements within the NEC. Licensing, certifications, and training are more important now than they ever have been in the electrical industry. Significant language was added to the NEC in 2023 to accompany the existing 142 uses of “qualified persons” language. While service and maintenance are nothing new to the electrical industry, the addition of 110.17 completes the trilogy of interweaving NFPA 70, NFPA 70E Standard for Electrical Safety in the Workplace and NFPA 70B Standard for Electrical Equipment Maintenance. However, the use and requirement of “qualified persons” is still inconsistent from article to article resulting in the perceived responsibility of the qualified person differing from system to system. Throughout the country, sections and portions of each system are NOT performed by qualified persons and the argument by those unqualified performing the work is based on the language or lack thereof for total inclusion of all “parts” of the system requiring training in the construction and installation of the electrical system.
2026 saw 17 PI’s in an attempt to promote uniformity with qualified persons language across the NEC. The consensus from CMP to CMP was a statement for qualified persons is more appropriate in Article 90 and/or Article 110. To draw a parallel from the enforceable qualified persons language in electrical safety and maintenance, to those in the NEC, a general requirement for qualified persons in Article 90.2(A) or Article 110 would then require that ALL electrical work under the scope of the NEC, including but not limited to the construction, installation, commissioning, and maintenance be performed by qualified persons.
As technology enhances and electrical systems become more complex and interconnected with energy systems outside traditional utility, the verification of construction, installation, commissioning, and maintenance by a qualified person becomes even more imperative.
This public comment is made in support of adding a “general” requirement in Article 90 or Article 110, in reference to all aspects of electrical work covered under the purview of the NEC being performed by qualified persons.
Finally, with the addition of 110.17 in NFPA 70 and the recent evolution of NFPA 70B moving to a standard, I would like to introduce the thought of amending the NEC Article 100 definition of Qualified Person to include commissioning, and at minimum maintenance. Ultimately reading:
Qualified Person. One who has skills and knowledge related to the construction, commissioning, maintenance, and operation of the electrical equipment and installations and has received safety training to recognize and avoid the hazards involved.

Related Item

- PI 1817, PI 1818, PI 1819, PI 1820

Submitter Information Verification

Submitter Full Name: George Mostardini
Organization: IBEW Local 134
Affiliation: IBEW
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 15 19:01:22 EDT 2024
Committee: NEC-P01

Public Comment No. 1834-NFPA 70-2024 [Section No. 90.2(A)]

(A) Practical Safeguarding.

The purpose of this code is the practical safeguarding of persons and property from hazards arising from the use of electricity. This code is not intended as a design specification or an instruction manual for ~~untrained persons~~ unqualified persons .

Informational Note: See article 100 for the definition of qualified person and unqualified person

Statement of Problem and Substantiation for Public Comment

This PC is being submitted in response to the resolution of PI-1557. The committee resolution statement stated the defined term of qualified person does not include the application of code requirements. As such 2 companion PCs were submitted revising the definition of Qualified Person to include the application of code requirements as well as create a new definition for the NEC for unqualified persons. The term unqualified person is already defined in NFPA 70E so this will also create consistency between the documents. Adding an informational note pointing to these definitions will aid users in determining what the purpose of this section.

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 1852-NFPA 70-2024 [Definition: Qualified Person.]	

Related Item

- PI-1557

Submitter Information Verification

Submitter Full Name: Jeff Noren
Organization: National Electrical Contractors Association
Street Address:
City:
State:
Zip:

Submittal Date: Tue Aug 27 16:22:19 EDT 2024
Committee: NEC-P01

Public Comment No. 41-NFPA 70-2024 [Section No. 90.2(B)]

(B) Adequacy.

This code contains provisions that are considered necessary for safety. Compliance ~~therewith and proper maintenance result~~ therewith result in an installation that is essentially free from hazard but not necessarily efficient, convenient, or adequate for good service or future expansion of electrical use.

Informational Note: Hazards often occur because of overloading of wiring systems by methods or usage not in conformity with this code. This occurs because initial wiring did not provide for increases in the use of electricity. An initial adequate installation and reasonable provisions for system changes provide for future increases in the use of electricity.

Statement of Problem and Substantiation for Public Comment

The phrase "and proper maintenance" is deleted in this recommendation to comply with the final action of Committee Input No. 9273 and Section and Table 3.2.1, Possibly Unenforceable and Vague Terms, in the NEC Style Manual. The word "proper" used in this context is unenforceable and vague. Further, while there is not a definitive statement as to why the NEC does not cover maintenance as this passed at the meeting and the committee statement explained why maintenance was covered by the NEC, of of the explanation of negative votes that created this Committee Input stated that "I do not agree the National Electrical Code (NEC) should state that it “covers maintenance and servicing” when, in fact it does not."

Related Item

• Committee Input No. 9273

Submitter Information Verification

Submitter Full Name: Palmer Hickman
Organization: Electrical Training Alliance
Street Address:
City:
State:
Zip:

Submittal Date: Thu Jul 11 16:57:36 EDT 2024
Committee: NEC-P01

Public Comment No. 851-NFPA 70-2024 [Section No. 90.2(B)]

(B) Adequacy.

This code contains provisions that are considered necessary for safety. Compliance therewith ~~and proper maintenance~~ result in an installation that is essentially free from hazard but not necessarily efficient, convenient, or adequate for good service or future expansion of electrical use.

Informational Note: Hazards often occur because of overloading of wiring systems by methods or usage not in conformity with this code. This occurs because initial wiring did not provide for increases in the use of electricity. An initial adequate installation and reasonable provisions for system changes provide for future increases in the use of electricity.

Statement of Problem and Substantiation for Public Comment

Maintenance was not included as something that is covered by the NEC. Accordingly, this section should only address the installation as a means to ensure a safe installation for correlation with that action that did not add maintenance to what is covered by the NEC. Maintenance is something that occurs at some point after the the installation.

Related Item

• CI-9273

Submitter Information Verification

Submitter Full Name: Palmer Hickman
Organization: Electrical Training Alliance
Street Address:
City:
State:
Zip:

Submittal Date: Tue Aug 06 16:21:42 EDT 2024
Committee: NEC-P01

Public Comment No. 1335-NFPA 70-2024 [Section No. 90.2(C)]

(C) Installations Covered.

This code covers the installation, reinstallation, and removal of electrical conductors, equipment, and raceways; signaling and communications conductors, equipment, and raceways; and optical fiber cables for the following:

(1) Public and private premises, including buildings, structures, mobile homes, recreational vehicles, and floating buildings

(2) Yards, lots, parking lots, carnivals, and industrial substations

(3) Installations of conductors and equipment that connect to the supply of electricity

(4) Installations used by the electric utility, such as office buildings, warehouses, garages, machine shops, and recreational buildings, that are not an integral part of a generating plant, substation, or control center

(5) Installations supplying shore power to ships and watercraft in marinas and boatyards, including monitoring of leakage current

(6) Installations used to export electric power from vehicles to premises wiring or for bidirectional current flow

Statement of Problem and Substantiation for Public Comment

This comment is being submitted on behalf of the Minnesota Department of Labor and Industry. Currently, the Department's inspection staff includes 14-office/field staff, 50-state field inspectors, 4-virtual inspectors and 22 plus contract electrical inspectors that complete over 170,000 electrical inspections annually.

Please reconsider PI 478 and add the word "reinstallation". The word adds clarity to the scope of NEC when it comes to replacing or repairing electrical installations. For example, we have many sections in the NEC that have code requirement when an installer is "replacing" electrical equipment. Technically, those installations are not addressed in the scope statement.

Related Item

• Public Input No. 478-NFPA 70-2023 Section No. 90.2(C)

Submitter Information Verification

Submitter Full Name: Dean Hunter
Organization: Minnesota Department of Labor
Street Address:
City:
State:
Zip:

Submittal Date: Tue Aug 20 17:07:38 EDT 2024
Committee: NEC-P01

Public Comment No. 1442-NFPA 70-2024 [Section No. 90.2(C)]

(C) ~~Installations~~ Covered.

This code covers ~~the installation and removal~~ installations of electrical equipment, conductors ~~,~~ and utilization equipment, and ~~raceways,~~ the removal where required elsewhere in this code ; including signaling and communications ~~conductors,~~ equipment~~, and raceways~~ ; and optical fiber cables and equipment for the following:

(1) Public and private premises, including buildings, structures, mobile homes, recreational vehicles, and floating buildings

(2) Yards, lots, parking lots, carnivals, and industrial substations

(3) Installations of conductors and equipment that connect to the supply of electricity

(4) Installations used by the electric utility, such as office buildings, warehouses, garages, machine shops, and recreational buildings, that are not an integral part of a generating plant, substation, or control center

(5) Installations supplying shore power to ships and watercraft in marinas and boatyards, including monitoring of leakage current

(6) Installations used to export electric power from vehicles to premises wiring or for bidirectional current flow

Statement of Problem and Substantiation for Public Comment

The code making panel previously stated that all equipment is included so there is no need to spell everything out, the addition of utilization equipment is necessary to clarify inclusion even when not part of an installation the NFPA 70 applys, e.g when the utilization equipment is being fabricated and not part of an electrical installation but is still required to meet the NFPA-70 standard. This language also follows the OSHA language and bring clarity to this often misplaced application of the use of utilization equipment vs just equipment.

§ 1910.302 Electric utilization systems.

(a) Scope -
(1) Covered. The provisions of §§ 1910.302 through 1910.308 cover electrical installations and utilization equipment installed or used within or on buildings, structures, and other premises, including: ~~~

Related Item

• Public Input No. 3779

Submitter Information Verification

Submitter Full Name: Alfio Torrisi
Organization: Triad National Security, LLC.
Street Address:
City:
State:
Zip:

Submittal Date: Thu Aug 22 18:31:43 EDT 2024
Committee: NEC-P01

Public Comment No. 2068-NFPA 70-2024 [Section No. 90.2(C)]

(C) Installations Covered.

This code covers the installation, reconditioning, servicing and removal of electrical conductors, equipment, and raceways; signaling and communications conductors, equipment, and raceways; and optical fiber cables for the following:

(1) Public and private premises, including buildings, structures, mobile homes, recreational vehicles, and floating buildings

(2) Yards, lots, parking lots, carnivals, and industrial substations

(3) Installations of conductors and equipment that connect to the supply of electricity

(4) Installations used by the electric utility, such as office buildings, warehouses, garages, machine shops, and recreational buildings, that are not an integral part of a generating plant, substation, or control center

(5) Installations supplying shore power to ships and watercraft in marinas and boatyards, including monitoring of leakage current

(6) Installations used to export electric power from vehicles to premises wiring or for bidirectional current flow

Statement of Problem and Substantiation for Public Comment

The terms "reconditioning" and "servicing" have been added to the Scope since there are requirements in the NEC for reconditioning and servicing. Maintenance was not added to correlate with the definition of servicing.

However, if maintenance is added, a definition would be needed in Article 100. Proposed definition: Maintenance: the process of maintaining electrical systems and equipment to address risk of failure, breakdown or malfunctions and improve safety and reliability.

Related Item

• CI-9273

Submitter Information Verification

Submitter Full Name: Daniel Neeser
Organization: Eaton Bussmann Division
Street Address:
City:
State:
Zip:

Submittal Date: Wed Aug 28 17:53:47 EDT 2024
Committee: NEC-P01

Public Comment No. 444-NFPA 70-2024 [Section No. 90.2(C)]

(C) Installations Covered.

This code covers the installation and removal of electrical conductors, equipment, and raceways; signaling and communications conductors, equipment, and raceways; and optical fiber cables for the following:

(1) Public and private premises, including buildings, structures, mobile homes, recreational vehicles, and floating buildings

(2) Yards, lots, parking lots, carnivals, and industrial substations

(3) Installations of conductors and equipment that connect to the supply of electricity

(4) Installations used by the electric utility, such as office buildings, warehouses, garages, machine shops, and recreational buildings, that are not an integral part of a generating plant, substation, or control center

(5) Installations supplying shore power to ships and watercraft in marinas and boatyards, including monitoring of leakage current

(6) Installations used to export electric power from vehicles to premises wiring or for bidirectional current flow

Additional Proposed Changes

File Name	Description	Approved
CN_91.pdf		

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 91 appeared in the First Draft Report.

The Correlating Committee directs CMP 1 to review the ballot comments related to developing a document scope section in 90.2. Prior to the 2023 edition of the NEC, Section 90.2 was titled “Scope”.

Related Item

• Correlating Committee Note No. 91

Submitter Information Verification

Submitter Full Name: CC Notes
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:

Submittal Date: Tue Jul 30 17:38:05 EDT 2024
Committee: NEC-P01

Correlating Committee Note No. 91-NFPA 70-2024 [Section No. 90.2(C)]

Submitter Information Verification

Committee: NEC-AAC
Submittal Date: Wed May 08 10:29:28 EDT 2024

Committee Statement

Committee Statement: The Correlating Committee directs CMP 1 to review the ballot comments related to developing a document scope section in 90.2. Prior to the 2023 edition of the NEC, Section 90.2 was titled “Scope”.

Ballot Results

✔ **This item has passed ballot**

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

Not Returned

McDaniel, Roger D.

Affirmative All

Ayer, Lawrence S.
Bowmer, Trevor N.
Hickman, Palmer L.
Holub, Richard A.
Jackson, Peter D.
Kendall, David H.
Manche, Alan
Osborne, Robert D.
Porter, Christine T.
Schultheis, Timothy James
Williams, David A.

Public Comment No. 445-NFPA 70-2024 [Section No. 90.2(D)]

(D) Installations Not Covered.

This code does not cover the following:

(1) Installations in ships, watercraft other than floating buildings, railway rolling stock, aircraft, or automotive vehicles other than mobile homes and recreational vehicles

Informational Note: Although the scope of this code indicates that the code does not cover installations in ships, portions of this code are incorporated by reference into Title 46, Code of Federal Regulations, Parts 110–113.

(2) Installations underground in mines and self-propelled mobile surface mining machinery and its attendant electrical trailing cable

(3) Installations of railways for generation, transformation, transmission, energy storage, or distribution of power used exclusively for operation of rolling stock or installations used exclusively for signaling and communications purposes

(4) Installations of communications equipment under the exclusive control of communications utilities located outdoors or in building spaces used exclusively for such installations

(5) Installations under the exclusive control of an electric utility where such installations

a. Consist of service drops or service laterals, and associated metering, or

b. Are on property owned or leased by the electric utility for the purpose of communications, metering, generation, control, transformation, transmission, energy storage, or distribution of electric energy, or

c. Are located in legally established easements or rights-of-way, or

d. Are located by other written agreements either designated by or recognized by public service commissions, utility commissions, or other regulatory agencies having jurisdiction for such installations. These written agreements shall be limited to installations for the purpose of communications, metering, generation, control, transformation, transmission, energy storage, or distribution of electric energy where legally established easements or rights-of-way cannot be obtained. These installations shall be limited to federal lands, Native American reservations through the U.S. Department of the Interior Bureau of Indian Affairs, military bases, lands controlled by port authorities and state agencies and departments, and lands owned by railroads.

Informational Note to (4) and (5): Examples of utilities may include those entities that are typically designated or recognized by governmental law or regulation by public service/utility commissions and that install, operate, and maintain electric supply (such as generation, transmission, or distribution systems) or communications systems (such as telephone, CATV, Internet, satellite, or data services). Utilities may be subject to compliance with codes and standards covering their regulated activities as adopted under governmental law or regulation. Additional information can be found through consultation with the appropriate governmental bodies, such as state regulatory commissions, the Federal Energy Regulatory Commission, and the Federal Communications Commission.

Additional Proposed Changes

File Name	Description	Approved
CN_92.pdf		

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 92 appeared in the First Draft Report.

The Correlating Committee directs CMP-1 to revise the informational note to comply with the NEC Style Manual Section 2.1.10.1 on information in the note that supports the requirement.

Related Item

• Correlating Committee Note No. 92

Submitter Information Verification

Submitter Full Name: CC Notes
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:

Submittal Date:	Tue Jul 30 17:40:23 EDT 2024
Committee:	NEC-P01

Correlating Committee Note No. 92-NFPA 70-2024 [Section No. 90.2(D)]

Submitter Information Verification

Committee: NEC-AAC
Submittal Date: Wed May 08 10:31:28 EDT 2024

Committee Statement

Committee Statement: The Correlating Committee directs CMP-1 to revise the informational note to comply with the NEC Style Manual Section 2.1.10.1 on information in the note that supports the requirement.

Ballot Results

✔ **This item has passed ballot**

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

Not Returned

McDaniel, Roger D.

Affirmative All

Ayer, Lawrence S.
Bowmer, Trevor N.
Hickman, Palmer L.
Holub, Richard A.
Jackson, Peter D.
Kendall, David H.
Manche, Alan
Osborne, Robert D.
Porter, Christine T.
Schultheis, Timothy James
Williams, David A.

Public Comment No. 1837-NFPA 70-2024 [New Section after 90.2(E)]

(F) Maintenance and Reconditioning of Equipment

Appropriate elements of maintenance and reconditioning of electrical equipment shall be covered in this code in accordance with the following:

(1) Covered

a. The recognition of the need for proper maintenance or reconditioning of electrical equipment where the lack thereof, compromises the equipment adequacy.

b. The recognition of the need for proper maintenance or reconditioning of electrical equipment where the lack thereof, compromises the practical safeguarding of persons and property.

c. The determination of electrical equipment that is to be reconditioned.

d. The determination of electrical equipment that is not permitted to be reconditioned.

e. The required identification of electrical equipment that has been reconditioned.

(2) Not Covered

a. What constitutes proper electrical equipment maintenance or reconditioning as covered by other industry standards or manufacturer installation instructions.

b. The intervals at which electrical equipment maintenance is to be performed.

Informational Note No. 1: See NFPA 70B-2026, Standard for *Electrical Equipment Maintenance* and the manufacturer's installation instructions for more information on what constitutes proper maintenance.

Informational Note No. 2: See the NEMA Policy on Reconditioned Electrical Equipment and the manufacturers documentation for more information on what electrical equipment is permitted to be reconditioned.

Statement of Problem and Substantiation for Public Comment

The introduction of section 110.17 in 2023 NEC brought the current scope creep issue in the NEC to the forefront. We have requirements throughout the document that address maintenance and reconditioning of electrical equipment. Adding the language in new proposed subpart (F) of 90.2 spells out the extent maintenance and reconditioning is covered by the NEC, resolving the scope creep issues, and limiting the application to those scenarios where it relates to the adequacy of equipment, and practical safeguarding of persons or property.

Related Item

• CCN-102

Submitter Information Verification

Submitter Full Name: Jeff Noren
Organization: National Electrical Contractors Association
Street Address:
City:
State:
Zip:

Submittal Date: Tue Aug 27 16:28:12 EDT 2024
Committee: NEC-P01

Public Comment No. 1217-NFPA 70-2024 [Section No. 90.2(E)]

(E) Relation to Other International Standards.

The requirements in this code address the fundamental principles of protection for safety contained in Section 131 of International Electrotechnical Commission Standard 60364-1, *Low-voltage Electrical Installations – Part 1: Fundamental Principles, Assessment of General Characteristics, Definitions*.

Informational Note: See IEC 60364-1, *Low-voltage Electrical Installations – Part 1: Fundamental Principles, Assessment of General Characteristics, Definitions*, Section 131, for fundamental principles of protection for safety that encompass protection against electric shock, protection against thermal effects, protection against overcurrent, protection against fault currents, and protection against overvoltage. All of these potential hazards are addressed by the requirements in this code.

(F) Special Permission.

The authority having jurisdiction for enforcing this *Code* may grant exception for the installation of conductors and equipment that are not under the exclusive control of the electric utilities and are used to connect the electric utility supply system to the service conductors of the premises served, provided such installations are outside a building or structure, or terminate inside at a readily accessible location nearest the point of entrance of the service conductors.

Statement of Problem and Substantiation for Public Comment

This comment seeks to retain the language of the 2023 NEC as it relates to special permission.
The CMP indicates that this material is redundant to 90.4, but it is not. Section 90.4 allows the AHJ to waive specific, individual requirements if equivelant safety objectives can be assured. This section allows the AHJ to waive compliance with the entire document. Customer-owned substatations are more popular than ever before, and the majority of AHJs are not comfortable inspecting them. Not only are we seeing more medium and high voltage services, but the voltages and sophistication of these installations are increasing as well. Several of my clients have a service point in excess of 230kV. The AHJ needs the ability to waive the NEC in its entirety and defer to outside expertise, often in the form of the serving utility to assist in these installations. Removing this language could be a very serious step backwards in electrical safety.

Related Item

• FR 8866

Submitter Information Verification

Submitter Full Name: Ryan Jackson
Organization: Self-employed
Street Address:
City:
State:
Zip:

Submittal Date: Sat Aug 17 17:07:38 EDT 2024
Committee: NEC-P01

Public Comment No. 1783-NFPA 70-2024 [Section No. 90.3]

90.3 Code Arrangement.

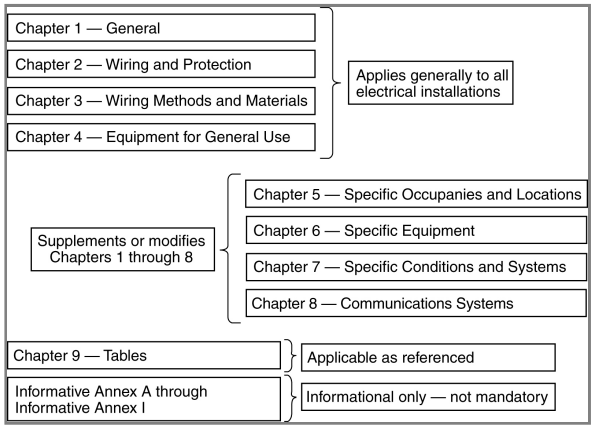
This code is divided into the introduction and nine chapters, as shown in Figure 90.3. Chapters 1 through 4 apply generally. Chapters 5 through ~~8~~ 7 may supplement or modify the requirements in Chapters 1 through 7.

Chapter 8 covers the communications systems and is not subject to the requirements of chapters 1 through 7 except where the requirements are specifically referenced in chapter 8 .

Chapter 9 consists of tables that are applicable as referenced.

Informative annexes are not part of the requirements of this code but are included for informational purposes only.

Figure 90.3 Code Arrangement.



Statement of Problem and Substantiation for Public Comment

The original purpose of the NEC was to protect people and property. These changes do neither in fact the unintended consequences may have the opposite effect. Class 4 Fault Managed Power is intrinsically safe and is not a danger to property or a cause of injury to people. There is no justification for this change. I would further argue that the committee should have gone further and moved fiber optic cable to chapter 8 for the same reason. Class 2 is power limited and also safe from fire ignition. The unintended consequences will raise construction costs during a century when communications is growing in importance to everyone. With increased costs for permitting, licensing and inspections General Contractors will encourage states to adopt other codes and abandon the NFPA entirely or never adopt this change. The independence of Chapter 8 is entirely rational and sensible.

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 1788-NFPA 70-2024 [Article 722]	

Related Item

• chapter 8 changes

Submitter Information Verification

Submitter Full Name: Patrick Mahoney
Organization: AECOM
Street Address:
City:
State:
Zip:

Submittal Date: Tue Aug 27 11:14:46 EDT 2024
Committee: NEC-P01

Public Comment No. 446-NFPA 70-2024 [Section No. 90.3]

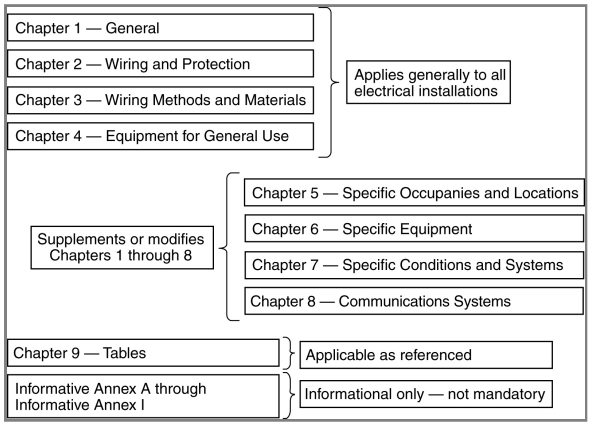
90.3 Code Arrangement.

This code is divided into the introduction and nine chapters, as shown in Figure 90.3. Chapters 1 through 4 apply generally. Chapters 5 through 8 may supplement or modify the requirements in Chapters 1 through 8.

Chapter 9 consists of tables that are applicable as referenced.

Informative annexes are not part of the requirements of this code but are included for informational purposes only.

Figure 90.3 Code Arrangement.



Additional Proposed Changes

File Name	Description	Approved
CN_93.pdf		

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 93 appeared in the First Draft Report on First Revision No. 9191.

The Correlating Committee directs the CMP-1 to review Figure 90.3 Code Arrangement to reflect the changes to 90.3 and the omission of Chapter 8 in the textbox “supplements or modifies”. Additionally, the references to the Informational Annexes omits Annex K.

Related Item

• First Revision No. 9191

Submitter Information Verification

Submitter Full Name: CC Notes
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jul 30 17:42:14 EDT 2024
Committee: NEC-P01

Correlating Committee Note No. 93-NFPA 70-2024 [Section No. 90.3]

Submitter Information Verification

Committee: NEC-AAC
Submittal Date: Wed May 08 10:38:10 EDT 2024

Committee Statement

Committee Statement: The Correlating Committee directs the CMP-1 to review Figure 90.3 Code Arrangement to reflect the changes to 90.3 and the omission of Chapter 8 in the text box “supplements or modifies”. Additionally, the references to the Informational Annexes omits Annex K.

First Revision No. 9191-NFPA 70-2024 [Section No. 90.3]

Ballot Results

✔ **This item has passed ballot**

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

Not Returned

McDaniel, Roger D.

Affirmative All

Ayer, Lawrence S.
Hickman, Palmer L.
Holub, Richard A.
Jackson, Peter D.
Kendall, David H.
Manche, Alan
Osborne, Robert D.
Porter, Christine T.
Schultheis, Timothy James
Williams, David A.

Negative with Comment

Bowmer, Trevor N.

The changes suggestd by the CN-93 are already completed in the 90.3 section as shown currently in Terra. No further changes are required.

Public Comment No. 447-NFPA 70-2024 [Section No. 90.7]

90.7 Examination of Equipment for Safety.

For specific items of equipment and materials referred to in this code, examinations for safety made under standard conditions provide a basis for approval where the record is made generally available through promulgation by organizations properly equipped and qualified for experimental testing, inspections of the run of goods at factories, and service-value determination through field inspections.

It is the intent of this code that factory-installed internal wiring or the construction of equipment need not be inspected at the time of installation of the equipment, except to detect alterations or damage, if the equipment has been listed by a qualified electrical testing laboratory in accordance with 110.3(C).

Informational Note No. 1: See 110.3 for guidance on safety examinations.

Informational Note No. 2: See Article 100 for definitions of *listed* and *reconditioned*.

Informational Note No. 3: See Informative Annex A for a list of product safety standards that are compatible with this code.

Additional Proposed Changes

File Name	Description	Approved
CN_95.pdf		

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 95 appeared in the First Draft Report on First Revision No. 8874.

The Correlating Committee directs the CMP-1 to review FR 8874 and consider removing Informational Note 1 because it is referenced in the requirement.

Related Item

• First Revision No. 8874

Submitter Information Verification

Submitter Full Name: CC Notes
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jul 30 17:43:34 EDT 2024
Committee: NEC-P01

Correlating Committee Note No. 95-NFPA 70-2024 [Section No. 90.7]

Submitter Information Verification

Committee: NEC-AAC
Submittal Date: Wed May 08 11:02:29 EDT 2024

Committee Statement

Committee Statement: The Correlating Committee directs the CMP-1 to review FR 8874 and consider removing Informational Note 1 because it is referenced in the requirement.

First Revision No. 8874-NFPA 70-2024 [Section No. 90.7]

Ballot Results

This item has passed ballot

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

Not Returned

McDaniel, Roger D.

Affirmative All

Ayer, Lawrence S.
Bowmer, Trevor N.
Hickman, Palmer L.
Holub, Richard A.
Jackson, Peter D.
Kendall, David H.
Manche, Alan
Osborne, Robert D.
Porter, Christine T.
Schultheis, Timothy James
Williams, David A.

Public Comment No. 449-NFPA 70-2024 [Section No. 90.9(D)]

(D) Compliance.

Conversion from inch-pound units to SI units shall be permitted to be an approximate conversion. Compliance with the numbers shown in either the SI system or the inch-pound system shall constitute compliance with this code.

Informational Note No. 1: Hard conversion is considered a change in dimensions or properties of an item into new sizes that might or might not be interchangeable with the sizes used in the original measurement. Soft conversion is considered a direct mathematical conversion and involves a change in the description of an existing measurement but not in the actual dimension.

Informational Note No. 2: SI conversions are based on IEEE/ASTM SI 10-1997, *Standard for the Use of the International System of Units (SI):The Modern Metric System*.

Additional Proposed Changes

File Name	Description	Approved
CN_97.pdf		

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 97 appeared in the First Draft Report.

The Correlating Committee directs the CMP-1 to review Informational Note No. 2 for the correct title and edition to comply with the Regulations Governing the Development of NFPA Standards 3.3.6.2.

Related Item

• Correlating Committee Note No. 97

Submitter Information Verification

Submitter Full Name: CC Notes
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jul 30 17:46:22 EDT 2024
Committee: NEC-P01

Correlating Committee Note No. 97-NFPA 70-2024 [Section No. 90.9(D)]

Submitter Information Verification

Committee: NEC-AAC
Submittal Date: Wed May 08 11:06:31 EDT 2024

Committee Statement

Committee Statement: The Correlating Committee directs the CMP-1 to review Informational Note No. 2 for the correct title and edition to comply with the Regulations Governing the Development of NFPA Standards 3.3.6.2.

Ballot Results

✔ **This item has passed ballot**

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

Not Returned

McDaniel, Roger D.

Affirmative All

Ayer, Lawrence S.
Bowmer, Trevor N.
Hickman, Palmer L.
Holub, Richard A.
Jackson, Peter D.
Kendall, David H.
Manche, Alan
Osborne, Robert D.
Porter, Christine T.
Schultheis, Timothy James
Williams, David A.

Public Comment No. 12-NFPA 70-2024 [Definition: Accessible (as applied to equipment).]

Accessible (as applied to equipment).

Capable of being reached for operation, renewal, and inspection. (CMP-1)

Informational Note: See the applicable building code and ICC A117.1-2017, Accessible and Usable Buildings and Facilities, for information regarding accessibility for people with disabilities.

Statement of Problem and Substantiation for Public Comment

The NFPA Disability Access Review and Advisory Committee (DARAC) requests an update to this section. This change is related to the elimination of the Informational Note in Article 110.1. DARAC suggests that this is a more relevant location for this note, and is more likely to be found for users of this code seeking information on accessible design. This is therefore related to FR8909 and FR8899, which removed Annex J, previously referenced in 110.1

Related Item

• FR8909, FR8898, PC15

Submitter Information Verification

Submitter Full Name: Jessica Hubert
Organization: Guardian Services Inc.
Affiliation: Disability Access Review Advisory Committee
Street Address:
City:
State:
Zip:

Submittal Date: Wed Jul 10 10:30:38 EDT 2024
Committee: NEC-P01

Public Comment No. 1025-NFPA 70-2024 [Definition: Accessible, Readily. (Readily Accessible)]

Accessible, Readily. (Readily Accessible)

Capable of being reached quickly for operation, renewal, or inspection ~~without requiring those to whom ready access is requisite to take~~ by those who require ready access. In this case, quickly means without having to take actions, such as to use tools (other than keys), to climb over or under, to remove obstacles, or to resort to portable ladders, and so forth. (CMP-1)

Informational Note: Use of keys is a common practice under controlled or supervised conditions and a common alternative to the ready access requirements under such supervised conditions as provided elsewhere in the *NEC*.

Statement of Problem and Substantiation for Public Comment

The existing sentence is technically correct, but it is difficult to read. I have been in many classes where 'readily accessible' is taught as having to be accessible for everyone, not just the person who needs it (the worker). When i teach this definition, i spend a good deal of time on the phrase "...to whom ready access is requisite...," explaining that this means "to those who require it." I have heard many state that they just skipped over those words because the words didn't make sense to them. This PI/PC is an attempt to make "technically correct" language more understandable for those who use the Code. Splitting the existing sentence into two sentences prevents having a very long and complicated single sentence.

Related Item

• 2134-NFPA 70-2023

Submitter Information Verification

Submitter Full Name: Eric Stromberg
Organization: Los Alamos National Laboratory
Affiliation: Self
Street Address:
City:
State:
Zip:

Submittal Date: Sun Aug 11 15:11:57 EDT 2024
Committee: NEC-P01

Public Comment No. 9-NFPA 70-2024 [Definition: Accessible, Readily. (Readily Accessible)]

Accessible, Readily. (Readily Accessible)

Capable of being reached quickly for operation, renewal, or inspection without requiring those to whom ready access is requisite to take actions, such as to use tools (other than keys), to climb over or under, to remove obstacles, or to resort to portable ladders, and so forth. (CMP-1)

Informational Note: Use of keys is a common practice under controlled or supervised conditions and a common alternative to the ready access requirements under such supervised conditions as provided elsewhere in the *NEC*.

Informational Note: See the applicable building code and ICC A117.1-2017, Accessible and Usable Buildings and Facilities for information regarding people with disabilities.

Statement of Problem and Substantiation for Public Comment

The NFPA Disability Access Review and Advisory Committee (DARAC) requests an update to this section. This change is related to the elimination of the Informational Note in Article 110.1. DARAC suggests that this is a more relevant location for this note and is more likely to be found for users of this code seeking information on accessible design. This is therefore related to FR 8909, FR 8898 which was removed Annex J, previously referenced in 110.1.

Related Item

• FR 8953, FR 8909, FR 8898, PI 1233

Submitter Information Verification

Submitter Full Name: Jessica Hubert
Organization: Guardian Services Inc.
Affiliation: Disability Access Review Advisory Committee
Street Address:
City:
State:
Zip:

Submittal Date: Wed Jul 10 10:19:26 EDT 2024
Committee: NEC-P01

Public Comment No. 1886-NFPA 70-2024 [Definition: Enclosure.]

Enclosure.

The case or housing of ~~apparatus or the fence or walls surrounding an installation to~~ apparatus to prevent personnel from accidentally contacting energized parts or to protect the equipment from physical damage. Fences or walls surrounding an installation can also provide such protection. (CMP-1)

Informational Note: See Table 110.28 for examples of enclosure types.

Statement of Problem and Substantiation for Public Comment

The case or housing enclosing a piece of electronic or electrical equipment is often an integral part of the equipment and also offers a very different type of protection from fences and walls surrounding an electrical installation. The current definition equates cases, housings, fences and walls as all the same type of protection.

Related Item

• FR8969

Submitter Information Verification

Submitter Full Name: Trevor Bowmer
Organization: Bunya Telecom Consulting, LLC
Street Address:
City:
State:
Zip:

Submittal Date: Tue Aug 27 20:45:17 EDT 2024
Committee: NEC-P01

Public Comment No. 1901-NFPA 70-2024 [Definition: Enclosure.]

Enclosure.

The case or housing of apparatus, or the fence or walls surrounding an installation, intended to prevent personnel from ~~accidentally~~ unintentionally contacting energized parts or to protect the equipment from physical damage. (CMP-1)

Informational Note: See Table 110.28 for examples of enclosure types.

Statement of Problem and Substantiation for Public Comment

In its First Draft Meeting of the NFPA 70E Technical Committee held in July 2024, the committee modified the definition of "Enclosure" that was found to be grammatically acceptable to the committee. These changes are reflected in this public comment. "Accidently" is changed to "unintentional" to also align with the NFPA 70E definition.

Related Item

• FR 8968

Submitter Information Verification

Submitter Full Name: Louis Barrios
Organization: Shell Global Solutions
Affiliation: American Chemistry Council
Street Address:
City:
State:
Zip:

Submittal Date: Tue Aug 27 22:09:55 EDT 2024
Committee: NEC-P01

Public Comment No. 855-NFPA 70-2024 [Definition: Enclosure.]

Enclosure.

The case or housing of apparatus, or the fence or walls surrounding an installation, intended to prevent personnel from either accidentally contacting energized parts or to protect the equipment from physical damage, or both . (CMP-1)

Informational Note: See Table 110.28 for examples of enclosure types.

Statement of Problem and Substantiation for Public Comment

This revision editorially corrects this requirement to state what an enclosure, by definition as written, protects. It is not an either or - it can be both. This recommendation recognizes that it can be one or the other or both.

Related Item

• PI-793

Submitter Information Verification

Submitter Full Name: Palmer Hickman
Organization: Electrical Training Alliance
Street Address:
City:
State:
Zip:

Submittal Date: Tue Aug 06 16:40:48 EDT 2024
Committee: NEC-P01

Public Comment No. 1746-NFPA 70-2024 [Definition: Equipment.]

Equipment.

A general term ~~, including~~ for items used as a part of or in connection with an electrical installation, such as fittings, devices, appliances, luminaires, apparatus, ~~machinery, and the like used as a part of, or in connection with, an electrical installation.~~ and machinery, other than wiring methods.. (CMP-1)

Statement of Problem and Substantiation for Public Comment

During consideration of the Public Inputs submitted to CMP-6, it became apparent that there was some confusion by code users regarding whether wiring methods are included under the umbrella term "equipment." CMP-6 clarified that wiring methods are not equipment, and revising the definition for equipment will be helpful for Code users. This will help differentiate code requirements for equipment (like panelboards) and wiring methods (like NM cable).

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 1745-NFPA 70-2024 [New Definition after Definition: Wiring Device.]	

Related Item

- PI 604

Submitter Information Verification

Submitter Full Name: Christel Hunter
Organization: Cerro Wire
Street Address:
City:
State:
Zip:
Submittal Date: Mon Aug 26 23:18:52 EDT 2024
Committee: NEC-P01

Public Comment No. 489-NFPA 70-2024 [Definition: Fixed (as applied to equipment).]

Fixed (as applied to equipment).

Equipment that is fastened or otherwise secured at a specific location. (CMP-17)

Additional Proposed Changes

File Name	Description	Approved
CN_136.pdf		

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 136 appeared in the First Draft Report on First Revision No. 9009.

The Correlating Committee directs CMP-1 to review the definition “Fixed (as applied to equipment)” that is being reassigned from CMP-17 to CMP-1 as the term applies throughout the code.

Related Item

• First Revision No. 9009

Submitter Information Verification

Submitter Full Name: CC Notes
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jul 30 19:51:57 EDT 2024
Committee: NEC-P01

Correlating Committee Note No. 136-NFPA 70-2024 [Definition: Fixed (as applied to equipment).]

Submitter Information Verification

Committee: NEC-AAC
Submittal Date: Wed May 08 15:46:06 EDT 2024

Committee Statement

Committee Statement: The Correlating Committee directs CMP-1 to review the definition “Fixed (as applied to equipment)” that is being reassigned from CMP-17 to CMP-1 as the term applies throughout the code.

First Revision No. 9009-NFPA 70-2024 [Definition: Fixed (as applied to equipment).]

Ballot Results

This item has passed ballot

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

Not Returned

McDaniel, Roger D.

Affirmative All

Ayer, Lawrence S.
Bowmer, Trevor N.
Hickman, Palmer L.
Holub, Richard A.
Jackson, Peter D.
Kendall, David H.
Manche, Alan
Osborne, Robert D.
Porter, Christine T.
Schultheis, Timothy James
Williams, David A.

Public Comment No. 1540-NFPA 70-2024 [Definition: Listed.]

Listed.

Equipment, materials, or services included in a list published by an organization that is acceptable to the authority having jurisdiction and concerned with evaluation of products or services, that maintains periodic inspection of production of listed equipment or materials or periodic evaluation of services, and whose listing states that either the equipment, material, or service meets appropriate designated standards or has been tested and found suitable for a specified purpose. (CMP-1)

Informational Note 1 : The means for identifying listed equipment may vary for each organization concerned with product evaluation, some of which do not recognize equipment as listed unless it is also labeled. Use of the system employed by the listing organization allows the authority having jurisdiction to identify a listed product.

Informational Note 2: Listed can be further qualified by listing for a location (e.g. Classified, wet, or dry) or listed for an application (e.g. grounding, bonding, terminating).

Statement of Problem and Substantiation for Public Comment

Resolution to PI-3293 says that the content of the proposed note is included in the definition, but in fact, it is not. The clarification that the proposed note provides would be helpful.

Related Item

• PI-3293

Submitter Information Verification

Submitter Full Name: Glen Edwards
Organization: Detector Electronics Corporation
Affiliation: International Society of Automation (ISA)
Street Address:
City:
State:
Zip:

Submittal Date: Fri Aug 23 17:14:05 EDT 2024
Committee: NEC-P01

Public Comment No. 1154-NFPA 70-2024 [Definition: Location, Wet. (Wet Location)]

Location, Wet. (Wet Location)

A location that is one or more of the following:

(1) Unprotected and exposed to weather

(2) Subject to saturation with water or water mixed with other liquids

(3) Underground

(4) In concrete slabs or masonry in direct contact with the earth

(CMP-1)

Informational Note: A vehicle washing area is an example of a wet location saturated with water or other liquids.

Statement of Problem and Substantiation for Public Comment

This public comment seeks to revert to the original 2023 NEC language.

Changing “and” to “or” has significant impacts on the use of products and listing that are acceptable for Wet Locations. For example, a Liquidtight Fitting is listed for use with machine oil whereas a Wet Location fitting is not. By stating “or” there will be an acceptance of these fittings with machine oil. The 2023 NEC language intended for there to be a water mixture with other liquid.

The proposed language clarifies these concerns and that water, or a water and other liquids are acceptable.

Related Item

• FR8978

Submitter Information Verification

Submitter Full Name: Megan Hayes
Organization: NEMA
Street Address:
City:
State:
Zip:

Submittal Date: Fri Aug 16 09:06:32 EDT 2024
Committee: NEC-P01

Public Comment No. 2063-NFPA 70-2024 [Definition: Outlet.]

Outlet.

A point on the wiring system at which current is taken to supply utilization equipment. An outlet is provided at the wiring compartment for hard-wired utilization equipment. (CMP-1)

Statement of Problem and Substantiation for Public Comment

The new proposed sentence provides clarity that hard-wired utilization equipment (whether indoor or outdoor) has been tested per OSHA 1910.7 to meet listing and labeling requirements.

Related Item

• PI #174 • PI #452

Submitter Information Verification

Submitter Full Name: James Stallcup
Organization: Stallcup Electrical Education
Affiliation: Stallcup Electrical Education
Street Address:
City:
State:
Zip:

Submittal Date: Wed Aug 28 17:34:46 EDT 2024
Committee: NEC-P01

Public Comment No. 56-NFPA 70-2024 [Definition: Outlet.]

Outlet.

A point on the wiring system ~~at which current is taken to supply utilization equipment.~~ where the branch circuit conductors are connected to a receptacle, a luminaire, a lampholder, or ultization equipment. (CMP-1)

Statement of Problem and Substantiation for Public Comment

This definition needs clarification as it is not being correctly applied in the field and a recognized code instructor is teaching that hardwired equipment is not supplied by an outlet. The following is from the substantiation for proposal 452:
"There have been many opinions on where the outlet is located for hard-wired utilization equipment, I personally believe there is no outlet, this is nothing more than a termination. However, clarification from Code Making Panel 1 based on the intent of the definition for an outlet, would be helpful."
Also see PI 453 which proposed adding an Informational Note that would have said:
"Informational Note: Hard-wired equipment has no outlet, only cord-and-plug connected utilization equipment (appliances) have an outlet, see definition of branch circuit, appliance and branch circuit, general purpose."
The substantiation for that said:
"I have maintained and always believed there is no outlet, this is nothing more than a termination. If an outlet is present, a substantiation from Code Making Panel 2 of where the outlet is located would be helpful."

This the wording in this Public Comment is similar to that accepted by CMP 18 in a revision to the term "receptacle outlet and would make the terms consistent with each other.

Related Item

- Public Input No. 174-NFPA 70-2023
- Public Input No. 452-NFPA 70-2023
- Public Input No. 3141-NFPA 70-2023
- Public Input No. 453-NFPA 70-2023

Submitter Information Verification

Submitter Full Name: Don Ganiere
Organization: none
Street Address:
City:
State:
Zip:
Submittal Date: Sun Jul 14 14:17:36 EDT 2024
Committee: NEC-P01

Public Comment No. 1852-NFPA 70-2024 [Definition: Qualified Person.]

Qualified Person.

One who has skills and knowledge related to the construction~~- and operation of the electrical equipment and installations and~~ ,operation and installation of electrical equipment, including the application of the requirements of this code, and has received safety training to recognize and avoid the hazards involved. (CMP-1)

Informational Note: See NFPA *70E*-2024, *Standard for Electrical Safety in the Workplace*, for electrical safety training requirements.

Statement of Problem and Substantiation for Public Comment

PI-1557 was submitted during the 1st draft to help ensure individuals were qualified in the application of the NEC requirements as specified in 90.2. The Committee's response in resolving PI-1557 was that the definition of qualified persons does not include the application of code requirements. This public comment seeks to revise the definition of qualified person to include the application of NEC requirements in the definition. See companion PC related to 90.2(A).

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 1834-NFPA 70-2024 [Section No. 90.2(A)]	

Related Item

• PI-1557

Submitter Information Verification

Submitter Full Name: Jeff Noren
Organization: National Electrical Contractors Association
Street Address:
City:
State:
Zip:
Submittal Date: Tue Aug 27 17:28:17 EDT 2024
Committee: NEC-P01

Public Comment No. 1665-NFPA 70-2024 [Definition: Reconditioned Equipment.]

Reconditioned Equipment.

Electromechanical systems, equipment, apparatus, or components that are restored to operating conditions for other than the present end user . This process differs from normal servicing or repair of equipment that remains within a facility, or replacement of listed equipment on a one-to-one basis. (CMP-1)

Informational Note: The term *reconditioned* is frequently referred to as *rebuilt*, *refurbished*, or *remanufactured*.

Statement of Problem and Substantiation for Public Comment

The current vague definition of Reconditioned Equipment is often misinterpreted as applying to motor repair whereby a motor is sent off to a motor repair shop to be rewound or simply have the bearings changed. Motors have long been repaired at motor repair shops by reverse engineering the motor winding and rewinding it using industry practices and knowledge gained from careful tear-down of the equipment. This process of repairing motors should not fall under the purview of the NEC® reconditioning restrictions, except in the case of Division 1 listed explosionproof or dust-ignitionproof motors where CMP14 restricts the process to ensure that the proper checks are made on the motor to ensure the protection method. The restrictions on "reconditioning" were inserted in the code to restrict the purchasing of "scrap" equipment and selling it back into the market without proper checks on the equipment to ensure its safe to reinstall. A motor sent to a motor repair shop for bearing change or rewind is so evaluated to ensure it may safely be returned to service and is often tested at the repair shop prior to re-installation at the owner's facility. This definition needs to be further clarified as shown, and as proposed in Public Input 3634 to reduce this confusion.

Related Item

• Public Input No 3634

Submitter Information Verification

Submitter Full Name: Richard Holub
Organization: The DuPont Company, Inc.
Street Address:
City:
State:
Zip:

Submittal Date: Mon Aug 26 07:26:36 EDT 2024
Committee: NEC-P01

Public Comment No. 1792-NFPA 70-2024 [Definition: Reconditioned Equipment.]

Reconditioned Equipment.

Electromechanical systems, equipment, apparatus, or components that are restored to operating conditions for other than the present end user . This process differs from normal servicing or repair of equipment that remains within a facility, or replacement of listed equipment on a one-to-one basis. (CMP-1)

Informational Note: The term *reconditioned* is frequently referred to as *rebuilt*, *refurbished*, or *remanufactured*.

Statement of Problem and Substantiation for Public Comment

Reconsider PI 3634.

Reconditioned or Reconditioned Equipment has confused the user of the NEC. Reconditioned was never intended to impact the servicing or repair of equipment currently installed even if it needed to go outside the facility for repair such as motors. Reconditioned was originally intended to address equipment that was repaired and resold and installed as a new piece of equipment. The code was silent on this issue and inspectors needed it to be addressed.

Related Item

• PI 3634

Submitter Information Verification

Submitter Full Name: David Kendall
Organization: ABB Inc.
Street Address:
City:
State:
Zip:

Submittal Date: Tue Aug 27 11:46:59 EDT 2024
Committee: NEC-P01

Public Comment No. 963-NFPA 70-2024 [New Definition after Definition: Disconnecting Means.]

TITLE OF NEW CONTENT

Dissimilar Metals.

Metals that, when placed together in direct electrical contact in the presence of an electrolyte, create a condition for galvanic corrosion that could inhibit the conductivity of electrical connections.

Statement of Problem and Substantiation for Public Comment

A definition for dissimilar metals is needed to interpret and correctly apply the requirement in the charging paragraph of 110.14. Committee Statements addressing previously submitted Public Inputs and Public Comments indicate a fundamental misunderstanding of the meaning of the term “dissimilar.” There are 6 references to dissimilar metals in the NEC. A definition will help the Code user understand the potential deleterious effects of having dissimilar metals in direct contact with one another while in the presence of an electrolyte.

The definition was created by taking into account definitions of dissimilar metals from multiple sources. In the field of materials science, the phrase “dissimilar metals” shows up in the context of galvanic corrosion and in the context of joining metals together. Examples and their sources are given below:

- AMPP (The Association for Materials Protection and Performance, a leading authority on corrosion and corrosion control) defines “dissimilar metals” as “different metals that could form an anode-cathode relationship in an electrolyte when connected by an electron-conducting (usually metallic) path.”
- The Department of Defense Standard Practice: Dissimilar Metals (MIL-STD-889C) states that “[t]his standard defines metals as dissimilar when two metal specimens are in contact or otherwise electrically connected to each other in a conductive solution and capable of generating an electric current.”
- The chapter “Welding of Dissimilar Metals” in the book “Welding of Metallic Materials: Methods, Metallurgy, and Performance” states that “[i]n broad technical terms, dissimilar welding of alloys/metallic materials can be classified in three different categories as given below (with increasing complexity).
  - Joining of the same metal in different alloy forms, such as joining of two different grades of steels or two different series of aluminum alloys.
  - Joining of the same metal in a different crystallographic form such as joining of austenitic steels to ferritic varieties.
  - Joining of two entirely different chemical species such as Fe [iron] to Al [aluminum], Fe [iron] to Ti [titanium].”

Citations:

- “Corrosion Terminology - D’s.” The Association for Materials Protection and Performance (AAMP). https://www.ampp.org/technical-research/what-is-corrosion/corrosion-terminology-glossary/corrosion-terminology-d.
- The Department of Defense Standard Practice: Dissimilar Metals, MIL-STD-889C. §3.1. August 2016. http://everyspec.com/MIL-STD/MIL-STD-0800-0899/MIL-STD-889C_55344/.
- Ganguly, S. 2023. Welding of Dissimilar Metals. In Welding of Metallic Materials: Methods, Metallurgy, and Performance, edited by Fuad Khoshnaw, p. 317. Elsevier.

Related Item

- Public Input No. 907

Submitter Information Verification

Submitter Full Name: John Kovacik
Organization: Trusted Safety Solutions LLC
Street Address:
City:
State:
Zip:

Submittal Date: Wed Aug 07 23:42:44 EDT 2024
Committee: NEC-P01

Public Comment No. 1051-NFPA 70-2024 [New Definition after Definition: Identified (as applied to ...]

In Sight From (Within Sight From) (Within Sight).

Equipment that is visible and not more than 15 m (50 ft) distant from other equipment is *in sight from* that other equipment. (CMP-1)

Statement of Problem and Substantiation for Public Comment

We believe this term is important to users and more appropriately located as a definition in Article 100. There are numerous definitions that have numerical values to describe the term as a statement of fact. See defined terms for voltage, splash pads, simple apparatus to name a few examples of terms that can only be defined with certain numeric parameters like "visible within 50 feet" in the definition for "Within Sight". Where these terms are used within this code "In Sight From" (Within Sight From) (Within Sight) a user is more likely to search for the definition in article 100 rather than article 110 to understand how to apply the requirement.

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 1048-NFPA 70-2024 [Section No. 110.29]	
Public Comment No. 1048-NFPA 70-2024 [Section No. 110.29]	

Related Item

- FR-8975

Submitter Information Verification

Submitter Full Name: David Hittinger
Organization: Independent Electrical Contractors
Affiliation: IEC Codes and Standards
Street Address:
City:
State:
Zip:

Submittal Date: Mon Aug 12 21:18:27 EDT 2024
Committee: NEC-P01

Public Comment No. 1462-NFPA 70-2024 [New Definition after Definition: Live Parts.]

Life Safety Equipment (as applied to Cybersecurity)

Building systems intended to be utilized during an evacuation, relocation, shelter in place, or utilized to obtain help in responses to an emergency that could reasonably jeopardize the health and safety of occupants.

Informational Note: In the context of cybersecurity, life safety systems include (but may not be limited to) the following systems: fire alarm, fire suppression, mass notification, two-way rescue assistance, fire pumps, HVAC, access control, elevators, escalators, moving walk s, lift, stairway chair lifts, emergency call systems, telephone, emergency power, emergency lighting, and video security.

Statement of Problem and Substantiation for Public Comment

This public comment is submitted on behalf of the NFPA Cybersecurity Advisory Committee. Section 110.3(A)(8) requires cybersecurity for network connected "life safety equipment" without defining what "life safety equipment" is. Additionally, neither NFPA 72 nor NFPA 101 define exactly what life safety equipment is. Clearly it includes fire alarm and mass notification systems, but it is not clear what other systems are affected by this requirement. This PC seeks to resolve this, but specifically in the context of cybersecurity to limit unintended consequences. The Informational note is intended to provide a non-limiting but comprehensive list of systems that meet the criteria for life-safety equipment. We purposely left off medical devices as it relates to cybersecurity because these requirements may be better represented in NFPA 99. But the committee might consider other systems such as defibrators' or other safety equipment. Note, for any of this equipment to be subject to Section 110.3(A)(8), it would still need to be "network-connected".

Related Item

- PI-3375

Submitter Information Verification

Submitter Full Name: Michael Pallett
Organization: Pallett Corner Consulting
Street Address:
City:
State:
Zip:

Submittal Date: Fri Aug 23 09:32:38 EDT 2024
Committee: NEC-P01

Public Comment No. 1618-NFPA 70-2024 [New Definition after Definition: Photovoltaic Cell (PV). (S...]

TITLE OF NEW CONTENT

Type your content here ...

Physical Damage

Damage that creates a risk to the function or safety or wiring or equipment.

Statement of Problem and Substantiation for Public Comment

The response to PI 1371 was “Physical Damage is a subjective term that is not enforceable.”

NFPA 70 uses the term more than 200 times, so there is a clear expectation that the risk be considered in installation and enforcement. It seems that there are 220-odd assumptions that the term is enforceable. Offering a definition will never remove subjectivity from the process of evaluating this risk; it will make the criterion clearer. This could result in more consistent enforcement.

Various definitions include characteristics that are not measurable but are included because they are useful in guiding judgments that must be made. Consider two examples:

“Readily Accessible” includes the term “reached quickly”; “quickly” makes this clearly a subjective judgment, but it helps installers and inspectors evaluate, for example, what to characterize as an obstacle.

More broadly, definitions such as that of “Appliance” offer examples. The term “such as” tells us these are not exhaustive lists but serve to guide judgement.

Related Item

• PI1371

Submitter Information Verification

Submitter Full Name: David E Shapiro
Organization: Safety First Electrical
Street Address:
City:
State:
Zip:

Submittal Date: Sat Aug 24 20:45:30 EDT 2024
Committee: NEC-P01

Public Comment No. 1842-NFPA 70-2024 [New Definition after Definition: Unit Equipment.]

Unqualified Person

A person who is not a qualified person.

Statement of Problem and Substantiation for Public Comment

This definition is in response to the resolution of PI 1557 as well as to use defined terminology consistently throughout the NEC document. Currently section 90.2(a) uses the undefined term "Untrained persons". Adding this definition would allow us to use a defined term "Unqualified Person" in section 90.2, this definition is also used in NFPA 70E which creates consistency between the documents.

Related Item

• PI-1557

Submitter Information Verification

Submitter Full Name: Jeff Noren
Organization: National Electrical Contractors Association
Street Address:
City:
State:
Zip:

Submittal Date: Tue Aug 27 16:48:22 EDT 2024
Committee: NEC-P01

Public Comment No. 1745-NFPA 70-2024 [New Definition after Definition: Wiring Device.]

Wiring Methods

Raceways, cables, and support methods that provide protection or support for premises wiring system conductors.

Statement of Problem and Substantiation for Public Comment

During consideration of the Public Inputs submitted to CMP-6, it became apparent that there was some confusion by code users regarding whether wiring methods are included under the umbrella term "equipment." CMP-6 clarified that wiring methods are not equipment, and including a definition for wiring methods will be helpful for Code users. This will help differentiate code requirements for equipment (like panelboards) and wiring methods (like NM cable).

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 1746-NFPA 70-2024 [Definition: Equipment.]	

Related Item

- PI 604

Submitter Information Verification

Submitter Full Name: Christel Hunter
Organization: Cerro Wire
Street Address:
City:
State:
Zip:
Submittal Date: Mon Aug 26 23:04:22 EDT 2024
Committee: NEC-P01

Public Comment No. 15-NFPA 70-2024 [Section No. 110.1]

110.1 Scope.

This article covers general requirements for the examination and approval, installation and use, access to and spaces about electrical conductors and equipment; enclosures intended for personnel entry; and tunnel installations.

~~Informational Note: See ICC A117.1-2017, *Accessible and Usable Buildings and Facilities* , for information regarding ADA accessibility design.~~

Statement of Problem and Substantiation for Public Comment

The NFPA Disability Access Review and Advisory Committee (DARAC) requests an update to this section. Article 110 does not represent any requirements relevant to ICC A117.1, nor does it represent accessibility requirement in the context of accessibility for people with disabilities. As such a reference to the former Annex J and ICC A117.1 should be removed. We suggest moving this to the definition for Accessible (as applied to equipment) and Readily Accessible.

Related Item

• FR8909, FR8898, PC9, PC12

Submitter Information Verification

Submitter Full Name: Jessica Hubert
Organization: Guardian Services Inc.
Affiliation: Disability Access Review Advisory Committee
Street Address:
City:
State:
Zip:

Submittal Date: Wed Jul 10 10:44:43 EDT 2024
Committee: NEC-P01

Public Comment No. 450-NFPA 70-2024 [Section No. 110.2]

110.2 Approval.

The conductors and equipment required or permitted by this code shall be acceptable only if approved.

Informational Note: See 90.7, Examination of Equipment for Safety, and 110.3, Examination, Identification, Installation, Use, and Listing (Product Certification) of Equipment. See definitions of *Approved, Identified, Labeled,* and *Listed*.

Additional Proposed Changes

File Name	Description	Approved
CN_99.pdf		

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 99 appeared in the First Draft Report.

The Correlating Committee directs CMP-1 to reconsider the Informational Note to comply with the NEC Style Manual 2.1.10.3. - Format. Consider revising the second sentence to read: See Article 100 for the definitions of Approved, Identified, Labeled and Listed."

Related Item

• Correlating Committee Note No. 99

Submitter Information Verification

Submitter Full Name: CC Notes
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jul 30 17:47:50 EDT 2024
Committee: NEC-P01

Correlating Committee Note No. 99-NFPA 70-2024 [Section No. 110.2]

Submitter Information Verification

Committee: NEC-AAC
Submittal Date: Wed May 08 11:17:44 EDT 2024

Committee Statement

Committee Statement: The Correlating Committee directs CMP-1 to reconsider the Informational Note to comply with the NEC Style Manual 2.1.10.3. - Format. Consider revising the second sentence to read: See Article 100 for the definitions of Approved, Identified, Labeled and Listed."

Ballot Results

✔ **This item has passed ballot**

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

Not Returned

McDaniel, Roger D.

Affirmative All

Ayer, Lawrence S.
Bowmer, Trevor N.
Hickman, Palmer L.
Holub, Richard A.
Jackson, Peter D.
Kendall, David H.
Manche, Alan
Osborne, Robert D.
Porter, Christine T.
Schultheis, Timothy James
Williams, David A.

Public Comment No. 1448-NFPA 70-2024 [Section No. 110.3(A)]

(A) Examination.

In judging equipment, considerations such as the following shall be evaluated:

(1) Suitability for installation and use in conformity with this code

Informational Note No. 1: Equipment may be new, reconditioned, refurbished, or remanufactured.

Informational Note No. 2: Suitability of equipment use may be identified by a description marked on or provided with a product to identify the suitability of the product for a specific purpose, environment, or application. Special conditions of use or other limitations and other pertinent information may be marked on the equipment, included in the product instructions, or included in the appropriate listing and labeling information. Suitability of equipment may be evidenced by listing or labeling.

(2) Mechanical strength and durability, including, for parts designed to enclose and protect other equipment, the adequacy of the protection thus provided

(3) Wire-bending and connection space

(4) Electrical insulation

(5) Heating effects under normal conditions of use and also under abnormal conditions likely to arise in service

(6) Arcing effects

(7) Classification by type, size, voltage, current capacity, and specific use

(8) Cybersecurity for network-connected life safety equipment **and network-connected non-life safety equipment located in or directly supplying life safety-related infrastructures** to address its ability to withstand unauthorized updates and malicious attacks while continuing to perform its intended safety functionality

Informational Note No. 3: See the ANSI/ISA 62443 series of standards for industrial automation and control systems, the UL 2900 series of standards for software cybersecurity for network-connectable products, and UL 5500, *Standard for Remote Software Updates*, which are standards that provide frameworks to mitigate current and future security cybersecurity vulnerabilities and address software integrity in systems of electrical equipment.

Informational Note No. 4: See NEMA CY 10000-2023, *Cybersecurity Implementation Guidance for Connected Electrical Infrastructure*, for recommendations on how to meet this requirement.

Informational Note No. 5: Examples of life safety equipment include, but are not limited to, fire alarm systems, access control, emergency signaling, elevator control, etc.

Informational Note No. 6: Examples of life safety-related infrastructures include, but are not limited to, waste water treatment facilities, water supply facilities, police stations, call centers, financial centers, data centers, and military bases.

Informational Note No. 7: Examples of non-life safety equipment directly supplying life safety-related infrastructures include, but are not limited to, PV systems, large-scale PV systems, fuel cell systems, wind electric systems, and interconnected electric power production sources.

(9) Other factors that contribute to the practical safeguarding of persons using or likely to come in contact with the equipment

Statement of Problem and Substantiation for Public Comment

It is not only life safety equipment that must be protected from cyber attacks, but also the non-life safety equipment located in or directly supplying life safety-related infrastructures that helps keep us alive and safe from danger. One horrific example would be a large metropolitan area, such as Chicago, if its waste water treatment and water supply were shut down due to a cyber attack. When toilets won't flush, sewage begins backing up, and there is no safe drinking water, it is not only an unhealthy situation but one in which riots will occur.

While there is a definition in Article 100 of a “life safety branch” of a healthcare facility, “life safety equipment”, as mentioned in 110.3(A)(8), is not defined in the NEC, causing possible confusion and making enforcement difficult for an electrical inspector. Without a definition of life safety equipment, there is a need for the examples provided in new Informational Note No. 5. For similar reasoning, the examples of “life safety-related infrastructures” are provided in Informational Note No. 6. Finally, because there is no definition of non-life safety equipment directly supplying life safety-related infrastructures, Informational Note No. 7 is added to provide clarity.

These modifications sufficiently address the Panel Statement which was “Critical infrastructure application articles may have additional requirements and are more specific to those systems and therefore should not be covered by the general rules in Article

110.”

In order to address the Panel Statement to resolve PI 1242, the phrase “critical infrastructure” has been deleted from the Public Input and replaced by “non-life safety equipment located in or directly supplying life safety-related infrastructures”. There is no longer a tie to the “critical infrastructure application articles” referenced in the Committee Statement. (While some life safety-related infrastructures have been designated by authorities as Article 708 Critical Operations Power Systems, most life safety-related infrastructures have not been so designated.)

Let’s look at two examples of a waste water treatment facility. 110.3(A)(8) currently requires that the fire alarm system in a waste water treatment facility, because it is assumed to be life safety equipment, be evaluated in light of cybersecurity. However, there is no requirement for other non-life safety systems within the waste water treatment plant, such as industrial control panels, which could easily be compromised by a cyber attack if connectd to the internet. For another waste water treatment facility example, look at a PV system that directly supplies the waste water treatment facility. The text in 110.3(A)(8) would not apply to this situation because the PV system would not be considered life safety equipment. With this Public Comment both the industrial control panel located in the waste water treatment facility and the PV system directly supplying the waste water treatment facility must be evaluated.

In addition to the already-required evaluation of life safety equipment in 110.3(A)(8), the proposed text in this Public Comment addresses the vulnerability of an entire life safety-related facility, without causing possible conflicts with the “critical infrastructure application articles” in later chapters.

Related Item

• PI 1242 • FR 9040

Submitter Information Verification

Submitter Full Name: Vincent Saporita
Organization: Saporita Consulting
Street Address:
City:
State:
Zip:

Submittal Date: Fri Aug 23 08:38:15 EDT 2024
Committee: NEC-P01

Public Comment No. 1459-NFPA 70-2024 [Section No. 110.3(A)]

(A) Examination.

In judging equipment, considerations such as the following shall be evaluated:

(1) Suitability for installation and use in conformity with this code

Informational Note No. 1: Equipment may be new, reconditioned, refurbished, or remanufactured.

Informational Note No. 2: Suitability of equipment use may be identified by a description marked on or provided with a product to identify the suitability of the product for a specific purpose, environment, or application. Special conditions of use or other limitations and other pertinent information may be marked on the equipment, included in the product instructions, or included in the appropriate listing and labeling information. Suitability of equipment may be evidenced by listing or labeling.

(2) Mechanical strength and durability, including, for parts designed to enclose and protect other equipment, the adequacy of the protection thus provided

(3) Wire-bending and connection space

(4) Electrical insulation

(5) Heating effects under normal conditions of use and also under abnormal conditions likely to arise in service

(6) Arcing effects

(7) Classification by type, size, voltage, current capacity, and specific use

(8) Cybersecurity for network-connected life safety equipment to address its ability to withstand unauthorized updates and malicious attacks while continuing to perform its intended safety functionality

Informational Note No. 3: See the ANSI/ISA 62443 series of standards for industrial automation and control systems, the UL 2900 series of standards for software cybersecurity for network-connectable products, and UL 5500, *Standard for Remote Software Updates*, which are standards that provide frameworks to mitigate current and future security cybersecurity vulnerabilities and address software integrity in systems of electrical equipment.

Informational Note No. 4: See NEMA CY 10000-2023, *Cybersecurity Implementation Guidance for Connected Electrical Infrastructure*, for recommendations on how to meet this requirement.

Informational Note No. 5: Critical Operations Power Systems (COPS) applications may have additional requirements as detailed in Article 708.

(9) Other factors that contribute to the practical safeguarding of persons using or likely to come in contact with the equipment

Statement of Problem and Substantiation for Public Comment

This public comment is submitted on behalf of the NFPA Cybersecurity Advisory Committee. The scope of article 110 is such that readers may consider the cybersecurity requirements presented here as establishing the cybersecurity scope of the NEC in general. As the committee pointed out in its resolution to PI-1242, “Critical infrastructure application articles may have additional requirements and are more specific to those systems …”. This PC seeks to increase the visibility of those additional requirements with the informational note that points to this section.

Related Item

• PI-1242

Submitter Information Verification

Submitter Full Name: Michael Pallett
Organization: Pallett Corner Consulting
Street Address:
City:
State:
Zip:

Submittal Date: Fri Aug 23 09:28:14 EDT 2024
Committee: NEC-P01

Public Comment No. 1528-NFPA 70-2024 [Section No. 110.3(A)]

(A) Examination.

In judging equipment, considerations such as the following shall be evaluated:

(1) Suitability for installation and use in conformity with this code

Informational Note No. 1: Equipment may be new, reconditioned, refurbished, or remanufactured.

Informational Note No. 2: Suitability of equipment use may be identified by a description marked on or provided with a product to identify the suitability of the product for a specific purpose, environment, or application. Special conditions of use or other limitations and other pertinent information may be marked on the equipment, included in the product instructions, or included in the appropriate listing and labeling information. Suitability of equipment may be evidenced by listing or labeling.

(2) Mechanical strength and durability, including, for parts designed to enclose and protect other equipment, the adequacy of the protection thus provided

(3) Wire-bending and connection space

(4) Electrical insulation

(5) Heating effects under normal conditions of use and also under abnormal conditions likely to arise in service

(6) Arcing effects

(7) Classification by type, size, voltage, current capacity, and specific use

(8) Cybersecurity for network-connected life safety equipment to address its ability to withstand unauthorized updates and malicious attacks while continuing to perform its intended safety functionality

Informational Note No. 3: See the ANSI/ISA 62443 series of standards for industrial automation and control systems, the UL 2900 series of standards for software cybersecurity for network-connectable products, and UL 5500, *Standard for Remote Software Updates*, which are standards that provide frameworks to mitigate current and future security cybersecurity vulnerabilities and address software integrity in systems of electrical equipment.

Informational Note No. 4: See NEMA CY 10000-2023, *Cybersecurity Implementation Guidance for Connected Electrical Infrastructure*, for recommendations on how to meet this requirement.

Informational Note No. 5: See NFPA 70B for guidance on establishing proper Cybersecurity practices as nearly all Cybersecurity threats arise after installtion and final inspection.

(9) Other factors that contribute to the practical safeguarding of persons using or likely to come in contact with the equipment

Statement of Problem and Substantiation for Public Comment

Public Input No. 4428-NFPA 70-2023 was resolved with the committee statement: "70B does not address cybersecurity. NFPA 70 addresses the installation of network connected equipment that is associated with life safety systems."

Because of the unfortunate timing of the NFPA 70B revision cycle, this was a reasonable response as the NFPA 70B First Draft meeting had not yet occurred. However, since then, First Revision No. 155-NFPA 70B-2024 has passed ballot. This adds a new equipment chapter for transfer switches, and this chapter includes cybersecurity maintenance requirements. Thus, as of the First Draft, NFPA 70B does address cybersecurity.

Other PIs were submitted, including mine, but were not adopted for the First Draft as the committee was not equipped to evaluate the more broad cybersecurity requirements adopted in other NFPA documents. The recently formed NFPA Cybersecurity Advisory Committee will be available to the NFPA 70B Technical Committee during the Second Draft, at which time additional cybersecurity maintenance requirements may be adopted via public comments based on the resolved public inputs.

I also must, once again, stress that cybersecurity cannot be adequately addressed through installation requirements alone. Implying that it is possible to have a secure system by simply by following installation guidelines does the industry a disservice, so I feel very strongly that referring users of the code to NFPA 70B goes a long way to highlighting this fact.

Related Item

• PI 4428

Submitter Information Verification

Submitter Full Name: Jason Potterf
Organization: Cisco
Affiliation: ESTA

Street Address:
City:
State:
Zip:
Submittal Date: Fri Aug 23 16:51:00 EDT 2024
Committee: NEC-P01

Public Comment No. 1863-NFPA 70-2024 [Section No. 110.3(A)]

(A) Examination.

In judging equipment, considerations such as the following shall be evaluated:

(1) Suitability for installation and use in conformity with this code

Informational Note No. 1: Equipment may be new, reconditioned, refurbished, or remanufactured.

Informational Note No. 2: Suitability of equipment use may be identified by a description marked on or provided with a product to identify the suitability of the product for a specific purpose, environment, or application. Special conditions of use or other limitations and other pertinent information may be marked on the equipment, included in the product instructions, or included in the appropriate listing and labeling information. Suitability of equipment may be evidenced by listing or labeling.

(2) Mechanical strength and durability, including, for parts designed to enclose and protect other equipment, the adequacy of the protection thus provided

(3) Wire-bending and connection space

(4) Electrical insulation

(5) Heating effects under normal conditions of use and also under abnormal conditions likely to arise in service

(6) Arcing effects

(7) Classification by type, size, voltage, current capacity, and specific use

(8) Cybersecurity for network-connected life safety equipment to address its ability to withstand unauthorized updates and malicious attacks while continuing to perform its intended safety functionality

Informational Note No. 3: See the ANSI/ISA 62443 series of standards for industrial automation and control systems, the UL 2900 series of standards for software cybersecurity for network-connectable products, and UL 5500, *Standard for Remote Software Updates*, which are standards that provide frameworks to mitigate current and future security cybersecurity vulnerabilities and address software integrity in systems of electrical equipment.

Informational Note No. 4: See NEMA CY ~~10000~~ 70001 -2023, *Cybersecurity Implementation Guidance for Connected Electrical Infrastructure*, for recommendations on how to meet this requirement.

(9) Other factors that contribute to the practical safeguarding of persons using or likely to come in contact with the equipment

Statement of Problem and Substantiation for Public Comment

This public comment is to correct the informational note no.2 to (8) as it references NEMA CY 10000-2023. The correct reference is NEMA CY 70000-2023, Cybersecurity Implementation Guidance for Connected Electrical Infrastructure.

Related Item

• PI-1573 • PI-502

Submitter Information Verification

Submitter Full Name: Jeff Noren
Organization: National Electrical Contractors Association
Street Address:
City:
State:
Zip:

Submittal Date: Tue Aug 27 18:38:54 EDT 2024
Committee: NEC-P01

Public Comment No. 825-NFPA 70-2024 [Section No. 110.3(A)]

(A) Examination.

In judging equipment, considerations such as the following shall be evaluated:

(1) Suitability for installation and use in conformity with this code

Informational Note No. 1: Equipment may be new, reconditioned, refurbished, or remanufactured.

Informational Note No. 2: Suitability of equipment use may be identified by a description marked on or provided with a product to identify the suitability of the product for a specific purpose, environment, or application. Special conditions of use or other limitations and other pertinent information may be marked on the equipment, included in the product instructions, or included in the appropriate listing and labeling information. Suitability of equipment may be evidenced by listing or labeling.

(2) Mechanical strength and durability, including, for parts designed to enclose and protect other equipment, the adequacy of the protection thus provided

(3) Wire-bending and connection space

(4) Electrical insulation

(5) Heating effects under normal conditions of use and also under abnormal conditions likely to arise in service

(6) Arcing effects

(7) Classification by type, size, voltage, current capacity, and specific use

(8) Cybersecurity for network-connected life safety equipment to address its ability to withstand unauthorized updates and malicious attacks while continuing to perform its intended safety functionality

Informational Note No. 3: See the ANSI/ISA 62443 series of standards for industrial automation and control systems, the UL 2900 series of standards for software cybersecurity for network-connectable products, and UL 5500, *Standard for Remote Software Updates*, which are standards that provide frameworks to mitigate current and future security cybersecurity vulnerabilities and address software integrity in systems of electrical equipment.

Informational Note No. 4: See NEMA CY ~~10000~~ 70001 -2023, *Cybersecurity Implementation Guidance for Connected Electrical Infrastructure*, for recommendations on how to meet this requirement.

(9) Other factors that contribute to the practical safeguarding of persons using or likely to come in contact with the equipment

Statement of Problem and Substantiation for Public Comment

This Public Comment is being submitted to fix an incorrect NEMA document number in the Public Input 3403 (FR9040). This NEMA document number matches the one that is now published.

Related Item

• FR 9040 / PI 3403

Submitter Information Verification

Submitter Full Name: Megan Hayes
Organization: NEMA
Street Address:
City:
State:
Zip:

Submittal Date: Mon Aug 05 18:43:51 EDT 2024
Committee: NEC-P01

Public Comment No. 1046-NFPA 70-2024 [Section No. 110.3(B)]

(B) Installation and Use.

Equipment that is listed, labeled, or both, or identified for a use shall be installed and used in accordance with any instructions included in the listing, labeling, or identification. ~~The installation and use instructions shall not reduce the~~ Installations shall comply with both the instructions and the requirements within this code.

Informational Note: The installation and use instructions may be provided in the form of printed material, quick response (QR) code, or the address on the internet where users can download the required instructions.

Statement of Problem and Substantiation for Public Comment

As written in the first draft, the installation is not being regulated, the instructions are (the "instructions shall" instead of the "installation shall"). When an AHJ is handed instructions that instruct a person to violate the code, the violation (as written the draft) is the words in the instruction, not the noncompliant installation. I support what the CMP is doing, and although I've always considered this issue obvious, I think it will reduce arguments. But the words need to point to the compliance of the installation, not the compliance (or noncompliance) of the instructions.

Related Item

• FR 9050

Submitter Information Verification

Submitter Full Name: Ryan Jackson
Organization: Self-employed
Street Address:
City:
State:
Zip:

Submittal Date: Mon Aug 12 20:51:02 EDT 2024
Committee: NEC-P01

Public Comment No. 106-NFPA 70-2024 [Section No. 110.3(B)]

(B) Installation and Use.

Equipment that is listed, labeled, or both, or identified for a use shall be installed and used in accordance with any instructions included in the listing, labeling, or identification ~~. The installation and use instructions shall not reduce the requirements within~~ that are not specifically covered by the requirements of this code.

Informational Note: The installation and use instructions may be provided in the form of printed material, quick response (QR) code, or the address on the internet where users can download the required instructions.

Statement of Problem and Substantiation for Public Comment

I am not in favor of the added first draft language "The installation and use instructions shall not reduce the requirements in this code". Who makes the assessment of “reduction”? If instructions are being provided and they are contrary to the NEC requirements, the certification bodies should be policing that, and the responsibility should not be shifted to the AHJ.

Related Item

• FR-9050

Submitter Information Verification

Submitter Full Name: David Hittinger
Organization: Independent Electrical Contractors
Affiliation: IEC
Street Address:
City:
State:
Zip:

Submittal Date: Wed Jul 17 16:01:52 EDT 2024
Committee: NEC-P01

Public Comment No. 1634-NFPA 70-2024 [Section No. 110.3(B)]

(B) Installation and Use.

Equipment that is listed, labeled, or both, or identified for a use shall be installed and used in accordance with ~~any instructions included in the listing, labeling, or identification~~ the installation and use instructions from the manufacturer . The installation and use instructions shall not reduce the requirements within this code.

Informational Note: The installation and use instructions may be provided in the form of printed material, quick response (QR) code, or the address on the internet where users can download the required instructions.

Statement of Problem and Substantiation for Public Comment

This is the same text as is proposed in PI 2160. The panel statement said that the information note covered this concern. However, the information note states "The installation and use instructions..." The charging text states "...instructions included in the listing, labelling..." The text in the charging text and the text in the informational note should be the same. I worked with John Minick for a number of years and he is the one who pointed out that the text "instructions included with the listing..." was not enforceable and was not even possible. John is the one who explained to me that the only people who have access to the "instructions included with the listing" were the manufacturer and U.L. The real intention of this section is for the users to follow the manufacturers instructions. This Public Input, and Public Comment, serves to simply change the text to say what it means.

Related Item

• 2160-NFPA 70-2023

Submitter Information Verification

Submitter Full Name: Eric Stromberg
Organization: Los Alamos National Laboratory
Affiliation: Self
Street Address:
City:
State:
Zip:

Submittal Date: Sun Aug 25 20:08:03 EDT 2024
Committee: NEC-P01

Public Comment No. 1877-NFPA 70-2024 [Section No. 110.3(B)]

(B) Installation and Use.

Equipment that is listed, labeled, or both, or identified for a use shall be installed and used in accordance with any instructions included in the listing, labeling, or identification. The installation and use instructions shall not reduce the requirements within this code. The code overrides the listing, labeling, installation, and manufacturers instructions.

Informational Note: The installation and use instructions may be provided in the form of printed material, quick response (QR) code, or the address on the internet where users can download the required instructions.

Statement of Problem and Substantiation for Public Comment

There has been confusion in the electrical industry that the National Electrical Code can override the listing, labeling, identification, and manufacturer's instructions. OSHA 1910.7 is very clear that National Codes are taken into consideration by manufacturers to achieve a listing and labeling. If this is true, how can the National Electrical Code override the listing, labeling, identification, and manufacturer's instructions.

Related Item

• PI 1896

Submitter Information Verification

Submitter Full Name: James Stallcup
Organization: Stallcup Electrical Education
Affiliation: Stallcup Electrical Education
Street Address:
City:
State:
Zip:

Submittal Date: Tue Aug 27 19:31:35 EDT 2024
Committee: NEC-P01

Public Comment No. 867-NFPA 70-2024 [Section No. 110.3(B)]

(B) Installation and Use.

Equipment that is listed, labeled, or both, or identified for a use shall be installed and used in accordance with any instructions included in the listing, labeling, or identification. The installation and use instructions shall not ~~reduce the~~ result in an installation that does not meet the requirements within this ~~code~~ code that are considered necessary for safety and provide for the practical safeguarding of persons and property from hazards arising from the use of electricity .

Informational Note: The installation and use instructions may be provided in the form of printed material, quick response (QR) code, or the address on the internet where users can download the required instructions.

Statement of Problem and Substantiation for Public Comment

This comment is a recommendation to improve the clarity and application of this requirement by retaining the intent of the First Revision while incorporating language from both the "practical safeguarding" requirements in 90.2(A) which address the purpose of the NEC from and the "adequacy" requirements in 90.2(B).

Related Item

• FR-9050

Submitter Information Verification

Submitter Full Name: Palmer Hickman
Organization: Electrical Training Alliance
Street Address:
City:
State:
Zip:

Submittal Date: Tue Aug 06 18:06:19 EDT 2024
Committee: NEC-P01

Public Comment No. 868-NFPA 70-2024 [Section No. 110.3(B)]

(B) Installation and Use.

Equipment that is listed, labeled, or both, or identified for a use shall be installed and used in accordance with any instructions included in the listing, labeling, or identification. The installation and use instructions shall not ~~reduce the~~ result in an installation that does not meet the requirements within this code.

Informational Note: The installation and use instructions may be provided in the form of printed material, quick response (QR) code, or the address on the internet where users can download the required instructions.

Statement of Problem and Substantiation for Public Comment

This comment is a recommendation to improve the clarity and application of this requirement by retaining the intent of the First Revision while editorially revising the requirement in a more accurate and succinct manner.

Related Item

• FR-9050

Submitter Information Verification

Submitter Full Name: Palmer Hickman
Organization: Electrical Training Alliance
Street Address:
City:
State:
Zip:

Submittal Date: Tue Aug 06 18:27:00 EDT 2024
Committee: NEC-P01

Public Comment No. 869-NFPA 70-2024 [Section No. 110.3(B)]

(B) Installation and Use.

Equipment that is listed, labeled, or both, or identified for a use shall be installed and used in accordance with any instructions included in the listing, labeling, or identification. The installation and use instructions shall not ~~reduce the~~ result in the installation and use of equipment that is not in compliance with the requirements within this code.

Informational Note: The installation and use instructions may be provided in the form of printed material, quick response (QR) code, or the address on the internet where users can download the required instructions.

Statement of Problem and Substantiation for Public Comment

This comment is intended to recognize that both the installation and use requirements must be complied with when applying the instructions associated with equipment covered by this requirement.

Related Item

• FR-9050

Submitter Information Verification

Submitter Full Name: Palmer Hickman
Organization: Electrical Training Alliance
Street Address:
City:
State:
Zip:

Submittal Date: Tue Aug 06 18:32:36 EDT 2024
Committee: NEC-P01

Public Comment No. 1033-NFPA 70-2024 [Section No. 110.4]

110.4 Voltages.

The voltage considered shall be that at which the circuit operates. The voltage rating of electrical equipment shall ~~not be~~ comply to either 110.4(A) or 110.4(B).

(A) Be not less than the nominal voltage of the circuit to which it is connected

(B) Be identified for use at the nominal voltage of the circuit to which it is connected

Informational Note: An example of equipment that has a different voltage than the circuit to which it is connected ~~.~~ is a motor

Statement of Problem and Substantiation for Public Comment

This is a copy of PI 427. The PI was rejected with the panel statement: "The definition of nominal voltage and the accompanying information note already clarifies the requirement." The issue here is that "Nominal" is not a range. "Nominal" is a single number. For example, a circuit with a Nominal voltage of 120 volts has an ANSI 84.1 Range A of +5% -5%, or 126 to 114. This is the allowable "Range," but the Nominal number is simply 120. It is interesting to note that the Code Panel mentioned the accompanying note. There is no existing informational note. The informational note was part of my PI. Hopefully, the Code Panel will reconsider the proposed text for 110.4. As the text is currently written, it is, in fact, a Code violation to connect a 460 volt motor to a 480 volt circuit.

Related Item

• 427-NFPA 70-2023

Submitter Information Verification

Submitter Full Name: Eric Stromberg
Organization: Los Alamos National Laboratory
Affiliation: Self
Street Address:
City:
State:
Zip:

Submittal Date: Sun Aug 11 17:39:07 EDT 2024
Committee: NEC-P01

Public Comment No. 154-NFPA 70-2024 [Section No. 110.14(C)(1)]

(1) Equipment Provisions.

The determination of termination provisions of equipment shall be based on 110.14(C)(1)(a) or 110.14(C)(1)(b). Unless the equipment is listed and marked otherwise, conductor ampacities used in determining equipment termination provisions shall be based on Table 310.16 ~~as~~ without regard to the table notes, as appropriately modified by 310.12.

(a) Termination provisions of equipment for circuits rated 100 amperes or less, or marked for 14 AWG through 1 AWG conductors, shall be used only for one of the following:

(2) Conductors rated 60°C (140°F).

(3) Conductors with higher temperature ratings, provided the ampacity of such conductors is determined based on the 60°C (140°F) ampacity of the conductor size used.

(4) Conductors with higher temperature ratings if the equipment is listed and identified for use with such conductors.

(5) For motors marked with design letters B, C, or D, conductors having an insulation rating of 75°C (167°F) or higher shall be permitted to be used, provided the ampacity of such conductors does not exceed the 75°C (167°F) ampacity.

(f) Termination provisions of equipment for circuits rated over 100 amperes, or marked for conductors larger than 1 AWG, shall be used only for one of the following:

(7) Conductors rated 75°C (167°F)

(8) Conductors with higher temperature ratings, provided the ampacity of such conductors does not exceed the 75°C (167°F) ampacity of the conductor size used, or up to their ampacity if the equipment is listed and identified for use with such conductors

Statement of Problem and Substantiation for Public Comment

It is commonly understood that the termination temperature limitations in 110.14(C) refer to the values from Table 310.16, without applying any adjustment and correction factors. Example D3(a) in the appendix demonstrates this.

However, Table 310.16 has notes which reference 310.15 for ampacity adjustment and correction. That means an unmodified reference to Table 310.16 does include ampacity adjustment and correction, as instructed by the table notes.

Therefore to exclude adjustment and correction factors, at a minimum the reference to Table 310.16 needs to instruct us to ignore the notes.

Note further that this section's use of the term "ampacity" is not in accordance with the definition in Article 100. That definition refers to a value "under the conditions of use," which language means that adjustment and correction factors are applied to determine the value. A more rigorous wording for the section would replace the defined term "ampacity" with a phrase such as "ampacity without adjustment and correction" or perhaps a more succinct new term such as "base ampacity."

Related Item

• Public Input No. 449-NFPA 70-2023

Submitter Information Verification

Submitter Full Name: Wayne Whitney
Organization: Whitney
Street Address:
City:
State:
Zip:

Submittal Date: Mon Jul 22 13:52:46 EDT 2024
Committee: NEC-P01

Public Comment No. 733-NFPA 70-2024 [Section No. 110.14(C)(1)]

(1) Equipment Provisions.

The determination of termination provisions of equipment shall be based on 110.14(C)(1)(a) or 110.14(C)(1)(b). Unless the equipment is listed and marked otherwise, conductor ampacities used in determining equipment termination provisions shall be based on Table 310.16 as appropriately modified by 310.12.

(a) Termination provisions of equipment for circuits rated 100 amperes or less, or marked for 14 AWG through 1 AWG conductors, shall be used only for one of the following:

(2) Conductors rated 60°C (140°F).

(3) Conductors with higher temperature ratings, provided the ampacity of such conductors

~~is determined based on~~

(1) does not exceed the 60°C (140°F) ampacity of the conductor size used.

(2) Conductors with higher temperature ratings if the equipment is listed and identified for use with such conductors.

(3) For motors marked with design letters B, C, or D, conductors having an insulation rating of 75°C (167°F) or higher shall be permitted to be used, provided the ampacity of such conductors does not exceed the 75°C (167°F) ampacity.

(d) Termination provisions of equipment for circuits rated over 100 amperes, or marked for conductors larger than 1 AWG, shall be used only for one of the following:

(5) Conductors rated 75°C (167°F)

(6) Conductors with higher temperature ratings, provided the ampacity of such conductors does not exceed the 75°C (167°F) ampacity of the conductor size used, or up to their ampacity if the equipment is listed and identified for use with such conductors

Statement of Problem and Substantiation for Public Comment

The present wording has a lack of parallelism between (a)(2) and (b)(2), so (a)(2) is adjusted to match the wording (b)(2).

Furthermore, the phrase "determined based on the 60°C (140°F) ampacity of the conductor size used," suggests that the ampacity values for 75°C or 90°C insulation may not be used for any purpose, not even ampacity adjustment or correction. This is in conflict with the second sentence of 110.14(C), "Conductors with temperature ratings higher than specified for terminations shall be permitted to be used for ampacity adjustment, correction, or both."

Related Item

• Public Input No. 449-NFPA 70-2023

Submitter Information Verification

Submitter Full Name: Wayne Whitney
Organization: Whitney
Street Address:
City:
State:
Zip:

Submittal Date: Sun Aug 04 13:02:10 EDT 2024
Committee: NEC-P01

Public Comment No. 734-NFPA 70-2024 [Section No. 110.14(C)(1)]

(1) Equipment Provisions.

The determination of termination provisions of equipment shall be based on 110.14(C)(1)(a) or 110.14(C)(1)(b). Unless the equipment is listed and marked otherwise, conductor ampacities used in determining equipment termination provisions shall be based on Table 310.16 as appropriately modified by 310.12.

(a) Termination provisions of equipment for circuits rated 100 amperes or less, or marked for 14 AWG through 1 AWG conductors, shall be used only for one of the following:

(2) Conductors rated 60°C (140°F).

(3) Conductors with higher temperature ratings, provided the ampacity of such conductors is determined based on the 60°C (140°F) ampacity of the conductor size used.

(4) Conductors with higher temperature ratings if the equipment is listed and identified for use with such conductors.

(5) For motors marked with design letters B, C, or D, conductors having an insulation rating of 75°C (167°F) or higher shall be permitted to be used, provided the ampacity of such conductors does not exceed the 75°C (167°F) ampacity.

(f) Termination provisions of equipment for circuits rated over 100 amperes, or marked for conductors larger than 1 AWG, shall be used only for one of the following:

(7) Conductors rated 75°C (167°F)

(8) Conductors with higher temperature ratings, provided the ampacity of such conductors does not exceed the 75°C (167°F) ampacity of the conductor size used

~~, or up to their ampacity~~

(1) .

(2) Conductors with higher temperature ratings if the equipment is listed and identified for use with such conductors .

Statement of Problem and Substantiation for Public Comment

Splitting (b)(2) into two subparts (b)(2) and (b)(3) provides greater parallelism with part (a), and thus clarity. Note that Terraview has mangled the marked up version of the proposed change, as is typical with lists.

Related Item

• Public Input No. 449-NFPA 70-2023

Submitter Information Verification

Submitter Full Name: Wayne Whitney
Organization: Whitney
Street Address:
City:
State:
Zip:

Submittal Date: Sun Aug 04 13:12:18 EDT 2024
Committee: NEC-P01

Public Comment No. 452-NFPA 70-2024 [Section No. 110.14(D)]

(D) Terminal Connection Torque.

Tightening torque values for terminal connections shall be as indicated on equipment or in installation instructions provided by the manufacturer. An approved means shall be used to achieve the indicated torque value.

Informational Note No. 1: Examples of approved means of achieving the indicated torque values include torque tools or devices such as shear bolts or breakaway-style devices with visual indicators that demonstrate that the proper torque has been applied.

Informational Note No. 2: See UL Standard 486A-486B-2018, *Standard for Safety-Wire Connectors*, Informative Annex I for torque values in the absence of manufacturer's recommendations.The equipment manufacturer can be contacted if numeric torque values are not indicated on the equipment or if the installation instructions are not available.

Informational Note No. 3: See NFPA 70B-2023, *Standard for Electrical Equipment Maintenance*, Section 7.2 for additional information for torquing threaded connections and terminations.

Additional Proposed Changes

File Name	Description	Approved
CN_100.pdf		

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 100 appeared in the First Draft Report on First Revision No. 8929.

The Correlating Committee directs CMP-1 to reconsider the Informational Note 3 and consider removing the word "section" and the phrase "for additional information", they are redundant.

Related Item

• First Revision No. 8929

Submitter Information Verification

Submitter Full Name: CC Notes
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jul 30 18:43:23 EDT 2024
Committee: NEC-P01

Correlating Committee Note No. 100-NFPA 70-2024 [Section No. 110.14(D)]

Submitter Information Verification

Committee: NEC-AAC
Submittal Date: Wed May 08 11:18:34 EDT 2024

Committee Statement

Committee Statement: The Correlating Committee directs CMP-1 to reconsider the Informational Note 3 and consider removing the word “section” and the phrase “for additional information”, they are redundant.

First Revision No. 8929-NFPA 70-2024 [Section No. 110.14(D)]

Ballot Results

✔ **This item has passed ballot**

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

Not Returned

McDaniel, Roger D.

Affirmative All

Ayer, Lawrence S.
Bowmer, Trevor N.
Hickman, Palmer L.
Holub, Richard A.
Jackson, Peter D.
Kendall, David H.
Manche, Alan
Osborne, Robert D.
Porter, Christine T.
Schultheis, Timothy James
Williams, David A.

Public Comment No. 1727-NFPA 70-2024 [Section No. 110.14 [Excluding any Sub-Sections]]

Because of different characteristics of dissimilar metals, devices such as pressure terminal or pressure splicing connectors and soldering lugs shall be identified for the material of the conductor and shall be properly installed and used. Conductors of dissimilar metals shall not be intermixed in a terminal or splicing connector where physical contact occurs between dissimilar conductors (such as copper and aluminum, copper and copper-clad aluminum, or aluminum and copper-clad aluminum), unless the device is identified for the purpose and conditions of use. Materials such as solder, fluxes, inhibitors, and compounds, where employed, shall be suitable for the use and shall be of a type that will not adversely affect the conductors, installation, or equipment.

Connectors and terminals for conductors more finely stranded than Class B and Class C stranding as shown in Chapter 9, Table 10, shall be identified for the specific conductor class or classes.

Statement of Problem and Substantiation for Public Comment

This proposal seeks to restore this section to the language of the 2017 National Electrical Code. When the examples of dissimilar conductors were removed from this section over the course of the 2020 and 2023 NEC code cycles, the difference in the rate of thermal expansion with respect to temperature may not have been fully considered. This property is especially relevant for splices where 2 or more conductors are placed or twisted together underneath a twist-on splicing connector (commonly produced with a conical metal spring in contact with the conductors). As the conductors undergo repeated heating and cooling during use, the conductors and the splicing connector can expand and contract at different rates, potentially leading to a reduction in the long-term reliability of the splice.

As of the date of submission of this Public Comment, Section 1.3(d) of the current version of UL 486C (Splicing Wire Connectors) Eighth Edition (dated 6/30/23) considers the following conductor material combinations to be intermixing (and therefore dissimilar): “copper-to-aluminum or copper-clad aluminum and aluminum-to-copper-clad aluminum”. The technical committee for UL 486C includes representatives of splicing connector manufacturers and other electrical industry experts. There has been at least one proposal to UL (possibly more) since the 2017 NEC was published to modify UL 486C regarding the material combinations that require the use of splicing connectors listed for use with intermixed materials. In at least one of the proposals, this statement was made: “The NEC considers CCA and copper to be similar materials”. Statements such as this have been used as a basis to propose for allowing the use of copper-clad aluminum conductors with splicing connectors rated for copper only. It is likely this statement is based upon the change that occurred to Section 110.14 during the 2020 code cycle to remove “copper and copper-clad aluminum” from the examples of dissimilar conductors. To this day, the UL technical committee (TC 486) maintains the position that the combination of copper and copper-clad aluminum conductors requires the use of splicing connectors rated for intermixed (dissimilar) materials.

To clarify this section and align with the position of the UL technical committee responsible for the standard governing splicing connectors, the language for Section 110.14 from the 2017 NEC (specifically the examples of dissimilar conductors) should be restored.

Related Item

• PI 4115

Submitter Information Verification

Submitter Full Name: Dave Watson
Organization: Southwire
Affiliation: Southwire
Street Address:
City:
State:
Zip:

Submittal Date: Mon Aug 26 17:50:47 EDT 2024
Committee: NEC-P01

Public Comment No. 545-NFPA 70-2024 [Section No. 110.14 [Excluding any Sub-Sections]]

~~Because of different characteristics of dissimilar metals,~~ Termination devices such as pressure terminal or pressure splicing connectors and soldering lugs shall be identified ~~for~~ , installed and used for the material of the conductor ~~and shall be properly installed and used. Conductors of dissimilar metals shall~~ . Conductors shall not be intermixed in a terminal or splicing connector or soldering lug where physical contact occurs between dissimilar conductors unless the device is identified for the purpose and conditions of use. Materials such as solder, fluxes, inhibitors, and compounds, where employed, shall be ~~suitable for~~ identified for the use and shall be of a type that will not adversely affect the conductors, installation, or equipment.

Connectors and terminals for conductors more finely stranded than Class B and Class C stranding as shown in Chapter 9, Table 10, shall be identified for the specific conductor class or classes.

Statement of Problem and Substantiation for Public Comment

The text is revised for clarity of the requirement. Additionally, revisions were made to remove terms that are unenforceable or vague.

Related Item

• PI 4115

Submitter Information Verification

Submitter Full Name: David Hittinger
Organization: Independent Electrical Contractors
Affiliation: IEC Codes and Standards
Street Address:
City:
State:
Zip:

Submittal Date: Wed Jul 31 08:49:13 EDT 2024
Committee: NEC-P01

Public Comment No. 873-NFPA 70-2024 [Section No. 110.14 [Excluding any Sub-Sections]]

Because of different characteristics of dissimilar metals, devices such as pressure terminal or pressure splicing connectors and soldering lugs shall be identified for the material of the conductor and shall be properly installed and used. Conductors of dissimilar metals shall not be intermixed in a terminal or splicing connector where physical contact occurs between dissimilar conductors unless the device is identified for the purpose and conditions of use. Materials such as solder, fluxes, inhibitors, and compounds, where employed, shall be suitable for the use and shall be of a type that will not adversely affect the conductors, installation, or equipment.

Informational Note: Examples of dissimilar conductors are copper and aluminum, and copper-clad aluminum and aluminum.

Connectors and terminals for conductors more finely stranded than Class B and Class C stranding as shown in Chapter 9, Table 10, shall be identified for the specific conductor class or classes.

Additional Proposed Changes

File Name	Description	Approved
Dr._William_Kane_letter_from_Thornton_Tomasetti.pdf		
Westmoreland_Metallurgical_Laboratory_Report.pdf		

Statement of Problem and Substantiation for Public Comment

The added Informational Note contains text that was previously in the body of 110.14 in a parenthetical phrase. It was in 110.14 dating back to the 1971 Edition of the NEC. The parenthetical phrase last appeared in the 2020 edition of the NEC. It was removed for the 2023 edition by Second Revision No. 7690. The Committee Statement supporting the revision referred to a rule in Paragraph 3.3.1.2 of the NEC Style Manual. The rule states, in part, to "[u]se simple declarative sentence structure and keep sentences short. Writing rules in long sentences full of commas, dependent clauses, and parenthetical expressions often creates confusion and misunderstanding. The requirement can be written in two or more short sentences, expressed using a list or table, or both." This reason for rejection is purely editorial and entirely non-technical.

Second Revision No. 7690 included a Response Message following the Committee Statement. The message states "While the statement that copper and copper-clad aluminum are considered similar metals, this will cause confusion without proper context. Terminals are only suitable for use with copper-clad aluminum conductors if they have been evaluated for both copper and aluminum. The proposed text implies that terminals suitable for copper are also suitable for copper-clad aluminum."

The response message is understood to be the technical reasons for removing the parenthetical phrase. However, the statements made in this message are inaccurate. Stating that terminals are only suitable for use with copper-clad aluminum conductors if they have been evaluated for both copper and aluminum is incorrect. UL 486 does not require terminals suitable for use with copper-clad aluminum conductors to be evaluated for both copper and aluminum.

Also, whether or not the proposed text implies that terminals suitable for copper are also suitable for copper-clad aluminum is irrelevant relative to the issue of dissimilar metals in 110.14. UL issued an engineering bulletin more than 50 years ago (issue date of April 2nd, 1971) which stated that based on their research they concluded that terminals suitable for use with copper conductors were also considered to be suitable for use with copper-clad aluminum conductors. From the time when that report was issued, there has been no evidence of hazards or field failures that would dispute this claim. Since the issuance of that engineering bulletin, there has been no other document published to rescind the technical findings in that bulletin.

Public Input 907 sought to address the issue of dissimilar metals with respect to copper to aluminum, and copper-clad aluminum to aluminum in the body of 110.14. While this is not the ask of this public comment, it is important to revisit the Committee Statement for the resolution of Public Input 907 as it contains statements that appear to be outside of the issue being addressed in 110.14.

The Committee Statement read; "The proposal (PI 907) cites a similarity with copper and copper-clad aluminum. There are products that are specific to "copper only" for their termination. Having a statement of similarity can be confusing to the user of the code. Ampacities are also different between the two types of conductors. The current language is clear."

The focus of this part of 110.14 is the intermixing of dissimilar metals in a terminal or splicing connector. The intent of this part is to make users aware that dissimilar metals have different characteristics which necessitates the requirement that conductors of dissimilar metals shall not be intermixed in a terminal or splicing connector unless the device is identified for the purpose and conditions of use. This issue of intermixing dissimilar metals has no relation to products that are specific to "copper only" for their termination. The types of conductors that are suitable for connection to a product are covered in the end-product standard or standards for terminals and splicing connectors.

The intermixing of dissimilar metals also has no relation to ampacities. Users of the code recognize that ampacities are covered primarily in Chapter 3, and it is understood that copper, copper-clad aluminum, and aluminum conductors will have different ampacities. The Committee Statement alludes to a fundamental misunderstanding of what the term "dissimilar" really means. For two metals to be "dissimilar" speaks only to their corrosion characteristics, and not to their "ampacities" or resistivities. The electrical properties of two dissimilar metals are irrelevant to the hazard being addressed in the charging statement of 110.14.

To intermix copper with aluminum or copper-clad aluminum with aluminum in a terminal or splicing connector not rated for intermixing of dissimilar metals is a problem and a hazard. Two dissimilar conductor materials in direct contact with each other could result in galvanic corrosion that could inhibit the conductivity of the electrical connection.

In summary, the Informational Note being proposed should be included in the Code. It contains helpful information advising the user as to what are considered dissimilar materials relative to the three conductor materials recognized in the NEC. The content of the Informational Note was in the Code for many editions and was removed only for compliance with the NEC Style Manual and not for technical reasons. As the Informational Note begins with the words “Examples of…” it is important to point out that the NEC Style Manual has no prohibition against using examples. The 2023 edition has many occurrences of examples being used, some of which are in the body of the Code beside mandatory language.

For further information on this topic please see the attached technical documents, which have been previously presented in support of the substantiation with prior Public Inputs and Public Comments on this issue.
1. Dr. William Kane letter from Thornton Tomasetti
2. Westmoreland Metallurgical Laboratory Report - Galvanic Corrosion in Copper-Clad Aluminum

Related Item

• Public Input No. 907

Submitter Information Verification

Submitter Full Name: John Kovacik
Organization: Trusted Safety Solutions LLC
Street Address:
City:
State:
Zip:

Submittal Date: Tue Aug 06 23:40:46 EDT 2024
Committee: NEC-P01

Thornton Tomasetti

Via email: pgraser@copperweld.com

January 3, 2023

Peter Graser
Vice President - Building Wire
COPPERWELD
5141 Virginia Way, Suite 410
Brentwood, TN 37027

RE: ELECTRICAL CONNECTIONS WITH COPPER CLADDED ALUMINUM CONDUCTORS
TT Project No. L22112.00

Dear Mr. Graser:

Thank you for the opportunity to provide a materials science assessment for the above referenced matter. I have attached a copy of my Curriculum Vitae for your reference. At your request I have reviewed some factors around certain electrical connections in the latest revision of the NFPA 70 code. In particular, I reviewed the material issues regarding copper-clad aluminum (CCA) and dissimilar metal connections.

The similarity of two metals electrically connected and exposed to a common environment is determined by their electrochemical potentials, which is a measure of the energy driving corrosion. Metals with different electrochemical potentials in a given environment are considered dissimilar, and when two dissimilar metals are joined in a corrosive environment, they create a galvanic couple.[1] This coupling leads to galvanic corrosion, accelerated corrosion of a metal because of an electrical contact with a more noble metal or nonmetallic conductor. Accelerated corrosion due to dissimilar metal coupling has been observed and studied since at least the 18th century.

Bimetals are components consisting of two metals that are combined to achieve material properties that cannot be obtained with a single metal. A common means of producing bimetals involves coextrusion, the simultaneous extrusion or drawing of two metals to form an integrated product. This process was first developed in 1863 but gained more commercial application in the nuclear industry in the middle of the 20th century.[2] Coextrusion has been applied in a wide variety of industries, including for electrical applications where CCA is used in wire, rod, and bus bar forms. Thermo-mechanical processing during the production of CCA can produce a metallurgical bond between the copper cladding and aluminum core.[3]

---

[1] ASM Handbook, Volume 13 – Corrosion, ASM International, 1983.
[2] ASM Handbook, Volume 14A – Metalworking: Bulk Forming, 2005.
[3] Sasaki, T.T., et al., Scripta Materialia, Volume 63, Issue 5, 2010, pgs. 488-491.

When CCA is used in an electrical connection the copper cladding contacts the other components of the connection. As a result, CCA performs more like a solid copper conductor than a solid aluminum conductor. This is most evident in the values of electrical contact resistance for a given contact pressure, where CCA is comparable to copper and significantly less than aluminum.[4] Variations in contact resistance result from differences in the natural oxide layer that forms on the surface of metals, and the aluminum oxide that forms in ambient conditions has a much higher resistivity than the analogous copper oxide.[5] Therefore, CCA is similar to solid copper in both its electrical and electrochemical behavior, as was confirmed in thermocycling testing[6] and galvanic corrosion testing.[7] Like with a solid copper conductor, connecting a CCA conductor to aluminum creates a dissimilar metal couple and could lead to galvanic corrosion if an electrolyte is present.

Thornton Tomasetti is an engineering firm that optimizes the design and performance of structures, materials, and systems for projects of every size and level of complexity. We are an employee-owned organization of engineers, scientists, architects, and other professionals collaborating from offices worldwide. As a member of our Forensics practice, I am part of a multidisciplinary team with expertise to investigate and analyze a broad range of issues, including metallurgy, strength of materials, and environmental degradation. On behalf of the firm, thank you again for the opportunity to assist in this matter. If you have any additional questions, please do not hesitate to contact me.

Sincerely,

THORNTON TOMASETTI, INC.

William M. Kane
Vice President

[4] Meese, W.J. and Cilimberg, R.L., *Analysis of Current Technology on Electrical Connections in Residential Branch Circuit Wiring*, U.S. Dept. of Commerce, National Bureau of Standards, March 1975, pg. 7.
[5] Fan, J.C., *Mechanisms of Building Wire Connection Failure*, A Texas Instruments Engineering, Inc., report, Bulletin No. 516-TB93-1070.
[6] Eaton Laboratories, *Terminal and Conductor Temperature Testing of 14 AWG Copper-Clad Aluminum and 14 AWG Copper Conductors, Part II – Thermocycling Tests*, November 13, 2020.
[7] Westmoreland Mechanical Testing & Research, Inc., WMT&R Report 8-70626, August 6, 2018.

WILLIAM KANE, PH.D., P.E.

Vice President

Summary

William Kane joined the Philadelphia Forensics practice at Thornton Tomasetti in 2021, bringing 15 years of experience in failure analysis and prevention. He is a recognized expert in materials and mechanical engineering with concentrations in metallurgy, strength and performance of materials, and environmental degradation. Dr. Kane has consulted on a wide range of issues including medical devices and implants, utility and infrastructure components, consumer products, welding, buildings and structures, construction equipment, piping, industrial and pharmaceutical production equipment, railcars, and automotive components. He has experience in fracture mechanics, microscopy, mechanical testing, corrosion and materials selection. Dr. Kane has taught at the University of Pennsylvania and Drexel University, and has presented extensively in his field, as well as contributed to multiple publications.

Areas of technical expertise

- Root Cause Failure Analysis
- Environmental Degradation of Materials
- Materials Science and Engineering

Education

- Ph.D., Materials Science & Engineering, 2005, University of Pennsylvania
- M.S., Materials Science & Engineering, 2003, University of Pennsylvania
- B.S., Materials Science & Engineering, 2001, University of Pennsylvania

Registrations

- Licensed Professional Engineer in DE, MD, NJ, NY, PA, & VA
- Certified Welding Inspector (CWI), American Welding Society
- Certified ASNT ACCP Level II, American Society for Nondestructive Testing

Professional activities

- Member, ASM International
- Member, American Welding Society
- Member, ASTM International
- Board Member, Physical Sciences Technical Advisory Committee, Ben Franklin Technology Partners (BFTP)
- Lecturer, University of Pennsylvania, 2009-2018
- Adjunct Faculty, Drexel University, 2010-2012

Select project experience

Root cause failure analysis

Philadelphia Criminal Justice Center Elevator Failure, Philadelphia, PA.* Mechanical and metallurgical investigation to determine the cause of an elevator accident.

Arthroscopic Surgery Tool Failure, Ephrata, PA.* Metallurgical analysis of a fractured arthroscopic shaver tool to determine the cause of the failure.

Cervical Plate System Failure Analysis, Philadelphia, PA.* Metallurgical analysis of fractured screws from a medical device to determine the cause of the fracture.

Petroleum Tanker Rupture, Kaysville, UT.* Investigation into the rupture of a DOT tanker that was involved in a motor vehicle accident.

Six Flags Chiller Rollercoaster Wheel Failure, Jackson, NJ.* Investigation into the failure of welded components on an amusement park ride that failed during operation.

Huntington Station Crane Collapse, Alexandria, VA.* Mechanical and metallurgical investigation to determine the cause of a tower crane collapse.

Environmental degradation of materials

Pharmaceutical Water Storage Tank Failure, Philadelphia, PA.* Metallurgical investigation to determine the cause and extent of cracking in a 22,000-gallon distilled water storage tank.

Naudain Street Gas Explosion, Philadelphia, PA.* Metallurgical investigation to determine the cause and extent of pipe corrosion that contributed to a gas leak.

Materials science & engineering

Great Wolf Lodge Premises Investigation, Scotrun, PA.* Materials evaluation of the platform surfaces on an indoor water park feature.

*Denotes work performed with previous employer.

WILLIAM KANE, PH.D., P.E.

Lacrosse Ball Usability Study, Philadelphia, PA.* Materials evaluation examining the effects of aging on lacrosse balls.

Boiler Fitness-for-Service Assessment, Philadelphia, PA.* Investigation to determine the cause of cracking and remaining structural integrity of a steam boiler superheater header.

Sworn testimony

Trial experience

Nelson v. United States, U.S. District Court for the Eastern District of Pennsylvania, 2022.

Wright v. Residence Inn Philadelphia, et al,* Court of Common Pleas, Philadelphia County. 2017.

Osmun v. Pat's King of Steaks, et al,* Court of Common Pleas, Philadelphia County. 2017.

Steinman v. Spinal Concepts, Inc.,* U.S. District Court, Western District of NY. 2013.

State Farm Fire & Casulaty Co. v. Carroll Water Systems, Inc., et al,* In the District Court of MD for Carroll County. 2012.

Deposition experience

Viscovich v. Fendi S.R.L., et al, U.S. District Court for the Southern District of NY. 2021.

GATX Corp. v. Georgia Power Co.,* U.S. District Court for the Northern District of GA. 2021.

Malone v. Elsburty Jr., et al,* In the Circuit Court of Harrison County, WV. 2020.

Sherrick v. Sunrise Medical, et al,* Court of Common Please, Franklin County, OH. 2020.

Moxham, et al v. M&J Overhead Door LLC, et al,* Superior Court Judicial District of Danbury. 2019.

Lopez v. Ryder Truck Rental, Inc., et al,* Superior Court of NJ, Essex County. 2018.

Evans, et al v. Globus Medical, Inc., et al,* In the Circuit Court of Baltimore County, MD. 2016.

IPSCO Tubulars, Inc. v. Ajax Tocco Magnethermic Corp.,* U.S. District Court for the Eastern District of AR. 2013.

Select papers, lectures and publications

"Preservation and Preparation of Fracture Specimens," ASM Handbook, Volume 12 – Fractography, ASM International. In press as of Sept 2021 (author)

"Tibial tray fracture in a modern prosthesis with retrieval analysis," Arthroplast Today 2018; 4:143-147 (co-author)

"Retrieval and clinical analysis of distraction-based dual growing rod constructs for early-onset scoliosis," The Spine Journal 2017, 17(10): 1506-1518 (co-author)

"Preserving Evidence in a Product Liability Case: Focus on Medical Devices," American Bar Association Litigation Group, Expert Witnesses Committee Article, February 21, 2017 (co-author)

"Mechanical Properties and Their Measurement," ASM International Metallurgy for the Non-Metallurgist course, Coatesville, PA, November 2014 (author)

"Failure Analysis for Medical Device Engineers," ASM International, Materials Park, OH, August 2014 (author)

"Collapse of Jet Center Hangars Under Snow Load," 2014 Structures Congress, American Society of Civil Engineers, Boston, MA, April 2014 (co-author)

"Method of characterizing fretting and corrosion at the various taper connections of retrieved modular components from metal-on-metal total hip arthroplasty. ASTM STP1560: Metal-On-Metal Total Hip Replacement Devices," ASTM International, 2013 (co-author)

"In vivo deformation, surface damage, and biostability of retrieved dynesys systems," Spine, November 2010; 35(23):1310-E1316 (co-author)

"Brittle intergranular fracture of a Ni-based superalloy at high temperatures by dynamic embrittlement," Materials Science and Engineering A 2004; 387-389:409-413, December 15 (co-author)

"MSE 495/496 – Senior Design", University of Pennslyvania, 2012-2018 (lecturer)

"MSE 555 – Environmental Degradation of Materials", University of Pennslyvania, 2012-2016 (lecturer)

"Failure Analysis for Medical Device Engineers", ASM International, 2017 (lecturer)

"Fretting and corrosion at the taper connections of retrieved modular components from metal-on-metal total hip arthroplasty," Talk 13, Symposium on Metal-on-Metal Total Hip Replacement Devices, Phoenix, AZ, May 8, 2012 (co-presenter)

"Oxygen-induced dynamic embrittlement in nickel-based superalloys,.Interfacial Engineering for Optimized Properties III," MRS 2004; 819:111-120 (co-presenter)

CONTACT

Bill Kane
1700 Market Street, Suite 1750, Philadelphia PA 19103
267.238.4000
WKane@ThorntonTomasetti.com
www.ThorntonTomasetti.com

Public Comment No. 1047-NFPA 70-2024 [Section No. 110.15]

110.15 High-Leg Marking.

On a 4-wire, delta-connected system where the midpoint of one phase winding is grounded, only the conductor or busbar having the higher phase voltage to ground shall be durably and permanently marked orange in color by an outer finish or by other effective means such that orange is visible ~~to~~ at all ~~accessible points and~~ terminations. Such identification shall be placed at each point on the system where a connection is made if the grounded conductor is also present.

Exception: In existing installations that use the color orange for other voltage systems, the conductor described in this section shall be use insulation that is not orange and shall be field-marked orange at its terminations.

Statement of Problem and Substantiation for Public Comment

The color orage is very commonly used as the "B" phase in 480Y/277V systems. I have inspected a couple of existing installations where a customer was adding three phase, 240V equipment and opted to install a high-leg system instead of a corner-grounded or ungrounded delta to acheive this. In these instanaces, using orange might not be the best solution. A conductor that is a different color and is then marked orange is far more effective.
This comment also fixes a typo (visible to all accessible points???) and removes the requirement from applying at all accessible points. There is no reason for any special marking at, for example, a conduit body. See200.4(B) Ex 2, for example.

Related Item

• FR 9121

Submitter Information Verification

Submitter Full Name: Ryan Jackson
Organization: Self-employed
Street Address:
City:
State:
Zip:

Submittal Date: Mon Aug 12 20:59:00 EDT 2024
Committee: NEC-P01

Public Comment No. 1858-NFPA 70-2024 [Section No. 110.15]

110.15 High-Leg Marking.

On a 4-wire, delta-connected system where the midpoint of one phase winding is grounded, only the conductor or busbar having the higher phase voltage to ground shall be durably and permanently marked ~~orange in color by an outer finish or by other effective means~~ such that ~~orange~~ the marking is visible to all accessible points ~~and terminations.~~ using one of the following methods:

(1) An orange outer finish

(2) By other effective means

Such identification shall be placed at each point on the system where a connection is made if the grounded conductor is also present.

Statement of Problem and Substantiation for Public Comment

The panel statement indicates that Section 110.15 has always required the markings to be made using the color orange in all identification methods used. In fact, the requirement has always permitted the use of another effective means to mark the high-leg and it did NOT require that effective means to be orange in color. This change is more restrictive than the prior editions, and the panel has not given a reason as to why the more restrictive language is necessary. There is no technical substantiation to revise this section to a more restrictive version, nor does this new language take into consideration any current installations. If the intent is to make this requirement more restrictive then the Panel should indicate the technical substantiation for making this requirement more restrictive, in their panel statement. Without substantiation for the change the proposed language should be reverted back or use the proposed language submitted with this comment.

Related Item

• FR-9121

Submitter Information Verification

Submitter Full Name: Jeff Noren
Organization: National Electrical Contractors Association
Street Address:
City:
State:
Zip:

Submittal Date: Tue Aug 27 18:13:18 EDT 2024
Committee: NEC-P01

Public Comment No. 1072-NFPA 70-2024 [Section No. 110.16]

110.16 Arc-Flash Hazard Marking.

In other than dwelling units, a permanent arc flash marking shall be field or factory applied to service equipment and feeder-supplied equipment, such as switchboards, switchgear, enclosed panelboards, industrial control panels, meter socket enclosures, and motor control centers. The marking shall meet the requirements in 110.21(B), be located so as to be clearly visible to qualified persons, and be in accordance with applicable industry practice, containing the following information:

(1) The nominal system voltage

(2) The arc flash boundary

(3) The available incident energy or minimum required level of personal protective equipment

(4) The date the ~~label~~ assessment was ~~applied~~ completed

Informational Note No. 1: See ANSI Z535.4-2011 (R2017), *Product Safety Signs and Labels*, for guidelines for the design of safety signs and labels for application to products.

Informational Note No. 2: See NFPA *70E*-2024, *Standard for Electrical Safety in the Workplace*, for applicable industry practices for equipment marking. This standard provides specific criteria for developing arc-flash labels for equipment that provides nominal system voltage, incident energy levels, arc-flash boundaries, minimum required levels of personal protective equipment, and so forth.

Statement of Problem and Substantiation for Public Comment

The most important date for an arc flash assessment (Table Method or Calculation Method) is the date that the assessment was completed. It is common practice in the industry to complete an assessment but have some time pass (hours, days, weeks) between that point and when the labels are installed. It is also common practice in the industry when doing a calculation-type assessment to print a date on the arc flash label to correspond with the dates the calculations were performed and the label was printed. This change would more directly allow for those common practices, while still ensuring there is a date on the label that can be used to evaluate the age and corresponding accuracy of the arc flash information relative to the 5-year review requirement indicated in NFPA 70E. The labels will still need to be in place prior to inspection by the AHJ which limits the risk of undue lag between the assessment and the label installation.

Related Item

• FR-9124

Submitter Information Verification

Submitter Full Name: David Hittinger
Organization: Independent Electrical Contractors
Affiliation: IEC Codes and Standards
Street Address:
City:
State:
Zip:

Submittal Date: Tue Aug 13 15:48:22 EDT 2024
Committee: NEC-P01

Public Comment No. 1475-NFPA 70-2024 [Section No. 110.16]

110.16 Arc-Flash Hazard Marking.

In other than dwelling units, a permanent arc flash marking shall be field or factory applied to service equipment and feeder-supplied equipment, such as switchboards, switchgear, enclosed panelboards, industrial control panels, meter socket enclosures, and motor control centers. The marking shall meet the requirements in 110.21(B), be located so as to be clearly visible to qualified persons, and be in accordance with applicable industry practice~~, containing the following information:~~

(1) ~~The nominal system voltage~~

(2) ~~The arc flash boundary~~

(3) ~~The available incident energy or minimum required level of personal protective equipment~~

(4) ~~The date the label was applied~~

.

Informational Note No. 1: See ANSI Z535.4-2011 (R2017), *Product Safety Signs and Labels*, for guidelines for the design of safety signs and labels for application to products.

Informational Note No. 2: See NFPA *70E*-2024, *Standard for Electrical Safety in the Workplace*, for applicable industry practices for equipment marking. This standard provides specific criteria for developing arc-flash labels for equipment that provides nominal system voltage, incident energy levels, arc-flash boundaries, minimum required levels of personal protective equipment, and so forth.

Statement of Problem and Substantiation for Public Comment

NFPA 70E already included detailed requirements concerning the arc-flash label and what it should contain. Having requirements in NFPA 70 for the same item creates conflicts between the standards. The proposed requirement to include the "date the label was applied" is not reasonable as labels are mostly created by printing the label and applying the label at some point later. This timing would require the label applied date to be written in by hand which is not allowed in another section of NFPA 70.
The second information note provides direction to the user for an applicable industry standard to use for the marking information.
NFPA 70 is also an installation document - not an electrical safety management document. Expanding the arc-flash label information is beyond the scope of NFPA 70. NFPA 70E includes this information in its scope.

Related Item

• FR-9124

Submitter Information Verification

Submitter Full Name: Paul sullivan
Organization: DuPont
Street Address:
City:
State:
Zip:

Submittal Date: Fri Aug 23 13:19:54 EDT 2024
Committee: NEC-P01

Public Comment No. 1897-NFPA 70-2024 [Section No. 110.16]

110.16 Arc-Flash Hazard Marking.

In other than dwelling units, a permanent arc flash marking shall be field or factory applied to service equipment and feeder-supplied equipment, such as switchboards, switchgear, enclosed panelboards, industrial control panels, meter socket enclosures, and motor control centers that are likely to require examination, adjustment, servicing, or maintenance while energized . The marking shall meet the requirements in 110.21(B), be located so as to be clearly visible to qualified persons, and be in accordance with applicable industry practice, containing the following information:

(1) The nominal system voltage

(2) The arc flash boundary

(3) The available incident energy or minimum required level of personal protective equipment

(4) ~~The date the label was applied~~

(5)

Informational Note No. 1: See ANSI Z535.4-2011 (R2017), *Product Safety Signs and Labels*, for guidelines for the design of safety signs and labels for application to products.

Informational Note No. 2: See NFPA *70E*-2024, *Standard for Electrical Safety in the Workplace*, for applicable industry practices for equipment marking. This standard provides specific criteria for developing arc-flash labels for equipment that provides nominal system voltage, incident energy levels, arc-flash boundaries, minimum required levels of personal protective equipment, and so forth.

Statement of Problem and Substantiation for Public Comment

CMP1 did a good job simplifying the arc flash labeling requirements of 110.16 and bringing the requirements more in line with NFPA 70E. However, it went too far by eliminating the phrase "likely to require examination, adjustment, servicing or maintenance while energized". This phrase provides important boundary conditions for when arc flash labeling is required, and has been included in 110.16 since its introduction to the NEC. This phrase is also present in NFPA 70E (130.5(H)). The proposed changes to 110.16 also includes the date the label is applied. This requirement is not included in NFPA 70E and should be deleted for alignment.

In its first draft meeting of the 2027 edition, the NFPA 70E technical committee retained the phrase "likely to require examination, adjustment, servicing, or maintenance while energized". Therefore, for alignment between NFPA 70 and NFPA 70E, this phrase should be added back in to 110.16.

Related Item

• FR 9124

Submitter Information Verification

Submitter Full Name: Louis Barrios
Organization: Shell Global Solutions
Affiliation: American Chemistry Council
Street Address:
City:
State:
Zip:

Submittal Date: Tue Aug 27 21:47:57 EDT 2024
Committee: NEC-P01

Public Comment No. 1911-NFPA 70-2024 [Section No. 110.16]

110.16 Arc-Flash Hazard Marking.

In other than dwelling units, a permanent arc flash marking shall be field or factory applied to service equipment and feeder-supplied equipment, such as switchboards, switchgear, enclosed panelboards, industrial control panels, meter socket enclosures, and motor control centers. The marking shall meet the requirements in 110.21(B), be located on the outside front of the enclosure so as to be ~~clearly~~ visible to qualified persons, and be in accordance with applicable industry practice, containing the following information:

(1) The nominal system voltage

(2) The arc flash boundary

(3) The available incident energy or minimum required level of personal protective equipment

(4) The date the label was applied

Informational Note No. 1: See ANSI Z535.4-2011 (R2017), *Product Safety Signs and Labels*, for guidelines for the design of safety signs and labels for application to products.

Informational Note No. 2: See NFPA *70E*-2024, *Standard for Electrical Safety in the Workplace*, for applicable industry practices for equipment marking. This standard provides specific criteria for developing arc-flash labels for equipment that provides nominal system voltage, incident energy levels, arc-flash boundaries, minimum required levels of personal protective equipment, and so forth.

Statement of Problem and Substantiation for Public Comment

The marking to comply with 110.21(B) does not provide enforceable language to require the marking on the outside front of the enclosure. 110.21(B) Field-Applied Hazard Markings are an essential part of safety for skilled and unskilled persons. The present requirement references informational notes that are not enforceable. The current requirement in 110.16 allows the Arc-Flash Hazard Marking label to be placed on the bottom, top or side of the enclosure, and sized as small as the printer allows, as long as it is clearly visible. Clearly visible is vague and could use some clarification.
110.21(B) is referenced in numerous sections in the code and should provide clear requirements that provide guidance and protections.

Related Item

• FR 9124

Submitter Information Verification

Submitter Full Name: David Williams
Organization: Delta Charter Township
Street Address:
City:
State:
Zip:

Submittal Date: Wed Aug 28 07:29:56 EDT 2024
Committee: NEC-P01

Public Comment No. 1980-NFPA 70-2024 [Section No. 110.16]

110.16 Arc-Flash Hazard Marking.

~~In other than dwelling units, a permanent arc flash marking shall be field or factory applied to service equipment and feeder-supplied equipment,~~
Electrical equipment such as switchboards,

~~switchgear, enclosed~~
panelboards, industrial control panels, meter socket enclosures, and motor control centers

~~. The marking shall meet the requirements in 110.21(B) , be located so as to be clearly visible to qualified persons, and be in accordance with applicable industry practice, containing~~
that are in other than dwelling units and that are likely to require examination, adjustment, servicing, or maintenance while energized shall be marked with a label containing all the following information:

~~The nominal~~
(1) Nominal system voltage

~~The arc~~
(2) Arc flash boundary

- ~~The available incident energy or minimum required level of personal protective equipment~~

(3) At least one of the following:

a. Available incident energy and the corresponding working distance, or the arc flash PPE category for the equipment, but not both

b. Minimum arc rating of clothing

c. Site-specific level of PPE

(4) The date the label was applied

Informational Note

~~No. 1~~
:

~~See ANSI Z535.4-2011 (R2017), *Product Safety Signs and Labels* , for guidelines for the design of safety signs and labels for application to products. Informational Note No. 2: See NFPA *70E* 2024~~
See NFPA 70E , Standard for Electrical Safety in the Workplace , for

~~applicable industry practices for equipment marking. This standard provides specific criteria for developing arc-flash labels for equipment that provides nominal system voltage, incident energy levels, arc-flash boundaries, minimum required levels of personal protective equipment, and so forth~~

additional information on the terminology and requirements included in this section .

Statement of Problem and Substantiation for Public Comment

Revise the wording in 110.16 to match what is in NFPA 70E - 2024, 130.5(H) but add the date requirement. I can't think of any good reason why the NEC requirements for installation need to be different that the requirements in NFPA 70E for work practices. The best time to determine the values needed by NFPA 70E are during the design of a new installation - most of the information already needs to available to properly design the installation.

Related Item

• fr 9124

Submitter Information Verification

Submitter Full Name: Paul Dobrowsky
Organization: Innovative Technology Services
Street Address:
City:
State:
Zip:

Submittal Date: Wed Aug 28 13:52:51 EDT 2024
Committee: NEC-P01

Public Comment No. 453-NFPA 70-2024 [Section No. 110.16]

110.16 Arc-Flash Hazard Marking.

In other than dwelling units, a permanent arc flash marking shall be field or factory applied to service equipment and feeder-supplied equipment, such as switchboards, switchgear, enclosed panelboards, industrial control panels, meter socket enclosures, and motor control centers. The marking shall meet the requirements in 110.21(B), be located so as to be clearly visible to qualified persons, and be in accordance with applicable industry practice, containing the following information:

(1) The nominal system voltage

(2) The arc flash boundary

(3) The available incident energy or minimum required level of personal protective equipment

(4) The date the label was applied

Informational Note No. 1: See ANSI Z535.4-2011 (R2017), *Product Safety Signs and Labels*, for guidelines for the design of safety signs and labels for application to products.

Informational Note No. 2: See NFPA *70E*-2024, *Standard for Electrical Safety in the Workplace*, for applicable industry practices for equipment marking. This standard provides specific criteria for developing arc-flash labels for equipment that provides nominal system voltage, incident energy levels, arc-flash boundaries, minimum required levels of personal protective equipment, and so forth.

Additional Proposed Changes

File Name	Description	Approved
CN_101.pdf		

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 101 appeared in the First Draft Report on First Revision No. 9124.

The Correlating Committee directs CMP-1 to reconsider the second sentence language “meet the requirements” and consider using the phrase "shall comply with"
or “in accordance with” to comply with the NEC Style Manual 4.1.3.

Related Item

• First Revision No. 9124

Submitter Information Verification

Submitter Full Name: CC Notes
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jul 30 18:45:54 EDT 2024
Committee: NEC-P01

Correlating Committee Note No. 101-NFPA 70-2024 [Section No. 110.16]

Submitter Information Verification

Committee: NEC-AAC
Submittal Date: Wed May 08 11:19:47 EDT 2024

Committee Statement

Committee Statement: The Correlating Committee directs CMP-1 to reconsider the second sentence language “meet the requirements” and consider using the phrase "shall comply with" or “in accordance with” to comply with the NEC Style Manual 4.1.3.

First Revision No. 9124-NFPA 70-2024 [Section No. 110.16]

Ballot Results

This item has passed ballot

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

Not Returned

McDaniel, Roger D.

Affirmative All

Ayer, Lawrence S.
Bowmer, Trevor N.
Hickman, Palmer L.
Holub, Richard A.
Jackson, Peter D.
Kendall, David H.
Manche, Alan
Osborne, Robert D.
Porter, Christine T.
Schultheis, Timothy James
Williams, David A.

Public Comment No. 965-NFPA 70-2024 [Section No. 110.16]

110.16 Arc-Flash Hazard Marking.

In other than dwelling units, a permanent arc flash marking shall be field ~~or factory~~ applied to service equipment and feeder-supplied equipment, such as switchboards, switchgear, enclosed panelboards, industrial control panels, meter socket enclosures, and motor control centers. The marking shall meet the requirements in 110.21(B), be located so as to be clearly visible to qualified persons, and be in accordance with applicable industry practice~~, containing the following information:~~

(1) ~~The nominal system voltage~~

(2) ~~The arc flash boundary~~

(3) ~~The available incident energy or minimum required level of personal protective equipment~~

(4) ~~The date the label was applied~~

.

Informational Note No. 1: See ANSI Z535.4-2011 (R2017), *Product Safety Signs and Labels*, for guidelines for the design of safety signs and labels for application to products.

Informational Note No. 2: See NFPA *70E*-2024, *Standard for Electrical Safety in the Workplace*, for applicable industry practices for equipment marking. This standard provides specific criteria for developing arc-flash labels for equipment that provides nominal system voltage, incident energy levels, arc-flash boundaries, minimum required levels of personal protective equipment, and so forth.

Statement of Problem and Substantiation for Public Comment

An arc-flash label that's factory applied could not possibly have the suggested information on it. Each installation would depend on field conditions so the only practical way this label could have the required information would be for it to be a field applied label. I've suggested that we delete the specific content recommended here for the label. NFPA 70E, Section 130.5(H) provides specific information that it recommends be included on a label. At most, I'd recommend pointing to that document's label requirements. Including specific label requirements here will lead to a correlation problem between the documents. In addition, the proposed language to include the "date the label is applied" is completely unworkable. The labels would typically be computer generated and would in most instances be printed weeks or months before they get applied, so I'm recommending that if this were to stay, you'd use something like "date the calculation was made", or something to that effect. The only way the "date applied" could possibly work is if they're field generating each label (or handwriting them which isn't allowed by 110.21(B)) and that's just not practical. If you went with "date calculation was made", that would negate the possibility of using the category method allowed by NFPA 70E, again - this presents a correlation problem. I think we need to keep this section simple, here, and point to NFPA 70E for more specific content, and the proposed informational notes to NFPA 70E and ANSI Z535 do that satisfactorily already, in my opinion.

Related Item

• FR-9124 •

Submitter Information Verification

Submitter Full Name: Richard Holub
Organization: The DuPont Company, Inc.
Street Address:
City:
State:
Zip:

Submittal Date: Thu Aug 08 09:14:16 EDT 2024
Committee: NEC-P01

Public Comment No. 1130-NFPA 70-2024 [New Section after 110.17]

Qualified Person

Consistently long standing there has been a fundamental issue regarding how an AHJ enforces the scattered qualified persons requirements within the NEC. Licensing, certifications, and training are more important now than they ever have been in the electrical industry. Significant language was added to the NEC in 2023 to accompany the existing 142 uses of “qualified persons” language. While service and maintenance are nothing new to the electrical industry, the addition of 110.17 completes the trilogy of interweaving NFPA 70, NFPA 70E Standard for Electrical Safety in the Workplace and NFPA 70B Standard for Electrical Equipment Maintenance. However, the use and requirement of “qualified persons” is still inconsistent from article to article resulting in the perceived responsibility of the qualified person differing from system to system. Throughout the country, sections and portions of each system are NOT performed by qualified persons and the argument by those unqualified performing the work is based on the language or lack thereof for total inclusion of all “parts” of the system requiring training in the construction and installation of the electrical system.

2026 saw 17 PI’s in an attempt to promote uniformity with qualified persons language across the NEC. The consensus from CMP to CMP was a statement for qualified persons is more appropriate in Article 90 and/or Article 110. To draw a parallel from the enforceable qualified persons language in electrical safety and maintenance, to those in the NEC, a general requirement for qualified persons in Article 90.2(A) or Article 110 would then require that ALL electrical work under the scope of the NEC, including but not limited to the construction, installation, commissioning, and maintenance be performed by qualified persons.

As technology enhances and electrical systems become more complex and interconnected with energy systems outside traditional utility, the verification of construction, installation, commissioning, and maintenance by a qualified person becomes even more imperative.

This public comment is made in support of adding a “general” requirement in Article 90 or Article 110, in reference to all aspects of electrical work covered under the purview of the NEC being performed by qualified persons.

Finally, with the addition of 110.17 in NFPA 70 and the recent evolution of NFPA 70B moving to a standard, I would like to introduce the thought of amending the NEC Article 100 definition of Qualified Person to include commissioning, and at minimum maintenance. Ultimately reading:

Qualified Person. One who has skills and knowledge related to the construction, commissioning, maintenance, and operation of the electrical equipment and installations and has received safety training to recognize and avoid the hazards involved.

Statement of Problem and Substantiation for Public Comment

Consistently long standing there has been a fundamental issue regarding how an AHJ enforces the scattered qualified persons requirements within the NEC. Licensing, certifications, and training are more important now than they ever have been in the electrical industry. Significant language was added to the NEC in 2023 to accompany the existing 142 uses of “qualified persons” language. While service and maintenance are nothing new to the electrical industry, the addition of 110.17 completes the trilogy of interweaving NFPA 70, NFPA 70E Standard for Electrical Safety in the Workplace and NFPA 70B Standard for Electrical Equipment Maintenance. However, the use and requirement of “qualified persons” is still inconsistent from article to article resulting in the perceived responsibility of the qualified person differing from system to system. Throughout the country, sections and portions of each system are NOT performed by qualified persons and the argument by those unqualified performing the work is based on the language or lack thereof for total inclusion of all “parts” of the system requiring training in the construction and installation of the electrical system.
2026 saw 17 PI’s in an attempt to promote uniformity with qualified persons language across the NEC. The consensus from CMP to CMP was a statement for qualified persons is more appropriate in Article 90 and/or Article 110. To draw a parallel from the enforceable qualified persons language in electrical safety and maintenance, to those in the NEC, a general requirement for qualified persons in Article 90.2(A) or Article 110 would then require that ALL electrical work under the scope of the NEC, including but not limited to the construction, installation, commissioning, and maintenance be performed by qualified persons.
As technology enhances and electrical systems become more complex and interconnected with energy systems outside traditional utility, the verification of construction, installation, commissioning, and maintenance by a qualified person becomes even more imperative.
This public comment is made in support of adding a “general” requirement in Article 90 or Article 110, in reference to all aspects of electrical work covered under the purview of the NEC being performed by qualified persons.
Finally, with the addition of 110.17 in NFPA 70 and the recent evolution of NFPA 70B moving to a standard, I would like to introduce the thought of amending the NEC Article 100 definition of Qualified Person to include commissioning, and at minimum maintenance. Ultimately reading:
Qualified Person. One who has skills and knowledge related to the construction, commissioning, maintenance, and operation of the electrical equipment and installations and has received safety training to recognize and avoid the hazards involved.

Related Item

- PI 1817, PI 1818, PI 1819, PI 1820 (See CMP4 response message for each)

Submitter Information Verification

Submitter Full Name: George Mostardini
Organization: IBEW Local 134
Affiliation: IBEW
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 15 19:11:14 EDT 2024
Committee: NEC-P01

Public Comment No. 1050-NFPA 70-2024 [Section No. 110.17]

~~**110.17** Servicing and Maintenance of Equipment.~~

~~Servicing and maintenance shall be performed by qualified persons trained in servicing and maintenance of equipment and shall comply with the following:~~

(1) ~~The servicing and maintenance shall be performed in accordance with the original equipment manufacturer's instructions and information included in the listing information, applicable industry standards, or as approved by the authority having jurisdiction.~~

(2) ~~The servicing and maintenance shall be performed using identified replacement parts that are verified under applicable product standards. The replacement parts shall comply with at least one of the following:~~

(3) ~~Be provided by the original equipment manufacturer~~

(4) ~~Be designed by an engineer experienced in the design of replacement parts for the type of equipment being serviced or maintained~~

(5) ~~Be approved by the authority having jurisdiction~~

~~Informational Note No. 1:~~ ~~For equipment that is not listed or field labeled, or for which components are no longer available from the original equipment manufacturer, one way to determine suitability is to review the documentation that accompanies the replacement parts.~~

~~Informational Note No. 2:~~ ~~See NFPA 70B-2023,~~ ~~*Standard for Electrical Equipment Maintenance*~~ ~~, for information related to maintenance for electrical, electronic, and communication systems and equipment.~~

Statement of Problem and Substantiation for Public Comment

The CMP seemed to agre with me that the scope of the NEC matters. In its explanation for rejecting my proposed deletion of this material, it pointed to a new section of 90.2 [90.2(C)] that was going to be added which would have expanded the scope of the NEC. That change DID NOT pass, however, which is further evidence of the fact that the NEC does not cover maintenance. The CMP was quick to point to 90.2 when it supported their reason for rejecting this PI, I hope they are equally as quick to acknowledge that it now contradicts their original postion and supports mine. This material is out of scope and belongs only in NFPA 70B.

Related Item

• PI 256

Submitter Information Verification

Submitter Full Name: Ryan Jackson
Organization: Self-employed
Street Address:
City:
State:
Zip:

Submittal Date: Mon Aug 12 21:16:47 EDT 2024
Committee: NEC-P01

Public Comment No. 1627-NFPA 70-2024 [Section No. 110.17]

110.17 ~~Servicing and Maintenance of~~ Servicing of Equipment.

Servicing ~~and maintenance~~ shall be performed by qualified persons trained in servicing ~~and maintenance~~ of equipment and shall comply with the following:

(1) The servicing ~~and maintenance~~ shall be performed in accordance with the original equipment manufacturer's instructions and information included in the listing information, applicable industry standards, or as approved by the authority having jurisdiction.

(2) The ~~servicing and maintenance shall~~ servicing shall be performed using identified replacement parts that are verified under applicable product standards. The replacement parts shall comply with at least one of the following:

(3) Be provided by the original equipment manufacturer

(4) Be designed by an engineer experienced in the design of replacement parts for the type of equipment being serviced or maintained

(5) Be approved by the authority having jurisdiction

Informational Note No. 1: For equipment that is not listed or field labeled, or for which components are no longer available from the original equipment manufacturer, one way to determine suitability is to review the documentation that accompanies the replacement parts.

Informational Note No. 2: See NFPA 70B-2023, *Standard for Electrical Equipment Maintenance*, for information related to maintenance for electrical, electronic, and communication systems and equipment.

Statement of Problem and Substantiation for Public Comment

CMP1 did a good job deleting "electrical preventative" from 110.17 but did not go for enough. "Maintenance" should also be deleted. Original action to add requirements on "reconditioned" equipment throughout the NEC have grossly expanded well beyond the original intent to now include both maintenance and servicing, which creates correlation issues with other standards such as NFPA 70B.

Proposed actions to add "maintenance, reconditioning, servicing" to the scope of the NEC via FR-9273 during the first draft failed ballot, further supporting that "maintenance" of electrical equipment should be left to NFPA 70B and not the NEC.

The scopes of the NEC, NFPA 70B and NFPA 70E should be clear to address installations, maintenance and safe work practices, respectively.

Related Item

• FR 9274 • FR 9273

Submitter Information Verification

Submitter Full Name: Louis Barrios
Organization: Shell Global Solutions
Affiliation: American Chemistry Council
Street Address:
City:
State:
Zip:

Submittal Date: Sun Aug 25 12:28:27 EDT 2024
Committee: NEC-P01

Public Comment No. 1628-NFPA 70-2024 [Section No. 110.17]

110.17 ~~Servicing and Maintenance of Equipment.~~

~~Servicing and maintenance shall be performed by qualified persons trained in servicing and maintenance of equipment and shall comply with the following:~~

(1) ~~The servicing and maintenance shall be performed in accordance with the original equipment manufacturer's instructions and information included in the listing information, applicable industry standards, or as approved by the authority having jurisdiction.~~

(2) ~~The servicing and maintenance shall be performed using identified replacement parts that are verified under applicable product standards. The replacement parts shall comply with at least one of the following:~~

(3) ~~Be provided by the original equipment manufacturer~~

(4) ~~Be designed by an engineer experienced in the design of replacement parts for the type of equipment being serviced or maintained~~

(5) ~~Be approved by the authority having jurisdiction~~

~~Informational Note No. 1:~~ ~~For equipment that is not listed or field labeled, or for which components are no longer available from the original equipment manufacturer, one way to determine suitability is to review the documentation that accompanies the replacement parts.~~

~~Informational Note No. 2:~~ ~~See NFPA 70B-2023,~~ ~~*Standard for Electrical Equipment Maintenance*~~ ~~, for information related to maintenance for electrical, electronic, and communication systems and equipment.~~

Statement of Problem and Substantiation for Public Comment

110.17 should have been deleted as originally proposed by Public Inputs 256 and 4205. "Maintenance" and "electrical preventative maintenance" are outside the scope of the NEC. NFPA 70 is intended for installations, NFPA 70E intended for safe work practices and NFPA 70B (now elevated to a Standard from a Recommended Practice) intended for maintenance. Original action to add requirements on "reconditioned" equipment have grossly expanded well beyond intent to now include both maintenance and servicing, which creates correlation issues with other standards such as NFPA 70B. Attempts to add "maintenance", "reconditioning" and "servicing" to the scope of the NEC in 90.2(C) failed ballot, further suggesting there is support to retain clarity of scope between the three NFPA standards.

Related Item

• FR 9274 • FR 9273

Submitter Information Verification

Submitter Full Name: Louis Barrios
Organization: Shell Global Solutions
Affiliation: American Chemistry Council
Street Address:
City:
State:
Zip:

Submittal Date: Sun Aug 25 12:56:49 EDT 2024
Committee: NEC-P01

Public Comment No. 1709-NFPA 70-2024 [Section No. 110.17]

110.17 Servicing ~~and Maintenance~~ of Equipment.

Servicing ~~and maintenance~~ shall be performed by qualified persons trained in servicing ~~and maintenance~~ of equipment and shall comply with the following:

(1) The servicing ~~and maintenance~~ shall be performed in accordance with the original equipment manufacturer's instructions and information included in the listing information, applicable industry standards, or as approved by the authority having jurisdiction.

(2) The servicing ~~and maintenance~~ shall be performed using identified replacement parts that are verified under applicable product standards. The replacement parts shall comply with at least one of the following:

(3) Be provided by the original equipment manufacturer

(4) Be designed by an engineer experienced in the design of replacement parts for the type of equipment being serviced

~~or maintained~~

a.

b. Be approved by the authority having jurisdiction

Informational Note No. 1: For equipment that is not listed or field labeled, or for which components are no longer available from the original equipment manufacturer, one way to determine suitability is to review the documentation that accompanies the replacement parts.

Informational Note No. 2: See NFPA 70B-2023, *Standard for Electrical Equipment Maintenance*, for information related to maintenance for electrical, electronic, and communication systems and equipment.

Statement of Problem and Substantiation for Public Comment

This suggested language change aligns with the defined term "servicing" which states that servicing is "The process of following a manufacturer's set of instructions or applicable industry standards to analyze, adjust, or perform prescribed actions upon equipment with the intention to preserve or restore the operational performance of the equipment." The informational note that accompanies this defined term states the following: "Servicing often encompasses maintenance and repair activities". By removing the term maintenance, we don't change the requirement but rather use a defined term that through the informational note ties the activities to maintenance. NFPA 70B is now a standard and this change does not reduce nor disassociate this section from electrical maintenance but rather leverages the defined term to make the connection with NFPA 70B or any other industry standard / manufacturer instructions available and acceptable to the authority having jurisdiction.

Related Item

• FR 9274

Submitter Information Verification

Submitter Full Name: Thomas Domitrovich
Organization: Eaton Corporation
Street Address:
City:
State:
Zip:

Submittal Date: Mon Aug 26 14:30:12 EDT 2024
Committee: NEC-P01

Public Comment No. 1751-NFPA 70-2024 [Section No. 110.17]

110.17 Servicing ~~and Maintenance~~ of Equipment.

Servicing ~~and maintenance~~ shall be performed by qualified persons trained in servicing ~~and maintenance~~ of equipment and shall comply with the following:

(1) The servicing ~~and maintenance~~ shall be performed in accordance with the original equipment manufacturer's instructions and information included in the listing information, applicable industry standards, or as approved by the authority having jurisdiction.

(2) The servicing ~~and maintenance~~ shall be performed using identified replacement parts that are verified under applicable product standards. The replacement parts shall comply with at least one of the following:

(3) Be provided by the original equipment manufacturer

(4) Be designed by an engineer experienced in the design of replacement parts for the type of equipment being serviced

~~or maintained~~

a.

b. Be approved by the authority having jurisdiction

Informational Note No. 1: For equipment that is not listed or field labeled, or for which components are no longer available from the original equipment manufacturer, one way to determine suitability is to review the documentation that accompanies the replacement parts.

Informational Note No. 2: See NFPA 70B-2023, *Standard for Electrical Equipment Maintenance*, for information related to maintenance for electrical, electronic, and communication systems and equipment.

Statement of Problem and Substantiation for Public Comment

"Maintenance" should be removed from the title and text of this section. As indicated in Informational Note No. 2, the correct NFPA document for maintenance of electrical equipment is NFPA 70B-2023 Standard for Electrical Equipment Maintenance. NFPA 70 is an installation document and not a maintenance document. Further, "maintenance" is not a defined term in Article 100 Definitions.

Related Item

• FR 9273 • FR 9274

Submitter Information Verification

Submitter Full Name: Mark Goodman
Organization: Mark Goodman Electrical Consulting
Affiliation: American Petroleum Institute
Street Address:
City:
State:
Zip:

Submittal Date: Tue Aug 27 00:45:21 EDT 2024
Committee: NEC-P01

Public Comment No. 1752-NFPA 70-2024 [Section No. 110.17]

~~**110.17** Servicing and Maintenance of Equipment.~~

~~Servicing and maintenance shall be performed by qualified persons trained in servicing and maintenance of equipment and shall comply with the following:~~

(1) ~~The servicing and maintenance shall be performed in accordance with the original equipment manufacturer's instructions and information included in the listing information, applicable industry standards, or as approved by the authority having jurisdiction.~~

(2) ~~The servicing and maintenance shall be performed using identified replacement parts that are verified under applicable product standards. The replacement parts shall comply with at least one of the following:~~

(3) ~~Be provided by the original equipment manufacturer~~

(4) ~~Be designed by an engineer experienced in the design of replacement parts for the type of equipment being serviced or maintained~~

(5) ~~Be approved by the authority having jurisdiction~~

~~Informational Note No. 1: For equipment that is not listed or field labeled, or for which components are no longer available from the original equipment manufacturer, one way to determine suitability is to review the documentation that accompanies the replacement parts.~~

~~Informational Note No. 2: See NFPA 70B-2023, *Standard for Electrical Equipment Maintenance* , for information related to maintenance for electrical, electronic, and communication systems and equipment.~~

Statement of Problem and Substantiation for Public Comment

Delete this new section in its entirety. NFPA 70 is an installation document and not a maintenance document. NFPA 70B-2023, Standard for Electrical Equipment Maintenance is the appropriate standard for this information. Potential conflicts between the requirements in NFPA 70 and NFPA 70B would only confuse users and AHJs.

Related Item

• FR 9273 • FR 9274

Submitter Information Verification

Submitter Full Name: Mark Goodman
Organization: Mark Goodman Electrical Consulting
Affiliation: American Petroleum Institute
Street Address:
City:
State:
Zip:

Submittal Date: Tue Aug 27 01:10:15 EDT 2024
Committee: NEC-P01

Public Comment No. 1770-NFPA 70-2024 [Section No. 110.17]

110.17 ~~Servicing and Maintenance of~~ Servicing of Equipment.

Servicing ~~and maintenance~~ shall be performed by qualified persons trained in servicing and maintenance of equipment and shall comply with the following:

(1) The ~~servicing and maintenance shall~~ servicing shall be performed in accordance with the original equipment manufacturer's instructions and information included in the listing information, applicable industry standards, or as approved by the authority having jurisdiction.

(2) The servicing ~~and maintenance~~ shall be performed using identified replacement parts that are verified under applicable product standards. The replacement parts shall comply with at least one of the following:

(3) Be provided by the original equipment manufacturer

(4) Be designed by an engineer experienced in the design of replacement parts for the type of equipment being serviced or maintained

(5) Be approved by the authority having jurisdiction

Informational Note No. 1: For equipment that is not listed or field labeled, or for which components are no longer available from the original equipment manufacturer, one way to determine suitability is to review the documentation that accompanies the replacement parts.

Informational Note No. 2: See NFPA 70B-2023, *Standard for Electrical Equipment Maintenance*, for information related to maintenance for electrical, electronic, and communication systems and equipment.

Statement of Problem and Substantiation for Public Comment

The maintenance provisions should be under NFPA-70B and not NFPA70. Removing the term maintenance does not change the requirement.

Related Item

• FR 9274

Submitter Information Verification

Submitter Full Name: David Williams
Organization:
Street Address:
City:
State:
Zip:
Submittal Date: Tue Aug 27 09:54:11 EDT 2024
Committee: NEC-P01

Public Comment No. 1916-NFPA 70-2024 [Section No. 110.17]

~~**110.17** Servicing and Maintenance of Equipment.~~

~~Servicing and maintenance shall be performed by qualified persons trained in servicing and maintenance of equipment and shall comply with the following:~~

(1) ~~The servicing and maintenance shall be performed in accordance with the original equipment manufacturer's instructions and information included in the listing information, applicable industry standards, or as approved by the authority having jurisdiction.~~

(2) ~~The servicing and maintenance shall be performed using identified replacement parts that are verified under applicable product standards. The replacement parts shall comply with at least one of the following:~~

(3) ~~Be provided by the original equipment manufacturer~~

(4) ~~Be designed by an engineer experienced in the design of replacement parts for the type of equipment being serviced or maintained~~

(5) ~~Be approved by the authority having jurisdiction~~

~~Informational Note No. 1:~~ ~~For equipment that is not listed or field labeled, or for which components are no longer available from the original equipment manufacturer, one way to determine suitability is to review the documentation that accompanies the replacement parts.~~

~~Informational Note No. 2:~~ ~~See NFPA 70B-2023,~~ ~~*Standard for Electrical Equipment Maintenance*~~ ~~, for information related to maintenance for electrical, electronic, and communication systems and equipment.~~

Statement of Problem and Substantiation for Public Comment

"Maintenance" and "Servicing" are outside the scope of the NEC®. Public Inputs 256 and 4205 both stated as much for consideration in the First Draft. Section 90.2 specifically states "This code covers the installatin and removal of electrical conductors, equipment, and raceways; signaling and communications conductors, equipment, and raceways; and optical fiber cables for the following:..." Maintenance, reconditioning, and servicing are all outside the scope of the NEC® and are more appropriately covered within the scope of NFPA 70B (now elevated to a Standard from a Recommended Practice). These requirements should be debated and included in NFPA 70B, if approved, but should not be included in the NEC®.

Related Item

• PI-256 • PI-4205

Submitter Information Verification

Submitter Full Name: Richard Holub
Organization: The DuPont Company, Inc.
Street Address:
City:
State:
Zip:

Submittal Date: Wed Aug 28 08:51:27 EDT 2024
Committee: NEC-P01

Public Comment No. 1984-NFPA 70-2024 [Section No. 110.17]

~~**110.17** Servicing and Maintenance of Equipment.~~

~~Servicing and maintenance shall be performed by qualified persons trained in servicing and maintenance of equipment and shall comply with the following:~~

(1) ~~The servicing and maintenance shall be performed in accordance with the original equipment manufacturer's instructions and information included in the listing information, applicable industry standards, or as approved by the authority having jurisdiction.~~

(2) ~~The servicing and maintenance shall be performed using identified replacement parts that are verified under applicable product standards. The replacement parts shall comply with at least one of the following:~~

(3) ~~Be provided by the original equipment manufacturer~~

(4) ~~Be designed by an engineer experienced in the design of replacement parts for the type of equipment being serviced or maintained~~

(5) ~~Be approved by the authority having jurisdiction~~

~~Informational Note No. 1:~~ ~~For equipment that is not listed or field labeled, or for which components are no longer available from the original equipment manufacturer, one way to determine suitability is to review the documentation that accompanies the replacement parts.~~

~~Informational Note No. 2:~~ ~~See NFPA 70B-2023,~~ ~~*Standard for Electrical Equipment Maintenance*~~ ~~, for information related to maintenance for electrical, electronic, and communication systems and equipment.~~

Statement of Problem and Substantiation for Public Comment

Delete these requirements. Servicing and maintenance requirements belong in NFPA 70B and NFPA 70E - not in the NEC, an installation standard.

Related Item

• fr 9274

Submitter Information Verification

Submitter Full Name: Paul Dobrowsky
Organization: Innovative Technology Services
Street Address:
City:
State:
Zip:

Submittal Date: Wed Aug 28 14:06:56 EDT 2024
Committee: NEC-P01

Public Comment No. 2070-NFPA 70-2024 [Section No. 110.17]

110.17 ~~Servicing and Maintenance of~~ Servicing of Equipment.

Servicing ~~and maintenance~~ shall be performed by qualified persons trained in servicing ~~and maintenance~~ of equipment and shall comply with the following:

(1) The servicing ~~and maintenance~~ shall be performed in accordance with the original equipment manufacturer's instructions and information included in the listing information, applicable industry standards, or as approved by the authority having jurisdiction.

(2) The servicing ~~and maintenance~~ shall be performed using identified replacement parts that are verified under applicable product standards. The replacement parts shall comply with at least one of the following:

(3) Be provided by the original equipment manufacturer

(4) Be designed by an engineer experienced in the design of replacement parts for the type of equipment being serviced or maintained

(5) Be approved by the authority having jurisdiction

Informational Note No. 1: For equipment that is not listed or field labeled, or for which components are no longer available from the original equipment manufacturer, one way to determine suitability is to review the documentation that accompanies the replacement parts.

Informational Note No. 2: See NFPA 70B-2023, *Standard for Electrical Equipment Maintenance*, for information related to maintenance for electrical, electronic, and communication systems and equipment.

Statement of Problem and Substantiation for Public Comment

The term "and maintenance" has been removed to correlate with the definition of servicing.

If this term is not deleted a definition of "maintenance" should be added in the Article 100.

Proposed definition: Maintenance: the process of maintaining electrical systems and equipment to address risk of failure, breakdown or malfunctions and improve safety and reliability.

Related Item

• FR-9274

Submitter Information Verification

Submitter Full Name: Daniel Neeser
Organization: Eaton Bussmann Division
Street Address:
City:
State:
Zip:

Submittal Date: Wed Aug 28 18:01:05 EDT 2024
Committee: NEC-P01

Public Comment No. 28-NFPA 70-2024 [Section No. 110.17]

~~**110.17** Servicing and Maintenance of Equipment.~~

~~Servicing and maintenance shall be performed by qualified persons trained in servicing and maintenance of equipment and shall comply with the following:~~

(1) ~~The servicing and maintenance shall be performed in accordance with the original equipment manufacturer's instructions and information included in the listing information, applicable industry standards, or as approved by the authority having jurisdiction.~~

(2) ~~The servicing and maintenance shall be performed using identified replacement parts that are verified under applicable product standards. The replacement parts shall comply with at least one of the following:~~

(3) ~~Be provided by the original equipment manufacturer~~

(4) ~~Be designed by an engineer experienced in the design of replacement parts for the type of equipment being serviced or maintained~~

(5) ~~Be approved by the authority having jurisdiction~~

~~Informational Note No. 1: For equipment that is not listed or field labeled, or for which components are no longer available from the original equipment manufacturer, one way to determine suitability is to review the documentation that accompanies the replacement parts.~~

~~Informational Note No. 2: See NFPA 70B-2023, *Standard for Electrical Equipment Maintenance* , for information related to maintenance for electrical, electronic, and communication systems and equipment.~~

Statement of Problem and Substantiation for Public Comment

Servicing and maintenance is not within the Scope of the NEC and should be removed as a general requirement. NFPA 70B Standard for Electrical Equipment Maintenance provides these requirements.

Related Item

• PI 256 and PI 4205

Submitter Information Verification

Submitter Full Name: David Hittinger
Organization: Independent Electrical Contractors
Affiliation: IEC Codes and Standards
Street Address:
City:
State:
Zip:

Submittal Date: Wed Jul 10 18:02:06 EDT 2024
Committee: NEC-P01

Public Comment No. 454-NFPA 70-2024 [Section No. 110.17]

110.17 Servicing and Maintenance of Equipment.

Servicing and maintenance shall be performed by qualified persons trained in servicing and maintenance of equipment and shall comply with the following:

(1) The servicing and maintenance shall be performed in accordance with the original equipment manufacturer's instructions and information included in the listing information, applicable industry standards, or as approved by the authority having jurisdiction.

(2) The servicing and maintenance shall be performed using identified replacement parts that are verified under applicable product standards. The replacement parts shall comply with at least one of the following:

a. Be provided by the original equipment manufacturer

b. Be designed by an engineer experienced in the design of replacement parts for the type of equipment being serviced or maintained

c. Be approved by the authority having jurisdiction

Informational Note No. 1: For equipment that is not listed or field labeled, or for which components are no longer available from the original equipment manufacturer, one way to determine suitability is to review the documentation that accompanies the replacement parts.

Informational Note No. 2: See NFPA 70B-2023, *Standard for Electrical Equipment Maintenance*, for information related to maintenance for electrical, electronic, and communication systems and equipment.

Additional Proposed Changes

File Name	Description	Approved
CN_102.pdf		

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 102 appeared in the First Draft Report on First Revision No. 9274.

The Correlating Committee will form a task group with representatives from multiple code-making panels and other affected parties to review 110.17 and related definitions currently in the code for alignment with the scope of the NEC and submit public comments if deemed necessary. The scope of NFPA 70B shall be considered as part of the task group review.

Additionally, as part of this review the task group shall take into consideration possible revisions to 110.20 to prohibit the installation of reconditioned equipment unless specifically permitted to be installed elsewhere in the code. Any revisions recommended by this task group will be proposed for the 2029 edition of the NEC.

Related Item

• First Revision No. 9274

Submitter Information Verification

Submitter Full Name: CC Notes
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:

Submittal Date: Tue Jul 30 18:47:09 EDT 2024
Committee: NEC-P01

Correlating Committee Note No. 102-NFPA 70-2024 [Section No. 110.17]

Submitter Information Verification

Committee: NEC-AAC
Submittal Date: Wed May 08 11:23:48 EDT 2024

Committee Statement

Committee Statement: The Correlating Committee will form a task group with representatives from multiple code-making panels and other affected parties to review 110.17 and related definitions currently in the code for alignment with the scope of the NEC and submit public comments if deemed necessary. The scope of NFPA 70B shall be considered as part of the task group review.

Additionally, as part of this review the task group shall take into consideration possible revisions to 110.20 to prohibit the installation of reconditioned equipment unless specifically permitted to be installed elsewhere in the code. Any revisions recommended by this task group will be proposed for the 2029 edition of the NEC.

First Revision No. 9274-NFPA 70-2024 [Section No. 110.17]

Ballot Results

✔ **This item has passed ballot**

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

Not Returned

McDaniel, Roger D.

Affirmative All

Ayer, Lawrence S.
Bowmer, Trevor N.
Hickman, Palmer L.
Holub, Richard A.
Jackson, Peter D.
Kendall, David H.
Manche, Alan

Osborne, Robert D.

Porter, Christine T.

Schultheis, Timothy James

Williams, David A.

Public Comment No. 849-NFPA 70-2024 [Section No. 110.17]

110.17 ~~Servicing and Maintenance of~~ Servicing of Equipment.

Servicing ~~and maintenance~~ of equipment shall be performed by qualified persons trained in servicing ~~and maintenance~~ of equipment and shall comply with the following:

(1) The ~~servicing and maintenance shall~~ servicing shall be performed in accordance with the original equipment manufacturer's instructions and information included in the listing information, applicable industry standards, or as approved by the authority having jurisdiction.

(2) The servicing ~~and maintenance~~ shall be performed using identified replacement parts that are verified under applicable product standards. The replacement parts shall comply with at least one of the following:

(3) Be provided by the original equipment manufacturer

(4) Be designed by an engineer experienced in the design of replacement parts for the type of equipment being serviced

~~or maintained~~

a.

b. Be approved by the authority having jurisdiction

Informational Note No. 1: For equipment that is not listed or field labeled, or for which components are no longer available from the original equipment manufacturer, one way to determine suitability is to review the documentation that accompanies the replacement parts.

~~Informational Note No. 2: See NFPA 70B-2023, *Standard for Electrical Equipment Maintenance* , for information related to maintenance for electrical, electronic, and communication systems and equipment.~~

Statement of Problem and Substantiation for Public Comment

This revision recommends the removal of "maintenance" and retaining "servicing" in 110.17. A concern expressed with retaining 110.17 is that NFPA 70B covers maintenance and therefore the NEC should not. Note that, since the scope of NFPA 70B only includes maintenance and not both servicing and maintenance, servicing can and should be retained in 110.17. See NFPA 70B 1.1 Scope. "This standard covers the preventive maintenance of electrical, electronic, and communications systems and equipment."

Related Item

• PI-4205

Submitter Information Verification

Submitter Full Name: Palmer Hickman
Organization: Electrical Training Alliance
Street Address:
City:
State:
Zip:

Submittal Date: Tue Aug 06 15:48:51 EDT 2024
Committee: NEC-P01

Public Comment No. 1-NFPA 70-2024 [Section No. 110.20]

110.20 Reconditioned Equipment.

Reconditioned equipment ~~shall be permitted except where prohibited~~ shall be permitted where specified elsewhere in this code. Equipment that is restored to operating condition shall be reconditioned with identified replacement parts and verified under applicable standards that are either provided by the original equipment manufacturer or that are designed by an engineer experienced in the design of replacement parts for the type of equipment being reconditioned.

Informational Note: See Article 100 for the definition of *equipment*.

(A) Equipment Required to Be Listed.

Equipment that is reconditioned and required by this code to be listed shall be listed or field labeled as reconditioned using available instructions from the original equipment manufacturer.

(B) Equipment Not Required to Be Listed.

Equipment that is reconditioned and not required by this code to be listed shall comply with one of the following:

(1) Be listed or field labeled as reconditioned

(2) Have the reconditioning performed in accordance with the original equipment manufacturer instructions

(C) Approved Equipment.

If the options specified in 110.20(A) or 110.20(B) are not available, the authority having jurisdiction shall be permitted to approve reconditioned equipment, and the reconditioner shall provide the authority having jurisdiction with documentation of the changes to the product.

Statement of Problem and Substantiation for Public Comment

Revise the text editorially to clarify the application of the requirement. The modified text will aid technical committees to acknowledge the reconditioned equipment that is permitted within their purview rather than equipment that is not permitted.

Related Item

• FR-9276

Submitter Information Verification

Submitter Full Name: David Hittinger
Organization: Independent Electrical Contractors
Affiliation: IEC Codes and Standards
Street Address:
City:
State:
Zip:

Submittal Date: Tue Jul 09 16:32:06 EDT 2024
Committee: NEC-P01

Public Comment No. 1918-NFPA 70-2024 [Section No. 110.21]

110.21 Marking.

(A) Equipment Markings.

(1) General.

The manufacturer's name, trademark, or other descriptive marking by which the organization responsible for the product can be identified shall be applied or affixed onto all electrical equipment. Other markings that indicate voltage, current, wattage, or other ratings shall be provided as specified elsewhere in this code. The marking shall be of sufficient durability to withstand the environment involved.

(2) Reconditioned Equipment.

Reconditioned equipment shall be marked with the following:

(1) Name, trademark, or other descriptive marking of the organization that performed the reconditioning

(2) The date of the reconditioning

(3) The term *reconditioned* or other approved wording or symbol indicating that the equipment has been reconditioned

~~The original listing mark shall be removed or made permanently illegible. The equipment nameplate shall not be required to be removed or made permanently illegible, only the part of the nameplate that includes the listing mark, if applicable. Approval of the reconditioned equipment shall not be based solely on the equipment's original listing.~~

Exception: In industrial occupancies, where conditions of maintenance and supervision ensure that only qualified persons service the equipment, the markings indicated in 110.21(A)(2) shall not be required for equipment that is reconditioned by the owner or operator as part of a regular equipment maintenance program.

Informational Note No. 1: ANSI-approved standards are available for application of reconditioned and refurbished equipment.

Informational Note No. 2: The term *reconditioned* may be interchangeable with the terms *rebuilt* , *refurbished* , or *remanufactured* even though these are sometimes different processes.

(B) Field-Applied Hazard Markings.

Where caution, warning, or danger hazard markings such as labels or signs are required by this code, the markings shall meet the following requirements:

(1) The marking shall be of sufficient durability to withstand the environment involved and warn of the hazards using effective words, colors, symbols, or any combination thereof.

Informational Note No. 1: See ANSI Z535.2-2011 (R2017), *Environmental and Facility Safety Signs* , which describes the design, application, and use of safety signs in facilities and in the environment.

Informational Note No. 2: See ANSI Z535.4-2011 (R2017), *Product Safety Signs and Labels* , which details the design, application, use, and placement of safety signs and labels on a wide variety of products.

(2) The marking shall be permanently affixed to the equipment or wiring method and shall not be handwritten.

Exception to (2): Portions of the markings that are variable, or that could be subject to changes, shall be permitted to be handwritten and shall be legible.

Statement of Problem and Substantiation for Public Comment

The whole reconditioning process is outside the scope of the NEC®, as described in 90.2. The definition of reconditioning is sufficiently vague for it to potentially apply to any motor repair conducted by a motor repair shop. Such repair could be as minor as replacement of the bearings on the motor. The repair of a motor is done based on scope agreed upon between the purchaser and the motor repair shop, and the NEC® is not the document to use to mandate removal of the original listing mark or require a new listing mark be applied. In the case of motors, the NEC®, specifically, doesn't require the motor to be listed, but more generally, OSHA does require all electrical equipment used in the workplace to be NRTL listed through 29 CFR 1910.303(a). The original motor nameplate listing is sufficient to demonstrate that the motor was approved when it was installed. Repair of that motor though a motor repair shop should warrant an additional label be applied to the motor so we know the repair history, and where it was done, but there should be no new listing requirement here. This is evidenced by the fact that Article 430 doesn't even have a listing requirement included. This requirement to remove the listing mark and the associated approval language shold be removed completely.

Related Item

• FCR-153

Submitter Information Verification

Submitter Full Name: Richard Holub
Organization: The DuPont Company, Inc.
Street Address:
City:
State:
Zip:

Submittal Date: Wed Aug 28 09:20:26 EDT 2024
Committee: NEC-P01

Public Comment No. 1774-NFPA 70-2024 [Section No. 110.21(B)]

(B) Field-Applied Hazard Markings.

Where caution, warning, or danger hazard markings such as labels or signs are required by this code, the markings shall meet the following requirements:

(1) The marking shall be of sufficient durability to withstand the environment involved and warn of the hazards using effective words, colors, symbols, or any combination thereof.

Informational Note No. 1: See ANSI Z535.2-2011 (R2017), *Environmental and Facility Safety Signs*, which describes the design, application, and use of safety signs in facilities and in the environment.

Informational Note No. 2: See ANSI Z535.4-2011 (R2017), *Product Safety Signs and Labels*, which details the design, application, use, and placement of safety signs and labels on a wide variety of products.

(2) The marking shall be permanently affixed to the equipment or wiring method and shall not be handwritten.

(3) The marking shall be on the front of the enclosure.

(4) The marking text shall be capitalized and have a minimum height of 13 mm (1/2 in.).

Exception to (2): Portions of the markings that are variable, or that could be subject to changes, shall be permitted to be handwritten and shall be legible.

Statement of Problem and Substantiation for Public Comment

110.21(B) Field-Applied Hazard Markings are an essential part of safety for skilled and unskilled persons. The present requirement references informational notes that are not enforceable. The current requirement allows a Hazard Marking label to be placed on the back, bottom, top or side of the enclosure, and sized as small as the printer allows.
110.21(B) is referenced in numerous sections in the code and should provide clear requirements that provide guidance and protections.

Related Item

• PI 3056

Submitter Information Verification

Submitter Full Name: David Williams
Organization:
Street Address:
City:
State:
Zip:
Submittal Date: Tue Aug 27 10:17:01 EDT 2024
Committee: NEC-P01

Public Comment No. 455-NFPA 70-2024 [Section No. 110.22]

110.22 Identification of Disconnecting Means.

(A) General.

Each disconnecting means in other than one- or two-family dwellings shall be legibly marked to indicate its purpose and circuit source unless located and arranged so the purpose and source is evident. The marking shall meet the requirements of 110.21(B).

(B) Engineered Series Combination Systems.

Equipment enclosures for circuit breakers or fuses applied in compliance with series combination ratings selected under engineering supervision in accordance with 240.86(A) shall be legibly marked in the field as directed by the engineer to indicate the equipment has been applied with a series combination rating. The marking shall meet the requirements in 110.21(B) and shall be readily visible and state the following:

CAUTION — ENGINEERED SERIES COMBINATION SYSTEM RATED _____ AMPERES. IDENTIFIED REPLACEMENT COMPONENTS REQUIRED.

(C) Tested Series Combination Systems.

Equipment enclosures for circuit breakers or fuses applied in compliance with the series combination ratings marked on the equipment by the manufacturer in accordance with 240.86(B) shall be legibly marked in the field to indicate the equipment has been applied with a series combination rating. The marking shall meet the requirements in 110.21(B) and shall be readily visible and state the following:

CAUTION — SERIES COMBINATION SYSTEM RATED ____ AMPERES. IDENTIFIED REPLACEMENT COMPONENTS REQUIRED.

Informational Note: See IEEE 3004.5-2014 *Recommended Practice for the Application of Low-Voltage Circuit Breakers in Industrial and Commercial Power Systems*, for further information on series tested systems.

Additional Proposed Changes

File Name	Description	Approved
CN_103.pdf		

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 103 appeared in the First Draft Report on First Revision No. 9147.

The Correlating Committee directs CMP-1 to reconsider the language “meet the requirements” and consider using the phrase "shall comply with" or “in accordance with” to comply with the NEC Style Manual 4.1.3.

Related Item

• First Revision No. 9147

Submitter Information Verification

Submitter Full Name: CC Notes
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:

Submittal Date: Tue Jul 30 18:48:42 EDT 2024
Committee: NEC-P01

Correlating Committee Note No. 103-NFPA 70-2024 [Section No. 110.22]

Submitter Information Verification

Committee: NEC-AAC
Submittal Date: Wed May 08 11:52:46 EDT 2024

Committee Statement

Committee Statement: The Correlating Committee directs CMP-1 to reconsider the language “meet the requirements” and consider using the phrase "shall comply with" or “in accordance with” to comply with the NEC Style Manual 4.1.3.

First Revision No. 9147-NFPA 70-2024 [Section No. 110.22]

Ballot Results

✔ **This item has passed ballot**

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

Not Returned

McDaniel, Roger D.

Affirmative All

Ayer, Lawrence S.
Bowmer, Trevor N.
Hickman, Palmer L.
Holub, Richard A.
Jackson, Peter D.
Kendall, David H.
Manche, Alan
Osborne, Robert D.
Porter, Christine T.
Schultheis, Timothy James
Williams, David A.

Public Comment No. 917-NFPA 70-2024 [Section No. 110.24(A)]

(A) Field Marking.

Service equipment at other than dwelling units shall be legibly marked in the field with the available fault current. The field ~~marking(s) shall~~ markings shall include the date the fault-current calculation was performed and comply with 110.21(B). The calculation shall be documented and made available to those authorized to design, install, inspect, maintain, or operate the system.

Informational Note No. 1: The available fault-current ~~marking(s) addressed~~ markings addressed in 110.24 is related to required short-circuit current and interrupting ratings of equipment.

Informational Note No. 2: Values of available fault current for use in determining appropriate minimum short-circuit current and interrupting ratings of service equipment are available from electric utilities in published or other forms.

Statement of Problem and Substantiation for Public Comment

This revision to remove "(s)" and and make the associated word plural is made to comply with the NEC Style Manual as plural is the appropriate tense of the word unless singular is specifically intended. Per 3.5.3, Plural, of the NEC Style manual, "unless referring to a single item of equipment, references to electrical components and parts shall be plural rather than singular. This results in greater consistency and makes it clear that the requirement refers to all components or parts of a given type or class."

Related Item

• FR-9157 • FR-9157

Submitter Information Verification

Submitter Full Name: Palmer Hickman
Organization: Electrical Training Alliance
Street Address:
City:
State:
Zip:

Submittal Date: Wed Aug 07 15:22:23 EDT 2024
Committee: NEC-P01

Public Comment No. 918-NFPA 70-2024 [Section No. 110.24(B)]

(B) Modifications.

When modifications to the electrical installation occur that affect the available fault current at the service, the available fault current shall be verified or recalculated as necessary to ensure the service equipment ratings are sufficient for the available fault current at the line terminals of the equipment. The required field ~~marking(s) in~~ markings in 110.24(A) shall be adjusted to reflect the new level of available fault current.

Exception: The field marking requirements in 110.24(A) and 110.24(B) shall not be required in industrial installations where conditions of maintenance and supervision ensure that only qualified persons service the equipment.

Statement of Problem and Substantiation for Public Comment

This revision to remove "(s)" and and make the associated word plural is made to comply with the NEC Style Manual as plural is the appropriate tense of the word unless singular is specifically intended. Per 3.5.3, Plural, of the NEC Style manual, "unless referring to a single item of equipment, references to electrical components and parts shall be plural rather than singular. This results in greater consistency and makes it clear that the requirement refers to all components or parts of a given type or class."

Related Item

• PI-3198

Submitter Information Verification

Submitter Full Name: Palmer Hickman
Organization: Electrical Training Alliance
Street Address:
City:
State:
Zip:

Submittal Date: Wed Aug 07 15:25:19 EDT 2024
Committee: NEC-P01

Public Comment No. 1031-NFPA 70-2024 [Section No. 110.26(A)]

(A) Working Space.

Working space for equipment likely to require examination, adjustment, servicing, or maintenance while energized shall comply with the dimensions of 110.26(A)(1), 110.26(A)(2), 110.26(A)(3), and 110.26(A)(4) or as required or permitted elsewhere in this code. By Special permission, small working spaces shall be permitted where all exposed live parts operate at not greater than 30 volts rms, 42 volts peak, or 60 volts dc.

Informational Note: See NFPA *70E*-2024, *Standard for Electrical Safety in the Workplace*, for guidance, such as determining severity of potential exposure and planning safe work practices including establishing an electrically safe work condition, arc flash labeling, and selecting personal protective equipment.

(1) Depth of Working Space.

The depth of the working space in the direction of live parts shall not be less than that specified in Table 110.26(A)(1) unless the requirements of 110.26(A)(1)(a), 110.26(A)(1)(b), or 110.26(A)(1)(c) are met. Distances shall be measured from the live parts, if such are exposed, or from the enclosure front or opening, if such live parts are enclosed.

Table 110.26(A)(1) Working Spaces

Nominal Voltage to Ground	Minimum Clear Distance		
	Condition 1	Condition 2	Condition 3
0–150	900 mm (3 ft)	900 mm (3 ft)	900 mm (3 ft)
151–600	900 mm (3 ft)	1.0 m (3 ft 6 in.)	1.2 m (4 ft)
601–1000	900 mm (3 ft)	1.2 m (4 ft)	1.5 m (5 ft)

Note: Where the conditions are as follows:

Condition 1 — Exposed or enclosed live parts on one side of the working space and no exposed or enclosed live or grounded parts on the other side of the working space, or exposed or enclosed live parts on both sides of the working space that are effectively guarded by insulating materials.

Condition 2 — Exposed or enclosed live parts on one side of the working space and grounded parts on the other side of the working space. Concrete, brick, or tile walls shall be considered as grounded.

Condition 3 — Exposed or enclosed live parts on both sides of the working space.

(a) *Dead-Front Assemblies.* Working space shall not be required in the back or sides of assemblies, such as dead-front switchboards, switchgear, or motor control centers, where all connections and all renewable or adjustable parts, such as fuses or switches, are accessible from locations other than the back or sides. Where rear access is required to work on nonelectrical parts on the back of enclosed equipment, a minimum horizontal working space of 762 mm (30 in.) shall be provided.

(b) ~~*Low Voltage.* By special permission, smaller working spaces shall be permitted where all exposed live parts operate at not greater than 30 volts rms, 42 volts peak, or 60 volts dc.~~

(c) *Existing Buildings.* In existing buildings where electrical equipment is being replaced, Condition 2 working clearance shall be permitted between dead-front switchboards, switchgear, enclosed panelboards, or motor control centers located across the aisle from each other where conditions of maintenance and supervision ensure that written procedures have been adopted to prohibit equipment on both sides of the aisle from being open at the same time and qualified persons who are authorized will service the installation.

(2) Width of Working Space.

The width of the working space in front of the electrical equipment shall be the width of the equipment or 762 mm (30 in.), whichever is greater. In all cases, the work space shall permit at least a 90-degree opening of equipment doors or hinged panels.

(3) Height of Working Space.

The work space shall be clear and extend from the grade, floor, or platform to a height of 2.0 m (6½ ft) or the height of the equipment, whichever is greater. Within the height requirements of this section, other equipment or support structures, such as concrete pads, associated with the electrical installation and located above or below the electrical equipment shall be permitted to extend not more than 150 mm (6 in.) beyond the front of the electrical equipment.

Exception No. 1: On battery systems mounted on open racks, the top clearance shall comply with 480.10(D).

Exception No. 2: In existing dwelling units, service equipment or enclosed panelboards that do not exceed 200 amperes shall be permitted in spaces where the height of the working space is less than 2.0 m (6½ ft).

Exception No. 3: Meters that are installed in meter sockets shall be permitted to extend beyond the other equipment. The meter socket shall be required to follow the rules of this section.

(4) Limited Access.

Where equipment likely to require examination, adjustment, servicing, or maintenance while energized is required by installation instructions or function to be located in a space with limited access, all of the following shall apply:

(1) Where equipment is installed above a lay-in ceiling, there shall be an opening not smaller than 559 mm × 559 mm (22 in. × 22 in.), or in a crawl space, there shall be an accessible opening not smaller than 559 mm × 762 mm (22 in. × 30 in.).

(2) The width of the working space shall be the width of the equipment enclosure or a minimum of 762 mm (30 in.), whichever is greater.

(3) All enclosure doors or hinged panels shall be capable of opening a minimum of 90 degrees.

(4) The space in front of the enclosure shall comply with the depth requirements of Table 110.26(A)(1) and shall be unobstructed to the floor by fixed cabinets, walls, or partitions. Space reductions in accordance with 110.26(A)(1)(b) shall be permitted. The maximum height of the working space shall be the height necessary to install the equipment in the limited space. A horizontal ceiling structural member or access panel shall be permitted in this space provided the location of weight-bearing structural members does not result in a side reach of more than 150 mm (6 in.) to work within the enclosure.

(5) Separation from High-Voltage Equipment.

Where switches, cutouts, or other equipment operating at 1000 volts, nominal, or less are installed in a vault, room, or enclosure where there are exposed live parts or exposed wiring operating over 1000 volts, nominal, the high-voltage equipment shall be effectively separated from the space occupied by the low-voltage equipment by a suitable partition, fence, or screen.

(6) Grade, Floor, or Working Platform.

The grade, floor, or platform in the required working space shall be kept clear and as level and flat as practical for the entire required depth and width of the working space.

Statement of Problem and Substantiation for Public Comment

This Public Comment is in regard to PI 2159. The intention of both the PI and the PC is to move the text of 110.26(A)(1)(b) to the parent text of 110.26(A). The current text is in the Depth section of 110.26(A). As the allowance is currently written, it doesn't apply to either Width or Height. Moving the text to the parent text allows modifications to Depth, Width, and Height; not just Depth.

Related Item

• 2159-NFPA 70-2023

Submitter Information Verification

Submitter Full Name: Eric Stromberg
Organization: Los Alamos National Laboratory
Affiliation: Self
Street Address:
City:
State:
Zip:

Submittal Date: Sun Aug 11 17:14:39 EDT 2024
Committee: NEC-P01

Public Comment No. 1299-NFPA 70-2024 [Section No. 110.26(A)(1)]

(1) Depth of Working Space.

The depth of the working space in the direction of live parts shall not be less than that specified in Table 110.26(A)(1) unless the requirements of 110.26(A)(1)(a), 110.26(A)(1)(b), or 110.26(A)(1)(c) are met. Distances shall be measured from the live parts, if such are exposed, or from the enclosure front or opening, if such live parts are enclosed.

Table 110.26(A)(1) Working Spaces

Nominal Voltage to Ground	Minimum Clear Distance		
	Condition 1	Condition 2	Condition 3
0–150 ac or dc	900 mm (3 ft)	900 mm (3 ft)	900 mm (3 ft)
151–600 ac or dc	900 mm (3 ft)	1.0 m (3 ft 6 in.)	1.2 m (4 ft)
601–1000 ac or 601-1500 dc	900 mm (3 ft)	1.2 m (4 ft)	1.5 m (5 ft)

Note: Where the conditions are as follows:

Condition 1 — Exposed or enclosed live parts on one side of the working space and no exposed or enclosed live or grounded parts on the other side of the working space, or exposed or enclosed live parts on both sides of the working space that are effectively guarded by insulating materials.

Condition 2 — Exposed or enclosed live parts on one side of the working space and grounded parts on the other side of the working space. Concrete, brick, or tile walls shall be considered as grounded.

Condition 3 — Exposed or enclosed live parts on both sides of the working space.

(a) *Dead-Front Assemblies.* Working space shall not be required in the back or sides of assemblies, such as dead-front switchboards, switchgear, or motor control centers, where all connections and all renewable or adjustable parts, such as fuses or switches, are accessible from locations other than the back or sides. Where rear access is required to work on nonelectrical parts on the back of enclosed equipment, a minimum horizontal working space of 762 mm (30 in.) shall be provided.

(b) *Low Voltage.* By special permission, smaller working spaces shall be permitted where all exposed live parts operate at not greater than 30 volts rms, 42 volts peak, or 60 volts dc.

(c) *Existing Buildings.* In existing buildings where electrical equipment is being replaced, Condition 2 working clearance shall be permitted between dead-front switchboards, switchgear, enclosed panelboards, or motor control centers located across the aisle from each other where conditions of maintenance and supervision ensure that written procedures have been adopted to prohibit equipment on both sides of the aisle from being open at the same time and qualified persons who are authorized will service the installation.

Statement of Problem and Substantiation for Public Comment

This Public Comment is submitted on behalf of a Correlating Committee Medium Voltage Task Group consisting of Robert Osborne (Chair), Paul Barnhart, Lou Grahor, Donny Cook, Scott Higgins, Mike Querry, Roger McDaniel, Dave Burns, Rod Belisle, Kevin Rogers, Tony Ricciuti, Paul Knapp, Paul Sullivan, George Smith, Eric Simmon, Kevin Arnold, Larry Wildermuth, and Kyle Krueger.

This first draft public comment updates the values in Table 110.26(A)(1), which are needed to address 1001 to 1500 volts dc, which were missing from the table. The minimum clear distances added for 1001 to 1500 volts dc are consistent with the distances in the existing Table 110.34(A).

Related Item

• CC Note No. 20

Submitter Information Verification

Submitter Full Name: Robert Osborne
Organization: UL Solutions
Street Address:
City:
State:
Zip:

Submittal Date: Tue Aug 20 12:55:20 EDT 2024
Committee: NEC-P01

Public Comment No. 1374-NFPA 70-2024 [Section No. 110.26(A)(1)]

(1) Depth of Working Space.

The depth of the working space in the direction of live parts shall not be less than that specified in Table 110.26(A)(1) unless the requirements of 110.26(A)(1)(a), 110.26(A)(1)(b), or 110.26(A)(1)(c) are met. Distances shall be measured from the live parts, if such are exposed, or from the enclosure front or opening, if such live parts are enclosed.

Table 110.26(A)(1) Working Spaces

Nominal Voltage to Ground	Minimum Clear Distance		
	Condition 1	Condition 2	Condition 3
0–150	900 mm (3 ft)	900 mm (3 ft)	900 mm (3 ft)
151–600	900 mm (3 ft)	1.0 m (3 ft 6 in.)	1.2 m (4 ft)
601–1000	900 mm (3 ft)	1.2 m (4 ft)	1.5 m (5 ft)

Note: Where the conditions are as follows:

Condition 1 — Exposed or enclosed live parts on one side of the working space and no exposed or enclosed live or grounded parts on the other side of the working space, or exposed or enclosed live parts on both sides of the working space that are effectively guarded by insulating materials.

Condition 2 — Exposed or enclosed live parts on one side of the working space and grounded parts on the other side of the working space. Concrete, brick, or tile walls shall be considered as grounded.

Condition 3 — Exposed or enclosed live parts on both sides of the working space.

(a) *Dead-Front Assemblies.* Working space shall not be required in the back or sides of assemblies, such as dead-front switchboards, switchgear, or motor control centers, where all connections and all renewable or adjustable parts, such as fuses or switches, are accessible from locations other than the back or sides. Where rear access is required to work on nonelectrical parts on the back of enclosed equipment, a minimum horizontal working space of 762 mm (30 in.) shall be provided.

(b) ~~*Low Voltage*~~ *Limited-Energy Systems* . By special permission, smaller working spaces shall be permitted ~~where all exposed live parts operate at not greater than 30 volts rms, 42 volts peak, or 60 volts dc~~ for limited-energy system installations .

(c) *Existing Buildings.* In existing buildings where electrical equipment is being replaced, Condition 2 working clearance shall be permitted between dead-front switchboards, switchgear, enclosed panelboards, or motor control centers located across the aisle from each other where conditions of maintenance and supervision ensure that written procedures have been adopted to prohibit equipment on both sides of the aisle from being open at the same time and qualified persons who are authorized will service the installation.

Additional Proposed Changes

File Name	Description	Approved
Limited_Energy_Roster-2026_2nd_Draft.pdf	Limited-Energy Task Group Roster-2nd Draft	

Statement of Problem and Substantiation for Public Comment

This public comment is submitted on behalf of the Limited-Energy Task Group (see attached roster) to modify the special permission requirement, so it applies to all limited-energy system installations. The voltage threshold excludes some limited-energy systems as they operate at higher than the listed thresholds. Limited-energy systems, by definition, in article 100 mitigate exposure to shock and fire hazards. This modification would limit this permissive rule to those systems (including communications) that fall under the limited-energy system definition. Additionally, with the removal of Chapter 8 independence, the requirements in 110.26 would now apply to communications system installations where they had not previously applied, this proposed revision would remedy that issues as well.

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 1370-NFPA 70-2024 [Definition: Limited-Energy System.]	PC revising limited-energy definition

Related Item

- FR-9191

Submitter Information Verification

Submitter Full Name: Kyle Krueger
Organization: NECA
Affiliation: NECA
Street Address:
City:
State:
Zip:
Submittal Date: Wed Aug 21 16:05:38 EDT 2024
Committee: NEC-P01

Limited Energy Task Group [2nd Draft]					
No.	**First Name**	**Last Name**	**Class.**	**Organization**	**Other Committees**
1	Kyle	Krueger	[I/M]	NECA	NEC-Correlating Comittee CMP 3 NFPA 72-Correlating Committee
2	Ernie	Gallo	[U/T]	NEBScore	
3	Derrick	Atkins	[L]	Minneapolis Electrical JA	NEC-Correlating Committee CMP 5
4	Anthony	Tassone	[R/T]	UL Solutions	CMP 3 CMP 16
5	Chad	Jones	[M]	Cisco	CMP 3
6	Sam	Rokowski	[I/M]	Maddox Inc.	CMP 3
7	George	Bish	[M]	Amazon/Ring Protect Inc	CMP 16
8	Trevor	Bowmer	[U]	Telecom Consulting	NEC Correlating Committee CMP 16
9	Ronald	Tellas	[M]	CCCA	CMP 3 CMP 16
10	Tim	Mikloiche	[E]	IAEI	CMP 3
11	Ryan	Jackosn	[M]	Steel Tube Industry	CMP 3
12	Diana	Lettkeman	[M]	Dish	CMP 16
13	John	Kacperski	[L]	IBEW	CMP 16

Public Comment No. 2073-NFPA 70-2024 [Section No. 110.26(A)(1)]

(1) Depth of Working Space.

The depth of the working space in the direction of live parts shall not be less than that specified in Table 110.26(A)(1) unless the requirements of 110.26(A)(1)(a), 110.26(A)(1)(b), or 110.26(A)(1)(c) are met. Distances shall be measured from the ~~live parts, if such are exposed, or from the~~ enclosure front or opening, if such live parts are enclosed.

Table 110.26(A)(1) Working Spaces

Nominal Voltage to Ground	Minimum Clear Distance		
	Condition 1	Condition 2	Condition 3
0–150	900 mm (3 ft)	900 mm (3 ft)	900 mm (3 ft)
151–600	900 mm (3 ft)	1.0 m (3 ft 6 in.)	1.2 m (4 ft)
601–1000	900 mm (3 ft)	1.2 m (4 ft)	1.5 m (5 ft)

Note: Where the conditions are as follows:

Condition 1 — Exposed or enclosed live parts on one side of the working space and no exposed or enclosed live or grounded parts on the other side of the working space, or exposed or enclosed live parts on both sides of the working space that are effectively guarded by insulating materials.

Condition 2 — Exposed or enclosed live parts on one side of the working space and grounded parts on the other side of the working space. Concrete, brick, or tile walls shall be considered as grounded.

Condition 3 — Exposed or enclosed live parts on both sides of the working space.

(a) *Dead-Front Assemblies.* Working space shall not be required in the back or sides of assemblies, such as dead-front switchboards, switchgear, or motor control centers, where all connections and all renewable or adjustable parts, such as fuses or switches, are accessible from locations other than the back or sides. Where rear access is required to work on nonelectrical parts on the back of enclosed equipment, a minimum horizontal working space of 762 mm (30 in.) shall be provided.

(b) *Low Voltage.* By special permission, smaller working spaces shall be permitted where all exposed live parts operate at not greater than 30 volts rms, 42 volts peak, or 60 volts dc.

(c) *Existing Buildings.* In existing buildings where electrical equipment is being replaced, Condition 2 working clearance shall be permitted between dead-front switchboards, switchgear, enclosed panelboards, or motor control centers located across the aisle from each other where conditions of maintenance and supervision ensure that written procedures have been adopted to prohibit equipment on both sides of the aisle from being open at the same time and qualified persons who are authorized will service the installation.

Statement of Problem and Substantiation for Public Comment

Working distance should be measured from the enclosure front or opening and not the live parts. The live parts could be installed where they are recessed from the enclosure front or opening, which reduces the working distance outside the equipment, such as switchgear where the exposed live parts (Bus Structure), could be 2 feet from the opening, leaving 1 foot outside the equipment. The revision deletes "live parts, if such are exposed; or from the".

Related Item

• FR-9207

Submitter Information Verification

Submitter Full Name: Daniel Neeser
Organization: Eaton Bussmann Division
Street Address:
City:
State:
Zip:

Submittal Date: Wed Aug 28 18:07:09 EDT 2024
Committee: NEC-P01

Public Comment No. 875-NFPA 70-2024 [Section No. 110.26(A)(1)]

(1) Depth of Working Space.

The depth of the working space in the direction of live parts shall not be less than that specified in Table 110.26(A)(1) unless the requirements of 110.26(A)(1)(a), 110.26(A)(1)(b), or 110.26(A)(1)(c) are met. Distances shall be measured from the live parts, if such are exposed, or from the enclosure front or opening, if such live parts are enclosed.

Table 110.26(A)(1) Working Spaces

Nominal Voltage to Ground	Minimum Clear Distance		
	Condition 1	Condition 2	Condition 3
0–150	900 mm (3 ft)	900 mm (3 ft)	900 mm (3 ft)
151–600	900 mm (3 ft)	1.0 m (3 ft 6 in.)	1.2 m (4 ft)
601–1000	900 mm (3 ft)	1.2 m (4 ft)	1.5 m (5 ft)

Note: Where the conditions are as follows:

Condition 1 — Exposed or enclosed live parts on one side of the working space and no exposed or enclosed live or grounded parts on the other side of the working space, or exposed or enclosed live parts on both sides of the working space that are effectively guarded by insulating materials.

Condition 2 — Exposed or enclosed live parts on one side of the working space and grounded parts on the other side of the working space. Concrete, brick, or tile walls shall be considered as grounded.a

Condition 3 — Exposed or enclosed live parts on both sides of the working space.

Exception: Grounded and bonded enclosures of electrical equipment that do not require working space shall not be considered live parts for the purposes of determining working depth conditions.

(a) *Dead-Front Assemblies.* Working space shall not be required in the back or sides of assemblies, such as dead-front switchboards, switchgear, or motor control centers, where all connections and all renewable or adjustable parts, such as fuses or switches, are accessible from locations other than the back or sides. Where rear access is required to work on nonelectrical parts on the back of enclosed equipment, a minimum horizontal working space of 762 mm (30 in.) shall be provided.

(b) *Low Voltage.* By special permission, smaller working spaces shall be permitted where all exposed live parts operate at not greater than 30 volts rms, 42 volts peak, or 60 volts dc.

(c) *Existing Buildings.* In existing buildings where electrical equipment is being replaced, Condition 2 working clearance shall be permitted between dead-front switchboards, switchgear, enclosed panelboards, or motor control centers located across the aisle from each other where conditions of maintenance and supervision ensure that written procedures have been adopted to prohibit equipment on both sides of the aisle from being open at the same time and qualified persons who are authorized will service the installation.

Statement of Problem and Substantiation for Public Comment

There are types of electrical equipment that do not require working space by the definition of 110.26(A). This added verbiage is intended to clarify that when determining working space requirements for nearby equipment, the grounded enclosure may be treated as a grounded surface even though it contains live parts since those parts would not be exposed while energized.

Related Item

• FR-9207

Submitter Information Verification

Submitter Full Name: Samuel Fopma
Organization: Interstates
Affiliation: IEC
Street Address:
City:
State:
Zip:

Submittal Date: Wed Aug 07 09:51:16 EDT 2024
Committee: NEC-P01

Public Comment No. 1301-NFPA 70-2024 [Section No. 110.26(A)(5)]

(5) Separation from High-Voltage Equipment.

Where switches, cutouts, or other equipment operating at 1000 volts ac , 1500 volts dc, nominal, or less are installed in a vault, room, or enclosure where there are exposed live parts or exposed wiring operating over 1000 volts ac , 1500 volts dc, nominal, the high-voltage equipment shall be effectively separated from the space occupied by the ~~low-voltage equipment~~ equipment operating at 1000 volts ac, 1500 volts dc, nominal, or less by a suitable partition, fence, or screen.

Statement of Problem and Substantiation for Public Comment

This Public Comment is submitted on behalf of a Correlating Committee Medium Voltage Task Group consisting of Robert Osborne (Chair), Paul Barnhart, Lou Grahor, Donny Cook, Scott Higgins, Mike Querry, Roger McDaniel, Dave Burns, Rod Belisle, Kevin Rogers, Tony Ricciuti, Paul Knapp, Paul Sullivan, George Smith, Eric Simmon, Kevin Arnold, Larry Wildermuth, and Kyle Krueger.

This change is needed to address the voltage demarcation for 1001 volts to 1500 volts dc. It also corrects the use of the term “low voltage” which is intended for less than 1000 volts, ac, or 1500 volts dc, but the term “low voltage” is not a defined term. The term “high voltage” was not modified because it is now defined in the 2026 first draft text as used in this requirement, although it was previously defined in 2023 as only 1000V or less without reference to 1500 volts dc.

Related Item

• CC Note No. 20

Submitter Information Verification

Submitter Full Name: Robert Osborne
Organization: UL Solutions
Street Address:
City:
State:
Zip:

Submittal Date: Tue Aug 20 13:04:15 EDT 2024
Committee: NEC-P01

Public Comment No. 1409-NFPA 70-2024 [Section No. 110.26(A)(6)]

(6) Grade, Floor, or Working Platform.

The grade, floor, or platform in the required working space shall be kept clear and as level and flat ~~as practical for~~ (less than 1/4in. (6.3mm) abrupt changes) as practical for the entire required depth and width of the working space.

Statement of Problem and Substantiation for Public Comment

Article 110.26(A)(6) uses vague language with the term "flat". Article 100 does not provide a definition for this term. Depending on AHJ, "flat" can be abrupt/sloped changes of elevations from inches to absolute no changes within the working space. This issue is very common from engineered equipment that comes in multiple skids being mounted together or lining up with existing concrete pads or with substation with an equipment pad and gravel. The "abrupt changes in elevation of walking surfaces" is being extracted from NFPA 101-2024 article 7.1.6.2 Changes in Elevation to be consistent thru multiple NFPA codes.

Related Item

• Working Space Grade, Floor, or Working Platform

Submitter Information Verification

Submitter Full Name: David Beltran Feliciano
Organization: Savannah River Nuclear Solutions, LLC
Affiliation: Department of Energy
Street Address:
City:
State:
Zip:

Submittal Date: Thu Aug 22 14:09:50 EDT 2024
Committee: NEC-P01

Public Comment No. 1159-NFPA 70-2024 [Section No. 110.26(C)(2)]

(2) Large Equipment.

For large equipment that contains overcurrent devices, switching devices, or control devices, there shall be one entrance to and egress from the required working space not less than 610 mm (24 in.) wide and 2.0 m (6½ ft) high at each end of the working space. This requirement shall apply to either of the following conditions:

(1) For equipment rated 1200 amperes or more and over 1.8 m (6 ft) wide

(2) For separate pieces of equipment that combine for more than 1200 amperes and over 1.8 m (6 ft) wide.

(3) For service disconnecting means installed in accordance with 230.71(B) where the combined ampere rating is 1200 amperes or more and where the combined width is over 1.8 m (6 ft)

A single entrance to and egress from the required working space shall be permitted where either of the conditions in 110.26(C)(2)(a) or 110.26(C)(2)(b) is met.

(a) *Unobstructed Egress.* Where the location permits a continuous and unobstructed way of egress travel, a single entrance to the working space shall be permitted.

(b) *Extra Working Space.* Where the depth of the working space is twice that required by 110.26(A)(1), a single entrance shall be permitted. It shall be located such that the distance from the equipment to the nearest edge of the entrance is not less than the minimum clear distance specified in Table 110.26(A)(1) for equipment operating at that voltage and in that condition.

Additional Proposed Changes

File Name	Description	Approved
110.26_C_2_.pdf	Sketch showing trap locations	
IMG_0043.jpg	Image of a switchgear lineup	

Statement of Problem and Substantiation for Public Comment

Public Input #1751 was resolved using the panel statement that the revision would create confusion by combining it with the single piece of equipment. This revision creates a new (2) to mirror that of the 1200 ampere and more, and over 6 ft for large service equipment. Service equipment requires the two paths out of the working space for safety therefore, equipment 1200 amperes and more, and over 6 ft in width should require at least 2 paths out of the working space. Without the second egress, a worker could become trapped in the isle between piece of equipment as shown in the attachments.

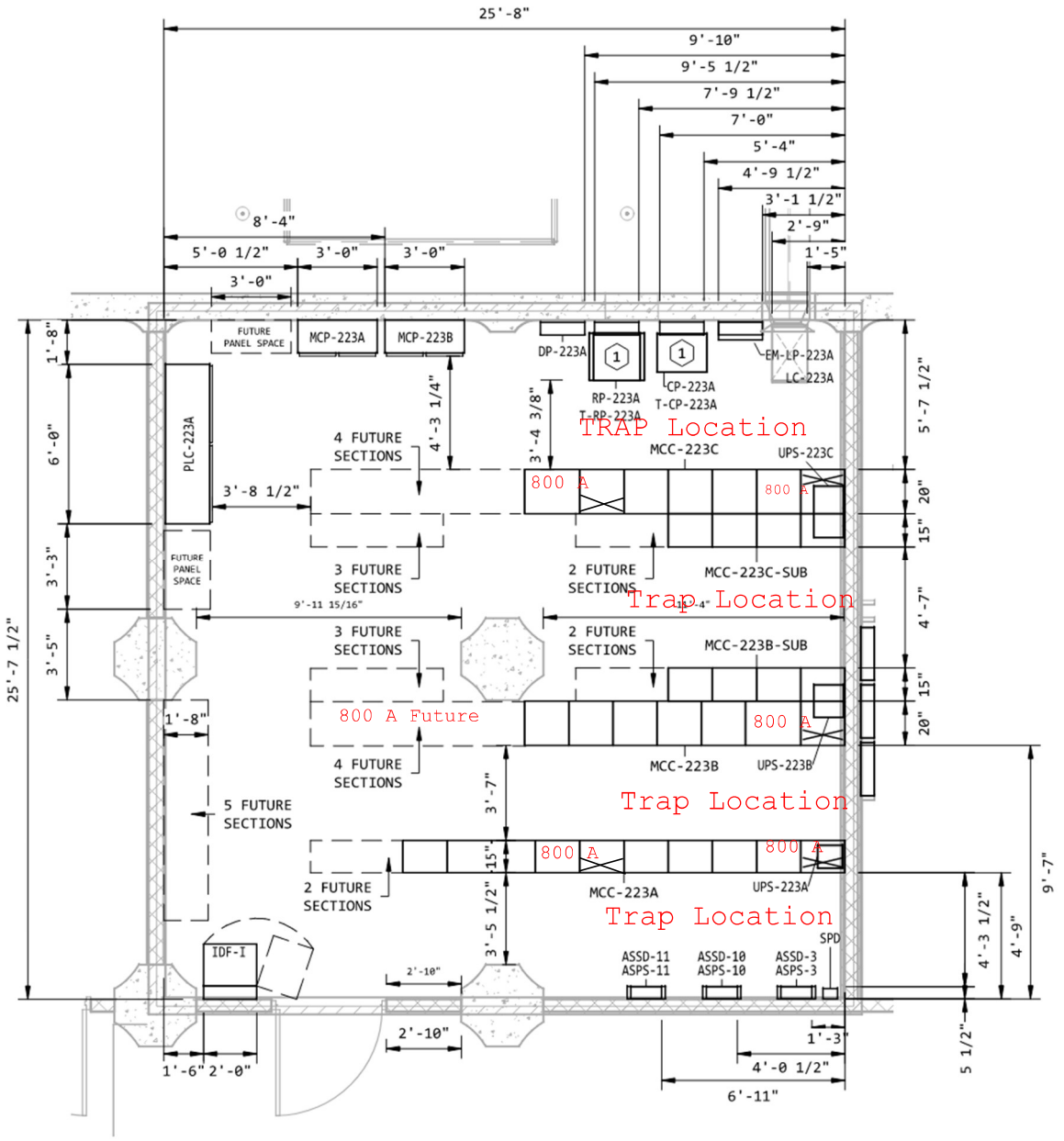
Related Item

• PI-1751

Submitter Information Verification

Submitter Full Name: David Hittinger
Organization: Independent Electrical Contractors
Affiliation: IEC Codes and Standards
Street Address:
City:
State:
Zip:

Submittal Date: Fri Aug 16 09:59:44 EDT 2024
Committee: NEC-P01


25'-8"
9'-10"
9'-5 1/2"
7'-9 1/2"
7'-0"
5'-4"
4'-9 1/2"
3'-1 1/2"
2'-9"
1'-5"
8'-4"
5'-0 1/2"
3'-0"
3'-0"
3'-0"
FUTURE PANEL SPACE
MCP-223A
MCP-223B
DP-223A
RP-223A
T-RP-223A
CP-223A
T-CP-223A
EM-LP-223A
LC-223A
TRAP Location
MCC-223C
UPS-223C
800 A
PLC-223A
4 FUTURE SECTIONS
3 FUTURE SECTIONS
2 FUTURE SECTIONS
MCC-223C-SUB
Trap Location
MCC-223B-SUB
800 A Future
MCC-223B
UPS-223B
5 FUTURE SECTIONS
MCC-223A
UPS-223A
IDF-I
ASSD-11
ASPS-11
ASSD-10
ASPS-10
ASSD-3
ASPS-3
SPD
1'-8"
6'-0"
3'-3"
3'-5"
25'-7 1/2"
4'-3 1/4"
3'-4 3/8"
3'-8 1/2"
9'-11 15/16"
3'-7"
15"
3'-5 1/2"
2'-10"
1'-6"
2'-0"
1'-3"
4'-0 1/2"
6'-11"
5 1/2"
4'-3 1/2"
4'-9"
9'-7"
5'-7 1/2"
20"
4'-7"


DANGER

Public Comment No. 920-NFPA 70-2024 [Section No. 110.26(C)(3)]

(3) Personnel Doors.

Where equipment rated 800 amperes or more that contains overcurrent devices, switching devices, or control devices is installed and there is a personnel ~~door(s) intended~~ doors intended for entrance to and egress from the working space less than 7.6 m (25 ft) from the nearest edge of the working space, the ~~door(s) shall~~ doors shall open at least 90 degrees in the direction of egress and be equipped with listed panic hardware or listed fire exit hardware.

Informational Note: See UL 305, *Standard For Panic Hardware*, for additional information on panic hardware, and see UL 10C, *Standard for Safety for Positive Pressure Fire Tests of Door Assemblies*, for additional information.

Statement of Problem and Substantiation for Public Comment

This revision revision should be considered globally as well as here to remove "(s)" and and make the associated word plural is made for correlation with similar requirements and to comply with the NEC Style Manual as plural is the appropriate tense of the word unless singular is specifically intended. Per 3.5.3, Plural, of the NEC Style manual, "unless referring to a single item of equipment, references to electrical components and parts shall be plural rather than singular. This results in greater consistency and makes it clear that the requirement refers to all components or parts of a given type or class."

Related Item

• PI-4234 • PI-4234

Submitter Information Verification

Submitter Full Name: Palmer Hickman
Organization: Electrical Training Alliance
Street Address:
City:
State:
Zip:

Submittal Date: Wed Aug 07 15:39:50 EDT 2024
Committee: NEC-P01

Public Comment No. 1419-NFPA 70-2024 [Section No. 110.26(D)]

(D) Illumination.

Illumination shall be provided for all working spaces about service equipment, switchboards, switchgear, enclosed panelboards, or motor control centers

~~installed~~
installed ~~indoors~~ . Control

~~of all luminaire(s)~~
by automatic means shall not be permitted to control all illumination within the working space. Additional lighting outlets shall not be required where the

~~work space~~
workspace is illuminated by an adjacent light source or as permitted

~~by 210~~
by 210 .70(A)(1) , . Outdoor remote locations may be controlled by an approved automatic means or switched controlled device.

Exception No. 1 , for switched receptacles.

Additional Proposed Changes

File Name	Description	Approved
20240822_213552.jpg	These are a service at night. One is with a flash the other is in the dark. This shows why illumination is needed for servicing at night.	
20240822_213535.jpg	These are a service at night. One is with a flash the other is in the dark. This shows why illumination is needed for servicing at night.	

Statement of Problem and Substantiation for Public Comment

Outdoor service equipment, switchboards, switchgear, panelboards, or motor control centers may be accessed for maintenance or service at night. A flashlight may be the only means of illumination. For remote locations a simple switch-controlled luminaire would meet this requirement.
There are several PI's with alternate wording for the panel to consider.

Related Item

• 1422-NFPA 70-2024

Submitter Information Verification

Submitter Full Name: Richard Hollander
Organization: Shums Coda Associates
Street Address:
City:
State:
Zip:

Submittal Date: Thu Aug 22 15:20:45 EDT 2024
Committee: NEC-P01

Public Comment No. 1422-NFPA 70-2024 [Section No. 110.26(D)]

(D) Illumination.

Illumination shall be provided for all working spaces about service equipment, switchboards, switchgear, enclosed panelboards, or motor control centers

~~installed~~
installed ~~indoors~~ . Control

~~of all luminaire(s)~~
by automatic means shall not be permitted to control all illumination within the working space. Additional lighting outlets shall not be required where the work space is illuminated by an adjacent light source or as permitted

~~by 210~~
by 210 .70(A)(1) , .

Exception No.

~~1~~
1: for switched receptacles.

Exception No.2: Outdoor remote locations may be controlled by an approved automatic means or switched controlled device.

Additional Proposed Changes

File Name	Description	Approved
20240822_213552.jpg	These are a service at night. One is with a flash the other is in the dark. This shows why illumination is needed for servicing at night.	
20240822_213535.jpg	These are a service at night. One is with a flash the other is in the dark. This shows why illumination is needed for servicing at night.	

Statement of Problem and Substantiation for Public Comment

Outdoor service equipment, switchboards, switchgear, panelboards, or motor control centers may be accessed for maintenance or service at night. A flashlight may be the only means of illumination. For remote locations a simple switch-controlled luminaire would meet this requirement.
There are several PI's with alternate wording for the panel to consider.

Related Item

• 1419-NFPA 70-2024

Submitter Information Verification

Submitter Full Name: Richard Hollander
Organization: Shums Coda Associates
Street Address:
City:
State:
Zip:

Submittal Date: Thu Aug 22 15:26:51 EDT 2024
Committee: NEC-P01

Public Comment No. 2074-NFPA 70-2024 [Section No. 110.26(D)]

(D) Illumination.

Illumination shall be provided for all working spaces about service equipment, switchboards, switchgear, enclosed panelboards, or motor control centers installed indoors. Control of all luminaire(s) by automatic means shall not be permitted ~~within~~ for the working space. Additional lighting outlets shall not be required where the work space is illuminated by an adjacent light source or as permitted by 210.70(A)(1) Exception No. 1 for switched receptacles.

Statement of Problem and Substantiation for Public Comment

Per the current wording, a person would be allowed to control the working space illumination from outside the working space, which should not be allowed.
As such the term "within" has been revised to "for".

Related Item

• FR-9225

Submitter Information Verification

Submitter Full Name: Daniel Neeser
Organization: Eaton Bussmann Division
Street Address:
City:
State:
Zip:

Submittal Date: Wed Aug 28 18:12:03 EDT 2024
Committee: NEC-P01

Public Comment No. 916-NFPA 70-2024 [Section No. 110.26(D)]

(D) Illumination.

Illumination shall be provided for all working spaces about service equipment, switchboards, switchgear, enclosed panelboards, or motor control centers installed indoors. Control of all ~~luminaire(s) by~~ luminaires by automatic means shall not be permitted within the working space. Additional lighting outlets shall not be required where the work space is illuminated by an adjacent light source or as permitted by 210.70(A)(1) Exception No. 1 for switched receptacles.

Statement of Problem and Substantiation for Public Comment

This revision to remove "(s)" and and make the associated word plural is made to comply with the NEC Style Manual as plural is the appropriate tense of the word unless singular is specifically intended. Per 3.5.3, Plural, of the NEC Style manual, "unless referring to a single item of equipment, references to electrical components and parts shall be plural rather than singular. This results in greater consistency and makes it clear that the requirement refers to all components or parts of a given type or class."

Related Item

• FR-9225

Submitter Information Verification

Submitter Full Name: Palmer Hickman
Organization: Electrical Training Alliance
Street Address:
City:
State:
Zip:

Submittal Date: Wed Aug 07 15:14:20 EDT 2024
Committee: NEC-P01

Public Comment No. 1425-NFPA 70-2024 [Section No. 110.26(E)]

(E) Dedicated Equipment Space.

All service equipment, switchboards, switchgear, enclosed panelboards, and motor control centers shall be located in dedicated spaces and protected from damage.

Exception: Control equipment that by its very nature or because of other rules of the code must be adjacent to or within sight of its operating machinery shall be permitted in those locations.

(1) Indoor.

Indoor installations shall comply with 110.26(E)(1)(a) through 110.26(E)(1)(d).

(a) *Dedicated Electrical Space.* The space equal to the width and depth of the equipment and extending from the floor to a height of 1.8 m (6 ft) above the equipment or to the structural ceiling, whichever is lower, shall be dedicated to the electrical installation. No piping, ducts, leak protection apparatus, or other equipment foreign to the electrical installation shall be located in this zone.

Exception: Suspended ceilings with removable panels shall be permitted within the 1.8 m (6 ft) zone.

(b) *Foreign Systems.* The area above the dedicated space required by 110.26(E)(1)(a) shall be permitted to contain foreign systems, provided protection is installed to avoid damage to the electrical equipment from condensation, leaks, or breaks in such foreign systems.

(c) *Sprinkler Protection.* Sprinkler protection shall be permitted for the dedicated space where the piping complies with this section.

(d) *Suspended Ceilings.* A dropped, suspended, or similar ceiling that does not add strength to the building structure shall not be considered a structural ceiling.

(2) Outdoor.

Outdoor installations shall comply with 110.26(E)(2)(a) through 110.26(E)(2)(c).

(a) *Installation Requirements.* Outdoor electrical equipment shall be the following:

(2) Installed in identified enclosures

(3) Protected from accidental contact by unauthorized personnel or by vehicular traffic

(4) Protected from accidental spillage or leakage from piping systems

(e) *Work Space.* The working clearance space shall include the zone described in 110.26(A). No architectural appurtenance or other equipment shall be located in this zone.

(f) *Dedicated Equipment Space.* The space equal to the width and depth of the equipment, and extending from grade to a height of 1.8 m (6 ft) above the equipment, shall be dedicated to the electrical installation. No piping or other equipment foreign to the electrical installation shall be located in this zone.

(4) . Illumination shall be provided for all working spaces about service equipment, switchboards, switchgear, panelboards, or motor control centers installed. Outdoor remote locations may be controlled by an approved automatic means . or switched controlled device .

Exception: Structural overhangs or roof extensions shall be permitted in this zone.

Additional Proposed Changes

File Name	Description	Approved
20240822_213552.jpg	These are a service at night. One is with a flash the other is in the dark. This shows why illumination is needed for servicing at night.	
20240822_213535.jpg	These are a service at night. One is with a flash the other is in the dark. This shows why illumination is needed for servicing at night.	

Statement of Problem and Substantiation for Public Comment

Outdoor service equipment, switchboards, switchgear, panelboards, or motor control centers may be accessed for maintenance or service at night. A flashlight may be the only means of illumination. For remote locations a simple switch-controlled luminaire would meet this requirement.
There are several PI's with alternate wording for the panel to consider.

Related Item

- 1427-NFPA 70-2024

Submitter Information Verification

Submitter Full Name: Richard Hollander
Organization: Shums Coda Associates
Street Address:
City:
State:
Zip:

Submittal Date: Thu Aug 22 15:31:07 EDT 2024
Committee: NEC-P01

Public Comment No. 1427-NFPA 70-2024 [Section No. 110.26(E)]

(E) Dedicated Equipment Space.

All service equipment, switchboards, switchgear, enclosed panelboards, and motor control centers shall be located in dedicated spaces and protected from damage.

Exception: Control equipment that by its very nature or because of other rules of the code must be adjacent to or within sight of its operating machinery shall be permitted in those locations.

(1) Indoor.

Indoor installations shall comply with 110.26(E)(1)(a) through 110.26(E)(1)(d).

(a) *Dedicated Electrical Space.* The space equal to the width and depth of the equipment and extending from the floor to a height of 1.8 m (6 ft) above the equipment or to the structural ceiling, whichever is lower, shall be dedicated to the electrical installation. No piping, ducts, leak protection apparatus, or other equipment foreign to the electrical installation shall be located in this zone.

Exception: Suspended ceilings with removable panels shall be permitted within the 1.8 m (6 ft) zone.

(b) *Foreign Systems.* The area above the dedicated space required by 110.26(E)(1)(a) shall be permitted to contain foreign systems, provided protection is installed to avoid damage to the electrical equipment from condensation, leaks, or breaks in such foreign systems.

(c) *Sprinkler Protection.* Sprinkler protection shall be permitted for the dedicated space where the piping complies with this section.

(d) *Suspended Ceilings.* A dropped, suspended, or similar ceiling that does not add strength to the building structure shall not be considered a structural ceiling.

(2) Outdoor.

Outdoor installations shall comply with 110.26(E)(2)(a) through 110.26(E)(2)(c).

(a) *Installation Requirements.* Outdoor electrical equipment shall be the following:

(2) Installed in identified enclosures

(3) Protected from accidental contact by unauthorized personnel or by vehicular traffic

(4) Protected from accidental spillage or leakage from piping systems

(e) *Work Space.* The working clearance space shall include the zone described in 110.26(A). No architectural appurtenance or other equipment shall be located in this zone.

(f) *Dedicated Equipment Space.* The space equal to the width and depth of the equipment, and extending from grade to a height of 1.8 m (6 ft) above the equipment, shall be dedicated to the electrical installation. No piping or other equipment foreign to the electrical installation shall be located in this zone.

(4) Illumination shall be provided for all working spaces about service equipment, switchboards, switchgear, panelboards, or motor control centers installed.

Exception: Structural overhangs or roof extensions shall be permitted in this zone.

Exception: Outdoor remote locations may be controlled by an approved automatic means or switched controlled device .

Additional Proposed Changes

File Name	Description	Approved
20240822_213552.jpg	These are a service at night. One is with a flash the other is in the dark. This shows why illumination is needed for servicing at night.	
20240822_213535.jpg	These are a service at night. One is with a flash the other is in the dark. This shows why illumination is needed for servicing at night.	

Statement of Problem and Substantiation for Public Comment

Outdoor service equipment, switchboards, switchgear, panelboards, or motor control centers may be accessed for maintenance or service at night. A flashlight may be the only means of illumination. For remote locations a simple switch-controlled luminaire would

meet this requirement.
There are several PI's with alternate wording for the panel to consider.

Related Item

• 1425-NFPA 70-2024

Submitter Information Verification

Submitter Full Name: Richard Hollander
Organization: Shums Coda Associates
Street Address:
City:
State:
Zip:

Submittal Date: Thu Aug 22 15:34:42 EDT 2024
Committee: NEC-P01

Public Comment No. 2076-NFPA 70-2024 [Section No. 110.26(E) [Excluding any Sub-Sections]]

All service equipment, switchboards, switchgear, ~~enclosed~~ panelboards, and motor control centers shall be located in dedicated spaces and protected from damage.

Exception: Control equipment that by its very nature or because of other rules of the code must be adjacent to or within sight of its operating machinery shall be permitted in those locations.

Statement of Problem and Substantiation for Public Comment

The term "enclosed" should not be added since FR-8903, which deletes the definition of "enclosed panelboard" has been accepted.

Related Item

• FR-9231

Submitter Information Verification

Submitter Full Name: Daniel Neeser
Organization: Eaton Bussmann Division
Street Address:
City:
State:
Zip:

Submittal Date: Wed Aug 28 18:15:21 EDT 2024
Committee: NEC-P01

Public Comment No. 921-NFPA 70-2024 [Section No. 110.26(F)]

(F) Locked Electrical Equipment Rooms or Enclosures.

Electrical equipment rooms or enclosures housing electrical apparatus that are controlled by a ~~lock(s)~~ locks shall be considered accessible to qualified persons.

Statement of Problem and Substantiation for Public Comment

This revision to remove "(s)" and and make the associated word plural is made for correlation with simlar requirements and to comply with the NEC Style Manual as plural is the appropriate tense of the word unless singular is specifically intended. Per 3.5.3, Plural, of the NEC Style manual, "unless referring to a single item of equipment, references to electrical components and parts shall be plural rather than singular. This results in greater consistency and makes it clear that the requirement refers to all components or parts of a given type or class."

Related Item

• PI-3933

Submitter Information Verification

Submitter Full Name: Palmer Hickman
Organization: Electrical Training Alliance
Street Address:
City:
State:
Zip:

Submittal Date: Wed Aug 07 15:44:24 EDT 2024
Committee: NEC-P01

Public Comment No. 811-NFPA 70-2024 [Section No. 110.26 [Excluding any Sub-Sections]]

Working space, and access to and egress from working space, shall be provided and maintained about all electrical equipment to permit ready and safe operation and maintenance of such equipment. Open equipment doors shall not impede access to and egress from the working space. Access or egress is impeded if one or more simultaneously opened equipment doors restrict working space access to be less than 610 mm (24 in.) wide and 2.0 m (6½ ft) high when such doors are or can be opened 90 degrees .

Statement of Problem and Substantiation for Public Comment

The need to stipulate that the worst case possible and therefore is the basis for the determination of whether there is 24 inches of access and egress is where equipment doors are or can be open 90 degrees (perpendicular to the equipment) so that access or egress is impeded if one or more simultaneously opened equipment doors, or personnel doors restrict working space access to be less than 610 mm (24 in.) wide and 2.0 m (6½ ft) high

Related Item

• PI-4234

Submitter Information Verification

Submitter Full Name: Palmer Hickman
Organization: Electrical Training Alliance
Street Address:
City:
State:
Zip:

Submittal Date: Mon Aug 05 16:38:52 EDT 2024
Committee: NEC-P01

Public Comment No. 321-NFPA 70-2024 [Section No. 110.27]

110.27 Guarding of Live Parts.

(A) Live Parts Guarded Against Accidental Contact.

Except as elsewhere required or permitted by this code, live parts of electrical equipment operating at 50 volts ac/dc to 1000 volts ac, 1500 volts dc, nominal shall be guarded against accidental contact by approved enclosures or by any of the following means:

(1) By location in a room, vault, or similar enclosure that is accessible only to qualified persons.

(2) By permanent, substantial partitions or screens arranged so that only qualified persons have access to the space within reach of the live parts. Any openings in such partitions or screens shall be sized and located so that persons are not likely to come into accidental contact with the live parts or to bring conducting objects into contact with them.

(3) By location on a balcony, gallery, or platform elevated and arranged so as to exclude unqualified persons.

(4) By elevation above the floor or other working surface as follows:

a. A minimum of 2.5 m (8 ft) for 50 volts to 300 volts between ungrounded conductors

b. A minimum of 2.6 m (8 ft 6 in.) for 301 volts to 600 volts between ungrounded conductors

c. A minimum of 2.62 m (8 ft 7 in.) for 601 volts to 1000 volts between ungrounded conductors

(B) Prevent Physical Damage.

In locations where electrical equipment is likely to be exposed to physical damage, enclosures or guards shall be so arranged and of such strength as to prevent such damage.

(C) Warning Signs.

Entrances to rooms and other guarded locations that contain exposed live parts shall be marked with conspicuous warning signs forbidding unqualified persons to enter. The marking shall meet the requirements in 110.21(B).

Additional Proposed Changes

File Name	Description	Approved
CN_20.pdf	NEC_CN20	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 20 appeared in the First Draft Report on First Revision No. 9213.

The Correlating Committee directs that CMP 1 review FR 9213 and the voltage limits identified in Table 110.26(A)(1) and Section 110.27(A)(4). Voltage limits in the table, and list item (A)(4) in 110.27 does not address the full voltage range identified in the title of Part II. Namely, requirements for installations with voltages between 1001 and 1500 V dc are missing. CMP is directed to review all requirements in Article 110 to ensure that there is consistency in the voltage limitations (e.g. 1000 volts ac, 1500 volts dc). Additionally, in110.27(C) the wording in the last sentence should be revised to state: “The marking shall comply with 110.21(B)” per 4.1.3 of the NEC Style Manual.

Related Item

• First Revision No. 9213

Submitter Information Verification

Submitter Full Name: CC Notes
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jul 29 16:53:52 EDT 2024
Committee: NEC-P01

Correlating Committee Note No. 20-NFPA 70-2024 [Section No. 110.27]

Submitter Information Verification

Committee: NEC-AAC
Submittal Date: Tue May 07 11:02:57 EDT 2024

Committee Statement

Committee Statement: The Correlating Committee directs that CMP 1 review FR 9213 and the voltage limits identified in Table 110.26(A)(1) and Section 110.27(A)(4). Voltage limits in the table, and list item (A)(4) in 110.27 does not address the full voltage range identified in the title of Part II. Namely, requirements for installations with voltages between 1001 and 1500 V dc are missing. CMP is directed to review all requirements in Article 110 to ensure that there is consistency in the voltage limitations (e.g. 1000 volts ac, 1500 volts dc). Additionally, in 110.27(C) the wording in the last sentence should be revised to state: “The marking shall comply with 110.21(B)” per 4.1.3 of the NEC Style Manual.

First Revision No. 9213-NFPA 70-2024 [Global Input]

Ballot Results

✔ **This item has passed ballot**

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

Not Returned

McDaniel, Roger D.

Affirmative All

Ayer, Lawrence S.
Bowmer, Trevor N.
Hickman, Palmer L.
Holub, Richard A.
Jackson, Peter D.
Kendall, David H.
Manche, Alan
Osborne, Robert D.
Porter, Christine T.

Schultheis, Timothy James

Williams, David A.

Public Comment No. 1723-NFPA 70-2024 [Section No. 110.27(A)]

(A) Live Parts Guarded Against Accidental Contact.

Except as elsewhere required or permitted by this code, live parts of electrical equipment operating at 50 volts ac/dc to 1000 volts ac, 1500 volts dc, nominal shall be guarded against accidental contact by approved enclosures or by any of the following means:

(1) By location in a room, vault, or similar enclosure that is accessible only to qualified persons.

(2) By permanent, substantial partitions or screens arranged so that only qualified persons have access to the space within reach of the live parts. Any openings in such partitions or screens shall be sized and located so that persons are not likely to come into accidental contact with the live parts or to bring conducting objects into contact with them.

(3) By location on a balcony, gallery, or platform elevated and arranged so as to exclude unqualified persons.

(4) ~~By~~ If accessible only to qualified persons and by elevation above the floor or other working surface as follows:

(5) A minimum of 2.5 m (8 ft) for 50 volts to 300 volts between ungrounded conductors

(6) A minimum of 2.6 m (8 ft 6 in.) for 301 volts to 600 volts between ungrounded conductors

(7) A minimum of 2.62 m (8 ft 7 in.) for 601 volts to 1000 volts between ungrounded conductors

Statement of Problem and Substantiation for Public Comment

This public comment is in response to Correlating Committee Note No. 20-NFPA 70-2024 to update the values in 110.27(A)(4), as needed to address 1001 to 1500 volts dc. Unfortunately, any modification to add 1001 to 1500 volts dc to 110.27(A)(4) will require subjective interpretation because there aren't any existing, directly parallel requirements in Art. 110 Part III "Over 1000 volts ac, 1500 volts dc, nominal". The closest Art. 110 Part III requirement to 110.27(A) is Table 110.34(A). However, it is not directly correlative because the 110.34(A) installation is focused on elevation above "work space" and Art. 110 Part III already has requirements for restricting access to high voltage from unqualified persons.

More importantly, this public comment recommends that CMP-1 further consider adding "If accessible only to qualified persons and..." to 110.27(A)(4). This would consider "live parts of electrical equipment" to be considered "guarded against accidental contact" by elevation only in areas accessible only to qualifies persons (or via another acceptable means of access control). As a more conservative safety alternative, remove these elevations as permitted methods of guarding altogether, or only permit them under exceptions for specific equipment or specific controlled installations.

In NFPALink, under 110.27(A)(4) in the Enhanced Content notes:
"The NEC also recognizes the guarding of live parts by elevation. The elevation levels correlate with requirements in ANSI/IEEE C2, National Electrical Safety Code® (NESC®)."

It should be noted that the correlating elevations in the NESC are located in Part 1, and the scope for Part 1 in 101 reads:
"Part 1 of this Code covers the electric supply conductors and equipment, along with the associated structural arrangements in electric supply stations, that are accessible only to qualified personnel."

It should be considered whether it is appropriate to correlate the "guarding of live parts by elevation" values in the NESC with the NEC 110.27(A)(4), and, if so, if live conductors should be considered guarded at the elevations listed in 110.27(A)(4) only if located in areas with controlled access.

NOTE: Due to errors in TerraView, the list items a., b., c., in 110.27(A)(4) are showing as added/modified. However, this is an error with the legislative text and list items a., b., c. were not modified as part of this public comment.

Related Item

• Correlating Committee Note No. 20-NFPA 70-2024

Submitter Information Verification

Submitter Full Name: Kevin Rogers
Organization: University of Wisconsin-Madison
Street Address:
City:
State:
Zip:

Submittal Date: Mon Aug 26 16:56:46 EDT 2024
Committee: NEC-P01

Public Comment No. 1300-NFPA 70-2024 [Section No. 110.27(C)]

(C) Warning Signs.

Entrances to rooms and other guarded locations that contain exposed live parts shall be marked with conspicuous warning signs forbidding unqualified persons to enter. The marking shall ~~meet the requirements in~~ comply with 110.21(B).

Statement of Problem and Substantiation for Public Comment

This Public Comment is submitted on behalf of a Correlating Committee Medium Voltage Task Group consisting of Robert Osborne (Chair), Paul Barnhart, Lou Grahor, Donny Cook, Scott Higgins, Mike Querry, Roger McDaniel, Dave Burns, Rod Belisle, Kevin Rogers, Tony Ricciuti, Paul Knapp, Paul Sullivan, George Smith, Eric Simmon, Kevin Arnold, Larry Wildermuth, and Kyle Krueger.

Changed “meet the requirements in” to “comply with” per 4.1.3 of the NEC Style Manual.

Related Item

• CC Note No. 20

Submitter Information Verification

Submitter Full Name: Robert Osborne
Organization: UL Solutions
Street Address:
City:
State:
Zip:

Submittal Date: Tue Aug 20 13:01:37 EDT 2024
Committee: NEC-P01

Public Comment No. 1719-NFPA 70-2024 [Section No. 110.28]

110.28 Enclosure Types.

Enclosures ~~(other than surrounding fences or walls covered in 110.31)~~ of switchboards, switchgear, enclosed panelboards, industrial control panels, motor control centers, meter sockets, enclosed switches, transfer switches, power outlets, circuit breakers, adjustable-speed drive systems, pullout switches, portable power distribution equipment, termination boxes, general-purpose transformers, fire pump controllers, fire pump motors, and motor controllers, and intended for such locations, shall be marked with an enclosure-type number as shown in Table 110.28.

Table 110.28 shall be used for selecting these enclosures for use in specific locations other than hazardous (classified) locations. The enclosures are not intended to protect against conditions such as condensation, icing, corrosion, or contamination that may occur within the enclosure or enter via the raceway or unsealed openings.

Table 110.28 Enclosure Selection

Provides a Degree of Protection Against the Following Environmental Conditions	For Outdoor Use									
	Enclosure Type Number									
	3	3R	3S	3X	3RX	3SX	4	4X	6	6P
Incidental contact with the enclosed equipment	X	X	X	X	X	X	X	X	X	X
Rain, snow, and sleet	X	X	X	X	X	X	X	X	X	X
Sleet*	—	—	X	—	—	X	—	—	—	—
Windblown dust	X	—	X	X	—	X	X	X	X	X
Hosedown	—	—	—	—	—	—	X	X	X	X
Corrosive agents	—	—	—	X	X	X	—	X	—	X
Temporary submersion	—	—	—	—	—	—	—	—	X	X
Prolonged submersion	—	—	—	—	—	—	—	—	—	X

Provides a Degree of Protection Against the Following Environmental Conditions	For Indoor Use									
	Enclosure Type Number									
	1	2	4	4X	5	6	6P	12	12K	13
Incidental contact with the enclosed equipment	X	X	X	X	X	X	X	X	X	X
Falling dirt	X	X	X	X	X	X	X	X	X	X
Falling liquids and light splashing	—	X	X	X	X	X	X	X	X	X
Circulating dust, lint, fibers, and flyings	—	—	X	X	—	X	X	X	X	X
Settling airborne dust, lint, fibers, and flyings	—	—	X	X	X	X	X	X	X	X
Hosedown and splashing water	—	—	X	X	—	X	X	—	—	—
Oil and coolant seepage	—	—	—	—	—	—	—	X	X	X
Oil or coolant spraying and splashing	—	—	—	—	—	—	—	—	—	X
Corrosive agents	—	—	—	X	—	—	X	—	—	—
Temporary submersion	—	—	—	—	—	X	X	—	—	—
Prolonged submersion	—	—	—	—	—	—	X	—	—	—

*The mechanism shall be operable when ice covered.

Informational Note No. 1: The term *raintight* is typically used in conjunction with Enclosure Types 3, 3S, 3SX, 3X, 4, 4X, 6, and 6P. The term *rainproof* is typically used in conjunction with Enclosure Types 3R and 3RX. The term *watertight* is typically used in conjunction with Enclosure Types 4, 4X, 6, and 6P. The term *driptight* is typically used in conjunction with Enclosure Types 2, 5, 12, 12K, and 13. The term *dusttight* is typically used in conjunction with Enclosure Types 3, 3S, 3SX, 3X, 4, 4X, 5, 6, 6P, 12, 12K, and 13.

Informational Note No. 2: See ANSI/IEC 60529, *Degrees of Protection Provided by Enclosures*, for ingress protection (IP) ratings.

Informational Note No. 3: See 502.10(A)(3), 502.10(B)(4), 503.10(A)(2), and 506.15(C)(9) for information on the use of dusttight enclosures in hazardous locations.

Informational Note No. 4: Some enclosure types, such as 12, 12K, or 13 enclosures, may be marked with an ancillary “-XH” for corrosive and hosedown capable indoor enclosure.

Informational Note No. 5: Some type 4X enclosures may be marked “indoor only.”

Informational Note No. 6: See NEMA 250, *Enclosures for Electrical Equipment (1000 Volts Maximum)*, for the description of the “Enclosure Type Rating: Ancillary — PW for Pressure Wash.”

Statement of Problem and Substantiation for Public Comment

This Public Comment is submitted on behalf of a Correlating Committee Medium Voltage Task Group consisting of Robert Osborne (Chair), Paul Barnhart, Lou Grahor, Donny Cook, Scott Higgins, Mike Querry, Roger McDaniel, Dave Burns, Rod Belisle, Kevin Rogers, Tony Ricciuti, Paul Knapp, Paul Sullivan, George Smith, Eric Simmon, Kevin Arnold, Larry Wildermuth, and Kyle Krueger.

The requirement in 110.28 is located in Part II. “Not Over 1000 Volts ac, 1500 Volts dc, Nominal”. Therefore, the reference for excluding “fences and walls covered in 110.31” can be deleted from 110.28 as those fences and walls are excluded under the voltage demarcation.

Related Item

• CC Note No. 20

Submitter Information Verification

Submitter Full Name: Robert Osborne
Organization: UL Solutions
Street Address:
City:
State:
Zip:

Submittal Date: Mon Aug 26 16:04:51 EDT 2024
Committee: NEC-P01

Public Comment No. 1048-NFPA 70-2024 [Section No. 110.29]

~~**110.29** In Sight From (Within Sight From, Within Sight).~~

~~Where this code specifies that equipment shall be "in sight from," "within sight from," or "within sight of" a building or structure or other equipment, the specified equipment shall be visible and not more than 15 m (50 ft) from the building, structure, or other equipment.~~

Statement of Problem and Substantiation for Public Comment

We believe that this requirement should be deleted and returned as a definition in Article 100. A companion public comment will be submitted to add this as a definition.

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 1051-NFPA 70-2024 [New Definition after Definition: Identified (as applied to ...]	
Public Comment No. 1051-NFPA 70-2024 [New Definition after Definition: Identified (as applied to ...]	

Related Item

• FR-8975

Submitter Information Verification

Submitter Full Name: David Hittinger
Organization: Independent Electrical Contractors
Affiliation: IEC Codes and Standards
Street Address:
City:
State:
Zip:
Submittal Date: Mon Aug 12 21:06:40 EDT 2024
Committee: NEC-P01

Public Comment No. 456-NFPA 70-2024 [Section No. 110.30]

110.30 General.

Conductors and equipment used on circuits over 1000 volts ac, 1500 volts dc, nominal shall comply with Article 110, Part I and with 110.30 through 110.41, which supplement or modify Part I. In no case shall this part apply to equipment on the supply side of the service point.

Additional Proposed Changes

File Name	Description	Approved
CN_104.pdf		

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 104 appeared in the First Draft Report on First Revision No. 9213.

The Correlating Committee directs CMP-1 to review the last sentence that states: “In no case shall” to be written to comply with the NEC Style Manual 3.5.4. Consider the term “Shall not”. Consider “Part III of this article shall not apply to equipment on the supply side of the service point.”

Related Item

• First Revision No. 9213

Submitter Information Verification

Submitter Full Name: CC Notes
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jul 30 18:50:22 EDT 2024
Committee: NEC-P01

Correlating Committee Note No. 104-NFPA 70-2024 [Section No. 110.30]

Submitter Information Verification

Committee: NEC-AAC
Submittal Date: Wed May 08 11:54:16 EDT 2024

Committee Statement

Committee Statement: The Correlating Committee directs CMP-1 to review the last sentence that states: “In no case shall” to be written to comply with the NEC Style Manual 3.5.4. Consider the term “Shall not”. Consider “Part III of this article shall not apply to equipment on the supply side of the service point.”

First Revision No. 9213-NFPA 70-2024 [Global Input]

Ballot Results

✔ **This item has passed ballot**

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

Not Returned

McDaniel, Roger D.

Affirmative All

Ayer, Lawrence S.
Bowmer, Trevor N.
Hickman, Palmer L.
Holub, Richard A.
Jackson, Peter D.
Kendall, David H.
Manche, Alan
Osborne, Robert D.
Porter, Christine T.
Schultheis, Timothy James
Williams, David A.

Public Comment No. 1669-NFPA 70-2024 [Section No. 110.31(C)(1)]

(1) In Places Accessible to Unqualified Persons.

Outdoor electrical installations that are open to unqualified persons shall comply with Article ~~225~~ 267 , Part ~~III~~ I .

Statement of Problem and Substantiation for Public Comment

This Public Comment is submitted on behalf of a Correlating Committee Medium Voltage Task Group consisting of Robert Osborne (Chair), Paul Barnhart, Lou Grahor, Donny Cook, Scott Higgins, Mike Querry, Roger McDaniel, Dave Burns, Rod Belisle, Kevin Rogers, Tony Ricciuti, Paul Knapp, Paul Sullivan, George Smith, Eric Simmon, Kevin Arnold, Larry Wildermuth, and Kyle Krueger.

This appears to have been a clerical mistake in first draft preparation as the reference was correct in NEC 2023 for Article 235 Part IV (NEC 2020 225 Part III). The article applicable to Over 1000V ac, 1500V dc, nominal is Article 267 Part I, which contains all the General requirements for Outside Feeders and Branch Circuits associated with safeguarding and clearances. The reference is updated to reflect the correct re-located 2026 first draft requirement from Article 235 to Article 267.

Related Item

• CC Note No. 268

Submitter Information Verification

Submitter Full Name: Robert Osborne
Organization: UL Solutions
Street Address:
City:
State:
Zip:

Submittal Date: Mon Aug 26 08:29:07 EDT 2024
Committee: NEC-P01

Public Comment No. 536-NFPA 70-2024 [Section No. 110.31(C)(1)]

(1) In Places Accessible to Unqualified Persons.

Outdoor electrical installations that are open to unqualified persons shall comply with Article 225, Part III.

Additional Proposed Changes

File Name	Description	Approved
CN_268.pdf		

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 268 appeared in the First Draft Report on First Revision No. 9255.

The Correlating Committee directs CMP 1 to review the reference to Article 225 in 110.31(C)(1), as requirements for outdoor branch circuits and feeders over 1000 volts ac or 1500 volts dc are located in Article 267.

Related Item

- First Revision No. 9255

Submitter Information Verification

Submitter Full Name: CC Notes
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jul 30 23:26:13 EDT 2024
Committee: NEC-P01

Correlating Committee Note No. 268-NFPA 70-2024 [Section No. 110.31(C)(1)]

Submitter Information Verification

Committee: NEC-AAC
Submittal Date: Thu May 09 17:56:57 EDT 2024

Committee Statement

Committee Statement: The Correlating Committee directs CMP 1 to review the reference to Article 225 in 110.31(C)(1), as requirements for outdoor branch circuits and feeders over 1000 volts ac or 1500 volts dc are located in Article 267.

First Revision No. 9255-NFPA 70-2024 [Section No. 110.31(C)(1)]

Ballot Results

✔ **This item has passed ballot**

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

Not Returned

McDaniel, Roger D.

Affirmative All

Ayer, Lawrence S.
Bowmer, Trevor N.
Hickman, Palmer L.
Holub, Richard A.
Jackson, Peter D.
Kendall, David H.
Manche, Alan
Osborne, Robert D.
Porter, Christine T.
Schultheis, Timothy James
Williams, David A.

Public Comment No. 1672-NFPA 70-2024 [Section No. 110.31 [Excluding any Sub-Sections]]

Electrical installations in a vault, room, or closet or in an area surrounded by a wall, screen, or fence, access to which is controlled by a lock(s) or other approved means, shall be considered to be accessible to qualified persons only. The type of enclosure used in a given case shall be designed and constructed according to the nature and degree of the hazard(s) associated with the installation.

For installations other than equipment as described in 110.31(D), a wall, screen, or fence shall be used to enclose an outdoor electrical installation to deter access by persons who are not qualified. A fence shall not be less than 2.1 m (7 ft) in height or a combination of 1.8 m (6 ft) or more of fence fabric and a 300 mm (1 ft) or more extension utilizing three or more strands of barbed wire or equivalent. The distance from the fence to live parts shall be not less than given in Table 110.31.

Table 110.31 Minimum Distance from Fence to Live Parts

Nominal Voltage[1]	Minimum Distance to Live Parts - m	Minimum Distance to Live Parts ft
~~1001–13~~ 1001[2]–13,799	3.05	10
13,800–230,000	4.57	15
Over 230,000	5.49	18

[1] Nominal voltages all reflect both ac and dc, except for Table Note 2

[2] 1001 volts ac, 1501 volts dc, nominal

Informational Note: See ANSI/IEEE C2-2023, *National Electrical Safety Code*, for clearances of conductors for specific system voltages and typical BIL ratings.

Statement of Problem and Substantiation for Public Comment

This Public Comment is submitted on behalf of a Correlating Committee Medium Voltage Task Group consisting of Robert Osborne (Chair), Paul Barnhart, Lou Grahor, Donny Cook, Scott Higgins, Mike Querry, Roger McDaniel, Dave Burns, Rod Belisle, Kevin Rogers, Tony Ricciuti, Paul Knapp, Paul Sullivan, George Smith, Eric Simmon, Kevin Arnold, Larry Wildermuth, and Kyle Krueger.

The table notes are added to Table 110.31 to clarify that 1001 to 1500 volts dc is not covered by this Table due to the voltage demarcation in 110.30 for Article 110, Part III.

Related Item

• CC Note No. 20

Submitter Information Verification

Submitter Full Name: Robert Osborne
Organization: UL Solutions
Street Address:
City:
State:
Zip:

Submittal Date: Mon Aug 26 08:46:07 EDT 2024
Committee: NEC-P01

Public Comment No. 922-NFPA 70-2024 [Section No. 110.31 [Excluding any Sub-Sections]]

Electrical installations in a vault, room, or closet or in an area surrounded by a wall, screen, or fence, access to which is controlled by a ~~lock(s) or~~ locks or other approved means, shall be considered to be accessible to qualified persons only. The type of enclosure used in a given case shall be designed and constructed according to the nature and degree of the ~~hazard(s) associated~~ hazards associated with the installation.

For installations other than equipment as described in 110.31(D), a wall, screen, or fence shall be used to enclose an outdoor electrical installation to deter access by persons who are not qualified. A fence shall not be less than 2.1 m (7 ft) in height or a combination of 1.8 m (6 ft) or more of fence fabric and a 300 mm (1 ft) or more extension utilizing three or more strands of barbed wire or equivalent. The distance from the fence to live parts shall be not less than given in Table 110.31.

Table 110.31 Minimum Distance from Fence to Live Parts

	-	Minimum Distance to Live Parts
Nominal Voltage	m	ft
1001–13,799	3.05	10
13,800–230,000	4.57	15
Over 230,000	5.49	18

Informational Note: See ANSI/IEEE C2-2023, *National Electrical Safety Code*, for clearances of conductors for specific system voltages and typical BIL ratings.

Statement of Problem and Substantiation for Public Comment

This revision to remove "(s)" and and make the associated word plural is made to comply with the NEC Style Manual as plural is the appropriate tense of the word unless singular is specifically intended. Per 3.5.3, Plural, of the NEC Style manual, "unless referring to a single item of equipment, references to electrical components and parts shall be plural rather than singular. This results in greater consistency and makes it clear that the requirement refers to all components or parts of a given type or class."

Related Item

• FR-8942

Submitter Information Verification

Submitter Full Name: Palmer Hickman
Organization: Electrical Training Alliance
Street Address:
City:
State:
Zip:

Submittal Date: Wed Aug 07 15:48:02 EDT 2024
Committee: NEC-P01

Public Comment No. 1673-NFPA 70-2024 [Section No. 110.34(A)]

(A) Working Space.

Except as elsewhere required or permitted in this code, equipment likely to require examination, adjustment, servicing, or maintenance while energized shall have clear working space in the direction of access to live parts of the electrical equipment and shall be not less than specified in Table 110.34(A). Distances shall be measured from the live parts, if such are exposed, or from the enclosure front or opening if such live parts are enclosed. The grade, floor, or platform in the required working space shall be kept clear, and the floor, grade, or platform in the working space shall be as level and flat as practical for the entire depth and width of the working space.

Exception: Working space shall not be required in back of equipment such as switchgear or control assemblies where there are no renewable or adjustable parts (such as fuses or switches) on the back and where all connections are accessible from locations other than the back. Where rear access is required to work on nonelectrical parts on the back of enclosed equipment, a minimum working space of 762 mm (30 in.) horizontally shall be provided.

Table 110.34(A) Minimum Depth of Clear Working Space at Electrical Equipment

Nominal Voltage to Ground[1]	Minimum Clear Distance		
	Condition 1	Condition 2	Condition 3
~~1001–2500 V~~ 1001[2]–2500 V	900 mm (3 ft)	1.2 m (4 ft)	1.5 m (5 ft)
2501–9000 V	1.2 m (4 ft)	1.5 m (5 ft)	1.8 m (6 ft)
9001–25,000 V	1.5 m (5 ft)	1.8 m (6 ft)	2.8 m (9 ft)
25,001 V–75 kV	1.8 m (6 ft)	2.5 m (8 ft)	3.0 m (10 ft)
Above 75 kV	2.5 m (8 ft)	3.0 m (10 ft)	3.7 m (12 ft)

[1] Nominal voltages all reflect both ac and dc except for Table Note 2.

[2] 1001 volts ac, 1501 volts dc, nominal.

Note : Where the conditions are as follows:

Condition 1 — Exposed or enclosed live parts on one side of the working space and no exposed or enclosed live or grounded parts on the other side of the working space, or exposed live parts on both sides of the working space that are effectively guarded by insulating materials.

Condition 2 — Exposed or enclosed live parts on one side of the working space and grounded parts on the other side of the working space. Concrete, brick, or tile walls shall be considered as grounded.

Condition 3 — Exposed or enclosed live parts on both sides of the working space.

Statement of Problem and Substantiation for Public Comment

This Public Comment is submitted on behalf of a Correlating Committee Medium Voltage Task Group consisting of Robert Osborne (Chair), Paul Barnhart, Lou Grahor, Donny Cook, Scott Higgins, Mike Querry, Roger McDaniel, Dave Burns, Rod Belisle, Kevin Rogers, Tony Ricciuti, Paul Knapp, Paul Sullivan, George Smith, Eric Simmon, Kevin Arnold, Larry Wildermuth, and Kyle Krueger.

The table notes are added to Table 110.34(A) to clarify that 1001 to 1500 volts dc is not covered by this Table due to the voltage demarcation in 110.30 for Article 110, Part III.

Related Item

• CC Note No. 20

Submitter Information Verification

Submitter Full Name: Robert Osborne
Organization: UL Solutions
Street Address:
City:
State:
Zip:
Submittal Date: Mon Aug 26 08:52:06 EDT 2024

Committee: NEC-P01

Public Comment No. 1302-NFPA 70-2024 [Section No. 110.34(B)]

(B) Separation from ~~Low-Voltage Equipment~~ High Voltage Equipment .

Where switches, cutouts, or other equipment operating at not over 1000 volts ac, 1500 volts dc, nominal are installed in a vault, room, or enclosure where there are exposed live parts or exposed wiring operating at over 1000 volts ac , 1500 volts dc, nominal, the high-voltage equipment shall be effectively separated from the space occupied by the ~~low-voltage equipment~~ equipment operating at 1000 volts ac, 1500 volts dc, nominal, or less by a suitable partition, fence, or screen.

Exception: Switches or other equipment operating at 1000 volts ac , 1500 volts dc, nominal, or less and serving only equipment within the high-voltage vault, room, or enclosure shall be permitted to be installed in the high-voltage vault, room, or enclosure without a partition, fence, or screen if accessible to qualified persons only.

Statement of Problem and Substantiation for Public Comment

This Public Comment is submitted on behalf of a Correlating Committee Medium Voltage Task Group consisting of Robert Osborne (Chair), Paul Barnhart, Lou Grahor, Donny Cook, Scott Higgins, Mike Querry, Roger McDaniel, Dave Burns, Rod Belisle, Kevin Rogers, Tony Ricciuti, Paul Knapp, Paul Sullivan, George Smith, Eric Simmon, Kevin Arnold, Larry Wildermuth, and Kyle Krueger.

This change is needed to address the voltage demarcation for 1001 volts to 1500 volts dc. It also corrects the use of the term “low voltage” which is intended for less than 1000 volts, ac, or 1500 volts dc, but the term “low voltage” is not defined. The term “high voltage” was not modified because it is now defined in the first draft text as used in this requirement, although it was previously defined in 2023 as only 1000V or less without reference to 1500 volts dc.

Related Item

• CC Note No. 20

Submitter Information Verification

Submitter Full Name: Robert Osborne
Organization: UL Solutions
Street Address:
City:
State:
Zip:

Submittal Date: Tue Aug 20 13:09:54 EDT 2024
Committee: NEC-P01

Public Comment No. 448-NFPA 70-2024 [Section No. 110.40]

110.40 Electrical Connections.

For equipment rated over 1000 volts nominal, but not more than 2000 volts nominal, that is connected using other than Type MV conductors, the requirements of 110.14 shall be applicable. For all equipment connected using Type MV conductors, the requirements of 110.40(A) through 110.40(E) shall supersede those of 110.14.

(A) General.

Because of different characteristics of dissimilar metals, devices shall be identified for the material of the conductor and shall be properly installed and used. Conductors of dissimilar metals shall not be intermixed where physical contact occurs between dissimilar conductors unless the device is identified for the purpose and conditions of use. Materials such as solder, fluxes, inhibitors, and compounds, where employed, shall be suitable for the use and shall be of a type that will not adversely affect the conductors, installation, or equipment. Connectors for more than one conductor shall be so identified.

Connectors and terminals for conductors shall be suitable for the conductor class or classes.

Where a listed Type MV cable joint or Type MV cable termination is supplied with a connector, only the connection means supplied by the manufacturer shall be used for installation.

(B) Terminals.

Connection of conductors to terminal parts shall ensure a mechanically secure electrical connection and be made by means of pressure connectors.

(C) Splices.

Conductors shall be spliced with splicing devices identified for the use. All splices and the free ends of conductors shall be covered with an insulation equivalent to that of the conductors or with an identified insulating device. Wire connectors or splicing means installed on conductors for direct burial shall be listed for such use.

(D) Temperature Limitations.

The temperature rating associated with the ampacity or temperature rating of a conductor shall be selected and coordinated so as not to exceed the lowest temperature rating of any connected termination, conductor, or device. Conductors with temperature ratings higher than specified for terminations shall be permitted to be used for ampacity adjustment, correction, or both.

(1) Equipment Provisions.

Termination of conductors at equipment shall be based on the ampacity for MV-90 conductors as given in Table 315.60(C)(1) through Table 315.60(C)(20), unless the equipment and the connector assembly is identified for use with 105°C (221°F) conductors. The use of MV-105 conductors, sized based on the ampacity for MV-90 conductors, shall be permitted.

(2) Separate Connector Provisions.

Separately installed pressure connectors shall be used with conductors at the ampacities not exceeding the ampacity at the listed and identified temperature rating of the connector.

(E) Terminal Connection Torque.

Tightening torque values for terminal connections shall be as indicated on equipment or in installation instructions provided by the manufacturer. An approved means shall be used to achieve the indicated torque value.

Informational Note No. 1: Examples of approved means of achieving the indicated torque values include torque tools or devices such as shear bolts or breakaway-style devices with visual indicators that demonstrate that the proper torque has been applied.

Informational Note No. 2: See NFPA 70B-2023, *Standard for Electrical Equipment Maintenance*, for additional information for torquing threaded connections and terminations.

Additional Proposed Changes

File Name	Description	Approved
CN_96.pdf		

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 96 appeared in the First Draft Report on First Revision No. 9258.

The Correlating Committee directs CMP-1 to review the language used in 110.40(A) pertaining to the term “because”. For clarity of the requirement the Code does not need to explain within the requirement why identification is required. Consider removal of the first two words in the

requirement for clarity. Correlation with 110.14 will also needs to be considered.

Related Item

• First Revision No. 9258

Submitter Information Verification

Submitter Full Name: CC Notes
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:

Submittal Date: Tue Jul 30 17:44:51 EDT 2024
Committee: NEC-P01

Correlating Committee Note No. 96-NFPA 70-2024 [Section No. 110.40]

Submitter Information Verification

Committee: NEC-AAC
Submittal Date: Wed May 08 11:04:36 EDT 2024

Committee Statement

Committee Statement: The Correlating Committee directs CMP-1 to review the language used in 110.40(A) pertaining to the term “because”. For clarity of the requirement the Code does not need to explain within the requirement why identification is required. Consider removal of the first two words in the requirement for clarity. Correlation with 110.14 will also needs to be considered.

First Revision No. 9258-NFPA 70-2024 [Section No. 110.40]

Ballot Results

✔ **This item has passed ballot**

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

Not Returned

McDaniel, Roger D.

Affirmative All

Ayer, Lawrence S.
Bowmer, Trevor N.
Hickman, Palmer L.
Holub, Richard A.
Jackson, Peter D.
Kendall, David H.
Manche, Alan
Osborne, Robert D.
Porter, Christine T.
Schultheis, Timothy James
Williams, David A.

Public Comment No. 1670-NFPA 70-2024 [Section No. 110.40(A)]

(A) General.

~~Because of different characteristics of dissimilar metals, devices~~ Devices shall be identified for the material of the conductor and shall be properly installed and used. Conductors of dissimilar metals shall not be intermixed where physical contact occurs between dissimilar conductors unless the device is identified for the purpose and conditions of use. Materials such as solder, fluxes, inhibitors, and compounds, where employed, shall be suitable for the use and shall be of a type that will not adversely affect the conductors, installation, or equipment. Connectors for more than one conductor shall be so identified.

Connectors and terminals for conductors shall be suitable for the conductor class or classes.

Where a listed Type MV cable joint or Type MV cable termination is supplied with a connector, only the connection means supplied by the manufacturer shall be used for installation.

Statement of Problem and Substantiation for Public Comment

This Public Comment is submitted on behalf of a Correlating Committee Medium Voltage Task Group consisting of Robert Osborne (Chair), Paul Barnhart, Lou Grahor, Donny Cook, Scott Higgins, Mike Querry, Roger McDaniel, Dave Burns, Rod Belisle, Kevin Rogers, Tony Ricciuti, Paul Knapp, Paul Sullivan, George Smith, Eric Simmon, Kevin Arnold, Larry Wildermuth, and Kyle Krueger.

The phrase “Because of different characteristics of dissimilar metals” should be deleted in the new first draft 110.40(A) as the requirement does not need an explanation. The requirement related to dissimilar metals is already clearly stated in the second sentence.

Related Item

• CC Note No. 96

Submitter Information Verification

Submitter Full Name: Robert Osborne
Organization: UL Solutions
Street Address:
City:
State:
Zip:

Submittal Date: Mon Aug 26 08:33:08 EDT 2024
Committee: NEC-P01

Public Comment No. 546-NFPA 70-2024 [Section No. 110.40(A)]

(A) General.

~~Because of different characteristics of dissimilar metals,~~ Termination devices shall be identified, installed and used for the material of the conductor~~ and shall be properly installed and used~~ . Conductors ~~of dissimilar metals~~ shall not be intermixed where physical contact occurs between dissimilar conductors unless the device is identified for the purpose and conditions of use. Materials such as solder, fluxes, inhibitors, and compounds, where employed, shall be ~~suitable~~ identified for the use and shall be of a type that will not adversely affect the conductors, installation, or equipment. Connectors for more than one conductor shall be so identified.

Connectors and terminals for conductors shall be suitable for the conductor class or classes.

Where a listed Type MV cable joint or Type MV cable termination is supplied with a connector, only the connection means supplied by the manufacturer shall be used for installation.

Statement of Problem and Substantiation for Public Comment

The text is revised for clarity of the requirement. Additionally, revisions were made to replace "suitable" with "identified" that is unenforceable or vague.

Related Item

• PI 9258

Submitter Information Verification

Submitter Full Name: David Hittinger
Organization: Independent Electrical Contractors
Affiliation: IEC Codes and Standards
Street Address:
City:
State:
Zip:

Submittal Date: Wed Jul 31 09:30:19 EDT 2024
Committee: NEC-P01

Public Comment No. 1674-NFPA 70-2024 [Section No. 110.40 [Excluding any Sub-Sections]]

For equipment rated over 1000 volts ~~nominal,~~ ac, 1500 volts dc, nominal, but not more than 2000 volts nominal ac or dc , that is connected using other than Type MV conductors, the requirements of 110.14 shall be applicable. For all equipment connected using Type MV conductors, the requirements of 110.40(A) through 110.40(E) shall supersede those of 110.14.

Statement of Problem and Substantiation for Public Comment

This Public Comment is submitted on behalf of a Correlating Committee Medium Voltage Task Group consisting of Robert Osborne (Chair), Paul Barnhart, Lou Grahor, Donny Cook, Scott Higgins, Mike Querry, Roger McDaniel, Dave Burns, Rod Belisle, Kevin Rogers, Tony Ricciuti, Paul Knapp, Paul Sullivan, George Smith, Eric Simmon, Kevin Arnold, Larry Wildermuth, and Kyle Krueger.

Updated voltage demarcation in the newly revised first draft 110.40 to include 1001 to 1500 volts dc. Also, clarified that the upper demarcation for using 110.14 vs 110.40 is 2000 volts ac or dc which is consistent with the voltage demarcation in 315.1, the Scope section for Article 315, Medium Voltage Conductors, Cable, Cable Joints, and Cable Terminations.

Related Item

• CC Note No. 20

Submitter Information Verification

Submitter Full Name: Robert Osborne
Organization: UL Solutions
Street Address:
City:
State:
Zip:

Submittal Date: Mon Aug 26 08:55:39 EDT 2024
Committee: NEC-P01

Public Comment No. 1023-NFPA 70-2024 [Section No. 110.52]

~~**110.52** Overcurrent Protection.~~

~~Motor-operated equipment shall be protected from overcurrent in accordance with Article 430, Parts III, IV, and V.~~
~~Transformers shall be protected from overcurrent in accordance with 450.5 .~~

Statement of Problem and Substantiation for Public Comment

NEC Article 110 is titled "General Requirements for Electrical Installations" with a scope that indicates the article covers general requirements for examination and approval, installation and use, access to and spaces about electrical conductors and equipment; enclosures intended for personnel entry; and tunnel installations. Part IV includes the requirements for Tunnel Installations over 1,000 Volts, Nominal. Section 110.51 includes the general requirements for the Part. The previous (2023 NEC) and revised first draft overcurrent protection requirements in 110.52 simply refer NEC users to requirements in Articles 430 for motors and Article 450 for transformers which are applicable regardless of this section. There is nothing unique in this section related to a tunnel installation over 1,000 volts. If this section is deleted completely, nothing changes. The requirements in Articles 430 and 450 continue to be applicable.

Related Item

• PI2624 and FR9262

Submitter Information Verification

Submitter Full Name: Donald Cook
Organization: Self
Street Address:
City:
State:
Zip:

Submittal Date: Sun Aug 11 15:07:58 EDT 2024
Committee: NEC-P01

Public Comment No. 1671-NFPA 70-2024 [Section No. 110.52]

~~**110.52** Overcurrent Protection.~~

~~Motor-operated equipment shall be protected from overcurrent in accordance with Article 430 , Parts III, IV, and V. Transformers shall be protected from overcurrent in accordance with 450.5 .~~

Statement of Problem and Substantiation for Public Comment

This Public Comment is submitted on behalf of a Correlating Committee Medium Voltage Task Group consisting of Robert Osborne (Chair), Paul Barnhart, Lou Grahor, Donny Cook, Scott Higgins, Mike Querry, Roger McDaniel, Dave Burns, Rod Belisle, Kevin Rogers, Tony Ricciuti, Paul Knapp, Paul Sullivan, George Smith, Eric Simmon, Kevin Arnold, Larry Wildermuth, and Kyle Krueger.

Requirements in Chapter 4 apply generally. The requirement in 110.52 does not modify the Chapter requirement, so it is recommended for deletion.

Related Item

• CC Note No. 105

Submitter Information Verification

Submitter Full Name: Robert Osborne
Organization: UL Solutions
Street Address:
City:
State:
Zip:

Submittal Date: Mon Aug 26 08:39:49 EDT 2024
Committee: NEC-P01

Public Comment No. 457-NFPA 70-2024 [Section No. 110.52]

110.52 Overcurrent Protection.

Motor-operated equipment shall be protected from overcurrent in accordance with Article 430, Parts III, IV, and V. Transformers shall be protected from overcurrent in accordance with 450.5.

Additional Proposed Changes

File Name	Description	Approved
CN_105.pdf		

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 105 appeared in the First Draft Report.

The Correlating Committee directs CMP-1 to review this requirement and consider if it is applicable to installations over 1000 volts ac, 1500 volts dc.

Related Item

• Correlating Committee Note No. 105

Submitter Information Verification

Submitter Full Name: CC Notes
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jul 30 18:52:11 EDT 2024
Committee: NEC-P01

Correlating Committee Note No. 105-NFPA 70-2024 [Section No. 110.52]

Submitter Information Verification

Committee: NEC-AAC
Submittal Date: Wed May 08 12:00:58 EDT 2024

Committee Statement

Committee Statement: The Correlating Committee directs CMP-1 to review this requirement and consider if it is applicable to installations over 1000 volts ac, 1500 volts dc.

Ballot Results

✔ **This item has passed ballot**

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

Not Returned

McDaniel, Roger D.

Affirmative All

Ayer, Lawrence S.
Bowmer, Trevor N.
Hickman, Palmer L.
Holub, Richard A.
Jackson, Peter D.
Kendall, David H.
Manche, Alan
Osborne, Robert D.
Porter, Christine T.
Schultheis, Timothy James
Williams, David A.

Public Comment No. 1026-NFPA 70-2024 [Section No. 110.54]

110.54 Bonding and Equipment Grounding Conductors.

~~**(A)** Grounded and Bonded.~~

All non–current-carrying metal parts of electrical equipment and all metal raceways and cable sheaths shall be solidly grounded and bonded to all metal pipes and rails at the portal and at intervals not exceeding 300 m (1000 ft) throughout the tunnel.

~~**(B)** Equipment Grounding Conductors.~~

~~An equipment grounding conductor shall be run with circuit conductors inside the metal raceway or inside the multiconductor cable jacket. The equipment grounding conductor shall be permitted to be insulated or bare.~~

Statement of Problem and Substantiation for Public Comment

NEC Article 110 is titled “General Requirements for Electrical Installations” with a scope that indicates the article covers general requirements for examination and approval, installation and use, access to and spaces about electrical conductors and equipment; enclosures intended for personnel entry; and tunnel installations. Part IV includes the requirements for Tunnel Installations over 1,000 Volts, Nominal. The existing 2023 text in 110.54(B) was not unique to tunnel installations over 1,000 volts, added no additional provisions to the other requirements in Article 250, and based on PI 739 seemed to add confusion for some users. Deleting existing first level subdivision (B) and simply including the unique provision in existing first level subdivision (A) as the only text in 110.54 adds clarity.

Related Item

• PI739

Submitter Information Verification

Submitter Full Name: Donald Cook
Organization: self
Street Address:
City:
State:
Zip:
Submittal Date: Sun Aug 11 15:35:18 EDT 2024
Committee: NEC-P01

Public Comment No. 443-NFPA 70-2024 [Global Input]

The Correlating Committee directs all Code-Making Panels to verify cross-references to Article 200 are accurate due to the renumbering of the article.

Additional Proposed Changes

File Name	Description	Approved
CN_84.pdf		✓

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 84 appeared in the First Draft Report.

The Correlating Committee directs all Code-Making Panels to verify cross-references to Article 200 are accurate due to the renumbering of the article.

Related Item

• Correlating Committee Note No. 84

Submitter Information Verification

Submitter Full Name: CC Notes
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jul 30 17:35:49 EDT 2024
Committee: NEC-P05

Correlating Committee Note No. 84-NFPA 70-2024 [Global Input]

Submitter Information Verification

Committee: NEC-AAC
Submittal Date: Wed May 08 08:49:53 EDT 2024

Committee Statement

Committee Statement: The Correlating Committee directs all Code-Making Panels to verify cross-references to Article 200 are accurate due to the renumbering of the article.

Ballot Results

✔ **This item has passed ballot**

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

Not Returned

McDaniel, Roger D.

Affirmative All

Ayer, Lawrence S.
Bowmer, Trevor N.
Hickman, Palmer L.
Holub, Richard A.
Jackson, Peter D.
Kendall, David H.
Manche, Alan
Osborne, Robert D.
Porter, Christine T.
Schultheis, Timothy James
Williams, David A.

Public Comment No. 493
Assigned to CMP-10, Referred to CMP 1 & 15)

Public Comment No. 493-NFPA 70-2024 [Global Input]

The Correlating Committee directs CMPs 1, 10, and 15 to consider use of two defined terms in the NEC, “panelboard” and “enclosure” arranged as “panelboard enclosure” which provides a suitable replacement for the current term “enclosed panelboard”. CMP 10 has deleted the term “enclosed panelboard”

Additional Proposed Changes

File Name	Description	Approved
CN_140.pdf		✓

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 140 appeared in the First Draft Report on First Revision No. 8903.

The Correlating Committee directs CMPs 1, 10, and 15 to consider use of two defined terms in the NEC, “panelboard” and “enclosure” arranged as “panelboard enclosure” which provides a suitable replacement for the current term “enclosed panelboard”. CMP 10 has deleted the term “enclosed panelboard”

Related Item

• First Revision No. 8903

Submitter Information Verification

Submitter Full Name: CC Notes
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jul 30 20:00:23 EDT 2024
Committee: NEC-P10

Correlating Committee Note No. 140-NFPA 70-2024 [Global Input]

Submitter Information Verification

Committee: NEC-AAC

Submittal Date: Wed May 08 16:47:26 EDT 2024

Committee Statement and Meeting Notes

Committee Statement: The Correlating Committee directs CMPs 1, 10, and 15 to consider use of two defined terms in the NEC, “panelboard” and “enclosure” arranged as “panelboard enclosure” which provides a suitable replacement for the current term “enclosed panelboard”. CMP 10 has deleted the term “enclosed panelboard”

Committee Notes:

Date	Submitted By	
May 8, 2024	Sarah Caldwell	CMP 1, 10 and 15

First Revision No. 8903-NFPA 70-2024 [Definition: Panelboard, Enclosed. (Enclosed Panelboard)]

Ballot Results

✔ **This item has passed ballot**

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

Not Returned

McDaniel, Roger D.

Affirmative All

Ayer, Lawrence S.

Bowmer, Trevor N.

Holub, Richard A.

Jackson, Peter D.

Kendall, David H.

Manche, Alan

Osborne, Robert D.

Porter, Christine T.

Schultheis, Timothy James

Williams, David A.

Negative with Comment

Hickman, Palmer L.

For correlation, "enclosed panelboard" continues to be the correct definition and term as added and used in the 2023 NEC.

Public Comment No. 504
Assigned to CMP-18, Referred to CMPs 1 - 17

Public Comment No. 504-NFPA 70-2024 [Global Input]

The Correlating Committee directs the CMPs to review the revision of the title of Article406 (Wiring Devices) and the new definition for the term "wiring device" in Article 100 forcorrelation of existing terminology using the newly define term in their articles.

Additional Proposed Changes

File Name	Description	Approved
CN_157.pdf		✓

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 157 appeared in the First Draft Report on First Revision No. 7965.

The Correlating Committee directs the CMPs to review the revision of the title of Article 406 (Wiring Devices) and the new definition for the term "wiring device" in Article 100 for correlation of existing terminology using the newly define term in their articles.

Related Item

• First Revision No. 7965

Submitter Information Verification

Submitter Full Name: CC Notes
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jul 30 22:29:14 EDT 2024
Committee: NEC-P18

Correlating Committee Note No. 157-NFPA 70-2024 [Global Input]

Submitter Information Verification

Committee: NEC-AAC

Submittal Date: Thu May 09 08:59:03 EDT 2024

Committee Statement and Meeting Notes

Committee Statement: The Correlating Committee directs the CMPs to review the revision of the title of Article 406 (Wiring Devices) and the new definition for the term "wiring device" in Article 100 for correlation of existing terminology using the newly define term in their articles.

First Revision No. 7965-NFPA 70-2024 [New Definition after Definition: Wireways, Nonmetallic. (No...]

Ballot Results

This item has passed ballot

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

Not Returned

McDaniel, Roger D.

Affirmative All

Ayer, Lawrence S.

Bowmer, Trevor N.

Hickman, Palmer L.

Holub, Richard A.

Jackson, Peter D.

Kendall, David H.

Manche, Alan

Osborne, Robert D.

Porter, Christine T.

Schultheis, Timothy James

Williams, David A.

Public Comment No. 527
Assigned to CMP- 2, Referred to CMPs 1 - 18

Public Comment No. 527-NFPA 70-2024 [Global Input]

The CMPs are directed to review references to Article 220 in the articles under their purview and make necessary revisions based on Article 220 being relocated to Article120.

Additional Proposed Changes

File Name	Description	Approved
CN_212.pdf		✓

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 212 appeared in the First Draft Report.

The CMPs are directed to review references to Article 220 in the articles under their purview and make necessary revisions based on Article 220 being relocated to Article 120.

Related Item

• Correlating Committee Note No. 212

Submitter Information Verification

Submitter Full Name: CC Notes
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jul 30 23:08:41 EDT 2024
Committee: NEC-P02

Correlating Committee Note No. 212-NFPA 70-2024 [Global Input]

Submitter Information Verification

Committee: NEC-AAC

Submittal Date: Thu May 09 11:53:08 EDT 2024

Committee Statement and Meeting Notes

Committee Statement: The CMPs are directed to review references to Article 220 in the articles under their purview and make necessary revisions based on Article 220 being relocated to Article 120.

Ballot Results

✔ **This item has passed ballot**

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

Not Returned

McDaniel, Roger D.

Affirmative All

Ayer, Lawrence S.
Bowmer, Trevor N.
Hickman, Palmer L.
Holub, Richard A.
Jackson, Peter D.
Kendall, David H.
Manche, Alan
Osborne, Robert D.
Porter, Christine T.
Schultheis, Timothy James
Williams, David A.

Public Comment No. 542
Assigned to CMP-3, Referred to CMPs 1 - 18

Public Comment No. 542-NFPA 70-2024 [Global Input]

The Correlating Committee directs the CMPs to review all references to requirements in Chapters 7 & 8 for accuracy in light of the relocation of requirements occurring in the First Draft.

Additional Proposed Changes

File Name	Description	Approved
CN_401.pdf		✓

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 401 appeared in the First Draft Report.

The Correlating Committee directs the CMPs to review all references to requirements in Chapters 7 & 8 for accuracy in light of the relocation of requirements occurring in the First Draft.

Related Item

• Correlating Committee Note No. 401

Submitter Information Verification

Submitter Full Name: CC Notes
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jul 30 23:39:04 EDT 2024
Committee: NEC-P03

Correlating Committee Note No. 401-NFPA 70-2024 [Global Input]

Submitter Information Verification

Committee: NEC-AAC
Submittal Date: Fri May 10 12:35:51 EDT 2024

Committee Statement

Committee Statement: The Correlating Committee directs the CMPs to review all references to requirements in Chapters 7 & 8 for accuracy in light of the relocation of requirements occurring in the First Draft.

Ballot Results

This item has passed ballot

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

Not Returned

McDaniel, Roger D.

Affirmative All

Ayer, Lawrence S.
Bowmer, Trevor N.
Hickman, Palmer L.
Holub, Richard A.
Jackson, Peter D.
Kendall, David H.
Manche, Alan
Osborne, Robert D.
Porter, Christine T.
Schultheis, Timothy James
Williams, David A.

Public Comment No. 861-NFPA 70-2024 [Article 100]

Article 100 Definitions

Scope. This article contains only those definitions essential to the application of this code. It is not intended to include commonly defined general terms or commonly defined technical terms from related codes and standards. An article number in parentheses following the definition indicates that the definition only applies to that article.

Informational Note: A definition that is followed by a reference in brackets has been extracted from one of the following standards. Only editorial changes were made to the extracted text to make it consistent with this code.

(1) NFPA 30A-2024, *Code for Motor Fuel Dispensing Facilities and Repair Garages*

(2) NFPA 33-2024, *Standard for Spray Application Using Flammable or Combustible Materials*

(3) NFPA 75-2024, *Standard for the Fire Protection of Information Technology Equipment*

(4) NFPA 79-2024, *Electrical Standard for Industrial Machinery*

(5) NFPA 99-2024, *Health Care Facilities Code*

(6) NFPA 101® -2024, *Life Safety Code*®

(7) NFPA 110-2025, *Standard for Emergency and Standby Power Systems*

(8) NFPA 303-2026, *Fire Protection Standard for Marinas and Boatyards*

(9) NFPA 307-2026, *Standard for the Construction and Fire Protection of Marine Terminals, Piers, and Wharves*

(10) NFPA 499-2024, *Recommended Practice for the Classification of Combustible Dusts and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas*

(11) NFPA 501-2024, *Standard on Manufactured Housing*

(12) NFPA 790-2024, *Standard for Competency of Third-Party Field Evaluation Bodies*

(13) NFPA 1192-2026, *Standard on Recreational Vehicles*

Accessible (as applied to equipment).

Capable of being reached for operation, renewal, and inspection. (CMP-1)

Accessible (as applied to wiring methods).

Capable of being removed or exposed without damaging the building structure or finish or not permanently closed in or blocked by the structure, other electrical equipment, other building systems, or finish of the building. (CMP-1)

Accessible, Readily. (Readily Accessible)

Capable of being reached quickly for operation, renewal, or inspection without requiring those to whom ready access is requisite to take actions, such as to use tools (other than keys), to climb over or under, to remove obstacles, or to resort to portable ladders, and so forth. (CMP-1)

Informational Note: Use of keys is a common practice under controlled or supervised conditions and a common alternative to the ready access requirements under such supervised conditions as provided elsewhere in the *NEC*.

Adapter.

A device used to adapt a circuit from one configuration of an attachment plug or receptacle to another configuration with the same current rating. (520) (CMP-15)

Adjustable Speed Drive.

Power conversion equipment that provides a means of adjusting the speed of an electric motor. (CMP-11)

Informational Note: A variable frequency drive is one type of electronic adjustable speed drive that controls the rotational speed of an ac electric motor by controlling the frequency and voltage of the electrical power supplied to the motor.

Adjustable Speed Drive System.

A combination of an adjustable speed drive, its associated motor(s), and auxiliary equipment. (CMP-11)

Aircraft Painting Hangar.

An aircraft hangar constructed for the express purpose of spraying, coating, and/or dipping applications and provided with dedicated ventilation supply and exhaust. (CMP-14)

Ambulatory Health Care Occupancy.

An occupancy used to provide services or treatment simultaneously to four or more patients that provides, on an outpatient basis, one or more of the following:

(1) Treatment for patients that renders the patients incapable of taking action for self-preservation under emergency conditions without the assistance of others.

(2) Anesthesia that renders the patients incapable of taking action for self-preservation under emergency conditions without the assistance of others.

(3) Treatment for patients who, due to the nature of their injury or illness, are incapable of taking action for self-preservation under emergency conditions without the assistance of others.

[***101*** **:** 3.3.198.1] (517) (CMP-15)

Ampacity.

The maximum current, in amperes, that a conductor can carry continuously under the conditions of use without exceeding its temperature rating. (CMP-6)

Amplifier (Audio Amplifier) (Pre-Amplifier).

Electronic equipment that increases the current or voltage, or both, of an audio signal intended for use by another piece of audio equipment. Amplifier is the term used to denote an audio amplifier. (640) (CMP-12)

Appliance.

Utilization equipment, generally other than industrial, that is normally built in a standardized size or type and is installed or connected as a unit to perform one or more functions such as clothes washing, air-conditioning, food mixing, and deep frying. (CMP-17)

Applicator.

The device used to transfer energy between the output circuit and the object or mass to be heated. (665) (CMP-12)

Approved.

Acceptable to the authority having jurisdiction. (CMP-1)

Arc-Fault Circuit Interrupter (AFCI).

A device intended to provide protection from the effects of arc faults by recognizing characteristics unique to arcing and by functioning to de-energize the circuit when an arc fault is detected. (CMP-2)

Array (PV Array) (Solar PV Array).

A mechanically and electrically integrated grouping of solar PV modules with mounting system, including any attached system components such as inverters or dc-to-dc converters and attached associated wiring. (690) (CMP-4)

Artificially Ventilated Room “v”.

A room volume protected by artificial ventilation and of sufficient size to permit the entry of a person who might occupy the room. (CMP-14)

Informational Note: see ANSI/UL 60079-13, *Explosive Atmospheres — Part 13: Equipment Protection by Pressurized Room “p” and Artificially Ventilated Room “v”* , for information on the requirements for rooms intended for human entry where artificial ventilation is used as a means of reducing the risk of explosion.

Askarel.

A generic term for a group of nonflammable synthetic chlorinated hydrocarbons used as electrical insulating media. (CMP-9)

Informational Note: Askarels of various compositional types are used. Under arcing conditions, the gases produced, while consisting predominantly of noncombustible hydrogen chloride, can include varying amounts of combustible gases, depending on the askarel type.

Associated Apparatus.

Apparatus in which the circuits are not necessarily intrinsically safe themselves but that affects the energy in the intrinsically safe circuits and is relied on to maintain intrinsic safety. Such apparatus is one of the following:

(1) Electrical apparatus that has an alternative type of protection for use in the appropriate hazardous (classified) location

(2) Electrical apparatus not so protected that shall not be used within a hazardous (classified) location

(CMP-14)

Informational Note No. 1: Associated apparatus has identified intrinsically safe connections for intrinsically safe apparatus and also might have connections for nonintrinsically safe apparatus.

Informational Note No. 2: An example of associated apparatus is an intrinsic safety barrier, which is a network designed to limit the energy (voltage and current) available to the protected circuit in the hazardous (classified) location under specified fault conditions.

Informational Note No. 3: See ANSI/UL 913, *Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III, Division 1, Hazardous (Classified) Locations* ; ANSI/UL 60079-11, *Explosive Atmospheres — Part 11: Equipment Protection by Intrinsic Safety "i"* ; and ANSI/ISA RP 12.06.01, *Recommended Practice for Wiring Methods for Hazardous (Classified) Locations Instrumentation — Part 1: Intrinsic Safety* , for additional information.

Associated Nonincendive Field Wiring Apparatus.

Apparatus in which the circuits are not necessarily nonincendive themselves but that affects the energy in nonincendive field wiring circuits and is relied on to maintain nonincendive energy levels. Such apparatus is one of the following:

(1) Electrical apparatus that has an alternative type of protection for use in the appropriate hazardous (classified) location

(2) Electrical apparatus not so protected that shall not be used within a hazardous (classified) location

(CMP-14)

Informational Note No. 1: Associated nonincendive field wiring apparatus has designated associated nonincendive field wiring apparatus connections for nonincendive field wiring apparatus and also might have connections for other electrical apparatus.

Informational Note No. 2: See ANSI/UL 121201, *Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations* , for additional information.

Attachment Fitting, Weight-Supporting (WSAF) (Weight-Supporting Attachment Fitting).

A device that, by insertion into a weight-supporting ceiling receptacle, establishes a connection between the conductors of the attached utilization equipment and the branch-circuit conductors connected to the weight-supporting ceiling receptacle. (CMP-18)

Informational Note No. 1: A weight-supporting attachment fitting is different from an attachment plug because no cord is associated with the fitting. A weight-supporting attachment fitting in combination with a weight-supporting ceiling receptacle secures the associated utilization equipment in place and supports its weight.

Informational Note No. 2: See ANSI/NEMA WD 6, *American National Standard for Wiring Devices — Dimensional Specifications* , for the standard configuration of weight-supporting attachment fittings and related weight-supporting ceiling receptacles.

Attachment Plug (Plug Cap) (Plug).

A device that, by insertion in a receptacle, establishes a connection between the conductors of the attached flexible cord and the conductors connected permanently to the receptacle. (CMP-18)

Audio Autotransformer.

A transformer with a single winding and multiple taps intended for use with an amplifier loudspeaker signal output. (640) (CMP-12)

Audio Signal Processing Equipment (Audio Equipment).

Electrically operated equipment that produces, processes, or both, electronic signals that, when appropriately amplified and reproduced by a loudspeaker, produce an acoustic signal within the range of normal human hearing (typically 20–20 kHz). Within Article 640, the terms equipment and audio equipment are assumed to be equivalent to audio signal processing equipment. (640) (CMP-12)

Informational Note: This equipment includes, but is not limited to, loudspeakers; headphones; pre-amplifiers; microphones and their power supplies; mixers; MIDI (musical instrument digital interface) equipment or other digital control systems; equalizers, compressors, and other audio signal processing equipment; and audio media recording and playback equipment, including turntables, tape decks and disk players (audio and multimedia), synthesizers, tone generators, and electronic organs. Electronic organs and synthesizers may have integral or separate amplification and loudspeakers. With the exception of amplifier outputs, virtually all such equipment is used to process signals (using analog or digital techniques) that have nonhazardous levels of voltage or current.

Audio System.

The totality of all equipment and interconnecting wiring used to fabricate a fully functional audio signal processing, amplification, and reproduction system. (640) (CMP-12)

Audio Transformer.

A transformer with two or more electrically isolated windings and multiple taps intended for use with an amplifier loudspeaker signal output. (640) (CMP-12)

Authority Having Jurisdiction (AHJ).

An organization, office, or individual responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, an installation, or a procedure. (CMP-1)

Informational Note: The phrase “authority having jurisdiction,” or its acronym AHJ, is used in NFPA documents in a broad manner, since jurisdictions and approval agencies vary, as do their responsibilities. Where public safety is primary, the authority having jurisdiction may be a federal, state, local, or other regional department or individual such as a fire chief; fire marshal; chief of a fire prevention bureau, labor department, or health department; building official; electrical inspector; or others having statutory authority. For insurance purposes, an insurance inspection department, rating bureau, or other insurance company representative may be the authority having jurisdiction. In many circumstances, the property owner or his or her designated agent assumes the role of the authority having jurisdiction; at government installations, the commanding officer or departmental official may be the authority having jurisdiction.

Automatic.

Performing a function without the necessity of human intervention. (CMP-1)

Bathroom.

An area including a sink with one or more of the following: a toilet, a urinal, a tub, a shower, a bidet, or similar plumbing fixtures. (CMP-2)

Battery.

A single cell or a group of cells connected together electrically in series, in parallel, or a combination of both. (CMP-13)

Battery, Flow. (Flow Battery)

An energy storage component that stores its active materials in the form of one or two electrolytes external to the reactor interface. When in use, the electrolytes are transferred between reactor and storage tanks. (706) (CMP-13)

Informational Note: Three commercially available flow battery technologies are zinc air, zinc bromine, and vanadium redox, sometimes referred to as *pumped electrolyte ESS* .

Battery, Sealed. (Sealed Battery)

A battery that has no provision for the routine addition of water or electrolyte or for external measurement of electrolyte specific gravity and might contain pressure relief venting. (CMP-13)

Battery, Stationary Standby. (Stationary Standby Battery)

A battery that spends the majority of the time on continuous float charge or in a high state of charge, in readiness for a discharge event. (CMP-13)

Informational Note: Uninterruptible Power Supply (UPS) batteries are an example that falls under this definition.

Battery-Powered Lighting Units.

Individual unit equipment for backup illumination consisting of a rechargeable battery; a battery-charging means; provisions for one or more lamps mounted on the equipment, or with terminals for remote lamps, or both; and a relaying device arranged to energize the lamps automatically upon failure of the supply to the unit equipment. (517) (CMP-15)

Berth.

The water space to be occupied by a boat or other vessel alongside or between bulkheads, piers, piles, fixed and floating docks, or any similar access structure. [**303:** 3.3.2] (555) (CMP-7)

Informational Note: See the definition of *Slip* for additional information.

Bipolar Circuit.

A dc circuit that is comprised of two monopole circuits, each having an opposite polarity connected to a common reference point. (CMP-4)

Block.

A square or portion of a city, town, or village enclosed by streets and including the alleys so enclosed, but not any street. (800) (CMP-16)

Boatyard.

A facility used for constructing, repairing, servicing, hauling from the water, storing (on land and in water), and launching of boats. [**303:** 3.3.3] (555) (CMP-7)

Bodies of Water, Artificially Made. (Artificially Made Bodies of Water)

Bodies of water that have been constructed or modified to fit some decorative or commercial purpose such as, but not limited to, aeration ponds, fish farm ponds, storm retention basins, treatment ponds, and irrigation (channel) facilities. Water depths may vary seasonally or be controlled. (682) (CMP-7)

Bodies of Water, Natural. (Natural Bodies of Water)

Bodies of water such as lakes, streams, ponds, rivers, and other naturally occurring bodies of water, which may vary in depth throughout the year. (682) (CMP-7)

Bonded (Bonding).

Connected to establish electrical continuity and conductivity. (CMP-5)

Bonding Conductor (Bonding Jumper).

A conductor that ensures the required electrical conductivity between metal parts that are required to be electrically connected. (CMP-5)

Bonding Conductor, Equipment. (Equipment Bonding Conductor)

The connection between two or more portions of the equipment grounding conductor. (CMP-5)

Bonding Conductor, Grounding Electrode (Grounding Electrode Bonding Jumper). (Grounding Electrode Bonding Conductor)

A conductor, other than the grounding electrode conductor, used to interconnect two or more grounding electrodes to form the grounding electrode system. (CMP-5)

Bonding Conductor, Main (Main Bonding Jumper). (Main Bonding Conductor)

The connection between the grounded circuit conductor and the equipment grounding conductor, or the supply-side bonding conductor, or both, at the service equipment. (CMP-5)

Bonding Conductor, Supply-Side (Supply-Side Bonding Jumper). (Supply-Side Bonding Conductor)

A conductor installed on the supply side of a service or within a service equipment enclosure(s), or for a separately derived system, that ensures the required electrical conductivity between metal parts required to be electrically connected. (CMP-5)

Bonding Conductor, System (System Bonding Jumper). (System Bonding Conductor)

The connection between the grounded circuit conductor and the supply-side bonding conductor, or the equipment grounding conductor, or both, at a separately derived system. (CMP-5)

Bonding Jumper, Impedance. (Impedance Bonding Jumper).

The connection in an impedance grounded system between the equipment grounding conductor(s) and the grounding electrode side of the impedance grounding device. (CMP-5)

Border Light.

A permanently installed overhead strip light. (520) (CMP-15)

Bottom Shield.

A protective layer that is installed between the floor and flat conductor cable (Type FCC) to protect the cable from physical damage and may or may not be incorporated as an integral part of the cable. (324) (CMP-6)

Branch Circuit (Branch-Circuit).

The circuit conductors between the final overcurrent device protecting the circuit and the outlet(s). (CMP-2)

Branch Circuit, Appliance. (Appliance Branch Circuit)

A branch circuit that supplies energy to one or more outlets to which appliances are to be connected and that has no permanently connected luminaires that are not a part of an appliance. (CMP-2)

Branch Circuit, General-Purpose. (General-Purpose Branch Circuit)

A branch circuit that supplies two or more receptacles or outlets for lighting and appliances. (CMP-2)

Branch Circuit, Individual. (Individual Branch Circuit)

A branch circuit that supplies only one utilization equipment. (CMP-2)

Branch Circuit, Motor. (Motor Branch Circuit)

The circuit conductors, including equipment, between the motor branch-circuit short-circuit and ground-fault protective device and an individual motor. (CMP-11)

Branch Circuit, Multiwire. (Multiwire Branch Circuit)

A branch circuit that consists of two or more ungrounded conductors that have a voltage between them, and a neutral conductor that has equal voltage between it and each ungrounded conductor of the circuit and that is connected to the neutral conductor of the system. (CMP-2)

Branch-Circuit Selection Current (BCSC).

The value in amperes to be used instead of the rated-load current in determining the ratings of motor branch-circuit conductors, disconnecting means, controllers, and branch-circuit short-circuit and ground-fault protective devices wherever the running overload protective device permits a sustained current greater than the specified percentage of the rated-load current. The value of branch-circuit selection current will always be equal to or greater than the marked rated-load current. (440) (CMP-11)

Breakout Assembly.

An adapter used to connect a multipole connector containing two or more branch circuits to multiple individual branch-circuit connectors. (520) (CMP-15)

Broadband.

Wide bandwidth data transmission that transports multiple signals, protocols, and traffic types over various media types. (CMP-16)

Building.

A structure that stands alone or that is separated from adjoining structures by fire walls. (CMP-1)

Building, Floating. (Floating Building)

A building that floats on water, is moored in a permanent location, and has a premises wiring system served through connection by permanent wiring to an electrical supply system not located on the premises. (CMP-7)

Building, Manufactured. (Manufactured Building)

Any building that is of closed construction and is made or assembled in manufacturing facilities on or off the building site for installation, or for assembly and installation on the building site, other than manufactured homes, mobile homes, park trailers, or recreational vehicles. (545) (CMP-7)

Building Component.

Any subsystem, subassembly, or other system designed for use in or integral with or as part of a structure, which can include structural, electrical, mechanical, plumbing, and fire protection systems, and other systems affecting health and safety. (545) (CMP-7)

Building System.

Plans, specifications, and documentation for a system of manufactured building or for a type or a system of building components, which can include structural, electrical, mechanical, plumbing, and fire protection systems, and other systems affecting health and safety, and including such variations thereof as are specifically permitted by regulation, and which variations are submitted as part of the building system or amendment thereto. (545) (CMP-7)

Bulkhead.

A vertical structural wall, usually of stone, timber, metal, concrete, or synthetic material, constructed along, and generally parallel to, the shoreline to retain earth as an extension of the upland, and often to provide suitable water depth at the waterside face. [**303:** 3.3.5] (555) (CMP-7)

Bull Switch.

An externally operated wall-mounted safety switch that can contain overcurrent protection and is designed for the connection of portable cables and cords. (530) (CMP-15)

Bundled.

Cables or conductors that are tied, wrapped, taped, or otherwise periodically bound together. (520) (CMP-15)

Busbar (as applied to low-voltage suspended ceiling power distribution systems).

A noninsulated conductor electrically connected to the source of supply and physically supported on an insulator providing a power rail for connection to utilization equipment, such as sensors, actuators, A/V devices, low-voltage luminaire assemblies, and similar electrical equipment. (393) (CMP-18)

Busbar Support (as applied to low-voltage suspended ceiling power distribution systems).

An insulator that runs the length of a section of suspended ceiling bus rail that serves to support and isolate the busbars from the suspended grid rail. (393) (CMP-18)

Busway.

A raceway consisting of a metal enclosure containing factory-mounted, bare or insulated conductors, which are usually copper or aluminum bars, rods, or tubes. (CMP-8)

Cabinet.

An enclosure that is designed for either surface mounting or flush mounting and is provided with a frame, mat, or trim in which a swinging door or doors are or can be hung. (CMP-8)

Cable, Abandoned. (Abandoned Cable)

Installed cable that is not terminated at equipment other than a termination fitting or a connector and is not identified for future use with a tag. (CMP-3)

> Informational Note: See 640.6(B) , 645.6(G) , 760.25, 770.25, 790.25, and 800.25 for requirements covering the removal of abandoned cables.

Cable, Armored (Type AC). (Armored Cable)

A fabricated assembly of insulated conductors in a flexible interlocked metallic armor. (CMP-6)

Cable, Circuit Integrity (CI). (Circuit Integrity Cable)

Cable(s) marked with the suffix “-CI” used for remote-control, signaling, power-limited, fire alarm, optical fiber, or communications systems that supply critical circuits to ensure survivability for continued circuit operation for a specified time under fire conditions. (CMP-3)

> Informational Note: See 772.4 for power circuits installed for survivability.

Cable, Coaxial. (Coaxial Cable)

A cylindrical assembly composed of a conductor centered inside a metallic tube or shield, separated by a dielectric material, and usually covered by an insulating jacket. (CMP-3)

Cable, Festoon. (Festoon Cable)

Single- and multiple-conductor cable intended for use and installation where flexibility is required. (610) (CMP-12)

Cable, Flat Conductor (Type FCC). (Flat Conductor Cable)

Three or more separate flat copper conductors placed horizontally edge-to-edge and enclosed within an insulating assembly. (324) (CMP-6)

Cable, Instrumentation Tray (Type ITC). (Instrumentation Tray Cable)

A factory assembly of two or more insulated conductors, with or without an equipment grounding conductor(s), enclosed in a nonmetallic sheath. (CMP-3)

Cable, Integrated Gas Spacer (Type IGS). (Integrated Gas Spacer Cable)

A factory assembly of one or more conductors, each individually insulated and enclosed in a loose fit, nonmetallic flexible conduit as an integrated gas spacer cable rated 0 volts through 600 volts. (CMP-6)

Cable, Limited Use. (Limited-Use Cable)

Cables that are intended to be used with protection such as a raceway or for specific restricted applications. (CMP-3)

> Informational Note: Limited use cables are denoted by an “X” suffix, for example Types CL2X or CMX.

Cable, Medium Voltage(Type MV). (Medium Voltage Cable)

A single or multiconductor solid dielectric insulated cable rated 2001 volts up to and including 35,000 volts, nominal. (CMP-6)

Cable, Metal Clad (Type MC). (Metal Clad Cable)

A factory assembly of one or more insulated circuit conductors with or without optical fiber members enclosed in an armor of interlocking metal tape, or a smooth or corrugated metallic sheath. (CMP-6)

Cable, Metallic Conductor. (Metallic Conductor Cable)

A factory assembly of two or more conductors having an overall covering. (CMP-3)

Cable, Mineral-Insulated, Metal-Sheathed (Type MI). (Mineral-Insulated, Metal-Sheathed Cable)

A factory assembly of one or more conductors insulated with a highly compressed refractory mineral insulation and enclosed in a liquidtight and gastight continuous copper or alloy steel sheath. (CMP-6)

Cable, Nonmetallic-Sheathed.

A factory assembly of two or more insulated conductors enclosed within an overall nonmetallic jacket. (CMP-6)

Cable, Nonmetallic-Sheathed (Type NM).

Insulated circuit conductors and a bare, covered, or insulated equipment grounding conductor enclosed within an overall nonmetallic jacket. (CMP-6)

Cable, Nonmetallic-Sheathed (Type NMC).

Insulated circuit conductors and a bare, covered, or insulsated equipment grounding conductor enclosed within an overall, corrosion resistant, nonmetallic jacket. (CMP-6)

Cable, Optical Fiber. (Optical Fiber Cable)

A factory assembly or field assembly of one or more optical fibers having an overall covering. (CMP-16)

> Informational Note: A field-assembled optical fiber cable is an assembly of one or more optical fibers within a jacket. The jacket, without optical fibers, is installed in a manner similar to conduit or raceway. Once the jacket is installed, the optical fibers are inserted into the jacket, completing the cable assembly.

Cable, Optical Fiber, Conductive. (Conductive Optical Fiber Cable)

A factory assembly of one or more optical fibers having an overall covering and containing non-current-carrying conductive member(s) such as metallic strength member(s), metallic vapor barrier(s), metallic armor, or metallic sheath. (CMP-16)

Cable, Optical Fiber, Hybrid. (Hybrid Optical Fiber Cable)

A cable containing optical fibers and current-carrying electrical conductors. (CMP-16)

Cable, Optical Fiber, Nonconductive. (Nonconductive Optical Fiber Cable)

A factory assembly of one or more optical fibers having an overall covering and containing no electrically conductive materials. (CMP-16)

Cable, Optical Fiber, Protected. (Protected Optical Fiber Cable)

Optical fiber cable protected from releasing optical radiation into the atmosphere during normal operating conditions and foreseeable malfunctions by additional armoring, conduit, cable tray, or raceway. (CMP-14)

> Informational Note: See ANSI/UL 60079-28, *Explosive Atmospheres — Part 28: Protection of Equipment and Transmission Systems Using Optical Radiation* , for additional information.

Cable, Portable Power Feeder. (Portable Power Feeder Cable)

One or more flexible shielded insulated power conductors enclosed in a flexible covering rated from 2001 to 25,000 volts. (CMP-6)

Cable, Power and Control Tray (Type TC). (Power and Control Tray Cable)

A factory assembly of two or more insulated conductors, with or without associated bare or covered equipment grounding conductors, under a nonmetallic jacket. (CMP-6)

Cable, Power-Limited Tray (Type PLTC). (Power-Limited Tray Cable)

A factory assembly of two or more insulated conductors rated at 300 volts, with or without associated bare or insulated equipment grounding conductors, under a nonmetallic jacket. (CMP-3)

Cable, Service. (Service Cable)

Service conductors made up in the form of a cable. (CMP-10)

Cable, Service Entrance. (Service Entrance Cable)

A single conductor or multiconductor cable provided with an overall covering, primarily used for services. (CMP-6)

Cable, Service Entrance (Type SE).

Service-entrance cable having a flame-retardant, moisture-resistant covering. (CMP-6)

Cable, Service Entrance (Type USE).

Service-entrance cable, identified for underground use, having a moisture-resistant covering, but not required to have a flame-retardant covering. (CMP-6)

Cable, Type P.

A factory assembly of one or more insulated flexible tinned copper conductors, with associated equipment grounding conductor(s), with or without a braided metallic armor and with an overall nonmetallic jacket. (CMP-6)

Cable, Under Carpet. (Under Carpet Cable)

Cables that are intended to be used under carpeting, floor covering, modular tiles, and planks. (722) (CMP-3)

Cable, Underground Feeder and Branch-Circuit (Type UF). (Underground Feeder and Branch-Circuit Cable)

A factory assembly of one or more insulated conductors with an integral or an overall covering of nonmetallic material suitable for direct burial in the earth. (CMP-6)

Cable Assembly, Flat (Type FC). (Flat Cable Assembly)

An assembly of parallel conductors formed integrally with an insulating material web specifically designed for field installation in surface metal raceway. (CMP-6)

Cable Bundle.

A group of cables that are tied together or in contact with one another in a closely packed configuration for at least 1.0 m (40 in.). (CMP-3)

> Informational Note: Random or loose installation of individual cables can result in less heating. Combing of the cables can result in less heat dissipation and more signal cross talk between cables.

Cable Connector.

A connector designed to join flat conductor cables (Type FCC) without using a junction box. (324) (CMP-6)

Cable Connector [as applied to hazardous (classified) locations].

An electrical device that is part of a cable assembly and that, by insertion of two mating configurations, establishes a connection between the conductors of the cable assembly and the conductors of a fixed piece of equipment. (CMP-14)

Informational Note No. 1: See ANSI/UL 121201, *Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations* , for information on the use of cable connectors.

Informational Note No. 2: Cable connectors in other than hazardous (classified) locations are referred to as male and female fittings.

Informational Note No. 3: See ANSI/UL 2238, *Cable Assemblies and Fittings for Industrial Control and Signal Distribution* , and ANSI/UL 2237, *Multi-Point Interconnection Power Cable Assemblies for Industrial Machinery* , for examples of standards on male and female fittings in other than hazardous (classified) locations.

Cable Joint.

A connection consisting of an insulation system and a connector where two (or more) medium voltage (Type MV) cables are joined together. (CMP-6)

Cable Management System.

An apparatus designed to control and organize lengths of cable or cord. (CMP-12)

Cable Routing Assembly.

A single channel or connected multiple channels, as well as associated fittings, forming a structural system that is used to support and route communications wires and cables, optical fiber cables, data cables associated with information technology and communications equipment, Class 2, Class 3, Class 4, and Type PLTC cables, and power-limited fire alarm cables in plenum, riser, and general-purpose applications. (CMP-3)

Cable Sheath.

A single or multiple layers of a protective covering that holds and protects the conductors or optical fibers, or both, contained inside. (CMP-3)

Cable System, Fire-Resistive. (Fire-Resistive Cable System)

A cable and components used to ensure survivability of critical circuits for a specified time under fire conditions. (CMP-3)

Cable System, Flat Conductor. (Flat Conductor Cable System)

A complete wiring system for branch circuits that is designed for installation under carpet squares. (324) (CMP-6)

Informational Note: The FCC system includes Type FCC cable and associated shielding, connectors, terminators, adapters, boxes, and receptacles.

Cable Termination.

A connection consisting of an insulation system and a connector and installed on a medium voltage (Type MV) cable to connect from a cable to a device, such as equipment. (CMP-6)

Cable Tie.

A band or length of material employing a locking device, used for bundling, securing, and/or supporting cable, flexible conduit, or flexible tubing.

Informational Note: The following are cable tie and cable tie fixing device type designations:

(1) Type(s) 1, 11, 2, 21, 2S, or 21S are evaluated for use in cable management applications.

(2) Type(s) 2S or 21S are also evaluated for securing and supporting cable, flexible conduit, and flexible tubing.

Cable Tie Fixing Device.

A component, such as a block or bracket, specifically designed to secure cable tie(s) to a mounting surface.

Informational Note: The following are cable tie and cable tie fixing device type designations:

(1) Type(s) 1, 11, 2, 21, 2S, or 21S are evaluated for use in cable management applications.

(2) Type(s) 2S or 21S are also evaluated for securing and supporting cable, flexible conduit, and flexible tubing.

Cable Tie Integral Device.

A single component, as produced, incorporating a cable tie and a cable tie fixing device that are not separable.

Note: The following are cable tie and cable tie fixing device type designations:

(1) Type(s) 1, 11, 2, 21, 2S, or 21S are evaluated for use in cable management applications.

(2) Type(s) 2S or 21S are also evaluated for securing and supporting cable, flexible conduit, and flexible tubing.

Cable Tray System.

A unit or assembly of units or sections and associated fittings forming a structural system used to securely fasten or support cables and raceways. (CMP-8)

Cablebus.

An assembly of units or sections with insulated conductors having associated fittings forming a structural system used to securely fasten or support conductors and conductor terminations in a completely enclosed, ventilated, protective metal housing. This assembly is designed to carry fault current and to withstand the magnetic forces of such current. (CMP-8)

Informational Note: Cablebus is ordinarily assembled at the point of installation from the components furnished or specified by the manufacturer in accordance with instructions for the specific job.

Cannabis Oil Booths.

Enclosed areas used to house cannabis oil equipment and systems.

Informational Note: Cannabis oil booths can be designed to house a single piece or multiple pieces of cannabis oil equipment. Booths range in size and can be large enough to permit entrance of personnel to perform the processing tasks.

Cannabis Oil Extraction Equipment.

Equipment that uses flammable materials (solvents) in the process of extracting the plant oil from the plant material.

Informational Note: Extraction equipment can use flammable materials as solvents to extract the plant oil from the plant material by saturating the plant material in a vented container, sealed container, or pressure vessel. Typical flammable materials used in the extraction process include butane, ethanol, hexane, pentane, propane, and LPG.

Cannabis Oil Post-Processing Equipment.

Equipment that is used in the final processing stages of the extracted plant oil (e.g., vacuum ovens, rotary evaporators, solvent recovery pumps).

Cannabis Oil Preparatory Equipment.

Equipment that is used to prepare the plant material for subsequent extraction of the plant oil (e.g., trimming, deseeding, drying/curing).

Cannabis Oil Systems.

Any combination of cannabis oil equipment needed for the overall extraction process (e.g., cannabis oil preparatory equipment, cannabis oil extraction equipment, cannabis oil booths, cannabis oil post-processing equipment).

Cell (as applied to batteries).

The basic electrochemical unit, characterized by an anode and a cathode, used to receive, store, and deliver electrical energy. (CMP-13)

Cell, Sealed. (Sealed Cell)

A cell that has no provision for the routine addition of water or electrolyte or for external measurement of electrolyte specific gravity and might contain pressure relief venting. (CMP-13)

Cell Line.

An assembly of electrically interconnected electrolytic cells supplied by a source of direct-current power. (CMP-12)

Cell Line Attachments and Auxiliary Equipment.

A term that includes, but is not limited to, auxiliary tanks; process piping; ductwork; structural supports; exposed cell line conductors; conduits and other raceways; pumps, positioning equipment, and cell cutout or bypass electrical devices. Auxiliary equipment includes tools, welding machines, crucibles, and other portable equipment used for operation and maintenance within the electrolytic cell line working zone. In the cell line working zone, auxiliary equipment includes the exposed conductive surfaces of ungrounded cranes and crane-mounted cell-servicing equipment. (668) (CMP-12)

Charge Controller.

Equipment that controls dc voltage or dc current, or both, and that is used to charge a battery or other energy storage device. (CMP-13)

Charger Power Converter.

The device used to convert energy from the power grid to a high-frequency output for wireless power transfer. (625) (CMP-12)

Child Care Facility.

A building or structure, or portion thereof, for educational, supervisory, or personal care services for more than four children 7 years old or less. (406) (CMP-18)

Circuit, Power-Limited. (Power-Limited Circuit)

An electrical circuit that is designed to provide acceptable protection from fire initiation and electrical shock by limiting the amount of power delivered into a fault by the power supply. (CMP-3)

Circuit Breaker.

A device designed to open and close a circuit by nonautomatic means and to open the circuit automatically on a predetermined overcurrent without damage to itself when properly applied within its rating. (CMP-10)

Informational Note: The automatic opening means can be integral, direct acting with the circuit breaker, or remote from the circuit breaker.

Circuit Breaker, Adjustable. (Adjustable Circuit Breaker)

A qualifying term indicating that the circuit breaker can be set to trip at various values of current, time, or both, within a predetermined range. (CMP-10)

Circuit Breaker, Instantaneous Trip. (Instantaneous Trip Circuit Breaker)

A qualifying term indicating that no delay is purposely introduced in the tripping action of the circuit breaker. (CMP-10)

Circuit Breaker, Inverse Time. (Inverse Time Circuit Breaker)

A qualifying term indicating that there is a delay purposely introduced in the tripping action of the circuit breaker, and the delay decreases as the magnitude of the current increases. (CMP-10)

Circuit Breaker, Nonadjustable. (Nonadjustable Circuit Breaker)

A qualifying term indicating that the circuit breaker does not have any adjustment to alter the value of the current at which it will trip or the time required for its operation. (CMP-10)

Class 1 Circuit.

The portion of the wiring system between the load side of the Class 1 power source and the connected equipment. (CMP-3)

Class 2 Circuit.

The portion of the wiring system between the load side of a Class 2 power source and the connected equipment. (CMP-3)

Informational Note: The design of a Class 2 circuit considers safety from a fire initiation standpoint and provides acceptable protection from electric shock due to its power limitations.

Class 3 Circuit.

The portion of the wiring system between the load side of a Class 3 power source and the connected equipment. (CMP-3)

Informational Note: The design of a Class 3 circuit considers safety from a fire initiation standpoint. Since higher levels of voltage and current than a Class 2 circuit are permitted, additional safeguards are specified to provide acceptable protection from electric shock.

Class 4 Circuit.

The portion of the wiring system between the load side of a Class 4 transmitter and the Class 4 receiver or Class 4 utilization equipment, as appropriate. (CMP-3)

Informational Note No. 1: A Class 4 circuit is also commonly referred to as a fault-managed power circuit.

Informational Note No. 2: Due to the active monitoring and control of the voltage and current provided, a Class 4 circuit considers safety from a fire initiation standpoint and provides acceptable protection from electric shock.

Class 4 Device.

Any active device connected to the Class 4 circuit; examples include a Class 4 transmitter, a Class 4 receiver, or Class 4 utilization equipment. (CMP-3)

Class 4 Power System.

An actively monitored and controlled system consisting of one or more Class 4 transmitters and one or more Class 4 receivers connected by a cabling system. (CMP-3)

Class 4 Receiver.

A device that accepts Class 4 power and converts it for use by utilization equipment. (CMP-3)

Class 4 Transmitter.

A device that sources Class 4 power. (726) (CMP-3)

> Informational Note: A Class 4 transmitter is different from traditional power sources in that it monitors the line for faults (both line-to-line and line-to-ground) and ceases power transmission if a fault is sensed.

Class 4 Utilization Equipment.

Devices that are directly powered by a Class 4 transmitter without the need for a separate Class 4 receiver (the receiver is integrated into the equipment). (CMP-3)

Closed Construction.

Any building, building component, assembly, or system manufactured in such a manner that all concealed parts of processes of manufacture cannot be inspected after installation at the building site without disassembly, damage, or destruction. (545) (CMP-7)

Clothes Closet.

A nonhabitable room or space intended primarily for storage of garments and apparel. (CMP-1)

Clothes Closet Storage Space.

The area within a clothes closet in which combustible materials can be kept. (410) (CMP-18)

Collector Rings.

An assembly of slip rings for transferring electric energy from a stationary to a rotating member. (675) (CMP-7)

Combiner (DC). (dc Combiner) (Direct-Current Combiner)

An enclosure that includes devices used to connect two or more PV system dc circuits in parallel. (690) (CMP-4)

Combustible Dust.

Solid particles that are 500 µm or smaller (i.e., material passing a U.S. No. 35 Standard Sieve as defined in ASTM E11-17, *Standard Specification for Woven Wire Test Sieve Cloth and Test Sieves*) that can form an explosible mixture when suspended in air at standard atmospheric pressure and temperature. [**499:** 3.3.3] (CMP-14)

> Informational Note: See ASTM E1226, *Standard Test Method for Explosibility of Dust Clouds* ; ISO 6184-1, *Explosion protection systems — Part 1: Determination of explosion indices of combustible dusts in air* ; or ANSI/UL 80079-20-2, *Explosive Atmospheres — Part 20-2: Material Characteristics — Combustible Dusts Test Methods* , for procedures for determining the explosibility of dusts. Historically, explosibility has been described as presenting a flash fire or explosion hazard. It could be understood that potential hazards due to the formation of an explosible mixture when suspended in air at standard atmospheric pressure and temperature would include ignition.

Combustible Gas Detection System.

A protection technique utilizing stationary gas detectors in industrial establishments. (CMP-14)

Commissioning.

The process, procedures, and testing used to set up and verify the initial performance, operational controls, safety systems, and sequence of operation of electrical devices and equipment, prior to it being placed into active service. (CMP-13)

Communications, Data. (Data Communications)

The transfer and reception of information in the form of a digital bitstream or a digitized analog signal transmitted over a point-to-point or point-to-multipoint arrangement. (CMP-16)

Communications Circuit.

A metallic, fiber, or wireless circuit that provides voice/data (and associated power) for communications-related services between communications equipment. (CMP-16)

> Informational Note: Because communications can be carried over conductors with power, meeting both this definition and the definition for a powering circuit is possible (e.g., a power line communications device may be used on a branch circuit). The addition of data to a power line circuit does not change the treatment of the circuit in this code.

Communications Circuit, Network-Powered Broadband. (Network-Powered Broadband Communications Circuit)

The circuit extending from the communications utility's or service provider's serving terminal or tap up to and including the network interface unit (NIU). (830) (CMP-16)

> Informational Note: A typical one-family dwelling network-powered communications circuit consists of a communications drop or communications service cable and an NIU and includes the communications utility's serving terminal or tap where it is not under the exclusive control of the communications utility.

Communications Circuit, Premises. (Premises Communications Circuit)

The circuit that extends voice, audio, video, data, interactive services, telegraph (except radio), and outside wiring for fire alarm and burglar alarm from the service provider's network terminal to the customer's communications equipment. (840) (CMP-16)

Communications Equipment.

The electronic equipment that performs the telecommunications operations for the transmission of audio, video, and data, and includes power equipment (e.g., dc converters, inverters, and batteries), technical support equipment (e.g., computers), and conductors dedicated solely to the operation of the equipment. (CMP-16)

> Informational Note: As the telecommunications network transitions to a more data-centric network, computers, routers, servers, and their powering equipment, are becoming essential to the transmission of audio, video, and data and are finding increasing application in communications equipment installations.

Communications Service Provider.

An organization, business, or individual that offers communications service to others. (CMP-16)

Communications System.

The communications equipment, communication circuits, and manual and machine operations necessary for the transmission, movement, and reception of information (e.g., voice, audio, data). (CMP-16)

Communications Utility.

An organization designated or recognized by an entity such as a public service commission or public utility commission, or recognized as such under federal, state, or local law. (CMP-16)

Community Antenna Television Circuit (CATV).

The circuit that extends community antenna television systems for audio, video, data, and interactive services from the service provider's network terminal to the appropriate customer equipment. (CMP-16)

Concealable Nonmetallic Extension.

A listed assembly of two, three, or four insulated circuit conductors within a nonmetallic jacket, an extruded thermoplastic covering, or a sealed nonmetallic covering. The classification includes surface extensions intended for mounting directly on the surface of walls or ceilings and concealed with paint, texture, joint compound, plaster, wallpaper, tile, wall paneling, or other similar materials. (CMP-6)

Concealed.

Rendered inaccessible by the structure or finish of the building. (CMP-1)

> Informational Note: Wires in concealed raceways are considered concealed, even though they may become accessible by withdrawing them.

Concealed Knob-and-Tube Wiring.

A wiring method using knobs, tubes, and flexible nonmetallic tubing for the protection and support of single insulated conductors. (CMP-6)

Conductor, Bare. (Bare Conductor)

A conductor having no covering or electrical insulation whatsoever. (CMP-6)

Conductor, Copper-Clad Aluminum. (Copper-Clad Aluminum Conductor)

Conductor drawn from a copper-clad aluminum rod, with the copper metallurgically bonded to an aluminum core. (CMP-6)

Conductor, Covered. (Covered Conductor)

A conductor encased within material of composition or thickness that is not recognized by this code as electrical insulation. (CMP-6)

Conductor, Insulated. (Insulated Conductor)

A conductor encased within material of composition and thickness that is recognized by this code as electrical insulation. (CMP-6)

Conductor, Insulated. (Insulated Conductor)

Overhead service conductor encased in a polymeric material adequate for the applied nominal voltage and any conductor types described in 310.4. (396) (CMP-6)

> Informational Note: See ICEA S-76-474-2011, *Standard for Neutral Supported Power Cable Assemblies with Weather-Resistant Extruded Insulation Rated 600 Volts* , for information about overhead service conductors.

Conductors, Outdoor Overhead. (Outdoor Overhead Conductors)

Single conductors, insulated, covered, or bare, installed outdoors on support structures in free air. (395) (CMP-6)

Conduit, Flexible Metal (FMC). (Flexible Metal Conduit)

A raceway of circular cross section made of helically wound, formed, interlocked metal strip. (CMP-8)

Conduit, High Density Polyethylene (HDPE). (High Density Polyethylene Conduit)

A nonmetallic raceway of circular cross section, with associated couplings, connectors, and fittings for the installation of electrical conductors. (CMP-8)

Conduit, Intermediate Metal (IMC). (Intermediate Metal Conduit)

A steel threadable raceway of circular cross section designed for the physical protection and routing of conductors and cables and for use as an equipment grounding conductor when installed with its integral or associated coupling and appropriate fittings. (CMP-8)

Conduit, Liquidtight Flexible Metal (LFMC). (Liquidtight Flexible Metal Conduit)

A raceway of circular cross section having an outer liquidtight, nonmetallic, sunlight-resistant jacket over an inner flexible metal core with associated couplings, connectors, and fittings for the installation of electric conductors. (CMP-8)

Conduit, Liquidtight Flexible Nonmetallic (LFNC). (Liquidtight Flexible Nonmetallic Conduit)

A raceway of circular cross section of various types as follows:

(1) A smooth seamless inner core and cover bonded together and having one or more reinforcement layers between the core and covers, designated as LFNC-A

(2) A smooth inner surface with integral reinforcement within the raceway wall, designated as LFNC-B

(3) A corrugated internal and external surface without integral reinforcement within the raceway wall, designated as LFNC-C

(CMP-8)

Informational Note: FNMC is an alternative designation for LFNC.

Conduit, Nonmetallic Underground with Conductors (NUCC). (Nonmetallic Underground Conduit with Conductors)

A factory assembly of conductors or cables inside a nonmetallic, smooth wall raceway with a circular cross section. (CMP-8)

Conduit, Reinforced Thermosetting Resin (RTRC). (Reinforced Thermosetting Resin Conduit)

A rigid nonmetallic raceway of circular cross section, with integral or associated couplings, connectors, and fittings for the installation of electrical conductors and cables. (CMP-8)

Conduit, Rigid Metal (RMC). (Rigid Metal Conduit)

A threadable raceway of circular cross section designed for the physical protection and routing of conductors and cables and for use as an equipment grounding conductor when installed with its integral or associated coupling and appropriate fittings. (CMP -8)

Conduit, Rigid Polyvinyl Chloride (PVC). (Rigid Polyvinyl Chloride Conduit)

A rigid nonmetallic raceway of circular cross section, with integral or associated couplings, connectors, and fittings for the installation of electrical conductors and cables. (CMP-8)

Conduit Body.

A separate portion of a conduit or tubing system that provides access through a removable cover(s) to the interior of the system at a junction of two or more sections of the system or at a terminal point of the system.

Boxes such as FS and FD or larger cast or sheet metal boxes are not classified as conduit bodies. (CMP-8)

Connector.

An electromechanical fitting. (393) (CMP-18)

Connector, Intercell. (Intercell Connector)

An electrically conductive bar or cable used to connect adjacent cells. (CMP-13)

Connector, Intertier. (Intertier Connector)

An electrical conductor used to connect two cells on different tiers of the same rack or different shelves of the same rack. (CMP-13)

Connector, Load. (Load Connector)

An electromechanical connector used for power from the busbar to utilization equipment. (393) (CMP-18)

Connector, Pendant. (Pendant Connector)

An electromechanical or mechanical connector used to suspend low-voltage luminaire or utilization equipment below the grid rail and to supply power to connect from the busbar to utilization equipment. (393) (CMP-18)

Connector, Power Feed. (Power Feed Connector)

An electromechanical connector used to connect the power supply to a power distribution cable, to connect directly to the busbar, or to connect from a power distribution cable to the busbar. (393) (CMP-18)

Connector, Pressure (Solderless). (Pressure Connector)

A device that establishes a connection between two or more conductors or between one or more conductors and a terminal by means of mechanical pressure and without the use of solder. (CMP-1)

Connector, Rail to Rail. (Rail to Rail Connector)

An electromechanical connector used to interconnect busbars from one ceiling grid rail to another grid rail. (393) (CMP-18)

Connector Strip.

A metal wireway containing pendant or flush receptacles. (520) (CMP-15)

Container (as applied to batteries).

A single-cell or multicell vessel or jar that holds the plates, electrolyte, and other elements of a single unit in a battery. (CMP-13)

Continuous Load.

A load where the maximum current is expected to continue for 3 hours or more. (CMP-2)

Control.

The predetermined process of connecting, disconnecting, increasing, or reducing electric power. (130) (CMP-13)

Control Circuit.

The circuit of a control apparatus or system that carries the electric signals directing the performance of the controller but does not carry the main power current. (CMP-11)

Control Circuits, Fault-Tolerant External. (Fault-Tolerant External Control Circuits)

Those control circuits either entering or leaving the fire pump controller enclosure, which if broken, disconnected, or shorted will not prevent the controller from starting the fire pump from all other internal or external means and may cause the controller to start the pump under these conditions. (695) (CMP-13)

Control Device, Emergency Lighting (ELCD). (Emergency Lighting Control Device)

A separate or integral device intended to perform one or more emergency lighting control functions. (700) (CMP-13)

> Informational Note: See UL 924, *Emergency Lighting and Power Equipment* , for information covering emergency lighting control devices.

Control Drawing.

A drawing or other document provided by the manufacturer of the intrinsically safe or associated apparatus, or of the nonincendive field wiring apparatus or associated nonincendive field wiring apparatus, that details the allowed interconnections between the intrinsically safe and associated apparatus or between the nonincendive field wiring apparatus or associated nonincendive field wiring apparatus. (CMP-14)

Informational Note: See the following standards for additional information:

(1) ANSI/ISA/UL 120202, *Recommendations for the Preparation, Content, and Organization of Intrinsic Safety Control Drawings*

(2) ANSI/UL 913, *Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III, Division 1, Hazardous (Classified) Locations*

(3) ANSI/UL 60079-11, *Explosive Atmospheres — Part 11: Equipment Protection by Intrinsic Safety "i"*

(4) ANSI/UL 121201, *Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations*

(5) ANSI/ISA RP 12.06.01, *Recommended Practice for Wiring Methods for Hazardous (Classified) Locations Instrumentation — Part 1: Intrinsic Safety*

Control Room.

An enclosed control space outside the hoistway, intended for full bodily entry, that contains the elevator motor controller. The room could also contain electrical and/or mechanical equipment used directly in connection with the elevator or dumbwaiter but not the electric driving machine or the hydraulic machine. (620) (CMP-12)

Control Space.

A space inside or outside the hoistway intended to be accessed with or without full bodily entry that contains the elevator motor controller. This space could also contain electrical and/or mechanical equipment used directly in connection with the elevator, dumbwaiter, escalator, moving walk, or platform lift, but not the electrical driving machine or the hydraulic machine. (620) (CMP-12)

Control System.

The overall system governing the starting, stopping, direction of motion, acceleration, speed, and retardation of the moving member. (620) (CMP-12)

Controller.

A device or group of devices that serves to govern, in some predetermined manner, the electric power delivered to the apparatus to which it is connected. (CMP-1)

Controller, Motion. (Motion Controller)

The electrical device(s) for that part of the control system that governs the acceleration, speed, retardation, and stopping of the moving member. (620) (CMP-12)

Informational Note: The motor control function may be integral to the motion controller.

Controller, Motor. (Motor Controller)

Any switch or device that is normally used to start and stop a motor by making and breaking the motor circuit current. (CMP-11)

Controller, Operation. (Operation Controller)

The electrical device(s) for that part of the control system that initiates the starting, stopping, and direction of motion in response to a signal from an operating device. (620) (CMP-12)

Converter, DC-to-DC. (DC-to-DC Converter)

A device that can provide an output dc voltage and current at a higher or lower value than the input dc voltage and current. (CMP-4)

Converter Circuit, DC-to-DC. (DC-to-DC Converter Circuit)

The dc circuit conductors connected to the output of a dc-to-dc converter. (CMP-4)

Converting Device.

That part of the heating equipment that converts input mechanical or electrical energy to the voltage, current, and frequency used for the heating applicator. A converting device consists of equipment using line frequency, all static multipliers, oscillator-type units using vacuum tubes, inverters using solid-state devices, or motor-generator equipment. (665) (CMP-12)

Cooking Unit, Counter-Mounted. (Counter-Mounted Cooking Unit)

A cooking appliance designed for mounting in or on a counter and consisting of one or more heating elements, internal wiring, and built-in or mountable controls. (CMP-2)

Coordination, Selective. (Selective Coordination)

Localization of an overcurrent condition to restrict outages to the circuit or equipment affected, accomplished by the selection and installation of overcurrent protective devices and their ratings or settings for the full range of available overcurrents, from overload to the available fault current, and for the full range of overcurrent protective device opening times associated with those overcurrents. (CMP-10)

Cord, Flexible. (Flexible Cord)

Two or more flexible insulated conductors enclosed in a flexible covering. (CMP-6)

Cord Connector.

A contact device terminated to a flexible cord that accepts an attachment plug or other insertion device. (CMP-6)

Cord Connector [as applied to hazardous (classified) locations].

A fitting intended to terminate a cord to a box or similar device and reduce the strain at points of termination and might include an explosionproof, a dust-ignitionproof, or a flameproof seal. (CMP-14)

Cord Set.

A length of flexible cord having an attachment plug at one end and a cord connector at the other end. (CMP-6)

Corrosive Environment.

Areas or enclosures without adequate ventilation, where electrical equipment is located and pool sanitation chemicals are stored, handled, or dispensed . (680) (CMP-17).

> Informational Note No. 1: See *Advisory: Swimming Pool Chemical: Chlorine* , OSWER 90-008.1, June 1990, available from the EPA National Service Center for Environmental Publications (NSCEP) as sanitation chemicals and pool water are considered to pose a risk of corrosion (gradual damage or destruction of materials) due to the presence of oxidizers (e.g., calcium hypochlorite, sodium hypochlorite, bromine, chlorinated isocyanurates) and chlorinating agents that release chlorine when dissolved in water.
>
> Informational Note No. 2: See ANSI/APSP-11, *Standard for Water Quality in Public Pools and Spas* , ANSI/ASHRAE 62.1, Table 6-4 Minimum Exhaust Rates, and *2021 International Swimming Pool and Spa Code (ISPSC)* , Section 324, including associated definitions and requirements concerning adequate ventilation of indoor spaces such as equipment and chemical storage rooms, which can reduce the likelihood of the accumulation of corrosive vapors. Chemicals such as chlorine cause severe corrosive and deteriorating effects on electrical connections, equipment, and enclosures when stored and kept in the same vicinity.

Counter (Countertop).

A fixed or stationary surface typically intended for food or beverage preparation, food or beverage serving, personal lavation, or laundering or a similar surface that presents a routine risk of spillage of larger quantities of liquids upon outlets mounted directly on or in the surface. (CMP-2)

> Informational Note No. 1: See UL 498, *Receptacles and Attachment Plugs* , and UL 943, *Ground-Fault Circuit Interrupters* , which establish the performance evaluation criteria and construction criteria.
>
> Informational Note No. 2: See 406.14(E) , 406.14(G)(1) , and 406.14(H) for information on receptacles for counters and countertops distinguished from receptacles for work surfaces.

Crane.

A mechanical device used for lifting or moving boats. [**303:** 3.3.6] (555) (CMP-7)

Critical Branch.

A system of feeders and branch circuits supplying power for task illumination, fixed equipment, select receptacles, and select power circuits serving areas and functions related to patient care that are automatically connected to alternate power sources by one or more transfer switches during interruption of the normal power source. [**99:** 3.3.30] (517) (CMP-15)

Critical Operations Areas, Designated (DCOA). (Designated Critical Operations Areas)

Areas within a facility or site designated as requiring critical operations power. (CMP-13)

Critical Operations Data System.

An information technology equipment system that requires continuous operation for reasons of public safety, emergency management, national security, or business continuity. (645) (CMP-12)

Critical Operations Power Systems (COPS).

Power systems for facilities or parts of facilities that require continuous operation for the reasons of public safety, emergency management, national security, or business continuity. (CMP-13)

Current-Limiting (as applied to overcurrent protection devices).

The ability to, when interrupting currents in its current-limiting range, reduce the current flowing in the faulted circuit to a magnitude substantially less than that obtainable in the same circuit if the device were replaced with a solid conductor having comparable impedance. (CMP-10)

Cutout Box.

An enclosure designed for surface mounting that has swinging doors or covers secured directly to and telescoping with the walls of the enclosure. (CMP-8)

Data Center, Modular (MDC). (Modular Data Center)

Prefabricated units, rated 1000 volts or less, consisting of an outer enclosure housing multiple racks or cabinets of information technology equipment (ITE) (e.g., servers) and various support equipment, such as electrical service and distribution equipment, HVAC systems, and the like. (646) (CMP-12)

> Informational Note: A typical construction may use a standard ISO shipping container or other structure as the outer enclosure, racks or cabinets of ITE, service-entrance equipment and power distribution components, power storage such as a UPS, and an air or liquid cooling system. Modular data centers are intended for fixed installation, either indoors or outdoors, based on their construction and resistance to environmental conditions. MDCs can be configured as an all-in-one system housed in a single equipment enclosure or as a system with the support equipment housed in separate equipment enclosures.

DC Plugging Box.

A dc device consisting of one or more 2-pole, 2-wire, nonpolarized, non-grounding-type receptacles intended to be used on dc circuits only. (530) (CMP-15)

Dead-Front.

Without live parts exposed to a person on the operating side of the equipment. (CMP-9)

Demand Factor.

The ratio of the maximum demand of a system, or part of a system, to the total connected load of a system or the part of the system under consideration. (CMP-2)

Dental Office.

A building or part thereof in which the following occur:

(1) Examinations and minor treatments/procedures performed under the continuous supervision of a dental professional;

(2) Use of limited to minimal sedation and treatment or procedures that do not render the patient incapable of self-preservation under emergency conditions; and

(3) No overnight stays for patients or 24-hour operations.

[**99:** 3.3.38] (CMP-15)

Deploy (Deployed).

The use of portable equipment for the duration required by the event or production for which it is used. (CMP-15)

Device.

A unit of an electrical system, other than a conductor, that carries or controls electric energy as its principal function. (CMP-1)

Dielectric Heating.

Heating of a nominally insulating material due to its own dielectric losses when the material is placed in a varying electric field. (665) (CMP-12)

Disconnecting Means.

A device, or group of devices, or other means by which the conductors of a circuit can be disconnected from their source of supply. (CMP-1)

Distribution Point (Center Yard Pole) (Meter Pole).

An electrical supply point from which service drops, service conductors, feeders, or branch circuits to buildings or structures utilized under single management are supplied. (547) (CMP-7)

Informational Note: The service point is typically located at the distribution point.

Diversion Controller (Diversion Charge Controller) (Diversion Load Controller).

Equipment that regulates the output of a source or charging process by diverting power to direct-current or alternating-current loads or to an interconnected utility service. (CMP-13)

Diversion Load.

A load connected to a diversion charge controller or diversion load controller, also known as a dump load. (CMP-4)

Docking Facility.

A covered or open, fixed or floating structure that provides access to the water and to which boats are secured. [**303:** 3.3.7] (555) (CMP-7)

Dormitory.

A building or a space in a building in which group sleeping accommodations are provided for more than 16 persons who are not members of the same family in one room, or a series of closely associated rooms, under joint occupancy and single management, with or without meals, but without individual cooking facilities. (CMP 2) [**101:** 3.3.68]

Informational Note: Rooms within dormitories intended for the use of individuals for combined living and sleeping purposes are guest rooms or guest suites. Examples of dormitories are college dormitories, fraternity and sorority houses, and military barracks. [**101:** A.3.3.68] (CMP 2)

Drop Box.

A box containing pendant- or flush-mounted receptacles attached to a multiconductor cable via strain relief or a multipole connector. (520) (CMP-15)

Dust-Ignitionproof.

Equipment enclosed in a manner that excludes dusts and does not permit arcs, sparks, or heat otherwise generated or liberated inside of the enclosure to cause ignition of exterior accumulations or atmospheric suspensions of a specified dust on or in the vicinity of the enclosure. (CMP-14)

Informational Note No. 1: See ANSI/UL 1203, *Explosion-Proof and Dust-Ignition-Proof Electrical Equipment for Use in Hazardous (Classified) Locations* , for information on dust-ignitionproof enclosures.

Informational Note No. 2: See NEMA 250, *Enclosures for Electrical Equipment (1000 Volts Maximum)* , for information on dust-ignitionproof enclosures that are sometimes additionally marked Type 9.

Dusttight.

Enclosures constructed so that dust will not enter under specified test conditions. (CMP-14)

Informational Note No. 1: See ANSI/UL 121201, *Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations* , for additional information.

Informational Note No. 2: See NEMA 250, *Enclosures for Electrical Equipment (1000 Volts Maximum),* and ANSI/UL 50E, *Enclosures for Electrical Equipment, Environmental Considerations* , for additional information on enclosure Types 3, 3X, 3S, 3SX, 4, 4X, 5, 6, 6P, 12, 12K, and 13 that are considered dusttight.

Duty, Continuous. (Continuous Duty)

Operation at a substantially constant load for an indefinitely long time. (CMP-1)

Duty, Intermittent. (Intermittent Duty)

Operation for alternate intervals of (1) load and no load; or (2) load and rest; or (3) load, no load, and rest. (CMP-1)

Duty, Periodic. (Periodic Duty)

Intermittent operation in which the load conditions are regularly recurrent. (CMP-1)

Duty, Short-Time. (Short-Time Duty)

Operation at a substantially constant load for a short and definite, specified time. (CMP-1)

Duty, Varying. (Varying Duty)

Operation at loads, and for intervals of time, both of which may be subject to wide variation. (CMP-1)

Dwelling, One-Family. (One-Family Dwelling)

A building that consists solely of one dwelling unit. (CMP-1)

Dwelling, Two-Family. (Two-Family Dwelling)

A building that consists solely of two dwelling units. (CMP-1)

Dwelling, Multifamily. (Multifamily Dwelling)

A building that contains three or more dwelling units. (CMP-1)

Dwelling Unit.

A single unit, providing complete and independent living facilities for one or more persons, including permanent provisions for living, sleeping, cooking, and sanitation. (CMP-2)

Electric-Discharge Lighting.

Systems of illumination utilizing fluorescent lamps, high-intensity discharge (HID) lamps, or neon tubing. (CMP-18)

Electric Power Production and Distribution Network.

Power production, distribution, and utilization equipment and facilities, such as electric utility systems that are connected to premises wiring and are external to and not controlled by a system that operates in interactive mode. (CMP-13)

Electric Self-Propelled Vehicle (ESV).

A vehicle or marine vessel, other than an EV, such as farm equipment, boats, aircraft, and golf carts, primarily powered by an electric motor that draws current from a rechargeable storage battery, fuel cell, photovoltaic array, or other source of electric current. (627) (CMP-12)

Electric Self-Propelled Vehicle Power Export Equipment (ESVPE).

The equipment, including the outlet on the electric self-propelled vehicle (ESV), that is used to provide electrical power at voltages greater than or equal to 30 Vac or 60 Vdc to loads external to the ESV, using the vehicle as the source of supply. (627) (CMP-12)

> Informational Note: Electric self-propelled vehicle power export equipment and electric self-propelled vehicle supply equipment or wireless power transfer equipment are sometimes contained in one piece of equipment, sometimes referred to as a bidirectional electric self-propelled vehicle supply equipment (ESVSE) or bidirectional wireless power transfer equipment (WPTE).

Electric Self-Propelled Vehicle Supply Equipment (ESVSE).

Equipment for plug-in charging, including the ungrounded, grounded, and equipment grounding conductors, and the electric self-propelled vehicle connectors, attachment plugs, personnel protection system, and all other fittings, devices, power outlets, or apparatus installed specifically for the purpose of transferring energy between the premises wiring and the electric vehicle. (627) (CMP-12)

> Informational Note: Electric self-propelled vehicle power export equipment and electric self-propelled vehicle supply equipment or wireless power transfer equipment (WPTE) are sometimes contained in one piece of equipment, sometimes referred to as a bidirectional ESVSE or bidirectional WPTE.

Electric Supply Stations.

Locations containing the generating stations and substations, including their associated generator, storage battery, transformer, and switchgear areas. (CMP-4)

Electric Vehicle (EV).

An automotive-type vehicle for on-road use, such as passenger automobiles, buses, trucks, vans, neighborhood electric vehicles, and electric motorcycles, primarily powered by an electric motor that draws current from a rechargeable storage battery, fuel cell, photovoltaic array, or other source of electric current. Plug-in hybrid electric vehicles (PHEV) are electric vehicles having a second source of motive power. (CMP-12)

> Informational Note: Off-road, self-propelled electric mobile machines, such as industrial trucks, hoists, lifts, transports, golf carts, airline ground support equipment, tractors, and boats are not considered electric vehicles.

Electric Vehicle Connector.

A device that, when electrically coupled (conductive or inductive) to an electric vehicle inlet, establishes an electrical connection to the electric vehicle for the purpose of power transfer and information exchange. (625) (CMP-12)

> Informational Note: See 625.48 for further information on interactive systems.

Electric Vehicle Power Export Equipment (EVPE).

The equipment, including the outlet on the electric vehicle, that is used to provide electrical power at voltages greater than or equal to 30 Vac or 60 Vdc to loads external to the electric vehicle, using the electric vehicle as the source of supply. (625) (CMP-12)

> Informational Note: Electric vehicle power export equipment and electric vehicle supply equipment or wireless power transfer equipment are sometimes contained in one piece of equipment, sometimes referred to as a bidirectional electric vehicle supply equipment (EVSE) or bidirectional wireless power transfer equipment (WPTE).

Electric Vehicle Supply Equipment (EVSE).

Equipment for plug-in charging, including the ungrounded, grounded, and equipment grounding conductors, and the electric vehicle connectors, attachment plugs, personnel protection system, and all other fittings, devices, power outlets, or apparatus installed specifically for the purpose of transferring energy between the premises wiring and the electric vehicle. (625) (CMP-12)

> Informational Note: Electric vehicle power export equipment and electric vehicle supply equipment or wireless power transfer equipment (WPTE) are sometimes contained in one piece of equipment, sometimes referred to as a bidirectional EVSE or bidirectional WPTE.

Electrical Circuit Protective System.

A system consisting of components and materials intended for installation as protection for specific electrical wiring systems with respect to the disruption of electrical circuit integrity upon exterior fire exposure. (CMP-16)

Electrical Datum Plane.

A specified vertical distance above the normal high-water level at which electrical equipment can be installed and electrical connections can be made. (CMP-7)

Electrical Ducts.

Electrical conduits, or other raceways round in cross section, that are suitable for use underground or embedded in concrete. (CMP-6)

Electrical Life Support Equipment.

Electrically powered equipment whose continuous operation is necessary to maintain a patient's life. [**99** :3.3.45] (517) (CMP-15)

Electrical Resistance Trace Heating "60079-30-1".

Type of protection for the purpose of producing heat on the principle of electrical resistance and typically composed of one or more metallic conductors and/or an electrically conductive material, suitably electrically insulated and protected. (CMP-14)

> Informational Note: See ANSI/UL 60079-30-1, *Explosive Atmospheres — Part 30-1: Electrical Resistance Trace Heating — General and Testing Requirements* , for additional information.

Electrically Connected.

A connection capable of carrying current as distinguished from connection through electromagnetic induction. (668) (CMP-12)

Electrified Truck Parking Space.

A truck parking space that has been provided with an electrical system that allows truck operators to connect their vehicles while stopped and to use off-board power sources in order to operate on-board systems such as air conditioning, heating, and appliances, without any engine idling. (626) (CMP-12)

> Informational Note: An electrified truck parking space also includes dedicated parking areas for heavy-duty trucks at travel plazas, warehouses, shipper and consignee yards, depot facilities, and border crossings. It does not include areas such as the shoulders of highway ramps and access roads, camping and recreational vehicle sites, residential and commercial parking areas used for automotive parking or other areas where ac power is provided solely for the purpose of connecting automotive and other light electrical loads, such as engine block heaters, and at private residences.

Electrified Truck Parking Space Wiring Systems.

All of the electrical wiring, equipment, and appurtenances related to electrical installations within an electrified truck parking space, including the electrified parking space supply equipment. (626) (CMP-12)

Electrolyte.

The medium that provides the ion transport mechanism between the positive and negative electrodes of a cell. (CMP-13)

Electrolytic Cell.

A tank or vat in which electrochemical reactions are caused by applying electric energy for the purpose of refining or producing usable materials. (668) (CMP-12)

Electrolytic Cell Line Working Zone.

The space envelope wherein operation or maintenance is normally performed on or in the vicinity of exposed energized surfaces of electrolytic cell lines or their attachments. (668) (CMP-12)

Electronic Power Converter.

A device that uses power electronics to convert one form of electrical power into another form of electrical power. (CMP-4)

> Informational Note: Examples of electronic power converters include, but are not limited to, inverters, dc-to-dc converters, and electronic charge controllers. These devices have limited current capabilities based on the device ratings at continuous rated power.

Electronically Protected.

A motor provided with electronic control that is an integral part of the motor and protects the motor against dangerous overheating due to failure of the electronic control, overload, and failure to start. (430) (CMP-11)

Emergency Luminaire, Battery-Equipped. (Battery-Equipped Emergency Luminaire)

A luminaire with a rechargeable battery, a battery charging means, and an automatic load control relay. (CMP-13)

Emergency Luminaire, Directly Controlled (DCEL). (Directly Controlled Emergency Luminaire)

A luminaire supplied by the facility emergency power system and with a control input for dimming or switching that provides an emergency illumination level upon loss of normal power. (700) (CMP-13)

> Informational Note: See ANSI/UL 924, *Emergency Lighting and Power Equipment* , for information covering directly controlled emergency luminaires.

Emergency Power Supply (EPS).

The source(s) of electric power of the required capacity and quality for an emergency power supply system (EPSS). (CMP-13)

Emergency Power Supply System (EPSS).

A complete functioning EPS system coupled to a system of conductors, disconnecting means and overcurrent protective devices, transfer switches, and all control, supervisory, and support devices up to and including the load terminals of the transfer equipment needed for the system to operate as a safe and reliable source of electric power. [**110:** 3.3.4] (CMP-13)

Emergency Systems.

Those systems legally required and classed as emergency by municipal, state, federal, or other codes, or by any governmental agency having jurisdiction. These systems are intended to automatically supply illumination, power, or both, to designated areas and equipment in the event of failure of the normal supply or in the event of accident to elements of a system intended to supply, distribute, and control power and illumination essential for safety to human life. (CMP-13)

Encapsulation “m”.

Type of protection where electrical parts that could ignite an explosive atmosphere by either sparking or heating are enclosed in a compound in such a way that this explosive atmosphere cannot be ignited. (CMP-14)

Informational Note: See ANSI/UL 60079-18, *Explosive atmospheres — Part 18: Equipment protection by encapsulation “m”*, for additional information.

Enclosed.

Surrounded by a case, housing, fence, or wall(s) that prevents persons from accidentally contacting energized parts. (CMP-1)

Enclosed-Break.

Having electrical make-or-break contacts such that, if an internal explosion of the flammable gas or vapor that can enter it occurs, the device will withstand the internal explosion without suffering damage and without communicating the internal explosion to the external flammable gas or vapor. (CMP-14)

Informational Note: See ANSI/UL 121201, *Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations* , for additional information.

Enclosure.

The case or housing of apparatus or the fence or walls surrounding an installation to prevent personnel from accidentally contacting energized parts or to protect the equipment from physical damage. (CMP-1)

Informational Note: See Table 110.28 for examples of enclosure types.

Energized.

Electrically connected to, or is, a source of voltage. (CMP-1)

Energized, Likely to Become. (Likely to Become Energized)

Conductive material that could become energized because of the failure of electrical insulation or electrical spacing. (CMP-5)

Energy Management System (EMS).

A system that monitors and controls power within an electrical system. (CMP-13)

Energy Storage System (ESS).

One or more devices, assembled together, capable of storing energy to supply electrical energy at a future time. [**855:** 3.3.9] (CMP-13)

Informational Note No. 1: An ESS(s) can include but is not limited to batteries, capacitors, and kinetic energy devices (e.g., flywheels and compressed air). An ESS(s) can include inverters or converters to change voltage levels or to make a change between an ac or a dc system.

Informational Note No. 2: These systems differ from a stationary standby battery installation where a battery spends the majority of the time on continuous float charge or in a high state of charge, in readiness for a discharge event.

Entertainment Device.

A mechanical or electromechanical device that provides an entertainment experience. (522) (CMP-15)

Informational Note: These devices can include animated props, show action equipment, animated figures, and special effects, coordinated with audio and lighting to provide an entertainment experience.

Equipment.

A general term, including fittings, devices, appliances, luminaires, apparatus, machinery, and the like used as a part of, or in connection with, an electrical installation. (CMP-1)

Equipment, Interconnection. (Interconnection Equipment)

Equipment that performs protective and control functions that enables power sources, or systems supplied by power sources, to operate in parallel with, separate from, and reconnect to systems supplied by other power sources. (CMP-4)

Equipment, Mobile. (Mobile Equipment)

Equipment with electrical components that is suitable to be moved only with mechanical aids or is provided with wheels for movement by a person(s) or powered devices. (513) (CMP-14)

Equipment, Portable. (Portable Equipment)

Equipment fed with portable cords or cables intended to be moved from one place to another. (640) (CMP-12)

Equipment, Portable. (Portable Equipment)

Equipment with electrical components suitable to be moved by a single person without mechanical aids. (511) (CMP-14)

Equipment, Portable. (Portable Equipment)

Equipment fed with portable cords or cables intended to be moved from one place to another. (520) (CMP-15)

Equipment, Portable. (Portable Equipment)

Equipment intended to be moved from one place to another. (530) (CMP-15)

Equipment, Signal. (Signal Equipment)

Includes audible and visual equipment such as chimes, gongs, lights, and displays that convey information to the user. (620) (CMP-12)

Equipment Branch.

A system of feeders and branch circuits arranged for delayed, automatic, or manual connection to the alternate power source and that serves primarily 3-phase power equipment. [**99** :3.3.50] (517) (CMP-15)

Equipment Protection Level (EPL).

Level of protection assigned to equipment based on its likelihood of becoming a source of ignition, and distinguishing the differences between explosive gas atmospheres and explosive dust atmospheres. (CMP-14)

> Informational Note: See ANSI/UL 60079-0, *Explosive Atmospheres — Part 0: Equipment — General Requirements* , for additional information.

Equipment Rack.

A framework for the support, enclosure, or both, of equipment; can be portable or stationary. (640) (CMP-12)

> Informational Note: See EIA/ECA 310-E-2005, *Cabinets, Racks, Panels and Associated Equipment* , for examples of equipment racks.

Equipotential Plane.

Conductive elements that are connected together to minimize voltage differences. (CMP-7)

Essential Electrical System.

A distribution system designed to ensure continuity of electrical power to designated areas and functions of a health care facility upon loss of one of the on-site or off-site sources with reliability and capacity sufficient to provide effective facility operation consistent with the facility's emergency operations plan. [**99:** 3.3.54] (517) (CMP-15)

Explosionproof Equipment.

Equipment enclosed in a case that is capable of withstanding an explosion of a specified gas or vapor that might occur within it, that is capable of preventing the ignition of a specified gas or vapor surrounding the enclosure by sparks, flashes, or explosion of the gas or vapor within, and that operates at such an external temperature that a surrounding flammable atmosphere will not be ignited. (CMP-14)

Informational Note No. 1: See ANSI/UL 1203, *Explosion-Proof and Dust-Ignition-Proof Electrical Equipment for Use in Hazardous (Classified) Locations* , for additional information.

Informational Note No. 2: See NEMA 250, *Enclosures for Electrical Equipment (1000 Volts Maximum)* , for additional information on explosionproof enclosures that are sometimes additionally marked Type 7.

Exposed (as applied to live parts).

Capable of being inadvertently touched or approached nearer than a safe distance by a person. (CMP-1)

Informational Note: This term applies to parts that are not suitably guarded, isolated, or insulated.

Exposed (as applied to wiring methods).

On or attached to the surface or behind panels designed to allow access. (CMP-1)

Exposed (Optical Fiber Cable Exposed to Accidental Contact).

A conductive optical fiber cable in such a position that, in case of failure of supports or insulation, contact between the cable's non–current-carrying conductive members and an electrical circuit might result. (CMP-16)

Exposed (to Accidental Contact).

A circuit in such a position that, in case of failure of supports or insulation, contact with another circuit may result. (CMP-16)

Exposed Conductive Surfaces.

Those surfaces that are capable of carrying electric current and that are unprotected, uninsulated, unenclosed, or unguarded, permitting personal contact. [**99:** 3.3.54] (517) (CMP-15)

Informational Note: Paint, anodizing, and similar coatings are not considered suitable insulation, unless they are listed for such use.

Externally Operable.

Capable of being operated without exposing the operator to contact with live parts. (CMP-1)

Facility, On-Site Power Production. (On-Site Power Production Facility)

The normal supply of electric power for the site that is expected to be constantly producing power. (695) (CMP-13)

Fastened-in-Place (as applied to electric vehicle power transfer systems and electric self-propelled vehicle power transfer systems).

Mounting means of equipment in which the fastening means are specifically designed to permit removal without the use of a tool. (CMP-12)

Fault-Managed Power (FMP).

A powering system that monitors for faults and controls current delivered to ensure fault energy is limited. (726) (CMP-3)

Informational Note No. 1: The monitoring and control systems differentiate fault-managed power from electric light and power circuits; therefore, alternative requirements to those of Chapters 1 through 4 are given regarding minimum wire sizes, ampacity adjustment and correction factors, overcurrent protection, insulation requirements, and wiring methods and materials.

Informational Note No. 2: A fault-managed power circuit is also commonly referred to as a Class 4 circuit.

Fault Current.

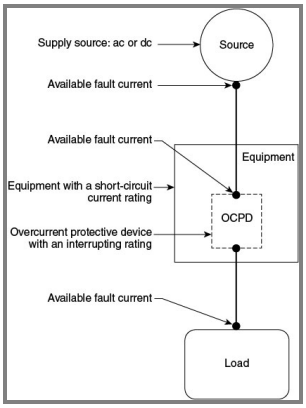
The current delivered at a point on the system during a short-circuit condition. (CMP-10)

Fault Current, Available. (Available Fault Current)

The largest amount of current capable of being delivered at a point on the system during a short-circuit condition. (CMP-10)

Informational Note: A short-circuit can occur during abnormal conditions such as a fault between circuit conductors or a ground fault. See Figure Informational Note 100.1 .

Figure Informational Note 100.1 Available Fault Current.



Fault Protection Device.

An electronic device that is intended for the protection of personnel and functions under fault conditions, such as network-powered broadband communications cable short or open circuit, to limit the current or voltage, or both, for a low-power network-powered broadband communications circuit and provide acceptable protection from electric shock. (830) (CMP-16)

Feeder.

All circuit conductors between the service equipment, the source of a separately derived system, or other power supply source and the final branch-circuit overcurrent protective device. (CMP-10)

Feeder Assembly.

The overhead or under-chassis feeder conductors, including the equipment grounding conductor, together with the necessary fittings and equipment; or the power-supply cord assembly for a mobile home, recreational vehicle, or park trailer, identified for the delivery of energy from the source of electrical supply to the panelboard within the mobile home, recreational vehicle, or park trailer. (CMP-7)

Festoon Lighting.

A string of outdoor lights that is suspended between two points. (CMP-18)

Fibers/Flyings, Combustible. (Combustible Fibers/Flyings)

Fibers/flyings, where any dimension is greater than 500 µm in nominal size, which can form an explosible mixture when suspended in air at standard atmospheric pressure and temperature. [**499:** 3.3.4.1] (CMP-14)

Informational Note No. 1: This definition and Informational Notes No. 2 and No. 3 have been extracted from NFPA 499-2024, *Recommended Practice for the Classification of Combustible Dusts and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas* . The NFPA 499 reference is in brackets. Only editorial changes were made to the extracted text to make it consistent with this code.

Informational Note No. 2: Section 500.5(D) defines a Class III location. Combustible fibers/flyings can be similar in physical form to ignitible fibers/flyings and protected using the same electrical equipment installation methods. Examples of fibers/flyings include flat platelet-shaped particulate, such as metal flake, and fibrous particulate, such as particle board core material. If the smallest dimension of a combustible material is greater than 500 µm, it is unlikely that the material would be combustible fibers/flyings, as determined by test. Finely divided solids with lengths that are large compared to their diameter or thickness usually do not pass through a 500 µm sieve, yet when tested could potentially be determined to be explosible. [**499:** A.3.3.4.1]

Informational Note No. 3: See ASTM E1226, *Standard Test Method for Explosibility of Dust Clouds* , ISO 6184-1, *Explosion protection systems — Part 1: Determination of explosion indices of combustible dusts in air* , or ISO/IEC/UL 80079-20-2, *Explosive atmospheres — Part 20-2: Material characteristics — Combustible dusts test methods* , for procedures for determining the explosibility of dusts. A material that is found to not present an explosible mixture could still be an ignitible fiber/flying, as defined in this article. Historically, the explosibility condition has been described as presenting a flash fire or explosion hazard. It could be understood that the potential hazard due to the formation of an explosible mixture when suspended in air at standard atmospheric pressure and temperature would include ignition. [**499:** A.3.3.4.1]

Fibers/Flyings, Ignitible. (Ignitible Fibers/Flyings)

Fibers/flyings where any dimension is greater than 500 µm in nominal size, which are not likely to be in suspension in quantities to produce an explosible mixture, but could produce an ignitible layer fire hazard. [**499:** 3.3.4.2] (CMP-14)

Informational Note No. 1: This definition and Informational Note No. 2 have been extracted from NFPA 499-2024, *Recommended Practice for the Classification of Combustible Dusts and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas* . The NFPA 499 reference is in brackets. Only editorial changes were made to the extracted text to make it consistent with this code.

Informational Note No. 2: Section 500.5 of this code prescribes a Class III location as one where ignitible fibers/flyings are present, but not likely to be in suspension in the air in quantities sufficient to produce ignitible mixtures. This description addresses fibers/flyings that do not present a flash-fire hazard or explosion hazard by test. This could be because those fibers/flyings are too large or too agglomerated to be suspended in air in sufficient concentration, or at all, under typical test conditions. Alternatively, this could be because they burn so slowly that, when suspended in air, they do not propagate combustion at any concentration. In this document the zone classification system includes ignitible fibers/flyings as a fire hazard in a layer, which is not addressed in the IEC zone system (see IEC 60079-10-2, *Explosive atmospheres — Part 10-2: Classification of areas — Explosive dust atmospheres*). Where these are present, the user could also consider installation in accordance with Article 503 of this code. [**499:** A.3.3.4.2]

Field Evaluation Body (FEB).

An organization or part of an organization that performs field evaluations of electrical or other equipment. [**790:** 3.3.4] (CMP-1)

> Informational Note: See NFPA 790-2024, *Standard for Competency of Third-Party Field Evaluation Bodies* , provides guidelines for establishing the qualification and competency of a body performing field evaluations of electrical products and assembles with electrical components.

Field Labeled (as applied to evaluated products).

Equipment or materials to which has been attached a label, symbol, or other identifying mark of an FEB indicating the equipment or materials were evaluated and found to comply with requirements as described in an accompanying field evaluation report. [**790:** 3.3.6] (CMP-1)

Fire Alarm Circuit.

The portion of the wiring system between the load side of the overcurrent device or the power-limited supply and the connected equipment of all circuits powered and controlled by the fire alarm system. Fire alarm circuits are classified as either non–power-limited or power-limited. (CMP-3)

Fire Alarm Circuit, Non-Power-Limited (NPLFA). (Non-Power-Limited Fire Alarm Circuit)

A fire alarm circuit powered by a source that is not power limited. (CMP-3)

> Informational Note: See 760.41 and 760.43 for requirements for non-power-limited fire alarm circuits.

Fire Alarm Circuit, Power-Limited (PLFA). (Power-Limited Fire Alarm Circuit)

A fire alarm circuit powered by a power-limited source . (CMP-3)

> Informational Note: See 760.121 for requirements on power-limited fire alarm circuits.

Fitting.

An accessory such as a locknut, bushing, or other part of a wiring system that is intended primarily to perform a mechanical rather than an electrical function. (CMP-1)

Fixed (as applied to equipment).

Equipment that is fastened or otherwise secured at a specific location. (CMP-17)

Fixed-in-Place (as applied to electric vehicle power transfer systems and electric self-propelled vehicle power transfer systems).

Mounting means of equipment using fasteners that require a tool for removal. (CMP-12)

Flameproof “d”.

Type of protection where the enclosure will withstand an internal explosion of a flammable mixture that has penetrated into the interior, without suffering damage and without causing ignition, through any joints or structural openings in the enclosure of an external explosive gas atmosphere consisting of one or more of the gases or vapors for which it is designed. (CMP-14)

> Informational Note: See ANSI/UL 60079-1, *Explosive Atmospheres — Part 1: Equipment Protection by Flameproof Enclosures “d”,* for additional information.

Flammable Anesthetics.

Gases or vapors, such as fluroxene, cyclopropane, divinyl ether, ethyl chloride, ethyl ether, and ethylene, that could form flammable or explosive mixtures with air, oxygen, or reducing gases such as nitrous oxide. (517) (CMP-15)

Flexible Bus Systems.

An assembly of flexible insulated bus, with a system of associated fittings used to secure, support, and terminate the bus. (CMP-8)

> Informational Note: Flexible bus systems are engineered systems for a specific site location and are ordinarily assembled at the point of installation from the components furnished or specified by the manufacturer.

Flexible Insulated Bus.

A flexible rectangular conductor with an overall insulation. (CMP-8)

Flywheel ESS (FESS).

A mechanical ESS composed of a spinning mass referred to as a rotor and an energy conversion mechanism such as a motor-generator that converts the mechanical energy to electrical energy. (706) (CMP-13)

> Informational Note: There are primarily two types of rotor constructions, solid metal mass design and composite fiber design.

Footlight.

A border light installed on or in the stage. (520) (CMP-15)

Forming Shell.

A structure designed to support a wet-niche luminaire assembly and intended for mounting in a pool or fountain structure. (680) (CMP-17)

Fountain.

An ornamental structure or recreational water feature from which one or more jets or streams of water are discharged into the air, including splash pads, ornamental pools, display pools, and reflection pools. The definition does not include drinking water fountains or water coolers. (680) (CMP-17)

Frame.

Chassis rail and any welded addition thereto of metal thickness of 1.35 mm (0.053 in.) or greater. (551) (CMP-7)

Free Air (as applied to conductors).

Open or ventilated environment that allows for heat dissipation and air flow around an installed conductor. (CMP-6)

Fuel Cell.

An electrochemical system that consumes fuel to produce an electric current. In such cells, the main chemical reaction used for producing electric power is not combustion. However, there may be sources of combustion used within the overall cell system, such as reformers/fuel processors. (CMP-4)

Fuel Cell System.

The complete aggregate of equipment used to convert chemical fuel into usable electricity and typically consisting of a reformer, stack, power inverter, and auxiliary equipment. (CMP-4)

Fuse.

An overcurrent protective device with a circuit-opening fusible part that is heated and severed by the passage of overcurrent through it. (CMP-10)

> Informational Note: A fuse comprises all the parts that form a unit capable of performing the prescribed functions. It may or may not be the complete device necessary to connect it into an electrical circuit.

Fuse, Electronically Actuated. (Electronically Actuated Fuse)

An overcurrent protective device that generally consists of a control module that provides current-sensing, electronically derived time–current characteristics, energy to initiate tripping, and an interrupting module that interrupts current when an overcurrent occurs. Such fuses may or may not operate in a current-limiting fashion, depending on the type of control selected. (CMP-10)

Fuse, Expulsion. (Expulsion Fuse)

A vented fuse unit in which the expulsion effect of gases produced by the arc and lining of the fuseholder, either alone or aided by a spring, extinguishes the arc. (CMP-10)

Fuse, Nonvented Power. (Nonvented Power Fuse)

A fuse without intentional provision for the escape of arc gases, liquids, or solid particles to the atmosphere during circuit interruption. (CMP-10)

Fuse, Power. (Power Fuse)

A vented, nonvented, or controlled vented fuse unit in which the arc is extinguished by being drawn through solid material, granular material, or liquid, either alone or aided by a spring. (CMP-10)

Fuse, Vented Power. (Vented Power Fuse)

A fuse with provision for the escape of arc gases, liquids, or solid particles to the surrounding atmosphere during circuit interruption. (CMP-10)

Garage.

A building or portion of a building in which one or more self-propelled vehicles can be kept for use, sale, storage, rental, repair, exhibition, or demonstration purposes. (CMP-1)

Informational Note: See 511.1 for commercial garages, repair and storage.

Garage, Major Repair. (Major Repair Garage)

A building or portions of a building where major repairs, such as engine overhauls, painting, body and fender work, welding or grinding, and repairs that require draining or emptying of the motor vehicle fuel tank are performed on motor vehicles, including associated floor space used for offices, parking, or showrooms. [**30A:** 3.3.12.1] (CMP-14)

Garage, Minor Repair. (Minor Repair Garage)

A building or portions of a building used for lubrication, inspection, and minor automotive maintenance work, such as engine tune-ups, replacement of parts, fluid changes (e.g., oil, antifreeze, transmission fluid, brake fluid, air-conditioning refrigerants), brake system repairs, tire rotation, and similar routine maintenance work, including the associated floor space used for offices, parking, or showrooms. [**30A:** 3.3.12.2] (CMP-14)

General-Purpose Cables, Cable Routing Assemblies, and Raceways.

Cables, cable routing assemblies, and raceways are suitable for general-purpose applications and are resistant to the spread of fire. (722) (CMP-3)

Generating Capacity, Inverter. (Inverter Generating Capacity)

The sum of parallel-connected inverter maximum continuous output power at 40°C in watts, kilowatts, volt-amperes, or kilovolt-amperes. (CMP-4)

Generating Station.

A plant wherein electric energy is produced by conversion from some other form of energy (e.g., chemical, nuclear, solar, wind, mechanical, or hydraulic) by means of suitable apparatus. (CMP-4)

Generator (Generator Set).

A machine that converts mechanical energy into electrical energy by means of a prime mover and alternator. (CMP-13)

Generator, On-Site Standby. (On-Site Standby Generator)

A facility producing electric power on site as the alternate supply of electric power. It differs from an on-site power production facility in that it is not constantly producing power. (695) (CMP-13)

Generator Terminals.

The point of connection for the output conductors on the generator (generator set). (445) (CMP-13)

Grid Bus Rail.

A combination of the busbar, the busbar support, and the structural suspended ceiling grid system. (393) (CMP-18)

Ground.

The Earth. (CMP-5)

Ground Fault.

An unintentional, electrically conductive connection between an ungrounded conductor of an electrical circuit and the normally non-current-carrying conductors, metal enclosures, metal raceways, metal equipment, or earth. (CMP-5)

Ground-Fault Circuit Interrupter (GFCI).

A device intended for the protection of personnel that functions to de-energize a circuit or portion thereof within an established period of time when a ground-fault current exceeds the values established for a Class A device. (CMP-2)

> Informational Note: See UL 943, *Standard for Ground-Fault Circuit Interrupters* , for further information. Class A ground-fault circuit interrupters trip when the ground-fault current is 6 mA or higher and do not trip when the ground-fault current is less than 4 mA.

Ground-Fault Circuit Interrupter, Special Purpose (SPGFCI). (Special Purpose Ground-Fault Circuit Interrupter)

A device intended for the detection of ground-fault currents that functions to de-energize a circuit or portion of a circuit within an established period of time established for Class C, D, or E devices. (CMP-2)

> Informational Note: See UL 943C, *Outline of Investigation for Special Purpose Ground-Fault Circuit Interrupters* , for information on Classes C, D, or E special purpose ground-fault circuit interrupters.

Ground-Fault Current Path.

An electrically conductive path from the point of a ground fault on a wiring system through normally non–current-carrying conductors, grounded conductors, equipment, or the earth to the electrical supply source. (CMP-5)

> Informational Note: Examples of ground-fault current paths are any combination of equipment grounding conductors, metallic raceways, metallic cable sheaths, electrical equipment, and any other electrically conductive material such as metal, water, and gas piping; steel framing members; stucco mesh; metal ducting; reinforcing steel; shields of communications cables; grounded conductors; and the earth itself.

Ground-Fault Current Path, Effective. (Effective Ground-Fault Current Path)

An intentionally constructed, low-impedance electrically conductive path designed and intended to carry current during ground-fault events from the point of a ground fault on a wiring system to the electrical supply source and that facilitates the operation of the overcurrent protective device or ground-fault detectors. (CMP-5)

Ground-Fault Detector-Interrupter, dc (GFDI).

A device that provides protection for PV system dc circuits by detecting a ground fault and could interrupt the fault path in the dc circuit. (690) (CMP-4)

> Informational Note: See UL 1741, *Standard for Inverters, Converters, Controllers and Interconnection System Equipment for Use with Distributed Energy Resources* , and UL 62109, *Standard for Power Converters for use in Photovoltaic Power Systems* , for further information on GFDI equipment.

Ground-Fault Protection of Equipment (GFPE).

A system intended to provide protection of equipment from damaging line-to-ground fault currents by operating to cause a disconnecting means to open all ungrounded conductors of the faulted circuit. This protection is provided at current levels less than those required to protect conductors from damage through the operation of a supply circuit overcurrent device. (CMP-5)

Grounded (Grounding).

Connected (connecting) to ground or to a conductive body that extends the ground connection. (CMP-5)

Grounded, Functionally. (Functionally Grounded)

A system that has an electrical ground reference for operational purposes that is not solidly grounded. (CMP-4)

> Informational Note: A functionally grounded system is often connected to ground through an electronic means internal to an inverter or charge controller that provides ground-fault protection. Examples of operational purposes for functionally grounded systems include ground-fault detection and performance-related issues for some power sources.

Grounded, Solidly. (Solidly Grounded)

Connected to ground without inserting any resistor or impedance device. (CMP-5)

Grounded Conductor.

A system or circuit conductor that is intentionally grounded. (CMP-5)

> Informational Note: Although an equipment grounding conductor is grounded, it is not considered a grounded conductor.

Grounded System, Impedance. (Impedance Grounded System)

An electrical system that is grounded by intentionally connecting the system neutral point to ground through an impedance device. (CMP-5)

Grounding Conductor, Equipment (EGC). (Equipment Grounding Conductor)

A conductive path(s) that is part of an effective ground-fault current path and connects normally non-current-carrying metal parts of equipment together and to the system grounded conductor or to the grounding electrode conductor, or both. (CMP-5)

> Informational Note No. 1: It is recognized that the equipment grounding conductor also performs bonding.
>
> Informational Note No. 2: See 250.118 for a list of acceptable equipment grounding conductors.

Grounding Conductor, Impedance. (Impedance Grounding Conductor)

A conductor that connects the system neutral point to the impedance device in an impedance grounded system. (CMP-5)

Grounding Electrode.

A conducting object through which a direct connection to earth is established. (CMP-5)

Grounding Electrode Conductor (GEC).

A conductor used to connect the system grounded conductor or the equipment to a grounding electrode or to a point on the grounding electrode system. (CMP-5)

Grouped.

Cables or conductors positioned adjacent to one another but not in continuous contact with each other. (520) (CMP-15)

Guarded.

Covered, shielded, fenced, enclosed, or otherwise protected by means of suitable covers, casings, barriers, rails, screens, mats, or platforms to remove the likelihood of approach or contact by persons or objects to a point of danger. (CMP-1)

Guest Room.

An accommodation combining living, sleeping, sanitary, and storage facilities within a compartment. (CMP-2)

Guest Suite.

An accommodation with two or more contiguous rooms comprising a compartment, with or without doors between such rooms, that provides living, sleeping, sanitary, and storage facilities. (CMP-2)

Gutter, Metal Auxiliary. (Metal Auxiliary Gutter)

A sheet metal enclosure used to supplement wiring spaces at meter centers, distribution centers, switchgear, switchboards, and similar points of wiring systems. The enclosure has hinged or removable covers for housing and protecting electrical wires, cable, and busbars. The enclosure is designed for conductors to be laid or set in place after the enclosures have been installed as a complete system. (CMP-8)

Gutter, Nonmetallic Auxiliary. (Nonmetallic Auxiliary Gutter)

A flame-retardant, nonmetallic enclosure used to supplement wiring spaces at meter centers, distribution centers, switchgear, switchboards, and similar points of wiring systems. The enclosure has hinged or removable covers for housing and protecting electrical wires, cable, and busbars. The enclosure is designed for conductors to be laid or set in place after the enclosures have been installed as a complete system. (CMP-8)

Habitable Room.

A room in a building for living, sleeping, eating, or cooking, but excluding bathrooms, toilet rooms, closets, hallways, storage or utility spaces, and similar areas. (CMP-2)

Handhole Enclosure.

An enclosure for use in underground systems, provided with an open or closed bottom, and sized to allow personnel to reach into, but not enter, for the purpose of installing, operating, or maintaining equipment or wiring or both. (CMP-8)

Hazard Current.

For a given set of connections in an isolated power system, the total current that would flow through a low impedance if it were connected between either isolated conductor and ground. [**99:** 3.3.72] (517) (CMP-15)

Hazard Current, Fault. (Fault Hazard Current)

The hazard current of a given isolated power system with all devices connected except the line isolation monitor. [**99:** 3.3.72.1] (517) (CMP-15)

Monitor Hazard Current.

The hazard current of the line isolation monitor alone. [**99:** 3.3.72.2] (517) (CMP-15)

Total Hazard Current.

The hazard current of a given isolated system with all devices, including the line isolation monitor, connected. [**99:** 3.3.72.3] (517) (CMP-15)

Header.

Transverse metal raceways for electrical conductors, providing access to predetermined cells of a precast cellular concrete floor, thereby permitting the installation of electrical conductors from a distribution center to the floor cells. (CMP-8)

Health Care Facilities.

Buildings, portions of buildings, or mobile enclosures in which human medical, dental, psychiatric, nursing, obstetrical, or surgical care is provided. [**99:** 3.3.73] (CMP-15)

> Informational Note: Examples of health care facilities include, but are not limited to, hospitals, nursing homes, limited care facilities, clinics, medical and dental offices, and ambulatory care centers, whether permanent or movable.

Health Care Facility's Governing Body.

The person or persons who have the overall legal responsibility for the operation of a health care facility. [**99:** 3.3.74] (517) (CMP-15)

Heating Equipment.

Any equipment that is used for heating purposes and whose heat is generated by induction or dielectric methods. (665) (CMP-12)

Heating Panel.

A complete assembly provided with a junction box or a length of flexible conduit for connection to a branch circuit. (CMP-17)

Heating Panel Set.

A rigid or nonrigid assembly provided with nonheating leads or a terminal junction assembly identified as being suitable for connection to a wiring system. (CMP-17)

Heating System.

A complete system consisting of components such as heating elements, fastening devices, nonheating circuit wiring, leads, temperature controllers, safety signs, junction boxes, raceways, and fittings. (CMP-17)

Heating System, Impedance. (Impedance Heating System)

A system in which heat is generated in an object, such as a pipe, rod, or combination of such objects serving as a heating element, by causing current to flow through such objects by direct connection to an ac voltage source from an isolating transformer. In some installations the object is embedded in the surface to be heated or constitutes the exposed component to be heated. (CMP-17)

Heating System, Induction. (Induction Heating System)

A system in which heat is generated in a pipeline or vessel wall by inducing current in the pipeline or vessel wall from an external isolated ac field source. (CMP-17)

Heating System, Skin Effect. (Skin-Effect Heating System)

A system in which heat is generated on the inner surface of a ferromagnetic envelope embedded in or fastened to the surface to be heated.

> Informational Note: Typically, an electrically insulated conductor is routed through and connected to the envelope at the other end. The envelope and the electrically insulated conductor are connected to an ac voltage source from an isolating transformer. (CMP-17)

Hermetic Refrigerant Motor-Compressor.

A combination consisting of a compressor and motor, both of which are enclosed in the same housing, with no external shaft or shaft seals, with the motor operating in the refrigerant. (CMP-11)

Hoistway.

Any shaftway, hatchway, well hole, or other vertical opening or space in which an elevator or dumbwaiter is designed to operate. (CMP-12)

Hospital.

A building or portion thereof used on a 24-hour basis for the medical, psychiatric, obstetrical, or surgical care of four or more inpatients. [***101*** : 3.3.152] (CMP-15)

Hydromassage Bathtub.

A permanently installed bathtub equipped with a recirculating piping system, pump, and associated equipment. It is designed so it can accept, circulate, and discharge water upon each use. (680) (CMP-17)

Identified (as applied to equipment).

Recognizable as suitable for the specific purpose, function, use, environment, application, and so forth, where described in a particular code requirement. (CMP-1)

> Informational Note: Some examples of ways to determine suitability of equipment for a specific purpose, environment, or application include investigations by a qualified testing laboratory (listing and labeling), an inspection agency, or other organizations concerned with product evaluation.

Increased Safety “e”.

Type of protection applied to electrical equipment that does not produce arcs or sparks in normal service and under specified abnormal conditions, in which additional measures are applied to give increased security against the possibility of excessive temperatures and of the occurrence of arcs and sparks. (CMP-14)

Informational Note: See ANSI/UL 60079-7, *Explosive Atmospheres — Part 7: Equipment Protection by Increased Safety “e”*, for additional information.

Induction Heating (Induction Melting) (Induction Welding).

The heating, melting, or welding of a nominally conductive material due to its own I2R losses when the material is placed in a varying electromagnetic field. (665) (CMP-12)

Industrial Control Panel.

An assembly of two or more components consisting of one of the following: (1) power circuit components only, such as motor controllers, overload relays, fused disconnect switches, and circuit breakers; (2) control circuit components only, such as push buttons, pilot lights, selector switches, timers, switches, and control relays; (3) a combination of power and control circuit components. These components, with associated wiring and terminals, are mounted on, or contained within, an enclosure or mounted on a subpanel. (CMP-11)

Informational Note: The industrial control panel does not include the controlled equipment.

Industrial Installation, Supervised. (Supervised Industrial Installation)

The industrial portions of a facility where all of the following conditions are met:

(1) Conditions of maintenance and engineering supervision ensure that only qualified persons monitor and service the system.

(2) The premises wiring system has 2500 kVA or greater of load used in industrial processes, manufacturing activities, or both, as calculated in accordance with Article 120 , Parts II, III, IV, or V.

(3) The premises has at least one service or feeder that is more than 150 volts to ground and more than 300 volts phase-to-phase.

This definition excludes installations in buildings used by the industrial facility for offices, warehouses, garages, machine shops, and recreational facilities that are not an integral part of the industrial plant, substation, or control center. (240) (CMP-10)

Information Technology Equipment (ITE).

Equipment and systems rated 1000 volts or less, normally found in offices or other business establishments and similar environments classified as ordinary locations, that are used for creation and manipulation of data, voice, video, and similar signals. (CMP-12)

Informational Note: See UL 60950-1-2007, *Information Technology Equipment — Safety — Part 1: General Requirements* , or UL 62368-1-2019, *Audio/Video Information and Communication Technology Equipment Part 1: Safety Requirements* , for information on listing requirements for both information technology equipment and communications equipment.

Information Technology Equipment Room.

A room within the information technology equipment area that contains the information technology equipment. [**75:** 3.3.15] (CMP-12)

Innerduct.

A nonmetallic raceway placed within a larger raceway. (CMP-16)

Insulated Bus Pipe (IBP).

A cylindrical solid or hollow conductor with a solid insulation system, having conductive grading layers and a grounding layer imbedded in the insulation, and provided with an overall covering of insulating or metallic material. IBP is also referred to as tubular covered conductor (TCC). (CMP-8)

Insulated Bus Pipe System.

An assembly that includes bus pipe, connectors, fittings, mounting structures, and other fittings and accessories. (CMP-8)

Insulating End.

An insulator designed to electrically insulate the end of a flat conductor cable (Type FCC). (324) (CMP-6)

Interactive Mode (Interactive).

The operating mode for power production sources or microgrids that operate in parallel with and are capable of delivering energy to an electric power production and distribution network or other primary power source. (CMP-4)

> Informational Note: Interactive mode is an operational mode of both interactive systems and of equipment such as interactive inverters.

Interrupting Rating.

The highest current at rated voltage that a device is identified to interrupt under standard test conditions. (CMP-10)

> Informational Note: Equipment intended to interrupt current at other than fault levels may have its interrupting rating implied in other ratings, such as horsepower or locked rotor current.

Intersystem Bonding Termination (IBT).

A device that provides a means for connecting intersystem bonding conductors for communications systems to the grounding electrode system. (CMP-16)

Intrinsic Safety "i".

Type of protection where any spark or thermal effect is incapable of causing ignition of a mixture of flammable or combustible material in air under prescribed test conditions. (CMP-14)

> Informational Note: See ANSI/UL 913, *Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III, Division 1, Hazardous (Classified) Locations* ; and ANSI/UL 60079-11, *Explosive Atmospheres — Part 11: Equipment Protection by Intrinsic Safety "i"*, for additional information.

Intrinsically Safe Apparatus.

Apparatus in which all the circuits are intrinsically safe. (CMP-14)

> Informational Note No. 1: See ANSI/UL 913, *Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III, Division 1, Hazardous (Classified) Locations* , and ANSI/UL 60079-11, *Explosive Atmospheres — Part 11: Equipment Protection by Intrinsic Safety "i"* , for additional information.
>
> Informational Note No. 2: See ANSI/ISA RP 12.06.01, *Recommended Practice for Wiring Methods for Hazardous (Classified) Locations Instrumentation — Part 1: Intrinsic Safety* , for installation information.

Intrinsically Safe Circuit.

A circuit in which any spark or thermal effect is incapable of causing ignition of a mixture of flammable or combustible material in air under prescribed test conditions. (CMP-14)

> Informational Note: See ANSI/UL 913, *Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III, Division 1, Hazardous (Classified) Locations* , and ANSI/UL 60079-11, *Explosive Atmospheres — Part 11: Equipment Protection by Intrinsic Safety "i"* , for test conditions.

Intrinsically Safe Circuits, Different. (Different Intrinsically Safe Circuits)

Intrinsically safe circuits in which the possible interconnections have not been evaluated and identified as intrinsically safe. (CMP-14)

Informational Note: See ANSI/UL 913, *Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III, Division 1, Hazardous (Classified) Locations* , and ANSI/UL 60079-11, *Explosive Atmospheres — Part 11: Equipment Protection by Intrinsic Safety "i"* , for additional information.

Intrinsically Safe System.

An assembly of interconnected intrinsically safe apparatus, associated apparatus, and interconnecting cables, in which those parts of the system that might be used in hazardous (classified) locations are intrinsically safe circuits. (CMP-14)

Informational Note No. 1: An intrinsically safe system might include more than one intrinsically safe circuit.

Informational Note No. 2: See ANSI/UL 913, *Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III, Division 1, Hazardous (Classified) Locations* ; ANSI/UL 60079-11, *Explosive Atmospheres — Part 11: Equipment Protection by Intrinsic Safety "i"* ; and ANSI/UL 60079-25, *Explosive Atmospheres — Part 25: Intrinsically Safe Electrical Systems* , for additional information.

Informational Note No. 3: See ANSI/ISA RP 12.06.01, *Recommended Practice for Wiring Methods for Hazardous (Classified) Locations Instrumentation — Part 1: Intrinsic Safety* , for installation information.

Invasive Procedure.

Any procedure that penetrates the protective surfaces of a patient's body (i.e., skin, mucous membrane, cornea) and that is performed with an aseptic field (procedural site). [Not included in this category are placement of peripheral intravenous needles or catheters used to administer fluids and/or medications, gastrointestinal endoscopies (i.e., sigmoidoscopies), insertion of urethral catheters, and other similar procedures.] [**99:** 3.3.91] (517) (CMP-15)

Inverter.

Equipment that changes dc to ac. (CMP-4)

Inverter, Interactive. (Interactive Inverter)

Inverter equipment having the capability to operate only in interactive mode. (CMP-13)

Inverter, Multimode. (Multimode Inverter)

Inverter equipment capable of operating in both interactive and island modes. (CMP-4)

Inverter, Stand-alone. (Stand-alone Inverter)

Inverter equipment having the capabilities to operate only in island mode. (CMP-4)

Inverter Input Circuit.

Conductors connected to the dc input of an inverter. (CMP-13)

Inverter Output Circuit.

Conductors connected to the ac output of an inverter. (CMP-13)

Inverter Utilization Output Circuit.

Conductors between the multimode or stand-alone inverter and utilization equipment. (706) (CMP-13)

Irrigation Machine.

An electrically driven or controlled machine, with one or more motors, not hand-portable, and used primarily to transport and distribute water for agricultural purposes. (675) (CMP-7)

Irrigation Machine, Center Pivot. (Center Pivot Irrigation Machine)

A multimotored irrigation machine that revolves around a central pivot and employs alignment switches or similar devices to control individual motors. (675) (CMP-7)

Island Mode.

The operating mode for power production sources or microgrids that allows energy to be supplied to loads that are disconnected from an electric power production and distribution network or other primary power source. (CMP-4)

Isolated (as applied to location).

Not readily accessible to persons unless special means for access are used. (CMP-1)

Isolated Power System.

A system comprising an isolation transformer or its equivalent, a line isolation monitor, and its ungrounded circuit conductors. [**99:** 3.3.93] (517) (CMP-15)

Isolation Transformer.

A transformer of the multiple-winding type, with the primary and secondary windings physically separated, that inductively couples its ungrounded secondary winding to the grounded feeder system that energizes its primary winding. [**99:** 3.3.94] (517) (CMP-15)

Kitchen.

An area with a sink and permanent provisions for food preparation and cooking. (CMP-2)

Labeled.

Equipment or materials to which has been attached a label, symbol, or other identifying mark of an organization that is acceptable to the authority having jurisdiction and concerned with product evaluation, that maintains periodic inspection of production of labeled equipment or materials, and by whose labeling the manufacturer indicates compliance with appropriate standards or performance in a specified manner. (CMP-1)

> Informational Note: If a listed product is of such a size, shape, material, or surface texture that it is not possible to apply legibly the complete label to the product, the complete label may appear on the smallest unit container in which the product is packaged.

Laundry Area.

An area containing or designed to contain a laundry tray, clothes washer, or clothes dryer. (CMP-2)

Leakage-Current Detector-Interrupter (LCDI).

A device provided in a power supply cord or cord set that senses leakage current flowing between or from the cord conductors and interrupts the circuit at a predetermined level of leakage current. (440) (CMP-11)

Legally Required Standby Systems.

Those systems required and so classed as legally required standby by municipal, state, federal, or other codes or by any governmental agency having jurisdiction. These systems are intended to automatically supply power to selected loads (other than those classed as emergency systems) in the event of failure of the normal source. (CMP-13)

Life Safety Branch.

A system of feeders and branch circuits supplying power for lighting, receptacles, and equipment essential for life safety that is automatically connected to alternate power sources by one or more transfer switches during interruption of the normal power source. [**99:** 3.3.97] (517) (CMP-15)

Lighting Assembly, Cord-and-Plug-Connected. (Cord-and-Plug-Connected Lighting Assembly)

A lighting assembly consisting of a luminaire intended for installation in the wall of a spa, hot tub, or storable pool, and a cord-and-plug-connected transformer or power supply. (680) (CMP-17)

Lighting Assembly, Through-Wall. (Through-Wall Lighting Assembly)

A lighting assembly intended for installation above grade, on or through the wall of a pool, consisting of two interconnected groups of components separated by the pool wall. (680) (CMP-17)

Lighting Outlet.

An outlet intended for the direct connection of a lampholder or luminaire. (CMP-18)

Lighting Track. (Track Lighting)

A manufactured assembly designed to support and energize luminaires that are capable of being readily repositioned on the track. Its length can be altered by the addition or subtraction of sections of track. (CMP-18)

Limited Care Facility.

A building or portion of a building used on a 24-hour basis for the housing of four or more persons who are incapable of self-preservation because of age; physical limitation due to accident or illness; or limitations such as intellectual disability/developmental disability, mental illness, or chemical dependency. [***101:*** 3.3.93.2] (CMP-15)

Limited-Energy System.

The equipment and cables of an end-to-end system that are power-restricted to ensure the energy delivered into any fault provides acceptable protection for fire prevention and electric shock. (CMP-3)

Limited Finishing Workstation.

A power-ventilated apparatus that is capable of confining the vapors, mists, residues, dusts, or deposits that are generated by a limited spray application process. Such apparatus is not a spray booth or spray room, as herein defined. [**33:** 3.3.23.1] (CMP-14)

> Informational Note: See NFPA 33-2024, *Standard for Spray Application Using Flammable or Combustible Materials* , Section 14.3 for information on limited finishing workstations.

Line Isolation Monitor.

A test instrument designed to continually check the balanced and unbalanced impedance from each line of an isolated circuit to ground and equipped with a built-in test circuit to exercise the alarm without adding to the leakage current hazard. [**99:** 3.3.99] (517) (CMP-15)

Liquid Immersion “o”.

Type of protection where electrical equipment is immersed in a protective liquid so that an explosive atmosphere that might be above the liquid or outside the enclosure cannot be ignited. (CMP-14)

> Informational Note: See ANSI/UL 60079-6, *Explosive Atmospheres — Part 6: Equipment Protection by Liquid Immersion “o”* , for additional information.

Listed.

Equipment, materials, or services included in a list published by an organization that is acceptable to the authority having jurisdiction and concerned with evaluation of products or services, that maintains periodic inspection of production of listed equipment or materials or periodic evaluation of services, and whose listing states that either the equipment, material, or service meets appropriate designated standards or has been tested and found suitable for a specified purpose. (CMP-1)

> Informational Note: The means for identifying listed equipment may vary for each organization concerned with product evaluation, some of which do not recognize equipment as listed unless it is also labeled. Use of the system employed by the listing organization allows the authority having jurisdiction to identify a listed product.

Live Parts.

Energized conductive components. (CMP-1)

Load Management.

The process within an energy management system that limits the total electrical load on an electrical supply system to a set value by adjusting or controlling the individual loads. (CMP-13)

Location, Anesthetizing. (Anesthetizing Location)

Any space within a facility that has been designated for the administration of any flammable or nonflammable inhalation anesthetic agent during examination or treatment, including the use of such agents for relative analgesia. (517) (CMP-15)

Location, Anesthetizing, Flammable. (Flammable Anesthetizing Location)

Any area of the facility that has been designated to be used for the administration of any flammable inhalation anesthetic agents in the normal course of examination or treatment. (517) (CMP-15)

Location, Damp. (Damp Location)

Locations protected from weather and not subject to saturation with water or other liquids but subject to moderate degrees of moisture. (CMP-1)

> Informational Note: Examples of such locations include partially protected locations under canopies, marquees, roofed open porches, and like locations, and interior locations subject to moderate degrees of moisture, such as some basements, some barns, and some cold-storage warehouses.

Location, Dry. (Dry Location)

A location not normally subject to dampness or wetness. A location classified as dry may be temporarily subject to dampness or wetness, as in the case of a building under construction. (CMP-1)

Location, Remote. (Remote Location)

A location, other than a motion picture or television studio, where a production is filmed or recorded. (530) (CMP-15)

Location, Wet. (Wet Location)

A location that is one or more of the following:

(1) Unprotected and exposed to weather

(2) Subject to saturation with water or other liquids

(3) Underground

(4) In concrete slabs or masonry in direct contact with the earth

(CMP-1)

> Informational Note: A vehicle washing area is an example of a wet location saturated with water or other liquids.

Location, Wet Procedure. (Wet Procedure Location)

The area in a patient care space where a procedure is performed that is normally subject to wet conditions while patients are present, including standing fluids on the floor or drenching of the work area, either of which condition is intimate to the patient or staff. [**99:** 3.3.187] (517) (CMP-15)

> Informational Note: Routine housekeeping procedures and incidental spillage of liquids do not define a wet procedure location. [**99:** A.3.3.187]

Locations, Hazardous (Classified). [Hazardous (Classified) Locations]

Locations where fire or explosion hazards might exist due to flammable gases, flammable liquid–produced vapors, combustible liquid–produced vapors, combustible dusts, combustible fiber/flyings, or ignitible fibers/flyings. (CMP-14)

Locations, Unclassified. (Unclassified Locations)

Locations determined to be neither Class I, Division 1; Class I, Division 2; Zone 0; Zone 1; Zone 2; Class II, Division 1; Class II, Division 2; Class III, Division 1; Class III, Division 2; Zone 20; Zone 21; Zone 22; nor any combination thereof. (CMP-14)

Long-Time Rating .

A rating based on an operating interval of 5 minutes or longer. (CMP-15)

Loudspeaker (Speaker).

Equipment that converts an ac electric signal into an acoustic signal. (640) (CMP-12)

Low-Voltage Contact Limit.

A voltage not exceeding the following values:

(1) 15 volts (RMS) for sinusoidal ac

(2) 21.2 volts peak for nonsinusoidal ac

(3) 30 volts for continuous dc

(4) 12.4 volts peak for dc that is interrupted at a rate of 10 to 200 Hz

(CMP-17)

Low-Voltage Suspended Ceiling Power Distribution System.

A system that serves as a support for a finished ceiling surface and consists of a busbar and busbar support system to distribute power to utilization equipment supplied by a Class 2 power supply. (393) (CMP-18)

Luminaire.

Utilization equipment intended to illuminate a space or object(s), to facilitate visual tasks, activities, aesthetics, or security, or a similar purpose. Light-emitting devices such as lamps or LED modules could be removable or replaceable. The equipment can connect directly to the branch circuit (ac or dc) or be used with a separate power source that regulates the voltage, current, or both from the branch circuit. A lampholder itself is not a luminaire. (CMP-18)

Luminaire, Directly Controlled (DCL).

A luminaire containing a control input for a dimming or switching function. (700) (CMP-13)

Luminaire, Dry-Niche. (Dry-Niche Luminaire)

A luminaire intended for installation in the floor or wall of a pool, spa, or fountain in a niche that is sealed against the entry of water. (680) (CMP-17)

Luminaire, No-Niche. (No-Niche Luminaire)

A luminaire intended for installation above or below the water without a niche. (680) (CMP-17)

Luminaire, Wet-Niche. (Wet-Niche Luminaire)

A luminaire intended for installation in a forming shell mounted in a pool or fountain structure where the luminaire will be completely surrounded by water. (680) (CMP-17)

Machine Room.

An enclosed machinery space outside the hoistway, intended for full bodily entry, that contains the electrical driving machine or the hydraulic machine. The room could also contain electrical and/or mechanical equipment used directly in connection with the elevator or dumbwaiter. (620) (CMP-12)

Machine Room and Control Room, Remote. (Remote Machine Room and Control Room)

A machine room or control room that is not attached to the outside perimeter or surface of the walls, ceiling, or floor of the hoistway. (620) (CMP-12)

Machinery, Industrial (Industrial Machine). (Industrial Machinery)

A power-driven machine (or a group of machines working together in a coordinated manner), not portable by hand while working, that is used to process material by cutting; forming; pressure; electrical, thermal, or optical techniques; lamination; or a combination of these processes. It can include associated equipment used to transfer material or tooling, including fixtures, to assemble/disassemble, to inspect or test, or to package. The associated electrical equipment, including the logic controller(s) and associated software or logic together with the machine actuators and sensors, are considered as part of the industrial machine. (CMP-12)

Machinery Space.

A space inside or outside the hoistway, intended to be accessed with or without full bodily entry, that contains the elevator, dumbwaiter, platform lift, or stairway chairlift equipment and could also contain equipment used directly in connection with the elevator, dumbwaiter, platform lift, or stairway chairlift. (620) (CMP-12)

Machinery Space and Control Space, Remote. (Remote Machinery Space and Control Space)

A machinery space or control space that is not within the hoistway, machine room, or control room and that is not attached to the outside perimeter or surface of the walls, ceiling, or floor of the hoistway. (620) (CMP-12)

Manufactured Home.

A structure, transportable in one or more sections, which in the traveling mode is 2.4 m (8 ft) or more in width or 12.2 m (40 ft) or more in length, or when erected on site is 29.77 m^2 (320 ft^2) or more is built on a permanent chassis and is designed to be used as a dwelling with or without a permanent foundation, whether or not connected to the utilities, and includes plumbing, heating, air conditioning, and electrical systems contained therein. The term includes any structure that meets all the requirements of this paragraph except the size requirements and with respect to which the manufacturer voluntarily files a certification required by the regulatory agency. Calculations used to determine the number of square meters (square feet) in a structure are based on the structure's exterior dimensions and include all expandable rooms, cabinets, and other projections containing interior space, but do not include bay windows. [**501:** 1.2.12] (CMP-7)

Informational Note No. 1: Unless otherwise indicated, the term *mobile home* includes manufactured home and excludes park trailers.

Informational Note No. 2: See the applicable building code for definition of the term *permanent foundation* .

Informational Note No. 3: See 24 CFR Part 3280, *Manufactured Home Construction and Safety Standards, of the Federal Department of Housing and Urban Development* , for additional information on the definition.

Manufactured Wiring System.

A system containing component parts that are assembled in the process of manufacture and cannot be inspected at the building site without damage or destruction to the assembly and used for the connection of luminaires, utilization equipment, continuous plug-in type busways, and other devices. (604) (CMP-7)

Marina.

A facility, generally on the waterfront, that stores and services boats in berths, on moorings, and in dry storage or dry stack storage. [**303:** 3.3.13] (555) (CMP-7)

Maximum Output Power.

The maximum power delivered by an amplifier into its rated load as determined under specified test conditions. (640) (CMP-12)

Informational Note: The maximum output power can exceed the manufacturer’s rated output power for the same amplifier.

Maximum Output Power (as applied to wind electric systems).

The maximum 1-minute average power output a wind turbine produces in normal steady-state operation (instantaneous power output can be higher). (694) (CMP-4)

Maximum Voltage.

The greatest difference in potential produced between any two conductors of a wind turbine circuit. (694) (CMP-4)

Maximum Water Level.

The highest level that water can reach before it spills out. (680) (CMP-17)

Medical Office.

A building or part thereof in which the following occur:

(1) Examinations and minor treatments/procedures performed under the continuous supervision of a medical professional;

(2) The use of limited to minimal sedation and treatment or procedures that do not render the patient incapable of self-preservation under emergency conditions; and

(3) No overnight stays for patients or 24-hour operations.

[**99:** 3.3.110] (CMP-15)

Membrane Enclosure.

A temporary enclosure used for the spraying of workpieces that cannot be moved into a spray booth where open spraying is not practical due to proximity to other operations, finish quality, or concerns such as the collection of overspray. (CMP-14)

Informational Note: See NFPA 33-2024, *Standard for Spray Application Using Flammable or Combustible Materials* , Chapter 18 for information on the construction and use of membrane enclosures.

Messenger-Supported Wiring.

An exposed wiring support system using a messenger wire to support insulated conductors by any one of the following:

(1) A messenger with rings and saddles for conductor support

(2) A messenger with a field-installed lashing material for conductor support

(3) Factory-assembled aerial cable

(4) Multiplex cables utilizing a bare conductor, factory assembled and twisted with one or more insulated conductors, such as duplex, triplex, or quadruplex type of construction

(CMP-6)

Messenger Wire (Messenger).

A wire that is run along with or integral with a cable or conductor to provide mechanical support for the cable or conductor. (CMP-6)

Metal Shield Connections.

Means of connection for flat conductor cables (Type FCC) designed to electrically and mechanically connect a metal shield to another metal shield, to a receptacle housing or self-contained device, or to a transition assembly. (324) (CMP-6)

Metering Centers (Meter Center).

Panelboards in enclosures also containing one or more meter sockets. (CMP-10)

Microgrid.

An electric power system containing interconnected power production sources and capable of acting as a primary source independent of an electric utility. (CMP-4)

Informational Note: Examples of power sources in microgrids include photovoltaic systems, generators, fuel cell systems, wind electric systems, energy storage systems, electric vehicles used as a source of supply, and electrical power conversion from other energy sources.

Microgrid, Health Care (Health Care Microgrid System). (Health Care Microgrid)

A group of interconnected loads and distributed energy resources within clearly defined boundaries that acts as a single controllable entity with respect to the utility. [**99:** 3.3.75] (517) (CMP-15)

Microgrid Control System (MCS).

A structured control system that manages microgrid operations, functionalities for utility interoperability, islanded operations, and transitions. (CMP-4)

Informational Note: MCS differ from multiple standby generators or uninterruptible power supplies that are evaluated and rated to operate as a single source of backup power upon loss of the primary power source. MCS functions include coordination, transitions, and interoperability between multiple power sources.

Microgrid Interconnect Device (MID).

A device that enables a microgrid system to separate from and reconnect to an interconnected primary power source. (CMP-4)

Mixer.

Equipment used to combine and level match a multiplicity of electronic signals, such as from microphones, electronic instruments, and recorded audio. (640) (CMP-12)

Mobile.

X-ray equipment mounted on a permanent base with wheels and/or casters for moving while completely assembled. (660) (CMP-12)

Mobile Home.

A factory-assembled structure or structures transportable in one or more sections that are built on a permanent chassis and designed to be used as a dwelling without a permanent foundation where connected to the required utilities and that include the plumbing, heating, air-conditioning, and electrical systems contained therein. (CMP-7)

Informational Note: Unless otherwise indicated, the term *mobile home* includes manufactured home and excludes park trailers.

Mobile Home Lot.

A designated portion of a mobile home park designed for the accommodation of one mobile home and its accessory buildings or structures for the exclusive use of its occupants. (550) (CMP-7)

Mobile Home Park.

A contiguous parcel of land that is used for the accommodation of mobile homes that are intended to be occupied. (550) (CMP-7)

Module, AC. (AC Module)

A complete, environmentally protected unit consisting of solar cells, inverter, and other components, designed to produce ac power. (690) (CMP-4)

Module System, AC. (AC Module System)

An assembly of ac modules, wiring methods, materials, and subassemblies that are evaluated, identified, and defined as a system. (690) (CMP-4)

Momentary Rating .

A rating based on an operating interval that does not exceed 5 seconds. (CMP-15)

Monitor.

An electrical or electronic means to observe, record, or detect the operation or condition of the electric power system or apparatus. (130) (CMP-13)

Monopole Circuit.

An electrical subset of a PV system that has two conductors in the output circuit, one positive (+) and one negative (−). (690) (CMP-4)

Monorail.

Overhead track and hoist system for moving material around the boatyard or moving and launching boats. [**303:** 3.3.16] (555) (CMP-7)

Mooring(s).

Any place where a boat is wet stored or berthed. [**303:** 3.3.17] (555) (CMP-7)

Motion Picture Studio (Television Studio).

A building, group of buildings, other structures, and outdoor areas designed, constructed, permanently altered, designated, or approved for the purpose of motion picture or television production. (530) (CMP-15)

Motion Picture Sound Stage.

A building or portion of a building, usually insulated from outside noise and natural light, designed, constructed, or altered for the purpose of image capture. (CMP-15)

Motor Control Center.

An assembly of one or more enclosed sections having a common power bus and principally containing motor control units. (CMP-11)

Motor Fuel Dispensing Facility.

That portion of a property where motor fuels are stored and dispensed from fixed equipment into the fuel tanks of motor vehicles or marine craft or into approved containers, including all equipment used in connection therewith. [**30A:** 3.3.11] (CMP-14)

> Informational Note: See 511.1 with respect to electrical wiring and equipment for other areas used as lubritoriums, service rooms, repair rooms, offices, salesrooms, compressor rooms, and similar locations.

Multi-Circuit Cable Outlet Enclosure.

An enclosure containing one or more multi-circuit plugs, receptacles, or both. (520) (CMP-15)

Multioutlet Assembly.

A surface, flush, or freestanding assemblage with a raceway and fittings or other enclosure provided with one or more receptacles, for the purpose of supplying power to utilization equipment. (CMP-18)

Nacelle.

An enclosure housing the alternator and other parts of a wind turbine. (694) (CMP-4)

Neon Tubing.

Electric-discharge luminous tubing, including cold cathode luminous tubing, that is manufactured into shapes to illuminate signs, form letters, parts of letters, skeleton tubing, outline lighting, other decorative elements, or art forms and filled with various inert gases. (600) (CMP-18)

Network Interface Unit (NIU).

A device that converts a broadband signal into component voice, audio, video, data, and interactive services signals and provides isolation between the network power and the premises signal circuits. These devices often contain primary and secondary protectors. (CMP-16)

Network Terminal.

A device that converts network-provided signals (optical, electrical, or wireless) into component signals, including voice, audio, video, data, wireless, optical, and interactive services, and is considered a network device on the premises that is connected to a communications service provider and is powered at the premises. (CMP-16)

Neutral Conductor.

The conductor connected to the neutral point of a system that is intended to carry current under normal conditions. (CMP-5)

Neutral Point.

The common point on a wye-connection in a polyphase system or midpoint on a single-phase, 3-wire system, or midpoint of a single-phase portion of a 3-phase delta system, or a midpoint of a 3-wire, direct-current system. (CMP-5)

Informational Note: At the neutral point of the system, the vectorial sum of the nominal voltages from all other phases within the system that utilize the neutral, with respect to the neutral point, is zero potential.

Nonautomatic.

Requiring human intervention to perform a function. (CMP-1)

Nonincendive Circuit.

A circuit, other than field wiring, in which any arc or thermal effect produced under intended operating conditions of the equipment, is not capable, under specified test conditions, of igniting the flammable gas–air, vapor–air, or dust–air mixture. (CMP-14)

Informational Note: See ANSI/UL 121201, *Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations* , for additional information.

Nonincendive Component.

A component having contacts for making or breaking an incendive circuit and the contacting mechanism is constructed so that the component is incapable of igniting the specified flammable gas–air or vapor–air mixture. The housing of such a component is not intended to exclude the flammable atmosphere or contain an explosion. (CMP-14)

Informational Note: See ANSI/UL 121201, *Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations* , for additional information.

Nonincendive Equipment.

Equipment having electrical/electronic circuitry that is incapable, under normal operating conditions, of causing ignition of a specified flammable gas–air, vapor–air, or dust–air mixture due to arcing or thermal means. (CMP-14)

Informational Note: See ANSI/UL 121201, *Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations* , for additional information.

Nonincendive Field Wiring.

Wiring that enters or leaves an equipment enclosure and, under normal operating conditions of the equipment, is not capable, due to arcing or thermal effects, of igniting the flammable gas–air, vapor–air, or dust–air mixture. Normal operation includes opening, shorting, or grounding the field wiring. (CMP-14)

Informational Note: See ANSI/UL 121201, *Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations* , for additional information.

Nonincendive Field Wiring Apparatus.

Apparatus intended to be connected to nonincendive field wiring. (CMP-14)

Informational Note: See ANSI/UL 121201, *Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations* , for additional information.

Nonlinear Load.

A load where the wave shape of the steady-state current does not follow the wave shape of the applied voltage. (CMP-1)

Informational Note: Electronic equipment, electronic/electric-discharge lighting, adjustable-speed drive systems, and similar equipment may be nonlinear loads.

Nonmetallic Extension.

An assembly of two insulated conductors within a nonmetallic jacket or an extruded thermoplastic covering. The classification includes surface extensions intended for mounting directly on the surface of walls or ceilings. (CMP-6)

Nonsparking.

Constructed to minimize the risk of arcs or sparks capable of creating an ignition hazard during conditions of normal operation. (CMP-14)

Informational Note No. 1: The term nonsparking is also referred to as nonarcing.

Informational Note No. 2: See ANSI/UL 121201, *Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations* , for additional information.

Normal/Emergency Power Source.

A power source on the output side of a transfer switch or uninterruptible power supply that is automatically available upon loss of normal power. (700) (CMP-13).

Normal High-Water Level (as applies to electrical datum plane distances).

Natural or Artificially Made Shorelines: An elevation delineating the highest water level that has been maintained for a sufficient period of time to leave evidence upon the landscape, commonly the point where the natural vegetation changes from predominantly aquatic to predominantly terrestrial.

Rivers and Streams: The elevation of the top of the bank of the channel. Streams, rivers, and tributaries that are prone to flooding and effects of water runoff shall consider the “bankfull stage” where an established gauge height at a given location along a river or stream, above which a rise in water surface will cause the river or stream to overflow the lowest natural stream bank somewhere in the corresponding reach.

Flood Control Bodies of Water: The flood pool maximum water surface elevation of a reservoir, equal to the elevation of the spillway.

Nonflood Control Bodies of Water: The flowage easement boundary in which the highest water surface elevation defined by the area existing between governmental-owned property line(s) and a contour line with perpetual rights to flood the area in connection with the operation of the reservoir. (CMP-7)

Nurses’ Station.

A space intended to provide a center of nursing activity for a group of nurses serving bed patients, where patient calls are received, nurses dispatched, nurses’ notes written, inpatient charts prepared, and medications prepared for distribution to patients. Where such activities are carried on in more than one location within a nursing unit, all such separate spaces are considered a to be parts of the nurses’ station. (517) (CMP-15)

Nursing Home.

A building or portion of a building used on a 24-hour basis for the housing and nursing care of four or more persons who, because of mental or physical incapacity, might be unable to provide for their own needs and safety without the assistance of another person. [***101*** **:** 3.3.150.2] (CMP-15)

Office Furnishing.

Cubicle panels, partitions, study carrels, workstations, desks, shelving systems, and storage units that may be mechanically and electrically interconnected to form an office furnishing system. (CMP-18)

Oil Immersion.

Electrical equipment immersed in a protective liquid so that an explosive atmosphere that might be above the liquid or outside the enclosure cannot be ignited. (CMP-14)

Informational Note: See ANSI/UL 121201, *Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations* , for additional information.

Open Wiring on Insulators.

An exposed wiring method using cleats, knobs, tubes, and flexible tubing for the protection and support of single insulated conductors run in or on buildings. (CMP-6)

Operating Device.

The car switch, pushbuttons, key or toggle switch(s), or other devices used to activate the operation controller. (620) (CMP-12)

Operator.

The individual responsible for starting, stopping, and controlling an amusement ride or supervising a concession. (525) (CMP-15)

Optical Radiation.

Electromagnetic radiation at wavelengths in vacuum between the region of transition to X-rays and the region of transition to radio waves that is approximately between 1 nm and 1000 µm. (CMP-14)

> Informational Note: See ANSI/UL 60079-28, *Explosive Atmospheres — Part 28: Protection of Equipment and Transmission Systems Using Optical Radiation* , for information on types of protection that can be applied to minimize the risk of ignition in explosive atmospheres from optical radiation in the wavelength range from 380 nm to 10 µm.

Optical Radiation, Inherently Safe "op is". (Inherently Safe Optical Radiation "op is")

Type of protection to minimize the risk of ignition in explosive atmospheres from optical radiation where visible or infrared radiation is incapable of producing sufficient energy under normal or specified fault conditions to ignite a specific explosive atmosphere. (CMP-14)

> Informational Note: See ANSI/UL 60079-28, *Explosive Atmospheres — Part 28: Protection of Equipment and Transmission Systems Using Optical Radiation* , for additional information.

Optical Radiation, Protected "op pr". (Protected Optical Radiation "op pr")

Type of protection to minimize the risk of ignition in explosive atmospheres from optical radiation where visible or infrared radiation is confined inside optical fiber or other transmission medium under normal constructions or constructions with additional mechanical protection based on the assumption that there is no escape of radiation from the confinement. (CMP-14)

> Informational Note: See ANSI/UL 60079-28, *Explosive Atmospheres — Part 28: Protection of Equipment and Transmission Systems Using Optical Radiation* , for additional information.

Optical System With Interlock "op sh".

Type of protection to minimize the risk of ignition in explosive atmospheres from optical radiation where visible or infrared radiation is confined inside optical fiber or other transmission medium with interlock cutoff provided to reliably reduce the unconfined beam strength to safe levels within a specified time in case the confinement fails and the radiation becomes unconfined. (CMP-14)

> Informational Note: See ANSI/UL 60079-28, *Explosive Atmospheres — Part 28: Protection of Equipment and Transmission Systems Using Optical Radiation* , for additional information.

Optional Standby Systems.

Those systems intended to supply power to public or private facilities or property where life safety does not depend on the performance of the system. These systems are intended to supply on-site generated or stored power to selected loads either automatically or manually. (CMP-13)

Organ, Electronic. (Electronic Organ)

A musical instrument that imitates the sound of a pipe organ by producing sound electronically. (CMP-12)

> Informational Note: Most new electronic organs produce sound digitally and are called digital organs.

Organ, Pipe. (Pipe Organ)

A musical instrument that produces sound by driving pressurized air (called *wind*) through pipes selected via a keyboard. (CMP-12)

Organ, Pipe Sounding Apparatus. (Pipe Organ Sounding Apparatus) (Pipe Organ Chamber).

The sound-producing part of a pipe organ, including, but not limited to, pipes, chimes, bells, the pressurized air- (wind-) producing equipment (blower), associated controls, and power equipment. (CMP-12)

Outlet.

A point on the wiring system at which current is taken to supply utilization equipment. (CMP-1)

Outlet Box Hood.

A housing shield intended to fit over a faceplate for flush-mounted wiring devices, or an integral component of an outlet box or of a faceplate for flush-mounted wiring devices. The hood does not serve to complete the electrical enclosure; it reduces the risk of water coming in contact with electrical components within the hood, such as attachment plugs, current taps, surge protective devices, direct plug-in transformer units, or wiring devices. (CMP-18)

Outline Lighting.

An arrangement of incandescent lamps, electric-discharge lighting, or other electrically powered light sources to outline or call attention to certain features such as the shape of a building or the decoration of a window. (CMP-18)

Output Cable to the Electric Vehicle.

An assembly consisting of a length of flexible EV cable and an electric vehicle connector (supplying power to the electric vehicle). (625) (CMP-12)

Output Cable to the Primary Pad.

A multiconductor, shielded cable assembly consisting of conductors to carry the high-frequency energy and any status signals between the charger power converter and the primary pad. (625) (CMP-12)

Overcurrent.

Any current in excess of the rated current of equipment or the ampacity of a conductor. It may result from overload, short circuit, or ground fault. (CMP-10)

> Informational Note: A current in excess of rating may be accommodated by certain equipment and conductors for a given set of conditions. Therefore, the rules for overcurrent protection are specific for particular situations.

Overcurrent Protective Device, Branch-Circuit. (Branch-Circuit Overcurrent Protective Device)

A device capable of providing protection for service, feeder, and branch circuits and equipment over the full range of overcurrents between its rated current and its interrupting rating. (CMP-10)

Overcurrent Protective Device, Supplementary. (Supplementary Overcurrent Protective Device)

A device intended to provide limited overcurrent protection for specific applications and utilization equipment such as luminaires and appliances. This limited protection is in addition to the protection provided in the required branch circuit by the branch-circuit overcurrent protective device. (CMP-10)

Overhead Gantry.

A structure consisting of horizontal framework, supported by vertical columns spanning above electrified truck parking spaces, that supports equipment, appliances, raceway, and other necessary components for the purpose of supplying electrical, HVAC, internet, communications, and other services to the spaces. (626) (CMP-12)

Overload.

Operation of equipment in excess of normal, full-load rating, or of a conductor in excess of its ampacity that, when it persists for a sufficient length of time, would cause damage or dangerous overheating. A fault, such as a short circuit or ground fault, is not an overload. (CMP-10)

Packaged Therapeutic Tub or Hydrotherapeutic Tank Equipment Assembly.

A factory-fabricated unit consisting of water-circulating, heating, and control equipment mounted on a common base, intended to operate a therapeutic tub or hydrotherapeutic tank. Equipment can include pumps, air blowers, heaters, lights, controls, sanitizer generators, and so forth. (680) (CMP-17)

Panelboard.

A single panel or group of panel units designed for assembly in the form of a single panel, including buses and automatic overcurrent devices, and equipped with or without switches for the control of light, heat, or power circuits; designed to be placed in a cabinet, enclosure, or cutout box placed in or against a wall, partition, or other support; and accessible only from the front. (CMP-10)

Panelboard, Enclosed. (Enclosed Panelboard)

An assembly of buses and connections, overcurrent devices, and control apparatus with or without switches or other equipment, installed in a cabinet, cutout box, or enclosure suitable for a panelboard application. (CMP-1)

Park Electrical Wiring Systems.

All of the electrical wiring, luminaires, equipment, and appurtenances related to electrical installations within a mobile home park, including the mobile home service equipment. (550) (CMP-7)

Park Trailer.

A unit that is built on a single chassis mounted on wheels and has a gross trailer area not exceeding 37 m^2 (400 ft^2) in the set-up mode. (552) (CMP-7)

Part-Winding Motors.

A part-winding start induction or synchronous motor is one that is arranged for starting by first energizing part of its primary (armature) winding and, subsequently, energizing the remainder of this winding in one or more steps. A standard part-winding start induction motor is arranged so that one-half of its primary winding can be energized initially, and, subsequently, the remaining half can be energized, both halves then carrying equal current. (CMP 11)

> Informational Note: A hermetic refrigerant motor-compressor is not considered a standard part-winding start induction motor.

Passenger Transportation Facilities.

Any area open to the public associated with passenger transportation such as an airport, bus terminal, highway rest stop and service area, marina, seaport, ferry slip, subway station, train station, or port of entry. (CMP-18)

Patient Bed Location.

The location of a patient sleeping bed, or the bed or procedure table of a Category 1 space. [**99:** 3.3.138] (CMP-15)

Patient Care–Related Electrical Equipment.

Electrical equipment appliance that is intended to be used for diagnostic, therapeutic, or monitoring purposes in a patient care vicinity. [**99:** 3.3.139] (517) (CMP-15)

Patient Care Space Category.

Any space of a health care facility wherein patients are intended to be examined or treated. [**99:** 3.3.145] (517) (CMP-15)

Informational Note No. 1: The health care facility's governing body designates patient care space in accordance with the type of patient care anticipated.

Informational Note No. 2: Business offices, corridors, lounges, day rooms, dining rooms, or similar areas typically are not classified as patient care spaces. [**99:** A.3.3.145]

Category 1 Space (Category 1).

Space in which failure of equipment or a system is likely to cause major injury or death of patients, staff, or visitors. [**99:** 3.3.140.1] (CMP-15)

Informational Note: These spaces, formerly known as critical care rooms, are typically where patients are intended to be subjected to invasive procedures and connected to line-operated, patient care–related appliances. Examples include, but are not limited to, special care patient rooms used for critical care, intensive care, and special care treatment rooms such as angiography laboratories, cardiac catheterization laboratories, delivery rooms, operating rooms, post-anesthesia care units, trauma rooms, and other similar rooms. [**99:** A.3.3.140.1]

Category 2 Space (Category 2).

Space in which failure of equipment or a system is likely to cause minor injury to patients, staff, or visitors. [**99:** 3.3.140.2] (CMP-15)

Informational Note: These spaces were formerly known as general care rooms. Examples include, but are not limited to, inpatient bedrooms, dialysis rooms, in vitro fertilization rooms, procedural rooms, and similar rooms. [**99:** A.3.3.140.2]

Category 3 Space (Category 3).

Space in which the failure of equipment or a system is not likely to cause injury to patients, staff, or visitors but can cause discomfort. [**99:** 3.3.140.3] (517) (CMP-15)

Informational Note: These spaces, formerly known as basic care rooms, are typically where basic medical or dental care, treatment, or examinations are performed. Examples include, but are not limited to, examination or treatment rooms in clinics, medical and dental offices, nursing homes, and limited care facilities. [**99:** A.3.3.140.3]

Category 4 Space (Category 4).

Space in which failure of equipment or a system is not likely to have a physical impact on patient care. [**99:** 3.3.140.4] (517) (CMP-15)

Informational Note: These spaces were formerly known as support rooms. Examples of support spaces include, but are not limited to, anesthesia work rooms, sterile supply, laboratories, morgues, waiting rooms, utility rooms, and lounges. [**99:** A.3.3.140.4]

Patient Care Vicinity.

A space, within a location intended for the examination and treatment of patients, extending 1.8 m (6 ft) beyond the normal location of the bed, chair, table, treadmill, or other device that supports the patient during examination and treatment and extending vertically to 2.3 m (7 ft 6 in.) above the floor. [**99:** 3.3.141] (517) (CMP-15)

Patient Equipment Grounding Point.

A jack or terminal that serves as the collection point for redundant grounding of electric appliances serving a patient care vicinity or for grounding other items in order to eliminate electromagnetic interference problems. [**99:** 3.3.142] (517) (CMP-15)

Performance Area.

The stage and audience seating area associated with a temporary stage structure, whether indoors or outdoors, constructed of scaffolding, truss, platforms, or similar devices, that is used for the presentation of theatrical or musical productions or for public presentations. (520) (CMP-15)

Permanent Amusement Attraction.

A ride device, entertainment device, or a combination of both that is installed such that portability or relocation is impracticable. (522) (CMP-15)

Permanently Installed Decorative Fountains and Reflection Pools.

Those that are constructed in the ground, on the ground, or in a building in such a manner that the fountain cannot be readily disassembled for storage, whether or not served by electrical circuits of any nature. These units are primarily constructed for their aesthetic value and are not intended for swimming or wading. (680) (CMP-17)

Personnel Protection System (as applied to EVSE).

A system of personnel protection devices and constructional features that when used together provide protection against electric shock of personnel. (625) (CMP-12)

Phase, Manufactured. (Manufactured Phase)

The phase that originates at the phase converter and is not solidly connected to either of the single-phase input conductors. (CMP-13)

Phase Converter.

An electrical device that converts single-phase power to 3-phase electric power. (CMP-13)

> Informational Note: Phase converters have characteristics that modify the starting torque and locked-rotor current of motors served, and consideration is required in selecting a phase converter for a specific load.

Phase Converter, Rotary. (Rotary-Phase Converter)

A device that consists of a rotary transformer and capacitor panel(s) that permits the operation of 3-phase loads from a single-phase supply. (455) (CMP-13)

Phase Converter, Static. (Static-Phase Converter)

A device without rotating parts, sized for a given 3-phase load to permit operation from a single-phase supply. (455) (CMP-13)

Photovoltaic Cell (PV). (Solar Cell).

The basic photovoltaic device that generates dc electricity when exposed to light. (CMP-4)

Pier.

A structure extending over the water and supported on a fixed foundation (fixed pier), or on flotation (floating pier), that provides access to the water. [**303:** 3.3.18] (CMP-7)

Pier, Fixed. (Fixed Pier)

Pier constructed on a permanent, fixed foundation, such as on piles, that permanently establishes the elevation of the structure deck with respect to land. [**303:** 3.3.18.2] (CMP-7)

Pier, Floating. (Floating Pier)

Pier designed with inherent flotation capability that allows the structure to float on the water surface and rise and fall with water level changes. [**303:** 3.3.18.3] (CMP-7)

Pinout Configuration.

The assignment of electrical functions to connector pins in a multicircuit connector. (CMP-15)

Pipeline.

A length of pipe including pumps, valves, flanges, control devices, strainers, and/or similar equipment for conveying fluids. (CMP-17)

Plenum.

A compartment or chamber to which one or more air ducts are connected and that forms part of the air distribution system. (CMP-3)

Plenum Cable, Cable Routing Assemblies, and Raceways.

Cables, cable routing assemblies, and raceways that have adequate fire-resistant and low smoke-producing characteristics and are suitable for use in ducts, plenums, and other spaces used for environmental air. (722) (CMP-3)

Point of Entrance.

The point within a building at which a wire or cable emerges from an external wall, the roof, or the floor. (CMP-16)

Pool.

Manufactured or field-constructed equipment designed to contain water and intended for use by persons for swimming, wading, immersion, recreational, or therapeutic purposes, but not including bodies of water incorporated as part of an industrial process, lakes, lagoons, surf parks, or other natural and artificially made bodies of water that could incorporate swimming and swimming areas. (680) (CMP-17)

> Informational Note: Natural and man-made bodies of water, which includes lakes, lagoons, surf parks, or other similar bodies of water, are addressed in Article 682 .

Pool, Immersion. (Immersion Pool)

A pool for ceremonial or ritual immersion of users, which is designed and intended to have its contents drained or discharged. (680) (CMP-17)

Pool, Permanently Installed Swimming, Wading, Immersion, and Therapeutic. (Permanently Installed Swimming, Wading, Immersion, and Therapeutic Pools)

Those that are permanently constructed or installed in the ground, partially in the ground, above ground, inside of a building, or on a building, whether or not served by electrical circuits. (680) (CMP-17)

Pool, Storable (Storable Immersion Pool). (Storable Pool)

Pools of any water depth, used for swimming, wading, or immersion, installed entirely on or above the ground that are intended to be stored when not in use or are designed for ease of relocation. (680) (CMP-17)

> Informational Note: A storable pool that is installed with a permanent deck around all or a portion of its perimeter is considered a permanently installed pool.

Pool Cover, Electrically Operated. (Electrically Operated Pool Cover)

Motor-driven equipment designed to cover and uncover the water surface of a pool by means of a flexible sheet or rigid frame. (680) (CMP-17)

Pool Lift, Electrically Powered. (Electrically Powered Pool Lift)

An electrically powered lift that provides accessibility for people with disabilities to and from a pool or spa. (680) (CMP-17)

Portable.

A device intended for indoor or outdoor use that is designed to be hand-carried from location to location, or easily transported without the use of other devices or equipment. (625) (CMP-12)

Portable.

X-ray equipment designed to be hand-carried. (660) (CMP-12)

Portable (as applied to equipment).

Equipment that is actually moved or can easily be moved from one place to another in normal use. (680) (CMP-17)

Portable Handlamp.

A cord- and plug-connected luminaire with a handle, and a hook for temporary mounting and hands-free operation. (CMP-18)

Portable Power Distribution Unit.

A power distribution box containing receptacles and overcurrent devices. (520) (CMP-15)

Informational Note: See ANSI/UL 1640, *Portable Power-Distribution Equipment* , for information on portable power distribution units.

Portable Structures.

Units designed to be moved including, but not limited to, amusement rides, attractions, concessions, tents, trailers, trucks, and similar units. (525) (CMP-15)

Portable Substation.

A portable assembly, usually mounted on a trailer, containing primary and secondary switchgear and a transformer. (530) (CMP-15)

Powder Filling "q".

Type of protection where electrical parts capable of igniting an explosive atmosphere are fixed in position and completely surrounded by filling material (glass or quartz powder) to prevent the ignition of an external explosive atmosphere. (CMP-14)

Informational Note: See ANSI/UL 60079-5, *Explosive Atmospheres — Part 5: Equipment protection by powder filling "q"* , for additional information.

Power Control System (PCS).

Equipment that monitors and controls power within an electrical system to prevent overload of an electrical service, feeder, conductor, or other power distribution equipment. (CMP-13)

Informational Note: A power control system may control generation, energy storage, loads, circuit controllers, or other equipment to manage power and may contain additional protective functions relative to EMS or grid interconnection functions.

Power Outlet.

An enclosed assembly that may include receptacles, circuit breakers, fuseholders, fused switches, buses, and watt-hour meter mounting means; intended to supply and control power to mobile homes, recreational vehicles, park trailers, or boats or to serve as a means for distributing power required to operate mobile or temporarily installed equipment. (CMP-7)

Power Outlet, Marina. (Marina Power Outlet)

An enclosed assembly that can include equipment such as receptacles, circuit breakers, fused switches, fuses, watt-hour meters, panelboards, and monitoring means identified for marina use. (555) (CMP-7)

Power Production Source (Power Source).

Electrical power production equipment other than a utility service, up to the source system disconnecting means. (CMP-4)

Informational Note: Examples of power production sources include engine and wind generators, solar photovoltaic systems, fuel cells, and energy storage systems.

Power Source Output Conductors.

The conductors between power production equipment and the service or other premises wiring. (CMP-4)

Power Sources.

A system of one or more off-site or one or more on-site power generation or storage components intended to provide power to nonessential electrical loads and the essential electrical system. [**99:** 3.3.155] (517) (CMP-15)

Power Supply (as applied to low-voltage suspended ceiling power distribution systems).

A Class 2 power supply connected between the branch-circuit power distribution system and the busbar low-voltage suspended ceiling power distribution system. (393) (CMP-18)

Power-Supply Cord.

An assembly consisting of an attachment plug and a length of flexible cord connected to utilization equipment. (CMP-6)

Premises.

The land and buildings located on the user's side of the point of demarcation between the communications service provider and the user. (800) (CMP-16)

Premises-Powered.

Using power provided locally from the premises. (CMP-16)

Premises Wiring (System).

Interior and exterior wiring, including power, lighting, control, and signal circuit wiring together with all their associated hardware, fittings, and wiring devices, both permanently and temporarily installed. This includes one of the following:

(1) Wiring from the service point to the outlets

(2) Wiring from and including the power source to the outlets if there is no service point

Such wiring does not include wiring internal to appliances, luminaires, motors, controllers, motor control centers, and similar equipment. (CMP-1)

> Informational Note: Power sources include, but are not limited to, interconnected or stand-alone batteries, solar photovoltaic systems, other distributed generation systems, or generators.

Pressurized.

The process of supplying an enclosure with a protective gas with or without continuous flow at sufficient pressure to prevent the entrance of combustible dust or ignitible fibers/flyings. (CMP-14)

Pressurized Enclosure "p".

Type of protection for electrical equipment that uses the technique of guarding against the ingress of the external atmosphere, which might be explosive, into an enclosure by maintaining a protective gas therein at a pressure above that of the external atmosphere. (CMP-14)

> Informational Note: See ANSI/UL-60079-2, *Explosive Atmospheres — Part 2: Equipment protection by pressurized enclosures "p"*, for additional information.

Pressurized Room "p".

A room volume protected by pressurization and of sufficient size to permit the entry of a person who might occupy the room. (CMP-14)

> Informational Note: See ANSI/UL 60079-13, *Explosive Atmospheres — Part 13: Equipment protection by pressurized room "p" and artificially ventilated room "v"* , for information on the requirements for rooms intended for human entry where pressurization is used as a means of reducing the risk of explosion.

Primary Pad.

A device external to the EV that transfers power via the contactless coupling as part of a wireless power transfer system. (625) (CMP-12)

Primary Source.

An electric utility or another source of power that acts as the main forming and stabilizing source in an electric power system. (CMP-4)

Prime Mover.

The machine that supplies the mechanical horsepower to a generator. (CMP-13)

Process Seal.

A seal between electrical systems and flammable or combustible process fluids where a failure could allow the migration of process fluids into the premises' wiring system. (CMP-14)

Informational Note: See ANSI/UL 122701, *Requirements for Process Sealing Between Electrical Systems and Flammable or Combustible Process Fluids* , for additional information.

Production Areas.

Areas where portable electrical equipment is used to implement the capture of images. (530) (CMP-15)

Projector, Nonprofessional. (Nonprofessional Projector)

Those types of projectors that do not comply with the definition of *Professional-Type Projector* . (540) (CMP-15)

Projector, Professional-Type. (Professional-Type Projector)

A type of projector using 35- or 70-mm film that has a minimum width of 35 mm (1 **3**⁄**8** in.) and has on each edge 212 perforations per meter (5.4 perforations per inch), or a type using carbon arc, xenon, or other light source equipment that develops hazardous gases, dust, or radiation. (540) (CMP-15)

Proscenium.

The wall and arch that separates the stage from the auditorium (i.e., house). (520) (CMP-15)

Protection by Enclosure "t".

Type of protection for explosive dust atmospheres where electrical equipment is provided with an enclosure providing dust ingress protection and a means to limit surface temperatures. (CMP-14)

Informational Note: See ANSI/UL 60079-31, *Explosive Atmospheres — Part 31: Equipment Dust Ignition Protection by Enclosure "t"* , for additional information.

Psychiatric Hospital.

A building used exclusively for the psychiatric care, on a 24-hour basis, of four or more inpatients. (517) (CMP-15)

Purged and Pressurized.

The process of (1) purging, supplying an enclosure with a protective gas at a sufficient flow and positive pressure to reduce the concentration of any flammable gas or vapor initially present to an acceptable level; and (2) pressurization, supplying an enclosure with a protective gas with or without continuous flow at sufficient pressure to prevent the entrance of a flammable gas or vapor, a combustible dust, or an ignitible fiber. (CMP-14)

Informational Note: See NFPA 496-2024, *Standard for Purged and Pressurized Enclosures for Electrical Equipment* , for additional information.

Purpose-Built.

A custom luminaire, a piece of lighting equipment, or an effect that is constructed for a specific purpose and is not serially manufactured or available for general sale. (530) (CMP-15)

PV DC Circuit (PV System DC Circuit).

Any dc conductor in PV source circuits, PV string circuits, and PV dc-to-dc converter circuits. (690) (CMP-4)

PV DC Circuit, Source. (PV Source Circuit)

The PV dc circuit conductors between modules in a PV string circuit, and from PV string circuits or dc combiners, to dc combiners, electronic power converters, or a dc PV system disconnecting means. (690) (CMP-4)

PV DC Circuit, String. (PV String Circuit)

The PV source circuit conductors of one or more series-connected PV modules. (690) (CMP-4)

PV Module (Module) (Solar PV Module).

A complete, environmentally protected unit consisting of solar cells and other components designed to produce dc power. (CMP-4)

PV (Photovoltaic) System (PV System) (Photovoltaic System).

The total components, circuits, and equipment up to and including the PV system disconnecting means that, in combination, convert solar energy into electric energy. (CMP-4)

Qualified Person.

One who has skills and knowledge related to the construction and operation of the electrical equipment and installations and has received safety training to recognize and avoid the hazards involved. (CMP-1)

> Informational Note: See NFPA *70E*-2024, *Standard for Electrical Safety in the Workplace*, for electrical safety training requirements.

Raceway.

An enclosed channel designed expressly for holding wires, cables, or busbars, with additional functions as permitted in this code. (CMP-8)

Raceway Cell.

A single enclosed tubular space in a cellular metal or concrete floor member, the axis of the cell being parallel to the axis of the floor member. (CMP-8)

Raceway, Cellular Metal Floor. (Cellular Metal Floor Raceway)

The hollow spaces of cellular metal floors, together with suitable fittings, that may be approved as enclosed channel for electrical conductors. (CMP-8)

Raceway, Communications. (Communications Raceway)

An enclosed channel of nonmetallic materials designed expressly for holding communications wires and cables; optical fiber cables; data cables associated with information technology and communications equipment; Class 2, Class 3, Class 4, and Type PLTC cables; and power-limited fire alarm cables in plenum, riser, and general-purpose applications. (CMP-3)

Raceway, Strut-Type Channel. (Strut-Type Channel Raceway)

A metal raceway that is intended to be mounted to the surface of or suspended from a structure, with associated accessories for the installation of electrical conductors and cables. (CMP-8)

Raceway, Surface Metal. (Surface Metal Raceway)

A metal raceway that is intended to be mounted to the surface of a structure, with associated couplings, connectors, boxes, and fittings for the installation of electrical conductors. (CMP-8)

Raceway, Surface Nonmetallic. (Surface Nonmetallic Raceway)

A nonmetallic raceway that is intended to be mounted to the surface of a structure, with associated couplings, connectors, boxes, and fittings for the installation of electrical conductors. (CMP-8)

Raceway, Underfloor. (Underfloor Raceway)

A raceway and associated components designed and intended for installation beneath or flush with the surface of a floor for the installation of cables and electrical conductors. (CMP-8)

Rail.

The structural support for the suspended ceiling system typically forming the ceiling grid supporting the ceiling tile and listed utilization equipment, such as sensors, actuators, A/V devices, and low-voltage luminaires and similar electrical equipment. (393) (CMP-18)

Rainproof.

Constructed, protected, or treated so as to prevent rain from interfering with the successful operation of the apparatus under specified test conditions. (CMP-1)

Raintight.

Constructed or protected so that exposure to a beating rain will not result in the entrance of water under specified test conditions. (CMP-1)

Rated-Load Current (RLC).

The current of a hermetic refrigerant motor-compressor resulting when it is operated at the rated load, rated voltage, and rated frequency of the equipment it serves. (440) (CMP-11)

Rated Output Power.

The amplifier manufacturer's stated or marked output power capability into its rated load. (640) (CMP-12)

Rated Power.

The output power of a wind turbine at its rated wind speed. (694) (CMP-4)

> Informational Note: See IEC 61400-12-1, *Power Performance Measurements of Electricity Producing Wind Turbines* , for the method for measuring wind turbine power output.

Receptacle.

A contact device installed at the outlet for the connection of an attachment plug, or for the direct connection of electrical utilization equipment designed to mate with the corresponding contact device. A single receptacle is a single contact device with no other contact device on the same yoke or strap. A multiple receptacle is two or more contact devices on the same yoke or strap. (CMP-18)

> Informational Note: A duplex receptacle is an example of a multiple receptacle that has two receptacles on the same yoke or strap.

Receptacle, Weather-Resistant (WR). (Weather-Resistant Receptacle)

A receptacle constructed to be resistant to the adverse effects of damp, wet, or outdoor locations. (CMP-18)

Receptacle, Weight-Supporting Ceiling (WSCR). (Weight-Supporting Ceiling Receptacle)

A contact device installed at an outlet box for the connection and support of luminaries or ceiling-suspended (paddle) fans using a weight-supporting attachment fitting (WSAF). (CMP-18)

> Informational Note: See ANSI/NEMA WD 6, *American National Standard for Wiring Devices — Dimensional Specifications* , for the standard configuration of weight-supporting ceiling receptacles and related weight-supporting attachment fittings.

Receptacle Outlet.

An outlet where the branch-circuit conductors are connected to one or more receptacles. (CMP-18)

Reconditioned Equipment.

Electromechanical systems, equipment, apparatus, or components that are restored to operating conditions. This process differs from normal servicing of equipment that remains within a facility, or replacement of listed equipment on a one-to-one basis. (CMP-1)

> Informational Note: The term *reconditioned* is frequently referred to as *rebuilt* , *refurbished* , or *remanufactured* .

Recreational Vehicle (RV) (Camping Trailer) (Motor Home) (Travel Trailer) (Truck Camper).

A vehicle or slide-in camper that is primarily designed as temporary living quarters for recreational, camping, or seasonal use; has its own motive power or is mounted on or towed by another vehicle; is regulated by the National Highway Traffic Safety Administration as a vehicle or vehicle equipment; does not require a special highway use permit for operation on the highways; and can be easily transported and set up on a daily basis by an individual. [**1192:** 3.3.52] (551) (CMP-7)

> Informational Note: See NFPA 1192-2026, *Standard on Recreational Vehicles* , Informative Annex A, for product types and definitions for motor homes and towable recreational vehicles.

Recreational Vehicle Park.

Any parcel or tract of land under the control of any person, organization, or governmental entity wherein two or more recreational vehicle, recreational park trailer, and/or other camping sites are offered for use by the public or members of an organization for overnight stays. (551) (CMP-7)

Recreational Vehicle Site.

A specific area within a recreational vehicle park or campground that is set aside for use by a camping unit. (551) (CMP-7)

Recreational Vehicle Site Supply Equipment.

A power outlet assembly located near the point of entrance of supply conductors to a recreational vehicle site and intended to constitute the disconnecting means for connected recreational vehicles. (551) (CMP-7)

Recreational Vehicle Stand.

That area of a recreational vehicle site intended for the placement of a recreational vehicle. (551) (CMP-7)

Reference Grounding Point.

The ground bus of the panelboard or isolated power system panel supplying the patient care room. [**99:** 3.3.158] (517) (CMP-15)

Relative Analgesia.

A state of sedation and partial block of pain perception produced in a patient by the inhalation of concentrations of nitrous oxide insufficient to produce loss of consciousness (conscious sedation). (517) (CMP-15)

Relay, Automatic Load Control (ALCR). (Automatic Load Control Relay)

An emergency lighting control device used to set normally dimmed or normally-off switched emergency lighting equipment to full power illumination levels in the event of a loss of the normal supply by bypassing the dimming/switching controls, and to return the emergency lighting equipment to normal status when the device senses the normal supply has been restored. (700) (CMP-13)

> Informational Note: See ANSI/UL 924, *Emergency Lighting and Power Equipment* , for the requirements covering automatic load control relays.

Remote-Control Circuit.

Any electrical circuit that controls any other circuit through a relay or an equivalent device. (CMP-3)

Remote Disconnect Control.

An electric device and circuit that controls a disconnecting means through a relay or equivalent device. (645) (CMP-12)

Resistance Heating Element.

A specific separate element to generate heat that is stand-alone, externally attached to, embedded in, integrated with, or internal to the object to be heated. (CMP-17)

> Informational Note: Tubular heaters, strip heaters, heating cable, heating tape, heating blankets, immersion heaters, and heating panels are examples of resistance heaters.

Restricted Industrial Establishment [as applied to hazardous (classified) locations].

Establishment with restricted public access, where the conditions of maintenance and supervision ensure that only qualified persons service the installation. (CMP-14)

Retrofit Kit.

A complete subassembly of parts and devices for field conversion of utilization equipment. (CMP-18)

Retrofit Kit, General Use. (General Use Retrofit Kit)

A kit that includes some, but not all, of the necessary parts to replace the illumination system of a host sign and installation instructions that identify the parts required to complete the subassembly in the field. (600) (CMP-18)

Retrofit Kit, Sign Specific. (Sign Specific Retrofit Kit)

A kit that includes all of the necessary parts and hardware to allow for field installation in a host sign, based on the included installation instructions. (600) (CMP-18)

Reverse Polarity Protection (Backfeed Protection).

A system that prevents two interconnected power supplies, connected positive to negative, from passing current from one power source into a second power source. (393) (CMP-18)

Ride Device.

A device or combination of devices that carry, convey, or direct a person(s) over or through a fixed or restricted course within a defined area for the primary purpose of amusement or entertainment. (522) (CMP-15)

Riser Cable, Cable Routing Assemblies, and Raceways.

Cables, cable routing assemblies, and raceways that have fire-resistant characteristics capable of preventing the carrying of fire from floor to floor and are suitable for use in a vertical run in a shaft or from floor to floor. (722) (CMP-3)

Road Show Connection Panel.

A type of patch panel designed to allow for road show connection of portable stage switchboards to fixed lighting outlets by means of permanently installed supplementary circuits. (520) (CMP-15)

Safe Zone.

Low probability of damage other than a slight swelling of the capacitor case, as identified by the case rupture curve of the capacitor. (460) (CMP-11)

Safety Circuit.

The part of a control system containing one or more devices that perform a safety-related function. [**79:** 3.3.95] (CMP-12)

> Informational Note: See NFPA 79-2024, *Electrical Standard for Industrial Machinery. Safety-related control system* and *safety interlock circuit* are common terms that can be used to refer to the safety circuit in other standards. The safety circuit can include hard-wired, communication, and software-related components.

Sealable Equipment.

Equipment enclosed in a case or cabinet that is provided with a means of sealing or locking so that live parts cannot be made accessible without opening the enclosure. (CMP-1)

> Informational Note: The equipment may or may not be operable without opening the enclosure.

Sealed [as applied to hazardous (classified) locations].

Constructed such that equipment is sealed effectively against entry of an external atmosphere and is not opened during normal operation or for any maintenance activities. (CMP-14)

> Informational Note: See ANSI/UL 121201, *Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations* , for additional information.

Sealed, Hermetically. (Hermetically Sealed)

Sealed against the entrance of an external atmosphere, such that the seal is made by fusion of metal to metal, ceramic to metal, or glass to metal. (CMP-14)

> Informational Note: See ANSI/UL 121201, *Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations* , for additional information.

Section Sign.

A sign or outline lighting system, shipped as subassemblies, that requires field-installed wiring between the subassemblies to complete the overall sign. The subassemblies are either physically joined to form a single sign unit or are installed as separate remote parts of an overall sign. (600) (CMP-18)

Selected Receptacles.

A minimal number of receptacles selected by the health care facility's governing body as necessary to provide essential patient care and facility services during loss of normal power. [**99:** 3.3.164] (517) (CMP-15)

Self-Contained Therapeutic Tubs or Hydrotherapeutic Tanks.

A factory-fabricated unit consisting of a therapeutic tub or hydrotherapeutic tank with all water-circulating, heating, and control equipment integral to the unit. Equipment may include pumps, air blowers, heaters, light controls, sanitizer generators, and so forth. (680) (CMP-17)

Separable Power Supply Cable Assembly.

A flexible cord or cable, including ungrounded, grounded, and equipment grounding conductors, provided with a cord connector, an attachment plug, and all other fittings, grommets, or devices installed for the purpose of delivering energy from the source of electrical supply to the truck or transport refrigerated unit (TRU) flanged surface inlet. (626) (CMP-12)

Separately Derived System.

An electrical power supply output, other than a service, having no direct connection(s) to circuit conductors of any other electrical source other than those established by grounding and bonding connections. (CMP-5)

Service.

The conductors and equipment connecting the serving utility to the wiring system of the premises served. (CMP-10)

Service Conductors.

The conductors from the service point to the service disconnecting means. (CMP-10)

Service Conductors, Overhead. (Overhead Service Conductors)

The overhead conductors between the service point and the first point of connection to the service-entrance conductors at the building or other structure. (CMP-10)

Service Conductors, Underground. (Underground Service Conductors)

The underground conductors between the service point and the first point of connection to the service-entrance conductors in a terminal box, meter, or other enclosure, inside or outside the building wall. (CMP-10)

> Informational Note: Where there is no terminal box, meter, or other enclosure, the point of connection is considered to be the point of entrance of the service conductors into the building.

Service Disconnect (Service Disconnecting Means).

A device that is connected to service conductors and disconnects the premises wiring system or equipment from the service conductors. (CMP-10)

Service Drop.

The overhead conductors between the serving utility and the service point. (CMP-10)

Service-Entrance Conductor Assembly.

Multiple single-insulated conductors twisted together without an overall covering, other than an optional binder intended only to keep the conductors together. (CMP-6)

Service-Entrance Conductors.

The service conductors between the terminals of the service equipment to the service drop, overhead service conductors, service lateral, or underground service conductors. (CMP-10)

Informational Note: Where service equipment is located outside the building walls, there could be no service-entrance conductors or they might be entirely outside the building.

Service Equipment.

The necessary equipment, consisting of a circuit breaker(s) or switch(es) and fuse(s) and their accessories, connected to the serving utility and intended to constitute the main control and disconnect of the serving utility. (CMP-10)

Service Equipment, Mobile Home. (Mobile Home Service Equipment)

The equipment containing the disconnecting means, overcurrent protective devices, and receptacles or other means for connecting a mobile home feeder assembly. (550) (CMP-7)

Service Lateral.

The underground conductors between the utility electric supply system and the service point. (CMP-10)

Service Point.

The point of connection between the facilities of the serving utility and the premises wiring. (CMP-10)

Informational Note: The service point can be described as the point of demarcation between where the serving utility ends and the premises wiring begins. The serving utility generally specifies the location of the service point based on the conditions of service.

Service Point, Communications. (Communications Service Point)

The point of connection between the communications service provider's network (outside plant) and the premises wiring (inside plant). (CMP-16)

Servicing.

The process of following a manufacturer's set of instructions or applicable industry standards to analyze, adjust, or perform prescribed actions upon equipment with the intention to preserve or restore the operational performance of the equipment. (CMP-1)

Informational Note: Servicing often encompasses maintenance and repair activities.

Shore Power.

The electrical equipment required to power a floating vessel including, but not limited to, the receptacle and cords. (555) (CMP-7)

Shoreline.

The farthest extent of standing water under the applicable conditions that determine the electrical datum plane for the specified body of water. (682) (CMP-7)

Short Circuit.

An abnormal connection (including an arc) of relatively low impedance, whether made accidentally or intentionally, between two or more points of different potential. (CMP-10)

Short-Circuit Current Rating.

The prospective symmetrical fault current at a nominal voltage to which equipment is able to be connected without sustaining damage exceeding defined acceptance criteria. (CMP-10)

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. (CMP-2)

Sign, Electric. (Electric Sign)

Electrically operated utilization equipment with words, symbols, art, or advertising designed to convey information or attract attention. (CMP-18)

Sign, Host. (Host Sign)

A sign or outline lighting system already installed in the field that is designated by a retroft kit for field conversion of the illumination system. (600) (CMP-18)

Sign, Photovoltaic (PV) Powered (PV Powered Sign). [Photovoltaic (PV) Powered Sign]

A complete sign powered by solar energy consisting of all components and subassemblies for installation either as an off-grid stand-alone, on-grid interactive, or non-grid interactive system. (600) (CMP-18)

Sign Body.

A portion of a sign that can provide protection from the weather and can additionally serve as an electrical enclosure. (600) (CMP-18)

Signaling Circuit.

Any electrical circuit that energizes signaling equipment. (CMP-3)

Simple Apparatus.

An electrical component or combination of components of simple construction with well-defined electrical parameters that does not generate more than 1.5 volts, 100 mA, and 25 mW, or a passive component that does not dissipate more than 1.3 watts and is compatible with the intrinsic safety of the circuit in which it is used. (CMP-14)

Informational Note No. 1: The following are examples of simple apparatus:

(1) Passive components; for example, switches, instrument connectors, plugs and sockets, junction boxes, resistance temperature devices, and simple semiconductor devices such as LEDs

(2) Sources of stored energy consisting of single components in simple circuits with well-defined parameters; for example, capacitors or inductors, whose values are considered when determining the overall safety of the system

(3) Sources of generated energy; for example, thermocouples and photocells, that do not generate more than 1.5 volts, 100 mA, and 25 mW

Informational Note No. 2: See ANSI/UL 913, *Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III, Division 1, Hazardous (Classified) Locations* , and ANSI/UL 60079-11, *Explosive Atmospheres — Part 11: Equipment Protection by Intrinsic Safety "i"* , for additional information.

Single-Pole Separable Connector.

A device that is installed at the ends of portable, flexible, single-conductor cable that is used to establish connection or disconnection between two cables or one cable and a single-pole, panel-mounted separable connector. (CMP-18)

Site-Isolating Device.

A pole-mounted disconnecting means installed at the distribution point for the purposes of isolation, system maintenance, emergency disconnection, or connection of optional standby systems. (547) (CMP-7)

Skeleton Tubing.

Neon tubing that is itself the sign or outline lighting and is not attached to an enclosure or sign body. (600) (CMP-18)

Slip.

A berthing space between or adjacent to piers, wharves, or docks; the water areas associated with boat occupation. [**303:** 3.3.21] (555) (CMP-7)

Informational Note: See the definition of *Berth* for additional information.

Solid-State Phase-Control Dimmer.

A solid-state dimmer where the wave shape of the steady-state current does not follow the wave shape of the applied voltage such that the wave shape is nonlinear. (CMP-15)

Solid-State Sine Wave Dimmer.

A solid-state dimmer where the wave shape of the steady-state current follows the wave shape of the applied voltage such that the wave shape is linear. (CMP-15)

Spa or Hot Tub.

A hydromassage pool, or tub for recreational or therapeutic use, not located in health care facilities, designed for immersion of users, and usually having a filter, heater, and motor-driven blower. It may be installed indoors or outdoors, on the ground or supporting structure, or in the ground or supporting structure. Generally, they are not designed or intended to have its contents drained or discharged after each use. (680) (CMP-17)

Spa or Hot Tub, Packaged Equipment Assembly. (Packaged Spa or Hot Tub Equipment Assembly)

A factory-fabricated unit consisting of water-circulating, heating, and control equipment mounted on a common base, intended to operate a spa or hot tub. Equipment can include pumps, air blowers, heaters, lights, controls, sanitizer generators, and so forth. (680) (CMP-17)

Spa or Hot Tub, Self-Contained. (Self-Contained Spa or Hot Tub)

Factory-fabricated unit consisting of a spa or hot tub vessel with all water-circulating, heating, and control equipment integral to the unit. Equipment can include pumps, air blowers, heaters, lights, controls, sanitizer generators, and so forth. (680) (CMP-17)

Spa or Hot Tub, Storable. (Storable Spa or Hot Tub)

Spas or hot tubs installed entirely on or above the ground that are intended to be stored when not in use and are designed for ease of relocation. (680) (CMP-17)

Space.

A portion of the health care facility designated by the health care facility's governing body that serves a specific purpose. [**99:** 3.3.171] (517) (CMP-15)

Special Permission.

The written consent of the authority having jurisdiction. (CMP-1)

Special Protection “s”.

Type of protection that permits design, assessment, and testing of equipment that cannot be fully assessed within a recognized type of protection or combination of recognized types of protection because of functional or operational limitations, but that can be demonstrated to provide the necessary equipment protection level (EPL). (CMP-14)

Informational Note: See ANSI/UL 60079-33, *Explosive Atmospheres — Part 33: Equipment Protection by Special Protection “s”* , for additional information.

Special-Purpose Multi-Circuit Cable System.

A portable branch-circuit distribution system consisting of one or more trunk cables and optional breakout assemblies or multi-circuit outlet enclosures. (520) (CMP-15)

Spider (Cable Splicing Block).

A device that contains busbars that are insulated from each other for the purpose of splicing or distributing power to portable cables and cords that are terminated with single-pole busbar connectors. (530) (CMP-15)

Spin Down.

A shutdown condition of the FESS, where energy is being dissipated and the flywheel rotor is slowing down to a stop. (706) (CMP-13)

Informational Note: A complete stop of a flywheel rotor cannot occur instantaneously because of the high kinetic energy of the rotor, but rather occurs over time as a result of friction forces acting on the rotor.

Splash Pad.

A fountain intended for recreational use by pedestrians and designed to contain no more than 25 mm (1 in.) of water depth. This definition does not include showers intended for hygienic rinsing prior to use of a pool, spa, or other water feature. (680) (CMP-17)

Spray Area.

Any fully enclosed, partly enclosed, or unenclosed area in which flammable or combustible vapors, mists, residues, dusts, or deposits are present due to the operation of spray processes, including:

(1) any area in the direct path of a spray application process;

(2) the interior of a spray booth, spray room, or limited finishing workstation, as herein defined;

(3) the interior of any exhaust plenum, eliminator section, or scrubber section;

(4) the interior of any exhaust duct or exhaust stack leading from a spray application process;

(5) the interior of any air recirculation path up to and including recirculation particulate filters;

(6) any solvent concentrator (pollution abatement) unit or solvent recovery (distillation) unit; and

(7) the inside of a membrane enclosure.

The following are not part of the spray area:

(1) fresh air make-up units;

(2) air supply ducts and air supply plenums;

(3) recirculation air supply ducts downstream of recirculation particulate filters; and

(4) exhaust ducts from solvent concentrator (pollution abatement) units. [**33:** 3.3.2.3] (CMP-14)

Informational Note No. 1: Unenclosed spray areas are locations outside of buildings or are localized operations within a larger room or space. Such areas are normally provided with some local vapor extraction/ventilation system. In automated operations, the area limits are the maximum area in the direct path of spray operations. In manual operations, the area limits are the maximum area of spray when aimed at 90 degrees to the application surface.

Informational Note No. 2: See definitions for *limited finishing workstation* and *membrane enclosure* for additional information.

Spray Area, Outdoor. (Outdoor Spray Area)

A spray area that is outside the confines of a building or that has a canopy or roof that does not limit the dissipation of the heat of a fire or dispersion of flammable vapors and does not restrict fire-fighting access and control. For the purpose of this standard, an outdoor spray area can be treated as an unenclosed spray area as defined in this code. [**33:** 3.3.2.3.1] (CMP-14)

Spray Area, Unenclosed. (Unenclosed Spray Area)

Any spray area that is not confined by a limited finishing workstation, spray booth, or spray room, as herein defined. [**33:** 3.3.2.3.2] (CMP-14)

Spray Booth.

A power-ventilated enclosure for a spray application operation or process that confines and limits the escape of the material being sprayed, including vapors, mists, dusts, and residues that are produced by the spraying operation and conducts or directs these materials to an exhaust system. [**33:** 3.3.19] (CMP-14)

> Informational Note: A spray booth is an enclosure or insert within a larger room used for spraying, coating, and/or dipping applications. A spray booth can be fully enclosed or have open front or face and can include a separate conveyor entrance and exit. The spray booth is provided with a dedicated ventilation exhaust with supply air from the larger room or from a dedicated air supply.

Spray Room.

A power-ventilated fully enclosed room with a specified fire resistance rating used exclusively for open spraying of flammable or combustible materials. [**33:** 3.3.20] (CMP-14)

Stage Effect (Special Effect).

An electrical or electromechanical piece of equipment used to simulate a distinctive visual or audible effect, such as a wind machine, lightning simulator, or sunset projector. (CMP-15)

Stage Equipment.

Equipment at any location on the premises integral to the stage production including, but not limited to, equipment for lighting, audio, special effects, rigging, motion control, projection, or video. (520) (CMP-15)

Stage Lighting Hoist.

A motorized lifting device that contains a mounting position for one or more luminaires, with wiring devices for connection of luminaires to branch circuits, and integral flexible cables to allow the luminaires to travel over the lifting range of the hoist while energized. (520) (CMP-15)

Stage Property.

An article or object used as a visual element in a motion picture or television production, except painted backgrounds (scenery) and costumes. (530) (CMP-15)

Stage Set.

A specific area set up with temporary scenery and properties designed and arranged for a particular scene in a motion picture or television production. (CMP-15)

Stage Switchboard, Fixed. (Fixed Stage Switchboard)

A permanently installed switchboard, panelboard, or rack containing dimmers or relays with associated overcurrent protective devices, or overcurrent protective devices alone, used primarily to feed stage equipment. (CMP-15)

Stage Switchboard, Portable. (Portable Stage Switchboard)

A portable rack or pack containing dimmers or relays with associated overcurrent protective devices, or overcurrent protective devices alone, used to feed stage equipment. (520) (CMP-15)

Stand Lamp.

A portable stand that contains a general-purpose luminaire or lampholder with guard for the purpose of providing general illumination on a stage, in an auditorium, or in a studio. (520) (CMP-15)

Stand-Alone System.

A system that is not connected to an electric power production and distribution network. (CMP-4)

Storage, Dry Stack. (Dry Stack Storage)

A facility, either covered or uncovered, constructed of horizontal and vertical structural members designed to allow placement of small boats in defined slots arranged both horizontally and vertically. [**303:** 3.3.24.2] (555) (CMP-7)

Stored-Energy Power Supply System (SEPSS).

A complete functioning EPSS powered by a stored-energy electrical source. (CMP-13)

Stranding, Compact. (Compact Stranding)

A conductor stranding method in which each layer of strands is pressed together to minimize the gaps between the strands so the overall diameter of the finished conductor is less than a concentric stranded conductor and less than a compressed stranded conductor. (CMP-6)

Stranding, Compressed. (Compressed Stranding)

A conductor stranding method in which the outer layer of strands is pressed together so the overall diameter of the finished conductor is less than a concentric stranded conductor but greater than a compact stranded conductor. (CMP-6)

Stranding, Concentric. (Concentric Stranding)

A conductor consisting of a straight central strand surrounded by one or more layers of strands, helically laid in a geometric pattern. (CMP-6)

Strip Light.

A luminaire with multiple lamps arranged in a row. (520) (CMP-15)

Structure.

That which is built or constructed, other than equipment. (CMP-1)

Structure, Relocatable. (Relocatable Structure)

A factory-assembled structure or structures transportable in one or more sections that are built on a permanent chassis and designed to be used as other than a dwelling unit without a permanent foundation. (545) (CMP-7)

> Informational Note: Examples of relocatable structures are those units that are equipped for sleeping purposes only, contractor's and other on-site offices, construction job dormitories, studio dressing rooms, banks, clinics, stores, shower facilities and restrooms, training centers, or for the display or demonstration of merchandise or machines.

Subassembly.

Component parts or a segment of a sign, retrofit kit, or outline lighting system that, when assembled, forms a complete unit or product. (600) (CMP-18)

Substation.

An assemblage of equipment (e.g., switches, interrupting devices, circuit breakers, buses, and transformers) through which electric energy is passed for the purpose of distribution, switching, or modifying its characteristics. (CMP-9)

Supervisory Control and Data Acquisition (SCADA).

An electronic system that provides monitoring and controls for the operation of the critical operations power system. (CMP-13)

> Informational Note: This can include the fire alarm system, security system, control of the HVAC, the start/stop/monitoring of the power supplies and electrical distribution system, annunciation and communications equipment to emergency personnel, facility occupants, and remote operators.

Support Areas.

Areas, other than fixed production offices, intended to support production and where image capture will not take place. Such areas include, but are not limited to, mobile production offices, storage, and workspaces; vehicles and trailers for cast, makeup, hair, lighting, grip, wardrobe, props, catering, and craft services; and portable restrooms. (530) (CMP-15)

Surge Arrester.

A protective device for limiting surge voltages by discharging or bypassing surge current; it also prevents continued flow of follow current while remaining capable of repeating these functions. (CMP-10)

Surge-Protective Device (SPD).

A protective device for limiting transient voltages by diverting or limiting surge current; it also prevents continued flow of follow current while remaining capable of repeating these functions and is designated as follows:

(1) Type 1: Permanently connected SPDs intended for installation between the secondary of the service transformer and the line side of the service disconnect overcurrent device

(2) Type 2: Permanently connected SPDs intended for installation on the load side of the service disconnect overcurrent device, including SPDs located at the branch panel

(3) Type 3: Point of utilization SPDs

(4) Type 4: Component SPDs, including discrete components, as well as assemblies. (CMP-10)

Informational Note: See UL 1449, *Standard for Surge Protective Devices* , for further information on SPDs.

Suspended Ceiling Grid.

A system that serves as a support for a finished ceiling surface and other utilization equipment. (393) (CMP-18)

Switch, Bypass Isolation. (Bypass Isolation Switch)

A manual, nonautomatic, or automatic operated device used in conjunction with a transfer switch to provide a means of bypass that directly connects the load conductors to a power source and allows the transfer switch to be isolated or disconnected. (CMP-13)

Switch, General-Use. (General-Use Switch)

A switch intended for use in general distribution and branch circuits. It is rated in amperes, and it is capable of interrupting its rated current at its rated voltage. (CMP-10)

Switch, General-Use Snap. (General-Use Snap Switch)

A form of general-use switch constructed so that it can be installed in device boxes or on box covers, or otherwise used in conjunction with wiring systems recognized by this code. (CMP-18)

Switch, Isolating. (Isolating Switch)

A switch intended for isolating an electrical circuit from the source of power. It has no interrupting rating, and it is intended to be operated only after the circuit has been opened by some other means. (CMP-10)

Switch, Motor-Circuit. (Motor-Circuit Switch)

A switch rated in horsepower that is capable of interrupting the maximum operating overload current of a motor of the same horsepower rating as the switch at the rated voltage. (CMP-11)

Switchboard.

A large single panel, frame, or assembly of panels on which are mounted on the face, back, or both, switches, overcurrent and other protective devices, buses, and usually instruments.(CMP-10)

Informational Note: These assemblies can be accessible from the rear or side as well as from the front and are not intended to be installed in cabinets.

Switchgear.

An assembly completely enclosed on all sides and top with sheet metal (except for ventilating openings and inspection windows) and containing primary power circuit switching, interrupting devices, or both, with buses and connections. The assembly may include control and auxiliary devices. Access to the interior of the enclosure is provided by doors, removable covers, or both. (CMP-10)

Informational Note: All switchgear subject to *NEC* requirements is metal enclosed. Switchgear rated below 1000 V or less may be identified as “low-voltage power circuit breaker switchgear.” Switchgear rated over 1000 V may be identified as “metal-enclosed switchgear” or “metal-clad switchgear.” Switchgear is available in non–arc-resistant or arc-resistant constructions.

Switching Device (as applied to equipment rated over 1000 volts ac, 1500 volts dc, nominal).

A device designed to close, open, or both, one or more electrical circuits. (CMP-9)

Cutout.

An assembly of a fuse support with either a fuseholder, fuse carrier, or disconnecting blade. The fuseholder or fuse carrier may include a conducting element (fuse link) or may act as the disconnecting blade by the inclusion of a nonfusible member.

Disconnecting Switch (or Isolating Switch).

A mechanical switching device used for isolating a circuit or equipment from a source of power.

Interrupter Switch.

A switching device capable of making, carrying, and interrupting specified currents.

Oil-Filled Cutout.

A cutout in which all or part of the fuse support and its fuse link or disconnecting blade is mounted in oil with complete immersion of the contacts and the fusible portion of the conducting element (fuse link) so that arc interruption by severing of the fuse link or by opening of the contacts will occur under oil.

Oil Switch.

A switching device having contacts that operate under oil (or askarel or other suitable liquid).

Regulator Bypass Switch.

A switching device or combination of switching devices designed to bypass equipment used to control voltage levels or related circuit characteristics.

System Isolation Equipment.

A redundantly monitored, remotely operated contactor-isolating system, packaged to provide the disconnection/isolation function, capable of verifiable operation from multiple remote locations by means of lockout switches, each having the capability of being padlocked in the “off” (open) position. (430) (CMP-11)

Tap Conductor.

A conductor, other than a service conductor, that has overcurrent protection ahead of its point of supply that exceeds the value permitted for similar conductors that are protected as described elsewhere in 240.4 . (240) (CMP-10)

Task Illumination.

Provisions for the minimum lighting required to carry out necessary tasks in the areas described in 517.34(A) , including safe access to supplies and equipment and access to exits. [**99:** 3.3.177] (517) (CMP-15)

Technical Power System.

An electrical distribution system where the equipment grounding conductor is isolated from the premises grounded conductor and the premises equipment grounding conductor except at a single grounded termination point within a branch-circuit panelboard, at the originating (main breaker) branch-circuit panelboard or at the premises grounding electrode. (640) (CMP-12)

Temporary Equipment.

Portable wiring and equipment intended for use with events of a transient or temporary nature where all equipment is presumed to be removed at the conclusion of the event. (640) (CMP-12)

Terminal (as applied to batteries).

That part of a cell, container, or battery to which an external connection is made (commonly identified as post, pillar, pole, or terminal post). (CMP-13)

Thermal Protector (as applied to motors).

A protective device for assembly as an integral part of a motor or motor-compressor that, when properly applied, protects the motor against dangerous overheating due to overload and failure to start. (CMP-11)

Informational Note: The thermal protector may consist of one or more sensing elements integral with the motor or motor-compressor and an external control device.

Thermal Resistivity.

The heat transfer capability through a substance by conduction. (CMP-6)

Informational Note: Thermal resistivity is the reciprocal of thermal conductivity and is designated Rho, which is expressed in the units °C-cm/W.

Thermally Protected (as applied to motors).

A motor or motor-compressor that is provided with a thermal protector. (CMP-11)

Top Shield.

A grounded metal shield covering under-carpet components of the flat conductor cable (Type FCC) system for the purposes of providing protection against physical damage. (324) (CMP-6)

Tower.

A pole or other structure that supports a wind turbine. (694) (CMP-4)

Transfer Switch.

An automatic or nonautomatic device for transferring one or more load conductor connections from one power source to another. (CMP-13)

Transfer Switch, Branch-Circuit Emergency Lighting (BCELTS). (Branch-Circuit Emergency Lighting Transfer Switch)

A device connected on the load side of a branch-circuit overcurrent protective device that transfers only emergency lighting loads from the normal power source to an emergency power source. (700) (CMP-13)

Informational Note: See ANSI/UL 1008, *Transfer Switch Equipment* , for information covering branch-circuit emergency lighting transfer switches.

Transfer Switch, Bypass Isolation. (Bypass Isolation Transfer Switch)

A transfer switch that provides a means to isolate the transfer switch. (CMP-13)

Transfer Switch, Meter-Mounted. (Meter-Mounted Transfer Switch)

A transfer switch connected between the utility meter and the meter base. (CMP-13)

Informational Note: Meter-mounted transfer switches can plug into the meter base. Transfer switches that incorporate the meter base in the transfer equipment assembly are not considered meter-mounted transfer switches.

Transformer.

Equipment, either single-phase or polyphase, that uses electromagnetic induction to convert current and voltage in a primary circuit into current and voltage in a secondary circuit. (CMP-9)

Transformer Secondary Conductor.

A conductor, other than a service conductor, that originates at the secondary winding terminals of a transformer. (CMP-10)

Transition Assembly.

An assembly to facilitate connection of the flat conductor cable (Type FCC) system to other wiring systems, incorporating (1) a means of electrical interconnection and (2) a suitable box or covering for providing electrical safety and protection against physical damage. (324) (CMP-6)

Transport Refrigerated Unit (TRU).

A trailer or container, with integrated cooling or heating, or both, used for the purpose of maintaining the desired environment of temperature-sensitive goods or products. (626) (CMP-12)

Transportable.

X-ray equipment that is to be installed in a vehicle or that may be readily disassembled for transport in a vehicle. (660) (CMP-12)

Truck.

A motor vehicle designed for the transportation of goods, services, and equipment. (626) (CMP-12)

Truck Coupler.

A truck flanged surface inlet and mating cord connector. (626) (CMP-12)

Truck Flanged Surface Inlet.

The device(s) on the truck into which the connector(s) is inserted to provide electric energy and other services. This device is part of the truck coupler. The truck flanged surface inlet is considered to be part of the truck and not part of the electrified truck parking space supply equipment. (626) (CMP-12)

Trunk Cable.

A portable extension cable containing six or more branch circuits, a male multipole plug, and a female multipole receptacle. (520) (CMP-15)

Tubing, Electrical Metallic (EMT). (Electrical Metallic Tubing)

An unthreaded thinwall raceway of circular cross section designed for the physical protection and routing of conductors and cables and for use as an equipment grounding conductor when installed utilizing appropriate fittings. (CMP-8)

Tubing, Electrical Nonmetallic (ENT). (Electrical Nonmetallic Tubing)

A nonmetallic, pliable, corrugated raceway of circular cross section with integral or associated couplings, connectors, and fittings for the installation of electrical conductors. It is composed of a material that is resistant to moisture and chemical atmospheres and is flame retardant.

A pliable raceway is a raceway that can be bent by hand with a reasonable force but without other assistance. (CMP-8)

Tubing, Flexible Metallic (FMT). (Flexible Metallic Tubing)

A metal raceway that is circular in cross section, flexible, and liquidtight without a nonmetallic jacket. (CMP-8)

Twofer.

An assembly containing one male plug and two female cord connectors used to connect two loads to one branch circuit. (520) (CMP-15)

Type of Protection “n”.

Type of protection where electrical equipment, in normal operation, is not capable of igniting a surrounding explosive gas atmosphere and a fault capable of causing ignition is not likely to occur. (CMP-14)

> Informational Note: See ANSI/UL 60079-15, *Explosive Atmospheres — Part 15: Equipment Protection by Type of Protection “n”*, for additional information.

Ungrounded.

Not connected to ground or to a conductive body that extends the ground connection. (CMP-5)

Uninterruptible Power Supply (UPS).

A device or system that provides quality and continuity of ac power through the use of a stored-energy device as the backup power source for a period of time when the normal power supply is incapable of performing acceptably. (CMP-13)

Unit Equipment.

A battery-equipped emergency luminaire that illuminates only as part of the emergency illumination system and is not illuminated when the normal supply is available. (CMP-13)

Utilization Equipment.

Equipment that utilizes electric energy for electronic, electromechanical, chemical, heating, lighting, or similar purposes. (CMP-1)

Valve Actuator Motor (VAM) Assemblies.

A manufactured assembly, used to operate a valve, consisting of an actuator motor and other components such as motor controllers, torque switches, limit switches, and overload protection. (430) (CMP-11)

Informational Note: VAMs typically have short-time duty and high-torque characteristics.

Ventilated.

Provided with a means to permit circulation of air sufficient to remove an excess of heat, fumes, or vapors. (CMP-14)

Vessel.

A container such as a barrel, drum, or tank for holding fluids or other material. (CMP-17)

Volatile Flammable Liquid.

A flammable liquid having a flash point below 38°C (100°F), or a flammable liquid whose temperature is above its flash point, or a Class II combustible liquid that has a vapor pressure not exceeding 276 kPa (40 psia) at 38°C (100°F) and whose temperature is above its flash point. (CMP-14)

Voltage (of a circuit).

The greatest root-mean-square (rms) (effective) difference of potential between any two conductors of the circuit concerned. (CMP-1)

Informational Note: Some systems, such as 3-phase 4-wire, single-phase 3-wire, and 3-wire direct current, may have various circuits of various voltages.

Voltage, High. (High Voltage)

A potential difference over 1000 volts ac, 1500 volts dc, nominal. (CMP-9)

Informational Note: Circuits and equipment rated at potential differences of more than 1000 volts ac, 1500 volts dc, and up to 52 kV, are also commonly referred to as medium voltage.

Voltage, Low. (Low Voltage)

An electromotive force rated 24 volts, nominal, or less. (552) (CMP-7)

Voltage, Nominal. (Nominal Voltage)

A nominal value assigned to a circuit or system for the purpose of conveniently designating its voltage class (e.g., 120/240 volts, 480Y/277 volts, 600 volts). (CMP-1)

Informational Note No. 1: The actual voltage at which a circuit operates can vary from the nominal within a range that permits satisfactory operation of equipment.

Informational Note No. 2: See ANSI C84.1-2011, *Voltage Ratings for Electric Power Systems and Equipment (60 Hz).*

Voltage, Nominal (as applied to battery or cell).(Nominal Voltage)

The value assigned to a cell or battery of a given voltage class for the purpose of convenient designation. The operating voltage of the cell or battery may vary above or below this value. (CMP-13)

Informational Note: The most common nominal cell voltages are 2 volts per cell for the lead-acid batteries, 1.2 volts per cell for alkali batteries, and 3.2 to 3.8 volts per cell for Li-ion batteries. Nominal voltages might vary with different chemistries.

Voltage to Ground.

For grounded circuits, the voltage between the given conductor and that point or conductor of the circuit that is grounded; for ungrounded circuits, the greatest voltage between the given conductor and any other conductor of the circuit. (CMP-1)

Watertight.

Constructed so that moisture will not enter the enclosure under specified test conditions. (CMP-1)

Weatherproof.

Constructed or protected so that exposure to the weather will not interfere with successful operation. (CMP-1)

> Informational Note: Rainproof, raintight, or watertight equipment can fulfill the requirements for weatherproof where varying weather conditions other than wetness, such as snow, ice, dust, or temperature extremes, are not a factor.

Wharf.

A structure at the shoreline that has a platform built along and parallel to a body of water with either an open deck or a superstructure. [**307:** 3.3.28] (555) (CMP-7)

Wind Turbine.

A mechanical device that converts wind energy to electrical energy. (CMP-4)

Wind Turbine Output Circuit. (Turbine Output Circuit)

The circuit conductors between the internal components of a wind turbine (which might include an alternator, integrated rectifier, controller, and/or inverter) and other equipment. (694) (CMP-4)

Wire.

A factory assembly of one or more insulated conductors without an overall covering. (805) (CMP-3)

Wireless Power Transfer (WPT).

The transfer of electrical energy from a power source to an electrical load via magnetic fields by a contactless means between a primary device and a secondary device. (625) (CMP-12)

Wireless Power Transfer Equipment (WPTE).

Equipment installed specifically for the purpose of transferring energy between the premises wiring and the electric vehicle without physical electrical contact. (625) (CMP-12)

> Informational Note No. 1: The general form of WPTE consists of two physical packages: a control box and a primary pad.
>
> Informational Note No. 2: Electric vehicle power export equipment and wireless power transfer equipment are sometimes contained in one set of equipment, sometimes referred to as a bidirectional WPTE.

Wireways, Metal. (Metal Wireways)

Sheet metal troughs with hinged or removable covers for housing and protecting electrical wires and cable and in which conductors are laid in place after the raceway has been installed as a complete system. (CMP-8)

Wireways, Nonmetallic. (Nonmetallic Wireways)

Flame-retardant, nonmetallic troughs with removable covers for housing and protecting electrical wires and cables in which conductors are laid in place after the raceway has been installed as a complete system. (CMP-8)

Wiring Device.

An electrical device that serves as either a connection point to facilitate the flow of current or as a control device in general distribution and branch circuits. (CMP-18)

> Informational Note: Examples of wiring devices include attachment plugs, receptacles, general-use snap switches, pendant switches, surface switches, dimmers, and electronic control switches and lighting control switches.

Work Surface.

A fixed, stationary, or portable surface typically intended for dry use and for tasks other than food or beverage preparation, food or beverage serving, personal lavation, or laundering that presents an incidental risk of spillage of smaller quantities of beverages and other liquids upon outlets mounted directly on or recessed in the surface. (CMP-2)

Informational Note No. 1: See UL 111, *Outline of Investigation for Multioutlet Assemblies*, and UL 962A, *Furniture Power Distribution Units*, which establish the performance evaluation criteria and construction criteria.

Informational Note No. 2: See 406.14(F), 406.14(G)(1), and 406.14(H) for information on receptacles for work surfaces distinguished from receptacles for counters and countertops.

Yoke (Strap).

The structural frame of a wiring device, such as a receptacle or switch, that serves as the mounting means. (CMP-18)

Zone.

A physically identifiable area (such as barriers or separation by distance) within an information technology equipment room, with dedicated power and cooling systems for the information technology equipment or systems. (645) (CMP-12)

Statement of Problem and Substantiation for Public Comment

This comment both recommends restoration of the definition of "enclosed panelboard" as it appears in the 2023 edition of the NEC as well as recommending that purview be assigned to CMP-1 which created this definition. This definition should be restored as on the numerous negative ballot statements related to its deletion as well as the panel statement which essentially agreed that "enclosed panelboard" is what a panelboard in fact is when a panelboard that is, by definition, is "...designed to be placed in a cabinet, enclosure, or cutout box..." is placed in a cabinet, enclosure, or cutout box, as designed, per the panel statement phrase "...an “enclosed panelboard” would be “a panelboard in an enclosure.”

Related Item

• FR-8903

Submitter Information Verification

Submitter Full Name: Palmer Hickman
Organization: Electrical Training Alliance
Street Address:
City:
State:
Zip:

Submittal Date: Tue Aug 06 17:14:45 EDT 2024
Committee: NEC-P10

Public Comment No. 864-NFPA 70-2024 [Article 100]

Article 100 Definitions

Scope. This article contains only those definitions essential to the application of this code. It is not intended to include commonly defined general terms or commonly defined technical terms from related codes and standards. An article number in parentheses following the definition indicates that the definition only applies to that article.

Informational Note: A definition that is followed by a reference in brackets has been extracted from one of the following standards. Only editorial changes were made to the extracted text to make it consistent with this code.

(1) NFPA 30A-2024, *Code for Motor Fuel Dispensing Facilities and Repair Garages*

(2) NFPA 33-2024, *Standard for Spray Application Using Flammable or Combustible Materials*

(3) NFPA 75-2024, *Standard for the Fire Protection of Information Technology Equipment*

(4) NFPA 79-2024, *Electrical Standard for Industrial Machinery*

(5) NFPA 99-2024, *Health Care Facilities Code*

(6) NFPA 101® -2024, *Life Safety Code*®

(7) NFPA 110-2025, *Standard for Emergency and Standby Power Systems*

(8) NFPA 303-2026, *Fire Protection Standard for Marinas and Boatyards*

(9) NFPA 307-2026, *Standard for the Construction and Fire Protection of Marine Terminals, Piers, and Wharves*

(10) NFPA 499-2024, *Recommended Practice for the Classification of Combustible Dusts and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas*

(11) NFPA 501-2024, *Standard on Manufactured Housing*

(12) NFPA 790-2024, *Standard for Competency of Third-Party Field Evaluation Bodies*

(13) NFPA 1192-2026, *Standard on Recreational Vehicles*

Accessible (as applied to equipment).

Capable of being reached for operation, renewal, and inspection. (CMP-1)

Accessible (as applied to wiring methods).

Capable of being removed or exposed without damaging the building structure or finish or not permanently closed in or blocked by the structure, other electrical equipment, other building systems, or finish of the building. (CMP-1)

Accessible, Readily. (Readily Accessible)

Capable of being reached quickly for operation, renewal, or inspection without requiring those to whom ready access is requisite to take actions, such as to use tools (other than keys), to climb over or under, to remove obstacles, or to resort to portable ladders, and so forth. (CMP-1)

Informational Note: Use of keys is a common practice under controlled or supervised conditions and a common alternative to the ready access requirements under such supervised conditions as provided elsewhere in the *NEC*.

Adapter.

A device used to adapt a circuit from one configuration of an attachment plug or receptacle to another configuration with the same current rating. (520) (CMP-15)

Adjustable Speed Drive.

Power conversion equipment that provides a means of adjusting the speed of an electric motor. (CMP-11)

Informational Note: A variable frequency drive is one type of electronic adjustable speed drive that controls the rotational speed of an ac electric motor by controlling the frequency and voltage of the electrical power supplied to the motor.

Adjustable Speed Drive System.

A combination of an adjustable speed drive, its associated motor(s), and auxiliary equipment. (CMP-11)

Aircraft Painting Hangar.

An aircraft hangar constructed for the express purpose of spraying, coating, and/or dipping applications and provided with dedicated ventilation supply and exhaust. (CMP-14)

Ambulatory Health Care Occupancy.

An occupancy used to provide services or treatment simultaneously to four or more patients that provides, on an outpatient basis, one or more of the following:

(1) Treatment for patients that renders the patients incapable of taking action for self-preservation under emergency conditions without the assistance of others.

(2) Anesthesia that renders the patients incapable of taking action for self-preservation under emergency conditions without the assistance of others.

(3) Treatment for patients who, due to the nature of their injury or illness, are incapable of taking action for self-preservation under emergency conditions without the assistance of others.

[***101*** **:** 3.3.198.1] (517) (CMP-15)

Ampacity.

The maximum current, in amperes, that a conductor can carry continuously under the conditions of use without exceeding its temperature rating. (CMP-6)

Amplifier (Audio Amplifier) (Pre-Amplifier).

Electronic equipment that increases the current or voltage, or both, of an audio signal intended for use by another piece of audio equipment. Amplifier is the term used to denote an audio amplifier. (640) (CMP-12)

Appliance.

Utilization equipment, generally other than industrial, that is normally built in a standardized size or type and is installed or connected as a unit to perform one or more functions such as clothes washing, air-conditioning, food mixing, and deep frying. (CMP-17)

Applicator.

The device used to transfer energy between the output circuit and the object or mass to be heated. (665) (CMP-12)

Approved.

Acceptable to the authority having jurisdiction. (CMP-1)

Arc-Fault Circuit Interrupter (AFCI).

A device intended to provide protection from the effects of arc faults by recognizing characteristics unique to arcing and by functioning to de-energize the circuit when an arc fault is detected. (CMP-2)

Array (PV Array) (Solar PV Array).

A mechanically and electrically integrated grouping of solar PV modules with mounting system, including any attached system components such as inverters or dc-to-dc converters and attached associated wiring. (690) (CMP-4)

Artificially Ventilated Room “v”.

A room volume protected by artificial ventilation and of sufficient size to permit the entry of a person who might occupy the room. (CMP-14)

Informational Note: see ANSI/UL 60079-13, *Explosive Atmospheres — Part 13: Equipment Protection by Pressurized Room “p” and Artificially Ventilated Room “v”* , for information on the requirements for rooms intended for human entry where artificial ventilation is used as a means of reducing the risk of explosion.

Askarel.

A generic term for a group of nonflammable synthetic chlorinated hydrocarbons used as electrical insulating media. (CMP-9)

Informational Note: Askarels of various compositional types are used. Under arcing conditions, the gases produced, while consisting predominantly of noncombustible hydrogen chloride, can include varying amounts of combustible gases, depending on the askarel type.

Associated Apparatus.

Apparatus in which the circuits are not necessarily intrinsically safe themselves but that affects the energy in the intrinsically safe circuits and is relied on to maintain intrinsic safety. Such apparatus is one of the following:

(1) Electrical apparatus that has an alternative type of protection for use in the appropriate hazardous (classified) location

(2) Electrical apparatus not so protected that shall not be used within a hazardous (classified) location

(CMP-14)

Informational Note No. 1: Associated apparatus has identified intrinsically safe connections for intrinsically safe apparatus and also might have connections for nonintrinsically safe apparatus.

Informational Note No. 2: An example of associated apparatus is an intrinsic safety barrier, which is a network designed to limit the energy (voltage and current) available to the protected circuit in the hazardous (classified) location under specified fault conditions.

Informational Note No. 3: See ANSI/UL 913, *Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III, Division 1, Hazardous (Classified) Locations* ; ANSI/UL 60079-11, *Explosive Atmospheres — Part 11: Equipment Protection by Intrinsic Safety "i"* ; and ANSI/ISA RP 12.06.01, *Recommended Practice for Wiring Methods for Hazardous (Classified) Locations Instrumentation — Part 1: Intrinsic Safety* , for additional information.

Associated Nonincendive Field Wiring Apparatus.

Apparatus in which the circuits are not necessarily nonincendive themselves but that affects the energy in nonincendive field wiring circuits and is relied on to maintain nonincendive energy levels. Such apparatus is one of the following:

(1) Electrical apparatus that has an alternative type of protection for use in the appropriate hazardous (classified) location

(2) Electrical apparatus not so protected that shall not be used within a hazardous (classified) location

(CMP-14)

Informational Note No. 1: Associated nonincendive field wiring apparatus has designated associated nonincendive field wiring apparatus connections for nonincendive field wiring apparatus and also might have connections for other electrical apparatus.

Informational Note No. 2: See ANSI/UL 121201, *Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations* , for additional information.

Attachment Fitting, Weight-Supporting (WSAF) (Weight-Supporting Attachment Fitting).

A device that, by insertion into a weight-supporting ceiling receptacle, establishes a connection between the conductors of the attached utilization equipment and the branch-circuit conductors connected to the weight-supporting ceiling receptacle. (CMP-18)

Informational Note No. 1: A weight-supporting attachment fitting is different from an attachment plug because no cord is associated with the fitting. A weight-supporting attachment fitting in combination with a weight-supporting ceiling receptacle secures the associated utilization equipment in place and supports its weight.

Informational Note No. 2: See ANSI/NEMA WD 6, *American National Standard for Wiring Devices — Dimensional Specifications* , for the standard configuration of weight-supporting attachment fittings and related weight-supporting ceiling receptacles.

Attachment Plug (Plug Cap) (Plug).

A device that, by insertion in a receptacle, establishes a connection between the conductors of the attached flexible cord and the conductors connected permanently to the receptacle. (CMP-18)

Audio Autotransformer.

A transformer with a single winding and multiple taps intended for use with an amplifier loudspeaker signal output. (640) (CMP-12)

Audio Signal Processing Equipment (Audio Equipment).

Electrically operated equipment that produces, processes, or both, electronic signals that, when appropriately amplified and reproduced by a loudspeaker, produce an acoustic signal within the range of normal human hearing (typically 20–20 kHz). Within Article 640, the terms equipment and audio equipment are assumed to be equivalent to audio signal processing equipment. (640) (CMP-12)

Informational Note: This equipment includes, but is not limited to, loudspeakers; headphones; pre-amplifiers; microphones and their power supplies; mixers; MIDI (musical instrument digital interface) equipment or other digital control systems; equalizers, compressors, and other audio signal processing equipment; and audio media recording and playback equipment, including turntables, tape decks and disk players (audio and multimedia), synthesizers, tone generators, and electronic organs. Electronic organs and synthesizers may have integral or separate amplification and loudspeakers. With the exception of amplifier outputs, virtually all such equipment is used to process signals (using analog or digital techniques) that have nonhazardous levels of voltage or current.

Audio System.

The totality of all equipment and interconnecting wiring used to fabricate a fully functional audio signal processing, amplification, and reproduction system. (640) (CMP-12)

Audio Transformer.

A transformer with two or more electrically isolated windings and multiple taps intended for use with an amplifier loudspeaker signal output. (640) (CMP-12)

Authority Having Jurisdiction (AHJ).

An organization, office, or individual responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, an installation, or a procedure. (CMP-1)

Informational Note: The phrase “authority having jurisdiction,” or its acronym AHJ, is used in NFPA documents in a broad manner, since jurisdictions and approval agencies vary, as do their responsibilities. Where public safety is primary, the authority having jurisdiction may be a federal, state, local, or other regional department or individual such as a fire chief; fire marshal; chief of a fire prevention bureau, labor department, or health department; building official; electrical inspector; or others having statutory authority. For insurance purposes, an insurance inspection department, rating bureau, or other insurance company representative may be the authority having jurisdiction. In many circumstances, the property owner or his or her designated agent assumes the role of the authority having jurisdiction; at government installations, the commanding officer or departmental official may be the authority having jurisdiction.

Automatic.

Performing a function without the necessity of human intervention. (CMP-1)

Bathroom.

An area including a sink with one or more of the following: a toilet, a urinal, a tub, a shower, a bidet, or similar plumbing fixtures. (CMP-2)

Battery.

A single cell or a group of cells connected together electrically in series, in parallel, or a combination of both. (CMP-13)

Battery, Flow. (Flow Battery)

An energy storage component that stores its active materials in the form of one or two electrolytes external to the reactor interface. When in use, the electrolytes are transferred between reactor and storage tanks. (706) (CMP-13)

Informational Note: Three commercially available flow battery technologies are zinc air, zinc bromine, and vanadium redox, sometimes referred to as *pumped electrolyte ESS* .

Battery, Sealed. (Sealed Battery)

A battery that has no provision for the routine addition of water or electrolyte or for external measurement of electrolyte specific gravity and might contain pressure relief venting. (CMP-13)

Battery, Stationary Standby. (Stationary Standby Battery)

A battery that spends the majority of the time on continuous float charge or in a high state of charge, in readiness for a discharge event. (CMP-13)

Informational Note: Uninterruptible Power Supply (UPS) batteries are an example that falls under this definition.

Battery-Powered Lighting Units.

Individual unit equipment for backup illumination consisting of a rechargeable battery; a battery-charging means; provisions for one or more lamps mounted on the equipment, or with terminals for remote lamps, or both; and a relaying device arranged to energize the lamps automatically upon failure of the supply to the unit equipment. (517) (CMP-15)

Berth.

The water space to be occupied by a boat or other vessel alongside or between bulkheads, piers, piles, fixed and floating docks, or any similar access structure. [**303:** 3.3.2] (555) (CMP-7)

Informational Note: See the definition of *Slip* for additional information.

Bipolar Circuit.

A dc circuit that is comprised of two monopole circuits, each having an opposite polarity connected to a common reference point. (CMP-4)

Block.

A square or portion of a city, town, or village enclosed by streets and including the alleys so enclosed, but not any street. (800) (CMP-16)

Boatyard.

A facility used for constructing, repairing, servicing, hauling from the water, storing (on land and in water), and launching of boats. [**303:** 3.3.3] (555) (CMP-7)

Bodies of Water, Artificially Made. (Artificially Made Bodies of Water)

Bodies of water that have been constructed or modified to fit some decorative or commercial purpose such as, but not limited to, aeration ponds, fish farm ponds, storm retention basins, treatment ponds, and irrigation (channel) facilities. Water depths may vary seasonally or be controlled. (682) (CMP-7)

Bodies of Water, Natural. (Natural Bodies of Water)

Bodies of water such as lakes, streams, ponds, rivers, and other naturally occurring bodies of water, which may vary in depth throughout the year. (682) (CMP-7)

Bonded (Bonding).

Connected to establish electrical continuity and conductivity. (CMP-5)

Bonding Conductor (Bonding Jumper).

A conductor that ensures the required electrical conductivity between metal parts that are required to be electrically connected. (CMP-5)

Bonding Conductor, Equipment. (Equipment Bonding Conductor)

The connection between two or more portions of the equipment grounding conductor. (CMP-5)

Bonding Conductor, Grounding Electrode (Grounding Electrode Bonding Jumper). (Grounding Electrode Bonding Conductor)

A conductor, other than the grounding electrode conductor, used to interconnect two or more grounding electrodes to form the grounding electrode system. (CMP-5)

Bonding Conductor, Main (Main Bonding Jumper). (Main Bonding Conductor)

The connection between the grounded circuit conductor and the equipment grounding conductor, or the supply-side bonding conductor, or both, at the service equipment. (CMP-5)

Bonding Conductor, Supply-Side (Supply-Side Bonding Jumper). (Supply-Side Bonding Conductor)

A conductor installed on the supply side of a service or within a service equipment enclosure(s), or for a separately derived system, that ensures the required electrical conductivity between metal parts required to be electrically connected. (CMP-5)

Bonding Conductor, System (System Bonding Jumper). (System Bonding Conductor)

The connection between the grounded circuit conductor and the supply-side bonding conductor, or the equipment grounding conductor, or both, at a separately derived system. (CMP-5)

Bonding Jumper, Impedance. (Impedance Bonding Jumper).

The connection in an impedance grounded system between the equipment grounding conductor(s) and the grounding electrode side of the impedance grounding device. (CMP-5)

Border Light.

A permanently installed overhead strip light. (520) (CMP-15)

Bottom Shield.

A protective layer that is installed between the floor and flat conductor cable (Type FCC) to protect the cable from physical damage and may or may not be incorporated as an integral part of the cable. (324) (CMP-6)

Branch Circuit (Branch-Circuit).

The circuit conductors between the final overcurrent device protecting the circuit and the outlet(s). (CMP-2)

Branch Circuit, Appliance. (Appliance Branch Circuit)

A branch circuit that supplies energy to one or more outlets to which appliances are to be connected and that has no permanently connected luminaires that are not a part of an appliance. (CMP-2)

Branch Circuit, General-Purpose. (General-Purpose Branch Circuit)

A branch circuit that supplies two or more receptacles or outlets for lighting and appliances. (CMP-2)

Branch Circuit, Individual. (Individual Branch Circuit)

A branch circuit that supplies only one utilization equipment. (CMP-2)

Branch Circuit, Motor. (Motor Branch Circuit)

The circuit conductors, including equipment, between the motor branch-circuit short-circuit and ground-fault protective device and an individual motor. (CMP-11)

Branch Circuit, Multiwire. (Multiwire Branch Circuit)

A branch circuit that consists of two or more ungrounded conductors that have a voltage between them, and a neutral conductor that has equal voltage between it and each ungrounded conductor of the circuit and that is connected to the neutral conductor of the system. (CMP-2)

Branch-Circuit Selection Current (BCSC).

The value in amperes to be used instead of the rated-load current in determining the ratings of motor branch-circuit conductors, disconnecting means, controllers, and branch-circuit short-circuit and ground-fault protective devices wherever the running overload protective device permits a sustained current greater than the specified percentage of the rated-load current. The value of branch-circuit selection current will always be equal to or greater than the marked rated-load current. (440) (CMP-11)

Breakout Assembly.

An adapter used to connect a multipole connector containing two or more branch circuits to multiple individual branch-circuit connectors. (520) (CMP-15)

Broadband.

Wide bandwidth data transmission that transports multiple signals, protocols, and traffic types over various media types. (CMP-16)

Building.

A structure that stands alone or that is separated from adjoining structures by fire walls. (CMP-1)

Building, Floating. (Floating Building)

A building that floats on water, is moored in a permanent location, and has a premises wiring system served through connection by permanent wiring to an electrical supply system not located on the premises. (CMP-7)

Building, Manufactured. (Manufactured Building)

Any building that is of closed construction and is made or assembled in manufacturing facilities on or off the building site for installation, or for assembly and installation on the building site, other than manufactured homes, mobile homes, park trailers, or recreational vehicles. (545) (CMP-7)

Building Component.

Any subsystem, subassembly, or other system designed for use in or integral with or as part of a structure, which can include structural, electrical, mechanical, plumbing, and fire protection systems, and other systems affecting health and safety. (545) (CMP-7)

Building System.

Plans, specifications, and documentation for a system of manufactured building or for a type or a system of building components, which can include structural, electrical, mechanical, plumbing, and fire protection systems, and other systems affecting health and safety, and including such variations thereof as are specifically permitted by regulation, and which variations are submitted as part of the building system or amendment thereto. (545) (CMP-7)

Bulkhead.

A vertical structural wall, usually of stone, timber, metal, concrete, or synthetic material, constructed along, and generally parallel to, the shoreline to retain earth as an extension of the upland, and often to provide suitable water depth at the waterside face. [**303:** 3.3.5] (555) (CMP-7)

Bull Switch.

An externally operated wall-mounted safety switch that can contain overcurrent protection and is designed for the connection of portable cables and cords. (530) (CMP-15)

Bundled.

Cables or conductors that are tied, wrapped, taped, or otherwise periodically bound together. (520) (CMP-15)

Busbar (as applied to low-voltage suspended ceiling power distribution systems).

A noninsulated conductor electrically connected to the source of supply and physically supported on an insulator providing a power rail for connection to utilization equipment, such as sensors, actuators, A/V devices, low-voltage luminaire assemblies, and similar electrical equipment. (393) (CMP-18)

Busbar Support (as applied to low-voltage suspended ceiling power distribution systems).

An insulator that runs the length of a section of suspended ceiling bus rail that serves to support and isolate the busbars from the suspended grid rail. (393) (CMP-18)

Busway.

A raceway consisting of a metal enclosure containing factory-mounted, bare or insulated conductors, which are usually copper or aluminum bars, rods, or tubes. (CMP-8)

Cabinet.

An enclosure that is designed for either surface mounting or flush mounting and is provided with a frame, mat, or trim in which a swinging door or doors are or can be hung. (CMP-8)

Cable, Abandoned. (Abandoned Cable)

Installed cable that is not terminated at equipment other than a termination fitting or a connector and is not identified for future use with a tag. (CMP-3)

> Informational Note: See 640.6(B) , 645.6(G) , 760.25, 770.25, 790.25, and 800.25 for requirements covering the removal of abandoned cables.

Cable, Armored (Type AC). (Armored Cable)

A fabricated assembly of insulated conductors in a flexible interlocked metallic armor. (CMP-6)

Cable, Circuit Integrity (CI). (Circuit Integrity Cable)

Cable(s) marked with the suffix “-CI” used for remote-control, signaling, power-limited, fire alarm, optical fiber, or communications systems that supply critical circuits to ensure survivability for continued circuit operation for a specified time under fire conditions. (CMP-3)

> Informational Note: See 772.4 for power circuits installed for survivability.

Cable, Coaxial. (Coaxial Cable)

A cylindrical assembly composed of a conductor centered inside a metallic tube or shield, separated by a dielectric material, and usually covered by an insulating jacket. (CMP-3)

Cable, Festoon. (Festoon Cable)

Single- and multiple-conductor cable intended for use and installation where flexibility is required. (610) (CMP-12)

Cable, Flat Conductor (Type FCC). (Flat Conductor Cable)

Three or more separate flat copper conductors placed horizontally edge-to-edge and enclosed within an insulating assembly. (324) (CMP-6)

Cable, Instrumentation Tray (Type ITC). (Instrumentation Tray Cable)

A factory assembly of two or more insulated conductors, with or without an equipment grounding conductor(s), enclosed in a nonmetallic sheath. (CMP-3)

Cable, Integrated Gas Spacer (Type IGS). (Integrated Gas Spacer Cable)

A factory assembly of one or more conductors, each individually insulated and enclosed in a loose fit, nonmetallic flexible conduit as an integrated gas spacer cable rated 0 volts through 600 volts. (CMP-6)

Cable, Limited Use. (Limited-Use Cable)

Cables that are intended to be used with protection such as a raceway or for specific restricted applications. (CMP-3)

> Informational Note: Limited use cables are denoted by an “X” suffix, for example Types CL2X or CMX.

Cable, Medium Voltage(Type MV). (Medium Voltage Cable)

A single or multiconductor solid dielectric insulated cable rated 2001 volts up to and including 35,000 volts, nominal. (CMP-6)

Cable, Metal Clad (Type MC). (Metal Clad Cable)

A factory assembly of one or more insulated circuit conductors with or without optical fiber members enclosed in an armor of interlocking metal tape, or a smooth or corrugated metallic sheath. (CMP-6)

Cable, Metallic Conductor. (Metallic Conductor Cable)

A factory assembly of two or more conductors having an overall covering. (CMP-3)

Cable, Mineral-Insulated, Metal-Sheathed (Type MI). (Mineral-Insulated, Metal-Sheathed Cable)

A factory assembly of one or more conductors insulated with a highly compressed refractory mineral insulation and enclosed in a liquidtight and gastight continuous copper or alloy steel sheath. (CMP-6)

Cable, Nonmetallic-Sheathed.

A factory assembly of two or more insulated conductors enclosed within an overall nonmetallic jacket. (CMP-6)

Cable, Nonmetallic-Sheathed (Type NM).

Insulated circuit conductors and a bare, covered, or insulated equipment grounding conductor enclosed within an overall nonmetallic jacket. (CMP-6)

Cable, Nonmetallic-Sheathed (Type NMC).

Insulated circuit conductors and a bare, covered, or insulsated equipment grounding conductor enclosed within an overall, corrosion resistant, nonmetallic jacket. (CMP-6)

Cable, Optical Fiber. (Optical Fiber Cable)

A factory assembly or field assembly of one or more optical fibers having an overall covering. (CMP-16)

> Informational Note: A field-assembled optical fiber cable is an assembly of one or more optical fibers within a jacket. The jacket, without optical fibers, is installed in a manner similar to conduit or raceway. Once the jacket is installed, the optical fibers are inserted into the jacket, completing the cable assembly.

Cable, Optical Fiber, Conductive. (Conductive Optical Fiber Cable)

A factory assembly of one or more optical fibers having an overall covering and containing non-current-carrying conductive member(s) such as metallic strength member(s), metallic vapor barrier(s), metallic armor, or metallic sheath. (CMP-16)

Cable, Optical Fiber, Hybrid. (Hybrid Optical Fiber Cable)

A cable containing optical fibers and current-carrying electrical conductors. (CMP-16)

Cable, Optical Fiber, Nonconductive. (Nonconductive Optical Fiber Cable)

A factory assembly of one or more optical fibers having an overall covering and containing no electrically conductive materials. (CMP-16)

Cable, Optical Fiber, Protected. (Protected Optical Fiber Cable)

Optical fiber cable protected from releasing optical radiation into the atmosphere during normal operating conditions and foreseeable malfunctions by additional armoring, conduit, cable tray, or raceway. (CMP-14)

> Informational Note: See ANSI/UL 60079-28, *Explosive Atmospheres — Part 28: Protection of Equipment and Transmission Systems Using Optical Radiation* , for additional information.

Cable, Portable Power Feeder. (Portable Power Feeder Cable)

One or more flexible shielded insulated power conductors enclosed in a flexible covering rated from 2001 to 25,000 volts. (CMP-6)

Cable, Power and Control Tray (Type TC). (Power and Control Tray Cable)

A factory assembly of two or more insulated conductors, with or without associated bare or covered equipment grounding conductors, under a nonmetallic jacket. (CMP-6)

Cable, Power-Limited Tray (Type PLTC). (Power-Limited Tray Cable)

A factory assembly of two or more insulated conductors rated at 300 volts, with or without associated bare or insulated equipment grounding conductors, under a nonmetallic jacket. (CMP-3)

Cable, Service. (Service Cable)

Service conductors made up in the form of a cable. (CMP-10)

Cable, Service Entrance. (Service Entrance Cable)

A single conductor or multiconductor cable provided with an overall covering, primarily used for services. (CMP-6)

Cable, Service Entrance (Type SE).

Service-entrance cable having a flame-retardant, moisture-resistant covering. (CMP-6)

Cable, Service Entrance (Type USE).

Service-entrance cable, identified for underground use, having a moisture-resistant covering, but not required to have a flame-retardant covering. (CMP-6)

Cable, Type P.

A factory assembly of one or more insulated flexible tinned copper conductors, with associated equipment grounding conductor(s), with or without a braided metallic armor and with an overall nonmetallic jacket. (CMP-6)

Cable, Under Carpet. (Under Carpet Cable)

Cables that are intended to be used under carpeting, floor covering, modular tiles, and planks. (722) (CMP-3)

Cable, Underground Feeder and Branch-Circuit (Type UF). (Underground Feeder and Branch-Circuit Cable)

A factory assembly of one or more insulated conductors with an integral or an overall covering of nonmetallic material suitable for direct burial in the earth. (CMP-6)

Cable Assembly, Flat (Type FC). (Flat Cable Assembly)

An assembly of parallel conductors formed integrally with an insulating material web specifically designed for field installation in surface metal raceway. (CMP-6)

Cable Bundle.

A group of cables that are tied together or in contact with one another in a closely packed configuration for at least 1.0 m (40 in.). (CMP-3)

> Informational Note: Random or loose installation of individual cables can result in less heating. Combing of the cables can result in less heat dissipation and more signal cross talk between cables.

Cable Connector.

A connector designed to join flat conductor cables (Type FCC) without using a junction box. (324) (CMP-6)

Cable Connector [as applied to hazardous (classified) locations].

An electrical device that is part of a cable assembly and that, by insertion of two mating configurations, establishes a connection between the conductors of the cable assembly and the conductors of a fixed piece of equipment. (CMP-14)

Informational Note No. 1: See ANSI/UL 121201, *Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations* , for information on the use of cable connectors.

Informational Note No. 2: Cable connectors in other than hazardous (classified) locations are referred to as male and female fittings.

Informational Note No. 3: See ANSI/UL 2238, *Cable Assemblies and Fittings for Industrial Control and Signal Distribution* , and ANSI/UL 2237, *Multi-Point Interconnection Power Cable Assemblies for Industrial Machinery* , for examples of standards on male and female fittings in other than hazardous (classified) locations.

Cable Joint.

A connection consisting of an insulation system and a connector where two (or more) medium voltage (Type MV) cables are joined together. (CMP-6)

Cable Management System.

An apparatus designed to control and organize lengths of cable or cord. (CMP-12)

Cable Routing Assembly.

A single channel or connected multiple channels, as well as associated fittings, forming a structural system that is used to support and route communications wires and cables, optical fiber cables, data cables associated with information technology and communications equipment, Class 2, Class 3, Class 4, and Type PLTC cables, and power-limited fire alarm cables in plenum, riser, and general-purpose applications. (CMP-3)

Cable Sheath.

A single or multiple layers of a protective covering that holds and protects the conductors or optical fibers, or both, contained inside. (CMP-3)

Cable System, Fire-Resistive. (Fire-Resistive Cable System)

A cable and components used to ensure survivability of critical circuits for a specified time under fire conditions. (CMP-3)

Cable System, Flat Conductor. (Flat Conductor Cable System)

A complete wiring system for branch circuits that is designed for installation under carpet squares. (324) (CMP-6)

Informational Note: The FCC system includes Type FCC cable and associated shielding, connectors, terminators, adapters, boxes, and receptacles.

Cable Termination.

A connection consisting of an insulation system and a connector and installed on a medium voltage (Type MV) cable to connect from a cable to a device, such as equipment. (CMP-6)

Cable Tie.

A band or length of material employing a locking device, used for bundling, securing, and/or supporting cable, flexible conduit, or flexible tubing.

Informational Note: The following are cable tie and cable tie fixing device type designations:

(1) Type(s) 1, 11, 2, 21, 2S, or 21S are evaluated for use in cable management applications.

(2) Type(s) 2S or 21S are also evaluated for securing and supporting cable, flexible conduit, and flexible tubing.

Cable Tie Fixing Device.

A component, such as a block or bracket, specifically designed to secure cable tie(s) to a mounting surface.

Informational Note: The following are cable tie and cable tie fixing device type designations:

(1) Type(s) 1, 11, 2, 21, 2S, or 21S are evaluated for use in cable management applications.

(2) Type(s) 2S or 21S are also evaluated for securing and supporting cable, flexible conduit, and flexible tubing.

Cable Tie Integral Device.

A single component, as produced, incorporating a cable tie and a cable tie fixing device that are not separable.

Note: The following are cable tie and cable tie fixing device type designations:

(1) Type(s) 1, 11, 2, 21, 2S, or 21S are evaluated for use in cable management applications.

(2) Type(s) 2S or 21S are also evaluated for securing and supporting cable, flexible conduit, and flexible tubing.

Cable Tray System.

A unit or assembly of units or sections and associated fittings forming a structural system used to securely fasten or support cables and raceways. (CMP-8)

Cablebus.

An assembly of units or sections with insulated conductors having associated fittings forming a structural system used to securely fasten or support conductors and conductor terminations in a completely enclosed, ventilated, protective metal housing. This assembly is designed to carry fault current and to withstand the magnetic forces of such current. (CMP-8)

Informational Note: Cablebus is ordinarily assembled at the point of installation from the components furnished or specified by the manufacturer in accordance with instructions for the specific job.

Cannabis Oil Booths.

Enclosed areas used to house cannabis oil equipment and systems.

Informational Note: Cannabis oil booths can be designed to house a single piece or multiple pieces of cannabis oil equipment. Booths range in size and can be large enough to permit entrance of personnel to perform the processing tasks.

Cannabis Oil Extraction Equipment.

Equipment that uses flammable materials (solvents) in the process of extracting the plant oil from the plant material.

Informational Note: Extraction equipment can use flammable materials as solvents to extract the plant oil from the plant material by saturating the plant material in a vented container, sealed container, or pressure vessel. Typical flammable materials used in the extraction process include butane, ethanol, hexane, pentane, propane, and LPG.

Cannabis Oil Post-Processing Equipment.

Equipment that is used in the final processing stages of the extracted plant oil (e.g., vacuum ovens, rotary evaporators, solvent recovery pumps).

Cannabis Oil Preparatory Equipment.

Equipment that is used to prepare the plant material for subsequent extraction of the plant oil (e.g., trimming, deseeding, drying/curing).

Cannabis Oil Systems.

Any combination of cannabis oil equipment needed for the overall extraction process (e.g., cannabis oil preparatory equipment, cannabis oil extraction equipment, cannabis oil booths, cannabis oil post-processing equipment).

Cell (as applied to batteries).

The basic electrochemical unit, characterized by an anode and a cathode, used to receive, store, and deliver electrical energy. (CMP-13)

Cell, Sealed. (Sealed Cell)

A cell that has no provision for the routine addition of water or electrolyte or for external measurement of electrolyte specific gravity and might contain pressure relief venting. (CMP-13)

Cell Line.

An assembly of electrically interconnected electrolytic cells supplied by a source of direct-current power. (CMP-12)

Cell Line Attachments and Auxiliary Equipment.

A term that includes, but is not limited to, auxiliary tanks; process piping; ductwork; structural supports; exposed cell line conductors; conduits and other raceways; pumps, positioning equipment, and cell cutout or bypass electrical devices. Auxiliary equipment includes tools, welding machines, crucibles, and other portable equipment used for operation and maintenance within the electrolytic cell line working zone. In the cell line working zone, auxiliary equipment includes the exposed conductive surfaces of ungrounded cranes and crane-mounted cell-servicing equipment. (668) (CMP-12)

Charge Controller.

Equipment that controls dc voltage or dc current, or both, and that is used to charge a battery or other energy storage device. (CMP-13)

Charger Power Converter.

The device used to convert energy from the power grid to a high-frequency output for wireless power transfer. (625) (CMP-12)

Child Care Facility.

A building or structure, or portion thereof, for educational, supervisory, or personal care services for more than four children 7 years old or less. (406) (CMP-18)

Circuit, Power-Limited. (Power-Limited Circuit)

An electrical circuit that is designed to provide acceptable protection from fire initiation and electrical shock by limiting the amount of power delivered into a fault by the power supply. (CMP-3)

Circuit Breaker.

A device designed to open and close a circuit by nonautomatic means and to open the circuit automatically on a predetermined overcurrent without damage to itself when properly applied within its rating. (CMP-10)

Informational Note: The automatic opening means can be integral, direct acting with the circuit breaker, or remote from the circuit breaker.

Circuit Breaker, Adjustable. (Adjustable Circuit Breaker)

A qualifying term indicating that the circuit breaker can be set to trip at various values of current, time, or both, within a predetermined range. (CMP-10)

Circuit Breaker, Instantaneous Trip. (Instantaneous Trip Circuit Breaker)

A qualifying term indicating that no delay is purposely introduced in the tripping action of the circuit breaker. (CMP-10)

Circuit Breaker, Inverse Time. (Inverse Time Circuit Breaker)

A qualifying term indicating that there is a delay purposely introduced in the tripping action of the circuit breaker, and the delay decreases as the magnitude of the current increases. (CMP-10)

Circuit Breaker, Nonadjustable. (Nonadjustable Circuit Breaker)

A qualifying term indicating that the circuit breaker does not have any adjustment to alter the value of the current at which it will trip or the time required for its operation. (CMP-10)

Class 1 Circuit.

The portion of the wiring system between the load side of the Class 1 power source and the connected equipment. (CMP-3)

Class 2 Circuit.

The portion of the wiring system between the load side of a Class 2 power source and the connected equipment. (CMP-3)

Informational Note: The design of a Class 2 circuit considers safety from a fire initiation standpoint and provides acceptable protection from electric shock due to its power limitations.

Class 3 Circuit.

The portion of the wiring system between the load side of a Class 3 power source and the connected equipment. (CMP-3)

Informational Note: The design of a Class 3 circuit considers safety from a fire initiation standpoint. Since higher levels of voltage and current than a Class 2 circuit are permitted, additional safeguards are specified to provide acceptable protection from electric shock.

Class 4 Circuit.

The portion of the wiring system between the load side of a Class 4 transmitter and the Class 4 receiver or Class 4 utilization equipment, as appropriate. (CMP-3)

Informational Note No. 1: A Class 4 circuit is also commonly referred to as a fault-managed power circuit.

Informational Note No. 2: Due to the active monitoring and control of the voltage and current provided, a Class 4 circuit considers safety from a fire initiation standpoint and provides acceptable protection from electric shock.

Class 4 Device.

Any active device connected to the Class 4 circuit; examples include a Class 4 transmitter, a Class 4 receiver, or Class 4 utilization equipment. (CMP-3)

Class 4 Power System.

An actively monitored and controlled system consisting of one or more Class 4 transmitters and one or more Class 4 receivers connected by a cabling system. (CMP-3)

Class 4 Receiver.

A device that accepts Class 4 power and converts it for use by utilization equipment. (CMP-3)

Class 4 Transmitter.

A device that sources Class 4 power. (726) (CMP-3)

> Informational Note: A Class 4 transmitter is different from traditional power sources in that it monitors the line for faults (both line-to-line and line-to-ground) and ceases power transmission if a fault is sensed.

Class 4 Utilization Equipment.

Devices that are directly powered by a Class 4 transmitter without the need for a separate Class 4 receiver (the receiver is integrated into the equipment). (CMP-3)

Closed Construction.

Any building, building component, assembly, or system manufactured in such a manner that all concealed parts of processes of manufacture cannot be inspected after installation at the building site without disassembly, damage, or destruction. (545) (CMP-7)

Clothes Closet.

A nonhabitable room or space intended primarily for storage of garments and apparel. (CMP-1)

Clothes Closet Storage Space.

The area within a clothes closet in which combustible materials can be kept. (410) (CMP-18)

Collector Rings.

An assembly of slip rings for transferring electric energy from a stationary to a rotating member. (675) (CMP-7)

Combiner (DC). (dc Combiner) (Direct-Current Combiner)

An enclosure that includes devices used to connect two or more PV system dc circuits in parallel. (690) (CMP-4)

Combustible Dust.

Solid particles that are 500 µm or smaller (i.e., material passing a U.S. No. 35 Standard Sieve as defined in ASTM E11-17, *Standard Specification for Woven Wire Test Sieve Cloth and Test Sieves*) that can form an explosible mixture when suspended in air at standard atmospheric pressure and temperature. [**499:** 3.3.3] (CMP-14)

> Informational Note: See ASTM E1226, *Standard Test Method for Explosibility of Dust Clouds* ; ISO 6184-1, *Explosion protection systems — Part 1: Determination of explosion indices of combustible dusts in air* ; or ANSI/UL 80079-20-2, *Explosive Atmospheres — Part 20-2: Material Characteristics — Combustible Dusts Test Methods* , for procedures for determining the explosibility of dusts. Historically, explosibility has been described as presenting a flash fire or explosion hazard. It could be understood that potential hazards due to the formation of an explosible mixture when suspended in air at standard atmospheric pressure and temperature would include ignition.

Combustible Gas Detection System.

A protection technique utilizing stationary gas detectors in industrial establishments. (CMP-14)

Commissioning.

The process, procedures, and testing used to set up and verify the initial performance, operational controls, safety systems, and sequence of operation of electrical devices and equipment, prior to it being placed into active service. (CMP-13)

Communications, Data. (Data Communications)

The transfer and reception of information in the form of a digital bitstream or a digitized analog signal transmitted over a point-to-point or point-to-multipoint arrangement. (CMP-16)

Communications Circuit.

A metallic, fiber, or wireless circuit that provides voice/data (and associated power) for communications-related services between communications equipment. (CMP-16)

> Informational Note: Because communications can be carried over conductors with power, meeting both this definition and the definition for a powering circuit is possible (e.g., a power line communications device may be used on a branch circuit). The addition of data to a power line circuit does not change the treatment of the circuit in this code.

Communications Circuit, Network-Powered Broadband. (Network-Powered Broadband Communications Circuit)

The circuit extending from the communications utility's or service provider's serving terminal or tap up to and including the network interface unit (NIU). (830) (CMP-16)

> Informational Note: A typical one-family dwelling network-powered communications circuit consists of a communications drop or communications service cable and an NIU and includes the communications utility's serving terminal or tap where it is not under the exclusive control of the communications utility.

Communications Circuit, Premises. (Premises Communications Circuit)

The circuit that extends voice, audio, video, data, interactive services, telegraph (except radio), and outside wiring for fire alarm and burglar alarm from the service provider's network terminal to the customer's communications equipment. (840) (CMP-16)

Communications Equipment.

The electronic equipment that performs the telecommunications operations for the transmission of audio, video, and data, and includes power equipment (e.g., dc converters, inverters, and batteries), technical support equipment (e.g., computers), and conductors dedicated solely to the operation of the equipment. (CMP-16)

> Informational Note: As the telecommunications network transitions to a more data-centric network, computers, routers, servers, and their powering equipment, are becoming essential to the transmission of audio, video, and data and are finding increasing application in communications equipment installations.

Communications Service Provider.

An organization, business, or individual that offers communications service to others. (CMP-16)

Communications System.

The communications equipment, communication circuits, and manual and machine operations necessary for the transmission, movement, and reception of information (e.g., voice, audio, data). (CMP-16)

Communications Utility.

An organization designated or recognized by an entity such as a public service commission or public utility commission, or recognized as such under federal, state, or local law. (CMP-16)

Community Antenna Television Circuit (CATV).

The circuit that extends community antenna television systems for audio, video, data, and interactive services from the service provider's network terminal to the appropriate customer equipment. (CMP-16)

Concealable Nonmetallic Extension.

A listed assembly of two, three, or four insulated circuit conductors within a nonmetallic jacket, an extruded thermoplastic covering, or a sealed nonmetallic covering. The classification includes surface extensions intended for mounting directly on the surface of walls or ceilings and concealed with paint, texture, joint compound, plaster, wallpaper, tile, wall paneling, or other similar materials. (CMP-6)

Concealed.

Rendered inaccessible by the structure or finish of the building. (CMP-1)

> Informational Note: Wires in concealed raceways are considered concealed, even though they may become accessible by withdrawing them.

Concealed Knob-and-Tube Wiring.

A wiring method using knobs, tubes, and flexible nonmetallic tubing for the protection and support of single insulated conductors. (CMP-6)

Conductor, Bare. (Bare Conductor)

A conductor having no covering or electrical insulation whatsoever. (CMP-6)

Conductor, Copper-Clad Aluminum. (Copper-Clad Aluminum Conductor)

Conductor drawn from a copper-clad aluminum rod, with the copper metallurgically bonded to an aluminum core. (CMP-6)

Conductor, Covered. (Covered Conductor)

A conductor encased within material of composition or thickness that is not recognized by this code as electrical insulation. (CMP-6)

Conductor, Insulated. (Insulated Conductor)

A conductor encased within material of composition and thickness that is recognized by this code as electrical insulation. (CMP-6)

Conductor, Insulated. (Insulated Conductor)

Overhead service conductor encased in a polymeric material adequate for the applied nominal voltage and any conductor types described in 310.4. (396) (CMP-6)

> Informational Note: See ICEA S-76-474-2011, *Standard for Neutral Supported Power Cable Assemblies with Weather-Resistant Extruded Insulation Rated 600 Volts* , for information about overhead service conductors.

Conductors, Outdoor Overhead. (Outdoor Overhead Conductors)

Single conductors, insulated, covered, or bare, installed outdoors on support structures in free air. (395) (CMP-6)

Conduit, Flexible Metal (FMC). (Flexible Metal Conduit)

A raceway of circular cross section made of helically wound, formed, interlocked metal strip. (CMP-8)

Conduit, High Density Polyethylene (HDPE). (High Density Polyethylene Conduit)

A nonmetallic raceway of circular cross section, with associated couplings, connectors, and fittings for the installation of electrical conductors. (CMP-8)

Conduit, Intermediate Metal (IMC). (Intermediate Metal Conduit)

A steel threadable raceway of circular cross section designed for the physical protection and routing of conductors and cables and for use as an equipment grounding conductor when installed with its integral or associated coupling and appropriate fittings. (CMP-8)

Conduit, Liquidtight Flexible Metal (LFMC). (Liquidtight Flexible Metal Conduit)

A raceway of circular cross section having an outer liquidtight, nonmetallic, sunlight-resistant jacket over an inner flexible metal core with associated couplings, connectors, and fittings for the installation of electric conductors. (CMP-8)

Conduit, Liquidtight Flexible Nonmetallic (LFNC). (Liquidtight Flexible Nonmetallic Conduit)

A raceway of circular cross section of various types as follows:

(1) A smooth seamless inner core and cover bonded together and having one or more reinforcement layers between the core and covers, designated as LFNC-A

(2) A smooth inner surface with integral reinforcement within the raceway wall, designated as LFNC-B

(3) A corrugated internal and external surface without integral reinforcement within the raceway wall, designated as LFNC-C

(CMP-8)

Informational Note: FNMC is an alternative designation for LFNC.

Conduit, Nonmetallic Underground with Conductors (NUCC). (Nonmetallic Underground Conduit with Conductors)

A factory assembly of conductors or cables inside a nonmetallic, smooth wall raceway with a circular cross section. (CMP-8)

Conduit, Reinforced Thermosetting Resin (RTRC). (Reinforced Thermosetting Resin Conduit)

A rigid nonmetallic raceway of circular cross section, with integral or associated couplings, connectors, and fittings for the installation of electrical conductors and cables. (CMP-8)

Conduit, Rigid Metal (RMC). (Rigid Metal Conduit)

A threadable raceway of circular cross section designed for the physical protection and routing of conductors and cables and for use as an equipment grounding conductor when installed with its integral or associated coupling and appropriate fittings. (CMP -8)

Conduit, Rigid Polyvinyl Chloride (PVC). (Rigid Polyvinyl Chloride Conduit)

A rigid nonmetallic raceway of circular cross section, with integral or associated couplings, connectors, and fittings for the installation of electrical conductors and cables. (CMP-8)

Conduit Body.

A separate portion of a conduit or tubing system that provides access through a removable cover(s) to the interior of the system at a junction of two or more sections of the system or at a terminal point of the system.

Boxes such as FS and FD or larger cast or sheet metal boxes are not classified as conduit bodies. (CMP-8)

Connector.

An electromechanical fitting. (393) (CMP-18)

Connector, Intercell. (Intercell Connector)

An electrically conductive bar or cable used to connect adjacent cells. (CMP-13)

Connector, Intertier. (Intertier Connector)

An electrical conductor used to connect two cells on different tiers of the same rack or different shelves of the same rack. (CMP-13)

Connector, Load. (Load Connector)

An electromechanical connector used for power from the busbar to utilization equipment. (393) (CMP-18)

Connector, Pendant. (Pendant Connector)

An electromechanical or mechanical connector used to suspend low-voltage luminaire or utilization equipment below the grid rail and to supply power to connect from the busbar to utilization equipment. (393) (CMP-18)

Connector, Power Feed. (Power Feed Connector)

An electromechanical connector used to connect the power supply to a power distribution cable, to connect directly to the busbar, or to connect from a power distribution cable to the busbar. (393) (CMP-18)

Connector, Pressure (Solderless). (Pressure Connector)

A device that establishes a connection between two or more conductors or between one or more conductors and a terminal by means of mechanical pressure and without the use of solder. (CMP-1)

Connector, Rail to Rail. (Rail to Rail Connector)

An electromechanical connector used to interconnect busbars from one ceiling grid rail to another grid rail. (393) (CMP-18)

Connector Strip.

A metal wireway containing pendant or flush receptacles. (520) (CMP-15)

Container (as applied to batteries).

A single-cell or multicell vessel or jar that holds the plates, electrolyte, and other elements of a single unit in a battery. (CMP-13)

Continuous Load.

A load where the maximum current is expected to continue for 3 hours or more. (CMP-2)

Control.

The predetermined process of connecting, disconnecting, increasing, or reducing electric power. (130) (CMP-13)

Control Circuit.

The circuit of a control apparatus or system that carries the electric signals directing the performance of the controller but does not carry the main power current. (CMP-11)

Control Circuits, Fault-Tolerant External. (Fault-Tolerant External Control Circuits)

Those control circuits either entering or leaving the fire pump controller enclosure, which if broken, disconnected, or shorted will not prevent the controller from starting the fire pump from all other internal or external means and may cause the controller to start the pump under these conditions. (695) (CMP-13)

Control Device, Emergency Lighting (ELCD). (Emergency Lighting Control Device)

A separate or integral device intended to perform one or more emergency lighting control functions. (700) (CMP-13)

> Informational Note: See UL 924, *Emergency Lighting and Power Equipment* , for information covering emergency lighting control devices.

Control Drawing.

A drawing or other document provided by the manufacturer of the intrinsically safe or associated apparatus, or of the nonincendive field wiring apparatus or associated nonincendive field wiring apparatus, that details the allowed interconnections between the intrinsically safe and associated apparatus or between the nonincendive field wiring apparatus or associated nonincendive field wiring apparatus. (CMP-14)

Informational Note: See the following standards for additional information:

(1) ANSI/ISA/UL 120202, *Recommendations for the Preparation, Content, and Organization of Intrinsic Safety Control Drawings*

(2) ANSI/UL 913, *Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III, Division 1, Hazardous (Classified) Locations*

(3) ANSI/UL 60079-11, *Explosive Atmospheres — Part 11: Equipment Protection by Intrinsic Safety "i"*

(4) ANSI/UL 121201, *Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations*

(5) ANSI/ISA RP 12.06.01, *Recommended Practice for Wiring Methods for Hazardous (Classified) Locations Instrumentation — Part 1: Intrinsic Safety*

Control Room.

An enclosed control space outside the hoistway, intended for full bodily entry, that contains the elevator motor controller. The room could also contain electrical and/or mechanical equipment used directly in connection with the elevator or dumbwaiter but not the electric driving machine or the hydraulic machine. (620) (CMP-12)

Control Space.

A space inside or outside the hoistway intended to be accessed with or without full bodily entry that contains the elevator motor controller. This space could also contain electrical and/or mechanical equipment used directly in connection with the elevator, dumbwaiter, escalator, moving walk, or platform lift, but not the electrical driving machine or the hydraulic machine. (620) (CMP-12)

Control System.

The overall system governing the starting, stopping, direction of motion, acceleration, speed, and retardation of the moving member. (620) (CMP-12)

Controller.

A device or group of devices that serves to govern, in some predetermined manner, the electric power delivered to the apparatus to which it is connected. (CMP-1)

Controller, Motion. (Motion Controller)

The electrical device(s) for that part of the control system that governs the acceleration, speed, retardation, and stopping of the moving member. (620) (CMP-12)

Informational Note: The motor control function may be integral to the motion controller.

Controller, Motor. (Motor Controller)

Any switch or device that is normally used to start and stop a motor by making and breaking the motor circuit current. (CMP-11)

Controller, Operation. (Operation Controller)

The electrical device(s) for that part of the control system that initiates the starting, stopping, and direction of motion in response to a signal from an operating device. (620) (CMP-12)

Converter, DC-to-DC. (DC-to-DC Converter)

A device that can provide an output dc voltage and current at a higher or lower value than the input dc voltage and current. (CMP-4)

Converter Circuit, DC-to-DC. (DC-to-DC Converter Circuit)

The dc circuit conductors connected to the output of a dc-to-dc converter. (CMP-4)

Converting Device.

That part of the heating equipment that converts input mechanical or electrical energy to the voltage, current, and frequency used for the heating applicator. A converting device consists of equipment using line frequency, all static multipliers, oscillator-type units using vacuum tubes, inverters using solid-state devices, or motor-generator equipment. (665) (CMP-12)

Cooking Unit, Counter-Mounted. (Counter-Mounted Cooking Unit)

A cooking appliance designed for mounting in or on a counter and consisting of one or more heating elements, internal wiring, and built-in or mountable controls. (CMP-2)

Coordination, Selective. (Selective Coordination)

Localization of an overcurrent condition to restrict outages to the circuit or equipment affected, accomplished by the selection and installation of overcurrent protective devices and their ratings or settings for the full range of available overcurrents, from overload to the available fault current, and for the full range of overcurrent protective device opening times associated with those overcurrents. (CMP-10)

Cord, Flexible. (Flexible Cord)

Two or more flexible insulated conductors enclosed in a flexible covering. (CMP-6)

Cord Connector.

A contact device terminated to a flexible cord that accepts an attachment plug or other insertion device. (CMP-6)

Cord Connector [as applied to hazardous (classified) locations].

A fitting intended to terminate a cord to a box or similar device and reduce the strain at points of termination and might include an explosionproof, a dust-ignitionproof, or a flameproof seal. (CMP-14)

Cord Set.

A length of flexible cord having an attachment plug at one end and a cord connector at the other end. (CMP-6)

Corrosive Environment.

Areas or enclosures without adequate ventilation, where electrical equipment is located and pool sanitation chemicals are stored, handled, or dispensed . (680) (CMP-17).

> Informational Note No. 1: See *Advisory: Swimming Pool Chemical: Chlorine* , OSWER 90-008.1, June 1990, available from the EPA National Service Center for Environmental Publications (NSCEP) as sanitation chemicals and pool water are considered to pose a risk of corrosion (gradual damage or destruction of materials) due to the presence of oxidizers (e.g., calcium hypochlorite, sodium hypochlorite, bromine, chlorinated isocyanurates) and chlorinating agents that release chlorine when dissolved in water.
>
> Informational Note No. 2: See ANSI/APSP-11, *Standard for Water Quality in Public Pools and Spas* , ANSI/ASHRAE 62.1, Table 6-4 Minimum Exhaust Rates, and *2021 International Swimming Pool and Spa Code (ISPSC)* , Section 324, including associated definitions and requirements concerning adequate ventilation of indoor spaces such as equipment and chemical storage rooms, which can reduce the likelihood of the accumulation of corrosive vapors. Chemicals such as chlorine cause severe corrosive and deteriorating effects on electrical connections, equipment, and enclosures when stored and kept in the same vicinity.

Counter (Countertop).

A fixed or stationary surface typically intended for food or beverage preparation, food or beverage serving, personal lavation, or laundering or a similar surface that presents a routine risk of spillage of larger quantities of liquids upon outlets mounted directly on or in the surface. (CMP-2)

> Informational Note No. 1: See UL 498, *Receptacles and Attachment Plugs* , and UL 943, *Ground-Fault Circuit Interrupters* , which establish the performance evaluation criteria and construction criteria.
>
> Informational Note No. 2: See 406.14(E) , 406.14(G)(1) , and 406.14(H) for information on receptacles for counters and countertops distinguished from receptacles for work surfaces.

Crane.

A mechanical device used for lifting or moving boats. [**303:** 3.3.6] (555) (CMP-7)

Critical Branch.

A system of feeders and branch circuits supplying power for task illumination, fixed equipment, select receptacles, and select power circuits serving areas and functions related to patient care that are automatically connected to alternate power sources by one or more transfer switches during interruption of the normal power source. [**99:** 3.3.30] (517) (CMP-15)

Critical Operations Areas, Designated (DCOA). (Designated Critical Operations Areas)

Areas within a facility or site designated as requiring critical operations power. (CMP-13)

Critical Operations Data System.

An information technology equipment system that requires continuous operation for reasons of public safety, emergency management, national security, or business continuity. (645) (CMP-12)

Critical Operations Power Systems (COPS).

Power systems for facilities or parts of facilities that require continuous operation for the reasons of public safety, emergency management, national security, or business continuity. (CMP-13)

Current-Limiting (as applied to overcurrent protection devices).

The ability to, when interrupting currents in its current-limiting range, reduce the current flowing in the faulted circuit to a magnitude substantially less than that obtainable in the same circuit if the device were replaced with a solid conductor having comparable impedance. (CMP-10)

Cutout Box.

An enclosure designed for surface mounting that has swinging doors or covers secured directly to and telescoping with the walls of the enclosure. (CMP-8)

Data Center, Modular (MDC). (Modular Data Center)

Prefabricated units, rated 1000 volts or less, consisting of an outer enclosure housing multiple racks or cabinets of information technology equipment (ITE) (e.g., servers) and various support equipment, such as electrical service and distribution equipment, HVAC systems, and the like. (646) (CMP-12)

> Informational Note: A typical construction may use a standard ISO shipping container or other structure as the outer enclosure, racks or cabinets of ITE, service-entrance equipment and power distribution components, power storage such as a UPS, and an air or liquid cooling system. Modular data centers are intended for fixed installation, either indoors or outdoors, based on their construction and resistance to environmental conditions. MDCs can be configured as an all-in-one system housed in a single equipment enclosure or as a system with the support equipment housed in separate equipment enclosures.

DC Plugging Box.

A dc device consisting of one or more 2-pole, 2-wire, nonpolarized, non-grounding-type receptacles intended to be used on dc circuits only. (530) (CMP-15)

Dead-Front.

Without live parts exposed to a person on the operating side of the equipment. (CMP-9)

Demand Factor.

The ratio of the maximum demand of a system, or part of a system, to the total connected load of a system or the part of the system under consideration. (CMP-2)

Dental Office.

A building or part thereof in which the following occur:

(1) Examinations and minor treatments/procedures performed under the continuous supervision of a dental professional;

(2) Use of limited to minimal sedation and treatment or procedures that do not render the patient incapable of self-preservation under emergency conditions; and

(3) No overnight stays for patients or 24-hour operations.

[**99:** 3.3.38] (CMP-15)

Deploy (Deployed).

The use of portable equipment for the duration required by the event or production for which it is used. (CMP-15)

Device.

A unit of an electrical system, other than a conductor, that carries or controls electric energy as its principal function. (CMP-1)

Dielectric Heating.

Heating of a nominally insulating material due to its own dielectric losses when the material is placed in a varying electric field. (665) (CMP-12)

Disconnecting Means.

A device, or group of devices, or other means by which the conductors of a circuit can be disconnected from their source of supply. (CMP-1)

Distribution Point (Center Yard Pole) (Meter Pole).

An electrical supply point from which service drops, service conductors, feeders, or branch circuits to buildings or structures utilized under single management are supplied. (547) (CMP-7)

Informational Note: The service point is typically located at the distribution point.

Diversion Controller (Diversion Charge Controller) (Diversion Load Controller).

Equipment that regulates the output of a source or charging process by diverting power to direct-current or alternating-current loads or to an interconnected utility service. (CMP-13)

Diversion Load.

A load connected to a diversion charge controller or diversion load controller, also known as a dump load. (CMP-4)

Docking Facility.

A covered or open, fixed or floating structure that provides access to the water and to which boats are secured. [**303:** 3.3.7] (555) (CMP-7)

Dormitory.

A building or a space in a building in which group sleeping accommodations are provided for more than 16 persons who are not members of the same family in one room, or a series of closely associated rooms, under joint occupancy and single management, with or without meals, but without individual cooking facilities. (CMP 2) [**101:** 3.3.68]

Informational Note: Rooms within dormitories intended for the use of individuals for combined living and sleeping purposes are guest rooms or guest suites. Examples of dormitories are college dormitories, fraternity and sorority houses, and military barracks. [**101:** A.3.3.68] (CMP 2)

Drop Box.

A box containing pendant- or flush-mounted receptacles attached to a multiconductor cable via strain relief or a multipole connector. (520) (CMP-15)

Dust-Ignitionproof.

Equipment enclosed in a manner that excludes dusts and does not permit arcs, sparks, or heat otherwise generated or liberated inside of the enclosure to cause ignition of exterior accumulations or atmospheric suspensions of a specified dust on or in the vicinity of the enclosure. (CMP-14)

Informational Note No. 1: See ANSI/UL 1203, *Explosion-Proof and Dust-Ignition-Proof Electrical Equipment for Use in Hazardous (Classified) Locations* , for information on dust-ignitionproof enclosures.

Informational Note No. 2: See NEMA 250, *Enclosures for Electrical Equipment (1000 Volts Maximum)* , for information on dust-ignitionproof enclosures that are sometimes additionally marked Type 9.

Dusttight.

Enclosures constructed so that dust will not enter under specified test conditions. (CMP-14)

Informational Note No. 1: See ANSI/UL 121201, *Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations* , for additional information.

Informational Note No. 2: See NEMA 250, *Enclosures for Electrical Equipment (1000 Volts Maximum),* and ANSI/UL 50E, *Enclosures for Electrical Equipment, Environmental Considerations* , for additional information on enclosure Types 3, 3X, 3S, 3SX, 4, 4X, 5, 6, 6P, 12, 12K, and 13 that are considered dusttight.

Duty, Continuous. (Continuous Duty)

Operation at a substantially constant load for an indefinitely long time. (CMP-1)

Duty, Intermittent. (Intermittent Duty)

Operation for alternate intervals of (1) load and no load; or (2) load and rest; or (3) load, no load, and rest. (CMP-1)

Duty, Periodic. (Periodic Duty)

Intermittent operation in which the load conditions are regularly recurrent. (CMP-1)

Duty, Short-Time. (Short-Time Duty)

Operation at a substantially constant load for a short and definite, specified time. (CMP-1)

Duty, Varying. (Varying Duty)

Operation at loads, and for intervals of time, both of which may be subject to wide variation. (CMP-1)

Dwelling, One-Family. (One-Family Dwelling)

A building that consists solely of one dwelling unit. (CMP-1)

Dwelling, Two-Family. (Two-Family Dwelling)

A building that consists solely of two dwelling units. (CMP-1)

Dwelling, Multifamily. (Multifamily Dwelling)

A building that contains three or more dwelling units. (CMP-1)

Dwelling Unit.

A single unit, providing complete and independent living facilities for one or more persons, including permanent provisions for living, sleeping, cooking, and sanitation. (CMP-2)

Electric-Discharge Lighting.

Systems of illumination utilizing fluorescent lamps, high-intensity discharge (HID) lamps, or neon tubing. (CMP-18)

Electric Power Production and Distribution Network.

Power production, distribution, and utilization equipment and facilities, such as electric utility systems that are connected to premises wiring and are external to and not controlled by a system that operates in interactive mode. (CMP-13)

Electric Self-Propelled Vehicle (ESV).

A vehicle or marine vessel, other than an EV, such as farm equipment, boats, aircraft, and golf carts, primarily powered by an electric motor that draws current from a rechargeable storage battery, fuel cell, photovoltaic array, or other source of electric current. (627) (CMP-12)

Electric Self-Propelled Vehicle Power Export Equipment (ESVPE).

The equipment, including the outlet on the electric self-propelled vehicle (ESV), that is used to provide electrical power at voltages greater than or equal to 30 Vac or 60 Vdc to loads external to the ESV, using the vehicle as the source of supply. (627) (CMP-12)

> Informational Note: Electric self-propelled vehicle power export equipment and electric self-propelled vehicle supply equipment or wireless power transfer equipment are sometimes contained in one piece of equipment, sometimes referred to as a bidirectional electric self-propelled vehicle supply equipment (ESVSE) or bidirectional wireless power transfer equipment (WPTE).

Electric Self-Propelled Vehicle Supply Equipment (ESVSE).

Equipment for plug-in charging, including the ungrounded, grounded, and equipment grounding conductors, and the electric self-propelled vehicle connectors, attachment plugs, personnel protection system, and all other fittings, devices, power outlets, or apparatus installed specifically for the purpose of transferring energy between the premises wiring and the electric vehicle. (627) (CMP-12)

> Informational Note: Electric self-propelled vehicle power export equipment and electric self-propelled vehicle supply equipment or wireless power transfer equipment (WPTE) are sometimes contained in one piece of equipment, sometimes referred to as a bidirectional ESVSE or bidirectional WPTE.

Electric Supply Stations.

Locations containing the generating stations and substations, including their associated generator, storage battery, transformer, and switchgear areas. (CMP-4)

Electric Vehicle (EV).

An automotive-type vehicle for on-road use, such as passenger automobiles, buses, trucks, vans, neighborhood electric vehicles, and electric motorcycles, primarily powered by an electric motor that draws current from a rechargeable storage battery, fuel cell, photovoltaic array, or other source of electric current. Plug-in hybrid electric vehicles (PHEV) are electric vehicles having a second source of motive power. (CMP-12)

> Informational Note: Off-road, self-propelled electric mobile machines, such as industrial trucks, hoists, lifts, transports, golf carts, airline ground support equipment, tractors, and boats are not considered electric vehicles.

Electric Vehicle Connector.

A device that, when electrically coupled (conductive or inductive) to an electric vehicle inlet, establishes an electrical connection to the electric vehicle for the purpose of power transfer and information exchange. (625) (CMP-12)

> Informational Note: See 625.48 for further information on interactive systems.

Electric Vehicle Power Export Equipment (EVPE).

The equipment, including the outlet on the electric vehicle, that is used to provide electrical power at voltages greater than or equal to 30 Vac or 60 Vdc to loads external to the electric vehicle, using the electric vehicle as the source of supply. (625) (CMP-12)

> Informational Note: Electric vehicle power export equipment and electric vehicle supply equipment or wireless power transfer equipment are sometimes contained in one piece of equipment, sometimes referred to as a bidirectional electric vehicle supply equipment (EVSE) or bidirectional wireless power transfer equipment (WPTE).

Electric Vehicle Supply Equipment (EVSE).

Equipment for plug-in charging, including the ungrounded, grounded, and equipment grounding conductors, and the electric vehicle connectors, attachment plugs, personnel protection system, and all other fittings, devices, power outlets, or apparatus installed specifically for the purpose of transferring energy between the premises wiring and the electric vehicle. (625) (CMP-12)

> Informational Note: Electric vehicle power export equipment and electric vehicle supply equipment or wireless power transfer equipment (WPTE) are sometimes contained in one piece of equipment, sometimes referred to as a bidirectional EVSE or bidirectional WPTE.

Electrical Circuit Protective System.

A system consisting of components and materials intended for installation as protection for specific electrical wiring systems with respect to the disruption of electrical circuit integrity upon exterior fire exposure. (CMP-16)

Electrical Datum Plane.

A specified vertical distance above the normal high-water level at which electrical equipment can be installed and electrical connections can be made. (CMP-7)

Electrical Ducts.

Electrical conduits, or other raceways round in cross section, that are suitable for use underground or embedded in concrete. (CMP-6)

Electrical Life Support Equipment.

Electrically powered equipment whose continuous operation is necessary to maintain a patient's life. [**99** :3.3.45] (517) (CMP-15)

Electrical Resistance Trace Heating "60079-30-1".

Type of protection for the purpose of producing heat on the principle of electrical resistance and typically composed of one or more metallic conductors and/or an electrically conductive material, suitably electrically insulated and protected. (CMP-14)

> Informational Note: See ANSI/UL 60079-30-1, *Explosive Atmospheres — Part 30-1: Electrical Resistance Trace Heating — General and Testing Requirements* , for additional information.

Electrically Connected.

A connection capable of carrying current as distinguished from connection through electromagnetic induction. (668) (CMP-12)

Electrified Truck Parking Space.

A truck parking space that has been provided with an electrical system that allows truck operators to connect their vehicles while stopped and to use off-board power sources in order to operate on-board systems such as air conditioning, heating, and appliances, without any engine idling. (626) (CMP-12)

> Informational Note: An electrified truck parking space also includes dedicated parking areas for heavy-duty trucks at travel plazas, warehouses, shipper and consignee yards, depot facilities, and border crossings. It does not include areas such as the shoulders of highway ramps and access roads, camping and recreational vehicle sites, residential and commercial parking areas used for automotive parking or other areas where ac power is provided solely for the purpose of connecting automotive and other light electrical loads, such as engine block heaters, and at private residences.

Electrified Truck Parking Space Wiring Systems.

All of the electrical wiring, equipment, and appurtenances related to electrical installations within an electrified truck parking space, including the electrified parking space supply equipment. (626) (CMP-12)

Electrolyte.

The medium that provides the ion transport mechanism between the positive and negative electrodes of a cell. (CMP-13)

Electrolytic Cell.

A tank or vat in which electrochemical reactions are caused by applying electric energy for the purpose of refining or producing usable materials. (668) (CMP-12)

Electrolytic Cell Line Working Zone.

The space envelope wherein operation or maintenance is normally performed on or in the vicinity of exposed energized surfaces of electrolytic cell lines or their attachments. (668) (CMP-12)

Electronic Power Converter.

A device that uses power electronics to convert one form of electrical power into another form of electrical power. (CMP-4)

> Informational Note: Examples of electronic power converters include, but are not limited to, inverters, dc-to-dc converters, and electronic charge controllers. These devices have limited current capabilities based on the device ratings at continuous rated power.

Electronically Protected.

A motor provided with electronic control that is an integral part of the motor and protects the motor against dangerous overheating due to failure of the electronic control, overload, and failure to start. (430) (CMP-11)

Emergency Luminaire, Battery-Equipped. (Battery-Equipped Emergency Luminaire)

A luminaire with a rechargeable battery, a battery charging means, and an automatic load control relay. (CMP-13)

Emergency Luminaire, Directly Controlled (DCEL). (Directly Controlled Emergency Luminaire)

A luminaire supplied by the facility emergency power system and with a control input for dimming or switching that provides an emergency illumination level upon loss of normal power. (700) (CMP-13)

> Informational Note: See ANSI/UL 924, *Emergency Lighting and Power Equipment* , for information covering directly controlled emergency luminaires.

Emergency Power Supply (EPS).

The source(s) of electric power of the required capacity and quality for an emergency power supply system (EPSS). (CMP-13)

Emergency Power Supply System (EPSS).

A complete functioning EPS system coupled to a system of conductors, disconnecting means and overcurrent protective devices, transfer switches, and all control, supervisory, and support devices up to and including the load terminals of the transfer equipment needed for the system to operate as a safe and reliable source of electric power. [**110:** 3.3.4] (CMP-13)

Emergency Systems.

Those systems legally required and classed as emergency by municipal, state, federal, or other codes, or by any governmental agency having jurisdiction. These systems are intended to automatically supply illumination, power, or both, to designated areas and equipment in the event of failure of the normal supply or in the event of accident to elements of a system intended to supply, distribute, and control power and illumination essential for safety to human life. (CMP-13)

Encapsulation “m”.

Type of protection where electrical parts that could ignite an explosive atmosphere by either sparking or heating are enclosed in a compound in such a way that this explosive atmosphere cannot be ignited. (CMP-14)

Informational Note: See ANSI/UL 60079-18, *Explosive atmospheres — Part 18: Equipment protection by encapsulation “m”*, for additional information.

Enclosed.

Surrounded by a case, housing, fence, or wall(s) that prevents persons from accidentally contacting energized parts. (CMP-1)

Enclosed-Break.

Having electrical make-or-break contacts such that, if an internal explosion of the flammable gas or vapor that can enter it occurs, the device will withstand the internal explosion without suffering damage and without communicating the internal explosion to the external flammable gas or vapor. (CMP-14)

Informational Note: See ANSI/UL 121201, *Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations* , for additional information.

Enclosure.

The case or housing of apparatus or the fence or walls surrounding an installation to prevent personnel from accidentally contacting energized parts or to protect the equipment from physical damage. (CMP-1)

Informational Note: See Table 110.28 for examples of enclosure types.

Energized.

Electrically connected to, or is, a source of voltage. (CMP-1)

Energized, Likely to Become. (Likely to Become Energized)

Conductive material that could become energized because of the failure of electrical insulation or electrical spacing. (CMP-5)

Energy Management System (EMS).

A system that monitors and controls power within an electrical system. (CMP-13)

Energy Storage System (ESS).

One or more devices, assembled together, capable of storing energy to supply electrical energy at a future time. [**855:** 3.3.9] (CMP-13)

Informational Note No. 1: An ESS(s) can include but is not limited to batteries, capacitors, and kinetic energy devices (e.g., flywheels and compressed air). An ESS(s) can include inverters or converters to change voltage levels or to make a change between an ac or a dc system.

Informational Note No. 2: These systems differ from a stationary standby battery installation where a battery spends the majority of the time on continuous float charge or in a high state of charge, in readiness for a discharge event.

Entertainment Device.

A mechanical or electromechanical device that provides an entertainment experience. (522) (CMP-15)

Informational Note: These devices can include animated props, show action equipment, animated figures, and special effects, coordinated with audio and lighting to provide an entertainment experience.

Equipment.

A general term, including fittings, devices, appliances, luminaires, apparatus, machinery, and the like used as a part of, or in connection with, an electrical installation. (CMP-1)

Equipment, Interconnection. (Interconnection Equipment)

Equipment that performs protective and control functions that enables power sources, or systems supplied by power sources, to operate in parallel with, separate from, and reconnect to systems supplied by other power sources. (CMP-4)

Equipment, Mobile. (Mobile Equipment)

Equipment with electrical components that is suitable to be moved only with mechanical aids or is provided with wheels for movement by a person(s) or powered devices. (513) (CMP-14)

Equipment, Portable. (Portable Equipment)

Equipment fed with portable cords or cables intended to be moved from one place to another. (640) (CMP-12)

Equipment, Portable. (Portable Equipment)

Equipment with electrical components suitable to be moved by a single person without mechanical aids. (511) (CMP-14)

Equipment, Portable. (Portable Equipment)

Equipment fed with portable cords or cables intended to be moved from one place to another. (520) (CMP-15)

Equipment, Portable. (Portable Equipment)

Equipment intended to be moved from one place to another. (530) (CMP-15)

Equipment, Signal. (Signal Equipment)

Includes audible and visual equipment such as chimes, gongs, lights, and displays that convey information to the user. (620) (CMP-12)

Equipment Branch.

A system of feeders and branch circuits arranged for delayed, automatic, or manual connection to the alternate power source and that serves primarily 3-phase power equipment. [**99** :3.3.50] (517) (CMP-15)

Equipment Protection Level (EPL).

Level of protection assigned to equipment based on its likelihood of becoming a source of ignition, and distinguishing the differences between explosive gas atmospheres and explosive dust atmospheres. (CMP-14)

> Informational Note: See ANSI/UL 60079-0, *Explosive Atmospheres — Part 0: Equipment — General Requirements* , for additional information.

Equipment Rack.

A framework for the support, enclosure, or both, of equipment; can be portable or stationary. (640) (CMP-12)

> Informational Note: See EIA/ECA 310-E-2005, *Cabinets, Racks, Panels and Associated Equipment* , for examples of equipment racks.

Equipotential Plane.

Conductive elements that are connected together to minimize voltage differences. (CMP-7)

Essential Electrical System.

A distribution system designed to ensure continuity of electrical power to designated areas and functions of a health care facility upon loss of one of the on-site or off-site sources with reliability and capacity sufficient to provide effective facility operation consistent with the facility's emergency operations plan. [**99:** 3.3.54] (517) (CMP-15)

Explosionproof Equipment.

Equipment enclosed in a case that is capable of withstanding an explosion of a specified gas or vapor that might occur within it, that is capable of preventing the ignition of a specified gas or vapor surrounding the enclosure by sparks, flashes, or explosion of the gas or vapor within, and that operates at such an external temperature that a surrounding flammable atmosphere will not be ignited. (CMP-14)

Informational Note No. 1: See ANSI/UL 1203, *Explosion-Proof and Dust-Ignition-Proof Electrical Equipment for Use in Hazardous (Classified) Locations* , for additional information.

Informational Note No. 2: See NEMA 250, *Enclosures for Electrical Equipment (1000 Volts Maximum)* , for additional information on explosionproof enclosures that are sometimes additionally marked Type 7.

Exposed (as applied to live parts).

Capable of being inadvertently touched or approached nearer than a safe distance by a person. (CMP-1)

Informational Note: This term applies to parts that are not suitably guarded, isolated, or insulated.

Exposed (as applied to wiring methods).

On or attached to the surface or behind panels designed to allow access. (CMP-1)

Exposed (Optical Fiber Cable Exposed to Accidental Contact).

A conductive optical fiber cable in such a position that, in case of failure of supports or insulation, contact between the cable's non–current-carrying conductive members and an electrical circuit might result. (CMP-16)

Exposed (to Accidental Contact).

A circuit in such a position that, in case of failure of supports or insulation, contact with another circuit may result. (CMP-16)

Exposed Conductive Surfaces.

Those surfaces that are capable of carrying electric current and that are unprotected, uninsulated, unenclosed, or unguarded, permitting personal contact. [**99:** 3.3.54] (517) (CMP-15)

Informational Note: Paint, anodizing, and similar coatings are not considered suitable insulation, unless they are listed for such use.

Externally Operable.

Capable of being operated without exposing the operator to contact with live parts. (CMP-1)

Facility, On-Site Power Production. (On-Site Power Production Facility)

The normal supply of electric power for the site that is expected to be constantly producing power. (695) (CMP-13)

Fastened-in-Place (as applied to electric vehicle power transfer systems and electric self-propelled vehicle power transfer systems).

Mounting means of equipment in which the fastening means are specifically designed to permit removal without the use of a tool. (CMP-12)

Fault-Managed Power (FMP).

A powering system that monitors for faults and controls current delivered to ensure fault energy is limited. (726) (CMP-3)

Informational Note No. 1: The monitoring and control systems differentiate fault-managed power from electric light and power circuits; therefore, alternative requirements to those of Chapters 1 through 4 are given regarding minimum wire sizes, ampacity adjustment and correction factors, overcurrent protection, insulation requirements, and wiring methods and materials.

Informational Note No. 2: A fault-managed power circuit is also commonly referred to as a Class 4 circuit.

Fault Current.

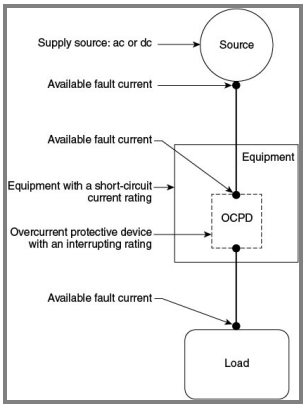
The current delivered at a point on the system during a short-circuit condition. (CMP-10)

Fault Current, Available. (Available Fault Current)

The largest amount of current capable of being delivered at a point on the system during a short-circuit condition. (CMP-10)

Informational Note: A short-circuit can occur during abnormal conditions such as a fault between circuit conductors or a ground fault. See Figure Informational Note 100.1 .

Figure Informational Note 100.1 Available Fault Current.



Fault Protection Device.

An electronic device that is intended for the protection of personnel and functions under fault conditions, such as network-powered broadband communications cable short or open circuit, to limit the current or voltage, or both, for a low-power network-powered broadband communications circuit and provide acceptable protection from electric shock. (830) (CMP-16)

Feeder.

All circuit conductors between the service equipment, the source of a separately derived system, or other power supply source and the final branch-circuit overcurrent protective device. (CMP-10)

Feeder Assembly.

The overhead or under-chassis feeder conductors, including the equipment grounding conductor, together with the necessary fittings and equipment; or the power-supply cord assembly for a mobile home, recreational vehicle, or park trailer, identified for the delivery of energy from the source of electrical supply to the panelboard within the mobile home, recreational vehicle, or park trailer. (CMP-7)

Festoon Lighting.

A string of outdoor lights that is suspended between two points. (CMP-18)

Fibers/Flyings, Combustible. (Combustible Fibers/Flyings)

Fibers/flyings, where any dimension is greater than 500 µm in nominal size, which can form an explosible mixture when suspended in air at standard atmospheric pressure and temperature. [**499:** 3.3.4.1] (CMP-14)

Informational Note No. 1: This definition and Informational Notes No. 2 and No. 3 have been extracted from NFPA 499-2024, *Recommended Practice for the Classification of Combustible Dusts and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas* . The NFPA 499 reference is in brackets. Only editorial changes were made to the extracted text to make it consistent with this code.

Informational Note No. 2: Section 500.5(D) defines a Class III location. Combustible fibers/flyings can be similar in physical form to ignitible fibers/flyings and protected using the same electrical equipment installation methods. Examples of fibers/flyings include flat platelet-shaped particulate, such as metal flake, and fibrous particulate, such as particle board core material. If the smallest dimension of a combustible material is greater than 500 µm, it is unlikely that the material would be combustible fibers/flyings, as determined by test. Finely divided solids with lengths that are large compared to their diameter or thickness usually do not pass through a 500 µm sieve, yet when tested could potentially be determined to be explosible. [**499:** A.3.3.4.1]

Informational Note No. 3: See ASTM E1226, *Standard Test Method for Explosibility of Dust Clouds* , ISO 6184-1, *Explosion protection systems — Part 1: Determination of explosion indices of combustible dusts in air* , or ISO/IEC/UL 80079-20-2, *Explosive atmospheres — Part 20-2: Material characteristics — Combustible dusts test methods* , for procedures for determining the explosibility of dusts. A material that is found to not present an explosible mixture could still be an ignitible fiber/flying, as defined in this article. Historically, the explosibility condition has been described as presenting a flash fire or explosion hazard. It could be understood that the potential hazard due to the formation of an explosible mixture when suspended in air at standard atmospheric pressure and temperature would include ignition. [**499:** A.3.3.4.1]

Fibers/Flyings, Ignitible. (Ignitible Fibers/Flyings)

Fibers/flyings where any dimension is greater than 500 µm in nominal size, which are not likely to be in suspension in quantities to produce an explosible mixture, but could produce an ignitible layer fire hazard. [**499:** 3.3.4.2] (CMP-14)

Informational Note No. 1: This definition and Informational Note No. 2 have been extracted from NFPA 499-2024, *Recommended Practice for the Classification of Combustible Dusts and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas* . The NFPA 499 reference is in brackets. Only editorial changes were made to the extracted text to make it consistent with this code.

Informational Note No. 2: Section 500.5 of this code prescribes a Class III location as one where ignitible fibers/flyings are present, but not likely to be in suspension in the air in quantities sufficient to produce ignitible mixtures. This description addresses fibers/flyings that do not present a flash-fire hazard or explosion hazard by test. This could be because those fibers/flyings are too large or too agglomerated to be suspended in air in sufficient concentration, or at all, under typical test conditions. Alternatively, this could be because they burn so slowly that, when suspended in air, they do not propagate combustion at any concentration. In this document the zone classification system includes ignitible fibers/flyings as a fire hazard in a layer, which is not addressed in the IEC zone system (see IEC 60079-10-2, *Explosive atmospheres — Part 10-2: Classification of areas — Explosive dust atmospheres*). Where these are present, the user could also consider installation in accordance with Article 503 of this code. [**499:** A.3.3.4.2]

Field Evaluation Body (FEB).

An organization or part of an organization that performs field evaluations of electrical or other equipment. [**790:** 3.3.4] (CMP-1)

> Informational Note: See NFPA 790-2024, *Standard for Competency of Third-Party Field Evaluation Bodies* , provides guidelines for establishing the qualification and competency of a body performing field evaluations of electrical products and assembles with electrical components.

Field Labeled (as applied to evaluated products).

Equipment or materials to which has been attached a label, symbol, or other identifying mark of an FEB indicating the equipment or materials were evaluated and found to comply with requirements as described in an accompanying field evaluation report. [**790:** 3.3.6] (CMP-1)

Fire Alarm Circuit.

The portion of the wiring system between the load side of the overcurrent device or the power-limited supply and the connected equipment of all circuits powered and controlled by the fire alarm system. Fire alarm circuits are classified as either non–power-limited or power-limited. (CMP-3)

Fire Alarm Circuit, Non-Power-Limited (NPLFA). (Non-Power-Limited Fire Alarm Circuit)

A fire alarm circuit powered by a source that is not power limited. (CMP-3)

> Informational Note: See 760.41 and 760.43 for requirements for non-power-limited fire alarm circuits.

Fire Alarm Circuit, Power-Limited (PLFA). (Power-Limited Fire Alarm Circuit)

A fire alarm circuit powered by a power-limited source . (CMP-3)

> Informational Note: See 760.121 for requirements on power-limited fire alarm circuits.

Fitting.

An accessory such as a locknut, bushing, or other part of a wiring system that is intended primarily to perform a mechanical rather than an electrical function. (CMP-1)

Fixed (as applied to equipment).

Equipment that is fastened or otherwise secured at a specific location. (CMP-17)

Fixed-in-Place (as applied to electric vehicle power transfer systems and electric self-propelled vehicle power transfer systems).

Mounting means of equipment using fasteners that require a tool for removal. (CMP-12)

Flameproof “d”.

Type of protection where the enclosure will withstand an internal explosion of a flammable mixture that has penetrated into the interior, without suffering damage and without causing ignition, through any joints or structural openings in the enclosure of an external explosive gas atmosphere consisting of one or more of the gases or vapors for which it is designed. (CMP-14)

> Informational Note: See ANSI/UL 60079-1, *Explosive Atmospheres — Part 1: Equipment Protection by Flameproof Enclosures “d”,* for additional information.

Flammable Anesthetics.

Gases or vapors, such as fluroxene, cyclopropane, divinyl ether, ethyl chloride, ethyl ether, and ethylene, that could form flammable or explosive mixtures with air, oxygen, or reducing gases such as nitrous oxide. (517) (CMP-15)

Flexible Bus Systems.

An assembly of flexible insulated bus, with a system of associated fittings used to secure, support, and terminate the bus. (CMP-8)

> Informational Note: Flexible bus systems are engineered systems for a specific site location and are ordinarily assembled at the point of installation from the components furnished or specified by the manufacturer.

Flexible Insulated Bus.

A flexible rectangular conductor with an overall insulation. (CMP-8)

Flywheel ESS (FESS).

A mechanical ESS composed of a spinning mass referred to as a rotor and an energy conversion mechanism such as a motor-generator that converts the mechanical energy to electrical energy. (706) (CMP-13)

> Informational Note: There are primarily two types of rotor constructions, solid metal mass design and composite fiber design.

Footlight.

A border light installed on or in the stage. (520) (CMP-15)

Forming Shell.

A structure designed to support a wet-niche luminaire assembly and intended for mounting in a pool or fountain structure. (680) (CMP-17)

Fountain.

An ornamental structure or recreational water feature from which one or more jets or streams of water are discharged into the air, including splash pads, ornamental pools, display pools, and reflection pools. The definition does not include drinking water fountains or water coolers. (680) (CMP-17)

Frame.

Chassis rail and any welded addition thereto of metal thickness of 1.35 mm (0.053 in.) or greater. (551) (CMP-7)

Free Air (as applied to conductors).

Open or ventilated environment that allows for heat dissipation and air flow around an installed conductor. (CMP-6)

Fuel Cell.

An electrochemical system that consumes fuel to produce an electric current. In such cells, the main chemical reaction used for producing electric power is not combustion. However, there may be sources of combustion used within the overall cell system, such as reformers/fuel processors. (CMP-4)

Fuel Cell System.

The complete aggregate of equipment used to convert chemical fuel into usable electricity and typically consisting of a reformer, stack, power inverter, and auxiliary equipment. (CMP-4)

Fuse.

An overcurrent protective device with a circuit-opening fusible part that is heated and severed by the passage of overcurrent through it. (CMP-10)

> Informational Note: A fuse comprises all the parts that form a unit capable of performing the prescribed functions. It may or may not be the complete device necessary to connect it into an electrical circuit.

Fuse, Electronically Actuated. (Electronically Actuated Fuse)

An overcurrent protective device that generally consists of a control module that provides current-sensing, electronically derived time–current characteristics, energy to initiate tripping, and an interrupting module that interrupts current when an overcurrent occurs. Such fuses may or may not operate in a current-limiting fashion, depending on the type of control selected. (CMP-10)

Fuse, Expulsion. (Expulsion Fuse)

A vented fuse unit in which the expulsion effect of gases produced by the arc and lining of the fuseholder, either alone or aided by a spring, extinguishes the arc. (CMP-10)

Fuse, Nonvented Power. (Nonvented Power Fuse)

A fuse without intentional provision for the escape of arc gases, liquids, or solid particles to the atmosphere during circuit interruption. (CMP-10)

Fuse, Power. (Power Fuse)

A vented, nonvented, or controlled vented fuse unit in which the arc is extinguished by being drawn through solid material, granular material, or liquid, either alone or aided by a spring. (CMP-10)

Fuse, Vented Power. (Vented Power Fuse)

A fuse with provision for the escape of arc gases, liquids, or solid particles to the surrounding atmosphere during circuit interruption. (CMP-10)

Garage.

A building or portion of a building in which one or more self-propelled vehicles can be kept for use, sale, storage, rental, repair, exhibition, or demonstration purposes. (CMP-1)

Informational Note: See 511.1 for commercial garages, repair and storage.

Garage, Major Repair. (Major Repair Garage)

A building or portions of a building where major repairs, such as engine overhauls, painting, body and fender work, welding or grinding, and repairs that require draining or emptying of the motor vehicle fuel tank are performed on motor vehicles, including associated floor space used for offices, parking, or showrooms. [**30A:** 3.3.12.1] (CMP-14)

Garage, Minor Repair. (Minor Repair Garage)

A building or portions of a building used for lubrication, inspection, and minor automotive maintenance work, such as engine tune-ups, replacement of parts, fluid changes (e.g., oil, antifreeze, transmission fluid, brake fluid, air-conditioning refrigerants), brake system repairs, tire rotation, and similar routine maintenance work, including the associated floor space used for offices, parking, or showrooms. [**30A:** 3.3.12.2] (CMP-14)

General-Purpose Cables, Cable Routing Assemblies, and Raceways.

Cables, cable routing assemblies, and raceways are suitable for general-purpose applications and are resistant to the spread of fire. (722) (CMP-3)

Generating Capacity, Inverter. (Inverter Generating Capacity)

The sum of parallel-connected inverter maximum continuous output power at 40°C in watts, kilowatts, volt-amperes, or kilovolt-amperes. (CMP-4)

Generating Station.

A plant wherein electric energy is produced by conversion from some other form of energy (e.g., chemical, nuclear, solar, wind, mechanical, or hydraulic) by means of suitable apparatus. (CMP-4)

Generator (Generator Set).

A machine that converts mechanical energy into electrical energy by means of a prime mover and alternator. (CMP-13)

Generator, On-Site Standby. (On-Site Standby Generator)

A facility producing electric power on site as the alternate supply of electric power. It differs from an on-site power production facility in that it is not constantly producing power. (695) (CMP-13)

Generator Terminals.

The point of connection for the output conductors on the generator (generator set). (445) (CMP-13)

Grid Bus Rail.

A combination of the busbar, the busbar support, and the structural suspended ceiling grid system. (393) (CMP-18)

Ground.

The Earth. (CMP-5)

Ground Fault.

An unintentional, electrically conductive connection between an ungrounded conductor of an electrical circuit and the normally non-current-carrying conductors, metal enclosures, metal raceways, metal equipment, or earth. (CMP-5)

Ground-Fault Circuit Interrupter (GFCI).

A device intended for the protection of personnel that functions to de-energize a circuit or portion thereof within an established period of time when a ground-fault current exceeds the values established for a Class A device. (CMP-2)

> Informational Note: See UL 943, *Standard for Ground-Fault Circuit Interrupters* , for further information. Class A ground-fault circuit interrupters trip when the ground-fault current is 6 mA or higher and do not trip when the ground-fault current is less than 4 mA.

Ground-Fault Circuit Interrupter, Special Purpose (SPGFCI). (Special Purpose Ground-Fault Circuit Interrupter)

A device intended for the detection of ground-fault currents that functions to de-energize a circuit or portion of a circuit within an established period of time established for Class C, D, or E devices. (CMP-2)

> Informational Note: See UL 943C, *Outline of Investigation for Special Purpose Ground-Fault Circuit Interrupters* , for information on Classes C, D, or E special purpose ground-fault circuit interrupters.

Ground-Fault Current Path.

An electrically conductive path from the point of a ground fault on a wiring system through normally non–current-carrying conductors, grounded conductors, equipment, or the earth to the electrical supply source. (CMP-5)

> Informational Note: Examples of ground-fault current paths are any combination of equipment grounding conductors, metallic raceways, metallic cable sheaths, electrical equipment, and any other electrically conductive material such as metal, water, and gas piping; steel framing members; stucco mesh; metal ducting; reinforcing steel; shields of communications cables; grounded conductors; and the earth itself.

Ground-Fault Current Path, Effective. (Effective Ground-Fault Current Path)

An intentionally constructed, low-impedance electrically conductive path designed and intended to carry current during ground-fault events from the point of a ground fault on a wiring system to the electrical supply source and that facilitates the operation of the overcurrent protective device or ground-fault detectors. (CMP-5)

Ground-Fault Detector-Interrupter, dc (GFDI).

A device that provides protection for PV system dc circuits by detecting a ground fault and could interrupt the fault path in the dc circuit. (690) (CMP-4)

> Informational Note: See UL 1741, *Standard for Inverters, Converters, Controllers and Interconnection System Equipment for Use with Distributed Energy Resources* , and UL 62109, *Standard for Power Converters for use in Photovoltaic Power Systems* , for further information on GFDI equipment.

Ground-Fault Protection of Equipment (GFPE).

A system intended to provide protection of equipment from damaging line-to-ground fault currents by operating to cause a disconnecting means to open all ungrounded conductors of the faulted circuit. This protection is provided at current levels less than those required to protect conductors from damage through the operation of a supply circuit overcurrent device. (CMP-5)

Grounded (Grounding).

Connected (connecting) to ground or to a conductive body that extends the ground connection. (CMP-5)

Grounded, Functionally. (Functionally Grounded)

A system that has an electrical ground reference for operational purposes that is not solidly grounded. (CMP-4)

> Informational Note: A functionally grounded system is often connected to ground through an electronic means internal to an inverter or charge controller that provides ground-fault protection. Examples of operational purposes for functionally grounded systems include ground-fault detection and performance-related issues for some power sources.

Grounded, Solidly. (Solidly Grounded)

Connected to ground without inserting any resistor or impedance device. (CMP-5)

Grounded Conductor.

A system or circuit conductor that is intentionally grounded. (CMP-5)

> Informational Note: Although an equipment grounding conductor is grounded, it is not considered a grounded conductor.

Grounded System, Impedance. (Impedance Grounded System)

An electrical system that is grounded by intentionally connecting the system neutral point to ground through an impedance device. (CMP-5)

Grounding Conductor, Equipment (EGC). (Equipment Grounding Conductor)

A conductive path(s) that is part of an effective ground-fault current path and connects normally non-current-carrying metal parts of equipment together and to the system grounded conductor or to the grounding electrode conductor, or both. (CMP-5)

> Informational Note No. 1: It is recognized that the equipment grounding conductor also performs bonding.
>
> Informational Note No. 2: See 250.118 for a list of acceptable equipment grounding conductors.

Grounding Conductor, Impedance. (Impedance Grounding Conductor)

A conductor that connects the system neutral point to the impedance device in an impedance grounded system. (CMP-5)

Grounding Electrode.

A conducting object through which a direct connection to earth is established. (CMP-5)

Grounding Electrode Conductor (GEC).

A conductor used to connect the system grounded conductor or the equipment to a grounding electrode or to a point on the grounding electrode system. (CMP-5)

Grouped.

Cables or conductors positioned adjacent to one another but not in continuous contact with each other. (520) (CMP-15)

Guarded.

Covered, shielded, fenced, enclosed, or otherwise protected by means of suitable covers, casings, barriers, rails, screens, mats, or platforms to remove the likelihood of approach or contact by persons or objects to a point of danger. (CMP-1)

Guest Room.

An accommodation combining living, sleeping, sanitary, and storage facilities within a compartment. (CMP-2)

Guest Suite.

An accommodation with two or more contiguous rooms comprising a compartment, with or without doors between such rooms, that provides living, sleeping, sanitary, and storage facilities. (CMP-2)

Gutter, Metal Auxiliary. (Metal Auxiliary Gutter)

A sheet metal enclosure used to supplement wiring spaces at meter centers, distribution centers, switchgear, switchboards, and similar points of wiring systems. The enclosure has hinged or removable covers for housing and protecting electrical wires, cable, and busbars. The enclosure is designed for conductors to be laid or set in place after the enclosures have been installed as a complete system. (CMP-8)

Gutter, Nonmetallic Auxiliary. (Nonmetallic Auxiliary Gutter)

A flame-retardant, nonmetallic enclosure used to supplement wiring spaces at meter centers, distribution centers, switchgear, switchboards, and similar points of wiring systems. The enclosure has hinged or removable covers for housing and protecting electrical wires, cable, and busbars. The enclosure is designed for conductors to be laid or set in place after the enclosures have been installed as a complete system. (CMP-8)

Habitable Room.

A room in a building for living, sleeping, eating, or cooking, but excluding bathrooms, toilet rooms, closets, hallways, storage or utility spaces, and similar areas. (CMP-2)

Handhole Enclosure.

An enclosure for use in underground systems, provided with an open or closed bottom, and sized to allow personnel to reach into, but not enter, for the purpose of installing, operating, or maintaining equipment or wiring or both. (CMP-8)

Hazard Current.

For a given set of connections in an isolated power system, the total current that would flow through a low impedance if it were connected between either isolated conductor and ground. [**99:** 3.3.72] (517) (CMP-15)

Hazard Current, Fault. (Fault Hazard Current)

The hazard current of a given isolated power system with all devices connected except the line isolation monitor. [**99:** 3.3.72.1] (517) (CMP-15)

Monitor Hazard Current.

The hazard current of the line isolation monitor alone. [**99:** 3.3.72.2] (517) (CMP-15)

Total Hazard Current.

The hazard current of a given isolated system with all devices, including the line isolation monitor, connected. [**99:** 3.3.72.3] (517) (CMP-15)

Header.

Transverse metal raceways for electrical conductors, providing access to predetermined cells of a precast cellular concrete floor, thereby permitting the installation of electrical conductors from a distribution center to the floor cells. (CMP-8)

Health Care Facilities.

Buildings, portions of buildings, or mobile enclosures in which human medical, dental, psychiatric, nursing, obstetrical, or surgical care is provided. [**99:** 3.3.73] (CMP-15)

> Informational Note: Examples of health care facilities include, but are not limited to, hospitals, nursing homes, limited care facilities, clinics, medical and dental offices, and ambulatory care centers, whether permanent or movable.

Health Care Facility's Governing Body.

The person or persons who have the overall legal responsibility for the operation of a health care facility. [**99:** 3.3.74] (517) (CMP-15)

Heating Equipment.

Any equipment that is used for heating purposes and whose heat is generated by induction or dielectric methods. (665) (CMP-12)

Heating Panel.

A complete assembly provided with a junction box or a length of flexible conduit for connection to a branch circuit. (CMP-17)

Heating Panel Set.

A rigid or nonrigid assembly provided with nonheating leads or a terminal junction assembly identified as being suitable for connection to a wiring system. (CMP-17)

Heating System.

A complete system consisting of components such as heating elements, fastening devices, nonheating circuit wiring, leads, temperature controllers, safety signs, junction boxes, raceways, and fittings. (CMP-17)

Heating System, Impedance. (Impedance Heating System)

A system in which heat is generated in an object, such as a pipe, rod, or combination of such objects serving as a heating element, by causing current to flow through such objects by direct connection to an ac voltage source from an isolating transformer. In some installations the object is embedded in the surface to be heated or constitutes the exposed component to be heated. (CMP-17)

Heating System, Induction. (Induction Heating System)

A system in which heat is generated in a pipeline or vessel wall by inducing current in the pipeline or vessel wall from an external isolated ac field source. (CMP-17)

Heating System, Skin Effect. (Skin-Effect Heating System)

A system in which heat is generated on the inner surface of a ferromagnetic envelope embedded in or fastened to the surface to be heated.

> Informational Note: Typically, an electrically insulated conductor is routed through and connected to the envelope at the other end. The envelope and the electrically insulated conductor are connected to an ac voltage source from an isolating transformer. (CMP-17)

Hermetic Refrigerant Motor-Compressor.

A combination consisting of a compressor and motor, both of which are enclosed in the same housing, with no external shaft or shaft seals, with the motor operating in the refrigerant. (CMP-11)

Hoistway.

Any shaftway, hatchway, well hole, or other vertical opening or space in which an elevator or dumbwaiter is designed to operate. (CMP-12)

Hospital.

A building or portion thereof used on a 24-hour basis for the medical, psychiatric, obstetrical, or surgical care of four or more inpatients. [***101*** : 3.3.152] (CMP-15)

Hydromassage Bathtub.

A permanently installed bathtub equipped with a recirculating piping system, pump, and associated equipment. It is designed so it can accept, circulate, and discharge water upon each use. (680) (CMP-17)

Identified (as applied to equipment).

Recognizable as suitable for the specific purpose, function, use, environment, application, and so forth, where described in a particular code requirement. (CMP-1)

> Informational Note: Some examples of ways to determine suitability of equipment for a specific purpose, environment, or application include investigations by a qualified testing laboratory (listing and labeling), an inspection agency, or other organizations concerned with product evaluation.

Increased Safety “e”.

Type of protection applied to electrical equipment that does not produce arcs or sparks in normal service and under specified abnormal conditions, in which additional measures are applied to give increased security against the possibility of excessive temperatures and of the occurrence of arcs and sparks. (CMP-14)

Informational Note: See ANSI/UL 60079-7, *Explosive Atmospheres — Part 7: Equipment Protection by Increased Safety “e”*, for additional information.

Induction Heating (Induction Melting) (Induction Welding).

The heating, melting, or welding of a nominally conductive material due to its own I2R losses when the material is placed in a varying electromagnetic field. (665) (CMP-12)

Industrial Control Panel.

An assembly of two or more components consisting of one of the following: (1) power circuit components only, such as motor controllers, overload relays, fused disconnect switches, and circuit breakers; (2) control circuit components only, such as push buttons, pilot lights, selector switches, timers, switches, and control relays; (3) a combination of power and control circuit components. These components, with associated wiring and terminals, are mounted on, or contained within, an enclosure or mounted on a subpanel. (CMP-11)

Informational Note: The industrial control panel does not include the controlled equipment.

Industrial Installation, Supervised. (Supervised Industrial Installation)

The industrial portions of a facility where all of the following conditions are met:

(1) Conditions of maintenance and engineering supervision ensure that only qualified persons monitor and service the system.

(2) The premises wiring system has 2500 kVA or greater of load used in industrial processes, manufacturing activities, or both, as calculated in accordance with Article 120 , Parts II, III, IV, or V.

(3) The premises has at least one service or feeder that is more than 150 volts to ground and more than 300 volts phase-to-phase.

This definition excludes installations in buildings used by the industrial facility for offices, warehouses, garages, machine shops, and recreational facilities that are not an integral part of the industrial plant, substation, or control center. (240) (CMP-10)

Information Technology Equipment (ITE).

Equipment and systems rated 1000 volts or less, normally found in offices or other business establishments and similar environments classified as ordinary locations, that are used for creation and manipulation of data, voice, video, and similar signals. (CMP-12)

Informational Note: See UL 60950-1-2007, *Information Technology Equipment — Safety — Part 1: General Requirements* , or UL 62368-1-2019, *Audio/Video Information and Communication Technology Equipment Part 1: Safety Requirements* , for information on listing requirements for both information technology equipment and communications equipment.

Information Technology Equipment Room.

A room within the information technology equipment area that contains the information technology equipment. [**75:** 3.3.15] (CMP-12)

Innerduct.

A nonmetallic raceway placed within a larger raceway. (CMP-16)

Insulated Bus Pipe (IBP).

A cylindrical solid or hollow conductor with a solid insulation system, having conductive grading layers and a grounding layer imbedded in the insulation, and provided with an overall covering of insulating or metallic material. IBP is also referred to as tubular covered conductor (TCC). (CMP-8)

Insulated Bus Pipe System.

An assembly that includes bus pipe, connectors, fittings, mounting structures, and other fittings and accessories. (CMP-8)

Insulating End.

An insulator designed to electrically insulate the end of a flat conductor cable (Type FCC). (324) (CMP-6)

Interactive Mode (Interactive).

The operating mode for power production sources or microgrids that operate in parallel with and are capable of delivering energy to an electric power production and distribution network or other primary power source. (CMP-4)

> Informational Note: Interactive mode is an operational mode of both interactive systems and of equipment such as interactive inverters.

Interrupting Rating.

The highest current at rated voltage that a device is identified to interrupt under standard test conditions. (CMP-10)

> Informational Note: Equipment intended to interrupt current at other than fault levels may have its interrupting rating implied in other ratings, such as horsepower or locked rotor current.

Intersystem Bonding Termination (IBT).

A device that provides a means for connecting intersystem bonding conductors for communications systems to the grounding electrode system. (CMP-16)

Intrinsic Safety "i".

Type of protection where any spark or thermal effect is incapable of causing ignition of a mixture of flammable or combustible material in air under prescribed test conditions. (CMP-14)

> Informational Note: See ANSI/UL 913, *Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III, Division 1, Hazardous (Classified) Locations* ; and ANSI/UL 60079-11, *Explosive Atmospheres — Part 11: Equipment Protection by Intrinsic Safety "i"*, for additional information.

Intrinsically Safe Apparatus.

Apparatus in which all the circuits are intrinsically safe. (CMP-14)

> Informational Note No. 1: See ANSI/UL 913, *Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III, Division 1, Hazardous (Classified) Locations* , and ANSI/UL 60079-11, *Explosive Atmospheres — Part 11: Equipment Protection by Intrinsic Safety "i"* , for additional information.
>
> Informational Note No. 2: See ANSI/ISA RP 12.06.01, *Recommended Practice for Wiring Methods for Hazardous (Classified) Locations Instrumentation — Part 1: Intrinsic Safety* , for installation information.

Intrinsically Safe Circuit.

A circuit in which any spark or thermal effect is incapable of causing ignition of a mixture of flammable or combustible material in air under prescribed test conditions. (CMP-14)

> Informational Note: See ANSI/UL 913, *Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III, Division 1, Hazardous (Classified) Locations* , and ANSI/UL 60079-11, *Explosive Atmospheres — Part 11: Equipment Protection by Intrinsic Safety "i"* , for test conditions.

Intrinsically Safe Circuits, Different. (Different Intrinsically Safe Circuits)

Intrinsically safe circuits in which the possible interconnections have not been evaluated and identified as intrinsically safe. (CMP-14)

Informational Note: See ANSI/UL 913, *Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III, Division 1, Hazardous (Classified) Locations* , and ANSI/UL 60079-11, *Explosive Atmospheres — Part 11: Equipment Protection by Intrinsic Safety "i"* , for additional information.

Intrinsically Safe System.

An assembly of interconnected intrinsically safe apparatus, associated apparatus, and interconnecting cables, in which those parts of the system that might be used in hazardous (classified) locations are intrinsically safe circuits. (CMP-14)

Informational Note No. 1: An intrinsically safe system might include more than one intrinsically safe circuit.

Informational Note No. 2: See ANSI/UL 913, *Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III, Division 1, Hazardous (Classified) Locations* ; ANSI/UL 60079-11, *Explosive Atmospheres — Part 11: Equipment Protection by Intrinsic Safety "i"* ; and ANSI/UL 60079-25, *Explosive Atmospheres — Part 25: Intrinsically Safe Electrical Systems* , for additional information.

Informational Note No. 3: See ANSI/ISA RP 12.06.01, *Recommended Practice for Wiring Methods for Hazardous (Classified) Locations Instrumentation — Part 1: Intrinsic Safety* , for installation information.

Invasive Procedure.

Any procedure that penetrates the protective surfaces of a patient's body (i.e., skin, mucous membrane, cornea) and that is performed with an aseptic field (procedural site). [Not included in this category are placement of peripheral intravenous needles or catheters used to administer fluids and/or medications, gastrointestinal endoscopies (i.e., sigmoidoscopies), insertion of urethral catheters, and other similar procedures.] [**99:** 3.3.91] (517) (CMP-15)

Inverter.

Equipment that changes dc to ac. (CMP-4)

Inverter, Interactive. (Interactive Inverter)

Inverter equipment having the capability to operate only in interactive mode. (CMP-13)

Inverter, Multimode. (Multimode Inverter)

Inverter equipment capable of operating in both interactive and island modes. (CMP-4)

Inverter, Stand-alone. (Stand-alone Inverter)

Inverter equipment having the capabilities to operate only in island mode. (CMP-4)

Inverter Input Circuit.

Conductors connected to the dc input of an inverter. (CMP-13)

Inverter Output Circuit.

Conductors connected to the ac output of an inverter. (CMP-13)

Inverter Utilization Output Circuit.

Conductors between the multimode or stand-alone inverter and utilization equipment. (706) (CMP-13)

Irrigation Machine.

An electrically driven or controlled machine, with one or more motors, not hand-portable, and used primarily to transport and distribute water for agricultural purposes. (675) (CMP-7)

Irrigation Machine, Center Pivot. (Center Pivot Irrigation Machine)

A multimotored irrigation machine that revolves around a central pivot and employs alignment switches or similar devices to control individual motors. (675) (CMP-7)

Island Mode.

The operating mode for power production sources or microgrids that allows energy to be supplied to loads that are disconnected from an electric power production and distribution network or other primary power source. (CMP-4)

Isolated (as applied to location).

Not readily accessible to persons unless special means for access are used. (CMP-1)

Isolated Power System.

A system comprising an isolation transformer or its equivalent, a line isolation monitor, and its ungrounded circuit conductors. [**99:** 3.3.93] (517) (CMP-15)

Isolation Transformer.

A transformer of the multiple-winding type, with the primary and secondary windings physically separated, that inductively couples its ungrounded secondary winding to the grounded feeder system that energizes its primary winding. [**99:** 3.3.94] (517) (CMP-15)

Kitchen.

An area with a sink and permanent provisions for food preparation and cooking. (CMP-2)

Labeled.

Equipment or materials to which has been attached a label, symbol, or other identifying mark of an organization that is acceptable to the authority having jurisdiction and concerned with product evaluation, that maintains periodic inspection of production of labeled equipment or materials, and by whose labeling the manufacturer indicates compliance with appropriate standards or performance in a specified manner. (CMP-1)

> Informational Note: If a listed product is of such a size, shape, material, or surface texture that it is not possible to apply legibly the complete label to the product, the complete label may appear on the smallest unit container in which the product is packaged.

Laundry Area.

An area containing or designed to contain a laundry tray, clothes washer, or clothes dryer. (CMP-2)

Leakage-Current Detector-Interrupter (LCDI).

A device provided in a power supply cord or cord set that senses leakage current flowing between or from the cord conductors and interrupts the circuit at a predetermined level of leakage current. (440) (CMP-11)

Legally Required Standby Systems.

Those systems required and so classed as legally required standby by municipal, state, federal, or other codes or by any governmental agency having jurisdiction. These systems are intended to automatically supply power to selected loads (other than those classed as emergency systems) in the event of failure of the normal source. (CMP-13)

Life Safety Branch.

A system of feeders and branch circuits supplying power for lighting, receptacles, and equipment essential for life safety that is automatically connected to alternate power sources by one or more transfer switches during interruption of the normal power source. [**99:** 3.3.97] (517) (CMP-15)

Lighting Assembly, Cord-and-Plug-Connected. (Cord-and-Plug-Connected Lighting Assembly)

A lighting assembly consisting of a luminaire intended for installation in the wall of a spa, hot tub, or storable pool, and a cord-and-plug-connected transformer or power supply. (680) (CMP-17)

Lighting Assembly, Through-Wall. (Through-Wall Lighting Assembly)

A lighting assembly intended for installation above grade, on or through the wall of a pool, consisting of two interconnected groups of components separated by the pool wall. (680) (CMP-17)

Lighting Outlet.

An outlet intended for the direct connection of a lampholder or luminaire. (CMP-18)

Lighting Track. (Track Lighting)

A manufactured assembly designed to support and energize luminaires that are capable of being readily repositioned on the track. Its length can be altered by the addition or subtraction of sections of track. (CMP-18)

Limited Care Facility.

A building or portion of a building used on a 24-hour basis for the housing of four or more persons who are incapable of self-preservation because of age; physical limitation due to accident or illness; or limitations such as intellectual disability/developmental disability, mental illness, or chemical dependency. [***101:*** 3.3.93.2] (CMP-15)

Limited-Energy System.

The equipment and cables of an end-to-end system that are power-restricted to ensure the energy delivered into any fault provides acceptable protection for fire prevention and electric shock. (CMP-3)

Limited Finishing Workstation.

A power-ventilated apparatus that is capable of confining the vapors, mists, residues, dusts, or deposits that are generated by a limited spray application process. Such apparatus is not a spray booth or spray room, as herein defined. [**33:** 3.3.23.1] (CMP-14)

> Informational Note: See NFPA 33-2024, *Standard for Spray Application Using Flammable or Combustible Materials* , Section 14.3 for information on limited finishing workstations.

Line Isolation Monitor.

A test instrument designed to continually check the balanced and unbalanced impedance from each line of an isolated circuit to ground and equipped with a built-in test circuit to exercise the alarm without adding to the leakage current hazard. [**99:** 3.3.99] (517) (CMP-15)

Liquid Immersion “o”.

Type of protection where electrical equipment is immersed in a protective liquid so that an explosive atmosphere that might be above the liquid or outside the enclosure cannot be ignited. (CMP-14)

> Informational Note: See ANSI/UL 60079-6, *Explosive Atmospheres — Part 6: Equipment Protection by Liquid Immersion “o”* , for additional information.

Listed.

Equipment, materials, or services included in a list published by an organization that is acceptable to the authority having jurisdiction and concerned with evaluation of products or services, that maintains periodic inspection of production of listed equipment or materials or periodic evaluation of services, and whose listing states that either the equipment, material, or service meets appropriate designated standards or has been tested and found suitable for a specified purpose. (CMP-1)

> Informational Note: The means for identifying listed equipment may vary for each organization concerned with product evaluation, some of which do not recognize equipment as listed unless it is also labeled. Use of the system employed by the listing organization allows the authority having jurisdiction to identify a listed product.

Live Parts.

Energized conductive components. (CMP-1)

Load Management.

The process within an energy management system that limits the total electrical load on an electrical supply system to a set value by adjusting or controlling the individual loads. (CMP-13)

Location, Anesthetizing. (Anesthetizing Location)

Any space within a facility that has been designated for the administration of any flammable or nonflammable inhalation anesthetic agent during examination or treatment, including the use of such agents for relative analgesia. (517) (CMP-15)

Location, Anesthetizing, Flammable. (Flammable Anesthetizing Location)

Any area of the facility that has been designated to be used for the administration of any flammable inhalation anesthetic agents in the normal course of examination or treatment. (517) (CMP-15)

Location, Damp. (Damp Location)

Locations protected from weather and not subject to saturation with water or other liquids but subject to moderate degrees of moisture. (CMP-1)

> Informational Note: Examples of such locations include partially protected locations under canopies, marquees, roofed open porches, and like locations, and interior locations subject to moderate degrees of moisture, such as some basements, some barns, and some cold-storage warehouses.

Location, Dry. (Dry Location)

A location not normally subject to dampness or wetness. A location classified as dry may be temporarily subject to dampness or wetness, as in the case of a building under construction. (CMP-1)

Location, Remote. (Remote Location)

A location, other than a motion picture or television studio, where a production is filmed or recorded. (530) (CMP-15)

Location, Wet. (Wet Location)

A location that is one or more of the following:

(1) Unprotected and exposed to weather

(2) Subject to saturation with water or other liquids

(3) Underground

(4) In concrete slabs or masonry in direct contact with the earth

(CMP-1)

> Informational Note: A vehicle washing area is an example of a wet location saturated with water or other liquids.

Location, Wet Procedure. (Wet Procedure Location)

The area in a patient care space where a procedure is performed that is normally subject to wet conditions while patients are present, including standing fluids on the floor or drenching of the work area, either of which condition is intimate to the patient or staff. [**99:** 3.3.187] (517) (CMP-15)

> Informational Note: Routine housekeeping procedures and incidental spillage of liquids do not define a wet procedure location. [**99:** A.3.3.187]

Locations, Hazardous (Classified). [Hazardous (Classified) Locations]

Locations where fire or explosion hazards might exist due to flammable gases, flammable liquid–produced vapors, combustible liquid–produced vapors, combustible dusts, combustible fiber/flyings, or ignitible fibers/flyings. (CMP-14)

Locations, Unclassified. (Unclassified Locations)

Locations determined to be neither Class I, Division 1; Class I, Division 2; Zone 0; Zone 1; Zone 2; Class II, Division 1; Class II, Division 2; Class III, Division 1; Class III, Division 2; Zone 20; Zone 21; Zone 22; nor any combination thereof. (CMP-14)

Long-Time Rating .

A rating based on an operating interval of 5 minutes or longer. (CMP-15)

Loudspeaker (Speaker).

Equipment that converts an ac electric signal into an acoustic signal. (640) (CMP-12)

Low-Voltage Contact Limit.

A voltage not exceeding the following values:

(1) 15 volts (RMS) for sinusoidal ac

(2) 21.2 volts peak for nonsinusoidal ac

(3) 30 volts for continuous dc

(4) 12.4 volts peak for dc that is interrupted at a rate of 10 to 200 Hz

(CMP-17)

Low-Voltage Suspended Ceiling Power Distribution System.

A system that serves as a support for a finished ceiling surface and consists of a busbar and busbar support system to distribute power to utilization equipment supplied by a Class 2 power supply. (393) (CMP-18)

Luminaire.

Utilization equipment intended to illuminate a space or object(s), to facilitate visual tasks, activities, aesthetics, or security, or a similar purpose. Light-emitting devices such as lamps or LED modules could be removable or replaceable. The equipment can connect directly to the branch circuit (ac or dc) or be used with a separate power source that regulates the voltage, current, or both from the branch circuit. A lampholder itself is not a luminaire. (CMP-18)

Luminaire, Directly Controlled (DCL).

A luminaire containing a control input for a dimming or switching function. (700) (CMP-13)

Luminaire, Dry-Niche. (Dry-Niche Luminaire)

A luminaire intended for installation in the floor or wall of a pool, spa, or fountain in a niche that is sealed against the entry of water. (680) (CMP-17)

Luminaire, No-Niche. (No-Niche Luminaire)

A luminaire intended for installation above or below the water without a niche. (680) (CMP-17)

Luminaire, Wet-Niche. (Wet-Niche Luminaire)

A luminaire intended for installation in a forming shell mounted in a pool or fountain structure where the luminaire will be completely surrounded by water. (680) (CMP-17)

Machine Room.

An enclosed machinery space outside the hoistway, intended for full bodily entry, that contains the electrical driving machine or the hydraulic machine. The room could also contain electrical and/or mechanical equipment used directly in connection with the elevator or dumbwaiter. (620) (CMP-12)

Machine Room and Control Room, Remote. (Remote Machine Room and Control Room)

A machine room or control room that is not attached to the outside perimeter or surface of the walls, ceiling, or floor of the hoistway. (620) (CMP-12)

Machinery, Industrial (Industrial Machine). (Industrial Machinery)

A power-driven machine (or a group of machines working together in a coordinated manner), not portable by hand while working, that is used to process material by cutting; forming; pressure; electrical, thermal, or optical techniques; lamination; or a combination of these processes. It can include associated equipment used to transfer material or tooling, including fixtures, to assemble/disassemble, to inspect or test, or to package. The associated electrical equipment, including the logic controller(s) and associated software or logic together with the machine actuators and sensors, are considered as part of the industrial machine. (CMP-12)

Machinery Space.

A space inside or outside the hoistway, intended to be accessed with or without full bodily entry, that contains the elevator, dumbwaiter, platform lift, or stairway chairlift equipment and could also contain equipment used directly in connection with the elevator, dumbwaiter, platform lift, or stairway chairlift. (620) (CMP-12)

Machinery Space and Control Space, Remote. (Remote Machinery Space and Control Space)

A machinery space or control space that is not within the hoistway, machine room, or control room and that is not attached to the outside perimeter or surface of the walls, ceiling, or floor of the hoistway. (620) (CMP-12)

Manufactured Home.

A structure, transportable in one or more sections, which in the traveling mode is 2.4 m (8 ft) or more in width or 12.2 m (40 ft) or more in length, or when erected on site is 29.77 m^2 (320 ft^2) or more is built on a permanent chassis and is designed to be used as a dwelling with or without a permanent foundation, whether or not connected to the utilities, and includes plumbing, heating, air conditioning, and electrical systems contained therein. The term includes any structure that meets all the requirements of this paragraph except the size requirements and with respect to which the manufacturer voluntarily files a certification required by the regulatory agency. Calculations used to determine the number of square meters (square feet) in a structure are based on the structure's exterior dimensions and include all expandable rooms, cabinets, and other projections containing interior space, but do not include bay windows. [**501:** 1.2.12] (CMP-7)

Informational Note No. 1: Unless otherwise indicated, the term *mobile home* includes manufactured home and excludes park trailers.

Informational Note No. 2: See the applicable building code for definition of the term *permanent foundation* .

Informational Note No. 3: See 24 CFR Part 3280, *Manufactured Home Construction and Safety Standards, of the Federal Department of Housing and Urban Development* , for additional information on the definition.

Manufactured Wiring System.

A system containing component parts that are assembled in the process of manufacture and cannot be inspected at the building site without damage or destruction to the assembly and used for the connection of luminaires, utilization equipment, continuous plug-in type busways, and other devices. (604) (CMP-7)

Marina.

A facility, generally on the waterfront, that stores and services boats in berths, on moorings, and in dry storage or dry stack storage. [**303:** 3.3.13] (555) (CMP-7)

Maximum Output Power.

The maximum power delivered by an amplifier into its rated load as determined under specified test conditions. (640) (CMP-12)

Informational Note: The maximum output power can exceed the manufacturer’s rated output power for the same amplifier.

Maximum Output Power (as applied to wind electric systems).

The maximum 1-minute average power output a wind turbine produces in normal steady-state operation (instantaneous power output can be higher). (694) (CMP-4)

Maximum Voltage.

The greatest difference in potential produced between any two conductors of a wind turbine circuit. (694) (CMP-4)

Maximum Water Level.

The highest level that water can reach before it spills out. (680) (CMP-17)

Medical Office.

A building or part thereof in which the following occur:

(1) Examinations and minor treatments/procedures performed under the continuous supervision of a medical professional;

(2) The use of limited to minimal sedation and treatment or procedures that do not render the patient incapable of self-preservation under emergency conditions; and

(3) No overnight stays for patients or 24-hour operations.

[**99:** 3.3.110] (CMP-15)

Membrane Enclosure.

A temporary enclosure used for the spraying of workpieces that cannot be moved into a spray booth where open spraying is not practical due to proximity to other operations, finish quality, or concerns such as the collection of overspray. (CMP-14)

Informational Note: See NFPA 33-2024, *Standard for Spray Application Using Flammable or Combustible Materials* , Chapter 18 for information on the construction and use of membrane enclosures.

Messenger-Supported Wiring.

An exposed wiring support system using a messenger wire to support insulated conductors by any one of the following:

(1) A messenger with rings and saddles for conductor support

(2) A messenger with a field-installed lashing material for conductor support

(3) Factory-assembled aerial cable

(4) Multiplex cables utilizing a bare conductor, factory assembled and twisted with one or more insulated conductors, such as duplex, triplex, or quadruplex type of construction

(CMP-6)

Messenger Wire (Messenger).

A wire that is run along with or integral with a cable or conductor to provide mechanical support for the cable or conductor. (CMP-6)

Metal Shield Connections.

Means of connection for flat conductor cables (Type FCC) designed to electrically and mechanically connect a metal shield to another metal shield, to a receptacle housing or self-contained device, or to a transition assembly. (324) (CMP-6)

Metering Centers (Meter Center).

Panelboards in enclosures also containing one or more meter sockets. (CMP-10)

Microgrid.

An electric power system containing interconnected power production sources and capable of acting as a primary source independent of an electric utility. (CMP-4)

Informational Note: Examples of power sources in microgrids include photovoltaic systems, generators, fuel cell systems, wind electric systems, energy storage systems, electric vehicles used as a source of supply, and electrical power conversion from other energy sources.

Microgrid, Health Care (Health Care Microgrid System). (Health Care Microgrid)

A group of interconnected loads and distributed energy resources within clearly defined boundaries that acts as a single controllable entity with respect to the utility. [**99:** 3.3.75] (517) (CMP-15)

Microgrid Control System (MCS).

A structured control system that manages microgrid operations, functionalities for utility interoperability, islanded operations, and transitions. (CMP-4)

Informational Note: MCS differ from multiple standby generators or uninterruptible power supplies that are evaluated and rated to operate as a single source of backup power upon loss of the primary power source. MCS functions include coordination, transitions, and interoperability between multiple power sources.

Microgrid Interconnect Device (MID).

A device that enables a microgrid system to separate from and reconnect to an interconnected primary power source. (CMP-4)

Mixer.

Equipment used to combine and level match a multiplicity of electronic signals, such as from microphones, electronic instruments, and recorded audio. (640) (CMP-12)

Mobile.

X-ray equipment mounted on a permanent base with wheels and/or casters for moving while completely assembled. (660) (CMP-12)

Mobile Home.

A factory-assembled structure or structures transportable in one or more sections that are built on a permanent chassis and designed to be used as a dwelling without a permanent foundation where connected to the required utilities and that include the plumbing, heating, air-conditioning, and electrical systems contained therein. (CMP-7)

Informational Note: Unless otherwise indicated, the term *mobile home* includes manufactured home and excludes park trailers.

Mobile Home Lot.

A designated portion of a mobile home park designed for the accommodation of one mobile home and its accessory buildings or structures for the exclusive use of its occupants. (550) (CMP-7)

Mobile Home Park.

A contiguous parcel of land that is used for the accommodation of mobile homes that are intended to be occupied. (550) (CMP-7)

Module, AC. (AC Module)

A complete, environmentally protected unit consisting of solar cells, inverter, and other components, designed to produce ac power. (690) (CMP-4)

Module System, AC. (AC Module System)

An assembly of ac modules, wiring methods, materials, and subassemblies that are evaluated, identified, and defined as a system. (690) (CMP-4)

Momentary Rating .

A rating based on an operating interval that does not exceed 5 seconds. (CMP-15)

Monitor.

An electrical or electronic means to observe, record, or detect the operation or condition of the electric power system or apparatus. (130) (CMP-13)

Monopole Circuit.

An electrical subset of a PV system that has two conductors in the output circuit, one positive (+) and one negative (−). (690) (CMP-4)

Monorail.

Overhead track and hoist system for moving material around the boatyard or moving and launching boats. [**303:** 3.3.16] (555) (CMP-7)

Mooring(s).

Any place where a boat is wet stored or berthed. [**303:** 3.3.17] (555) (CMP-7)

Motion Picture Studio (Television Studio).

A building, group of buildings, other structures, and outdoor areas designed, constructed, permanently altered, designated, or approved for the purpose of motion picture or television production. (530) (CMP-15)

Motion Picture Sound Stage.

A building or portion of a building, usually insulated from outside noise and natural light, designed, constructed, or altered for the purpose of image capture. (CMP-15)

Motor Control Center.

An assembly of one or more enclosed sections having a common power bus and principally containing motor control units. (CMP-11)

Motor Fuel Dispensing Facility.

That portion of a property where motor fuels are stored and dispensed from fixed equipment into the fuel tanks of motor vehicles or marine craft or into approved containers, including all equipment used in connection therewith. [**30A:** 3.3.11] (CMP-14)

> Informational Note: See 511.1 with respect to electrical wiring and equipment for other areas used as lubritoriums, service rooms, repair rooms, offices, salesrooms, compressor rooms, and similar locations.

Multi-Circuit Cable Outlet Enclosure.

An enclosure containing one or more multi-circuit plugs, receptacles, or both. (520) (CMP-15)

Multioutlet Assembly.

A surface, flush, or freestanding assemblage with a raceway and fittings or other enclosure provided with one or more receptacles, for the purpose of supplying power to utilization equipment. (CMP-18)

Nacelle.

An enclosure housing the alternator and other parts of a wind turbine. (694) (CMP-4)

Neon Tubing.

Electric-discharge luminous tubing, including cold cathode luminous tubing, that is manufactured into shapes to illuminate signs, form letters, parts of letters, skeleton tubing, outline lighting, other decorative elements, or art forms and filled with various inert gases. (600) (CMP-18)

Network Interface Unit (NIU).

A device that converts a broadband signal into component voice, audio, video, data, and interactive services signals and provides isolation between the network power and the premises signal circuits. These devices often contain primary and secondary protectors. (CMP-16)

Network Terminal.

A device that converts network-provided signals (optical, electrical, or wireless) into component signals, including voice, audio, video, data, wireless, optical, and interactive services, and is considered a network device on the premises that is connected to a communications service provider and is powered at the premises. (CMP-16)

Neutral Conductor.

The conductor connected to the neutral point of a system that is intended to carry current under normal conditions. (CMP-5)

Neutral Point.

The common point on a wye-connection in a polyphase system or midpoint on a single-phase, 3-wire system, or midpoint of a single-phase portion of a 3-phase delta system, or a midpoint of a 3-wire, direct-current system. (CMP-5)

Informational Note: At the neutral point of the system, the vectorial sum of the nominal voltages from all other phases within the system that utilize the neutral, with respect to the neutral point, is zero potential.

Nonautomatic.

Requiring human intervention to perform a function. (CMP-1)

Nonincendive Circuit.

A circuit, other than field wiring, in which any arc or thermal effect produced under intended operating conditions of the equipment, is not capable, under specified test conditions, of igniting the flammable gas–air, vapor–air, or dust–air mixture. (CMP-14)

Informational Note: See ANSI/UL 121201, *Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations* , for additional information.

Nonincendive Component.

A component having contacts for making or breaking an incendive circuit and the contacting mechanism is constructed so that the component is incapable of igniting the specified flammable gas–air or vapor–air mixture. The housing of such a component is not intended to exclude the flammable atmosphere or contain an explosion. (CMP-14)

Informational Note: See ANSI/UL 121201, *Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations* , for additional information.

Nonincendive Equipment.

Equipment having electrical/electronic circuitry that is incapable, under normal operating conditions, of causing ignition of a specified flammable gas–air, vapor–air, or dust–air mixture due to arcing or thermal means. (CMP-14)

Informational Note: See ANSI/UL 121201, *Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations* , for additional information.

Nonincendive Field Wiring.

Wiring that enters or leaves an equipment enclosure and, under normal operating conditions of the equipment, is not capable, due to arcing or thermal effects, of igniting the flammable gas–air, vapor–air, or dust–air mixture. Normal operation includes opening, shorting, or grounding the field wiring. (CMP-14)

Informational Note: See ANSI/UL 121201, *Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations* , for additional information.

Nonincendive Field Wiring Apparatus.

Apparatus intended to be connected to nonincendive field wiring. (CMP-14)

Informational Note: See ANSI/UL 121201, *Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations* , for additional information.

Nonlinear Load.

A load where the wave shape of the steady-state current does not follow the wave shape of the applied voltage. (CMP-1)

Informational Note: Electronic equipment, electronic/electric-discharge lighting, adjustable-speed drive systems, and similar equipment may be nonlinear loads.

Nonmetallic Extension.

An assembly of two insulated conductors within a nonmetallic jacket or an extruded thermoplastic covering. The classification includes surface extensions intended for mounting directly on the surface of walls or ceilings. (CMP-6)

Nonsparking.

Constructed to minimize the risk of arcs or sparks capable of creating an ignition hazard during conditions of normal operation. (CMP-14)

Informational Note No. 1: The term nonsparking is also referred to as nonarcing.

Informational Note No. 2: See ANSI/UL 121201, *Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations* , for additional information.

Normal/Emergency Power Source.

A power source on the output side of a transfer switch or uninterruptible power supply that is automatically available upon loss of normal power. (700) (CMP-13).

Normal High-Water Level (as applies to electrical datum plane distances).

Natural or Artificially Made Shorelines: An elevation delineating the highest water level that has been maintained for a sufficient period of time to leave evidence upon the landscape, commonly the point where the natural vegetation changes from predominantly aquatic to predominantly terrestrial.

Rivers and Streams: The elevation of the top of the bank of the channel. Streams, rivers, and tributaries that are prone to flooding and effects of water runoff shall consider the “bankfull stage” where an established gauge height at a given location along a river or stream, above which a rise in water surface will cause the river or stream to overflow the lowest natural stream bank somewhere in the corresponding reach.

Flood Control Bodies of Water: The flood pool maximum water surface elevation of a reservoir, equal to the elevation of the spillway.

Nonflood Control Bodies of Water: The flowage easement boundary in which the highest water surface elevation defined by the area existing between governmental-owned property line(s) and a contour line with perpetual rights to flood the area in connection with the operation of the reservoir. (CMP-7)

Nurses’ Station.

A space intended to provide a center of nursing activity for a group of nurses serving bed patients, where patient calls are received, nurses dispatched, nurses’ notes written, inpatient charts prepared, and medications prepared for distribution to patients. Where such activities are carried on in more than one location within a nursing unit, all such separate spaces are considered a to be parts of the nurses’ station. (517) (CMP-15)

Nursing Home.

A building or portion of a building used on a 24-hour basis for the housing and nursing care of four or more persons who, because of mental or physical incapacity, might be unable to provide for their own needs and safety without the assistance of another person. [***101*** **:** 3.3.150.2] (CMP-15)

Office Furnishing.

Cubicle panels, partitions, study carrels, workstations, desks, shelving systems, and storage units that may be mechanically and electrically interconnected to form an office furnishing system. (CMP-18)

Oil Immersion.

Electrical equipment immersed in a protective liquid so that an explosive atmosphere that might be above the liquid or outside the enclosure cannot be ignited. (CMP-14)

Informational Note: See ANSI/UL 121201, *Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations* , for additional information.

Open Wiring on Insulators.

An exposed wiring method using cleats, knobs, tubes, and flexible tubing for the protection and support of single insulated conductors run in or on buildings. (CMP-6)

Operating Device.

The car switch, pushbuttons, key or toggle switch(s), or other devices used to activate the operation controller. (620) (CMP-12)

Operator.

The individual responsible for starting, stopping, and controlling an amusement ride or supervising a concession. (525) (CMP-15)

Optical Radiation.

Electromagnetic radiation at wavelengths in vacuum between the region of transition to X-rays and the region of transition to radio waves that is approximately between 1 nm and 1000 µm. (CMP-14)

> Informational Note: See ANSI/UL 60079-28, *Explosive Atmospheres — Part 28: Protection of Equipment and Transmission Systems Using Optical Radiation* , for information on types of protection that can be applied to minimize the risk of ignition in explosive atmospheres from optical radiation in the wavelength range from 380 nm to 10 µm.

Optical Radiation, Inherently Safe "op is". (Inherently Safe Optical Radiation "op is")

Type of protection to minimize the risk of ignition in explosive atmospheres from optical radiation where visible or infrared radiation is incapable of producing sufficient energy under normal or specified fault conditions to ignite a specific explosive atmosphere. (CMP-14)

> Informational Note: See ANSI/UL 60079-28, *Explosive Atmospheres — Part 28: Protection of Equipment and Transmission Systems Using Optical Radiation* , for additional information.

Optical Radiation, Protected "op pr". (Protected Optical Radiation "op pr")

Type of protection to minimize the risk of ignition in explosive atmospheres from optical radiation where visible or infrared radiation is confined inside optical fiber or other transmission medium under normal constructions or constructions with additional mechanical protection based on the assumption that there is no escape of radiation from the confinement. (CMP-14)

> Informational Note: See ANSI/UL 60079-28, *Explosive Atmospheres — Part 28: Protection of Equipment and Transmission Systems Using Optical Radiation* , for additional information.

Optical System With Interlock "op sh".

Type of protection to minimize the risk of ignition in explosive atmospheres from optical radiation where visible or infrared radiation is confined inside optical fiber or other transmission medium with interlock cutoff provided to reliably reduce the unconfined beam strength to safe levels within a specified time in case the confinement fails and the radiation becomes unconfined. (CMP-14)

> Informational Note: See ANSI/UL 60079-28, *Explosive Atmospheres — Part 28: Protection of Equipment and Transmission Systems Using Optical Radiation* , for additional information.

Optional Standby Systems.

Those systems intended to supply power to public or private facilities or property where life safety does not depend on the performance of the system. These systems are intended to supply on-site generated or stored power to selected loads either automatically or manually. (CMP-13)

Organ, Electronic. (Electronic Organ)

A musical instrument that imitates the sound of a pipe organ by producing sound electronically. (CMP-12)

> Informational Note: Most new electronic organs produce sound digitally and are called digital organs.

Organ, Pipe. (Pipe Organ)

A musical instrument that produces sound by driving pressurized air (called *wind*) through pipes selected via a keyboard. (CMP-12)

Organ, Pipe Sounding Apparatus. (Pipe Organ Sounding Apparatus) (Pipe Organ Chamber).

The sound-producing part of a pipe organ, including, but not limited to, pipes, chimes, bells, the pressurized air- (wind-) producing equipment (blower), associated controls, and power equipment. (CMP-12)

Outlet.

A point on the wiring system at which current is taken to supply utilization equipment. (CMP-1)

Outlet Box Hood.

A housing shield intended to fit over a faceplate for flush-mounted wiring devices, or an integral component of an outlet box or of a faceplate for flush-mounted wiring devices. The hood does not serve to complete the electrical enclosure; it reduces the risk of water coming in contact with electrical components within the hood, such as attachment plugs, current taps, surge protective devices, direct plug-in transformer units, or wiring devices. (CMP-18)

Outline Lighting.

An arrangement of incandescent lamps, electric-discharge lighting, or other electrically powered light sources to outline or call attention to certain features such as the shape of a building or the decoration of a window. (CMP-18)

Output Cable to the Electric Vehicle.

An assembly consisting of a length of flexible EV cable and an electric vehicle connector (supplying power to the electric vehicle). (625) (CMP-12)

Output Cable to the Primary Pad.

A multiconductor, shielded cable assembly consisting of conductors to carry the high-frequency energy and any status signals between the charger power converter and the primary pad. (625) (CMP-12)

Overcurrent.

Any current in excess of the rated current of equipment or the ampacity of a conductor. It may result from overload, short circuit, or ground fault. (CMP-10)

> Informational Note: A current in excess of rating may be accommodated by certain equipment and conductors for a given set of conditions. Therefore, the rules for overcurrent protection are specific for particular situations.

Overcurrent Protective Device, Branch-Circuit. (Branch-Circuit Overcurrent Protective Device)

A device capable of providing protection for service, feeder, and branch circuits and equipment over the full range of overcurrents between its rated current and its interrupting rating. (CMP-10)

Overcurrent Protective Device, Supplementary. (Supplementary Overcurrent Protective Device)

A device intended to provide limited overcurrent protection for specific applications and utilization equipment such as luminaires and appliances. This limited protection is in addition to the protection provided in the required branch circuit by the branch-circuit overcurrent protective device. (CMP-10)

Overhead Gantry.

A structure consisting of horizontal framework, supported by vertical columns spanning above electrified truck parking spaces, that supports equipment, appliances, raceway, and other necessary components for the purpose of supplying electrical, HVAC, internet, communications, and other services to the spaces. (626) (CMP-12)

Overload.

Operation of equipment in excess of normal, full-load rating, or of a conductor in excess of its ampacity that, when it persists for a sufficient length of time, would cause damage or dangerous overheating. A fault, such as a short circuit or ground fault, is not an overload. (CMP-10)

Packaged Therapeutic Tub or Hydrotherapeutic Tank Equipment Assembly.

A factory-fabricated unit consisting of water-circulating, heating, and control equipment mounted on a common base, intended to operate a therapeutic tub or hydrotherapeutic tank. Equipment can include pumps, air blowers, heaters, lights, controls, sanitizer generators, and so forth. (680) (CMP-17)

Panelboard.

A single panel or group of panel units designed for assembly in the form of a single panel, including buses and automatic overcurrent devices, and equipped with or without switches for the control of light, heat, or power circuits; designed to be placed in a cabinet, enclosure, or cutout box placed in or against a wall, partition, or other support; and accessible only from the front. (CMP-10)

Panelboard, Placed. (Placed Panelboard)

An assembly where a panelboard is placed in a cabinet, cutout box, or enclosure approved for the application. (CMP-1)

Park Electrical Wiring Systems.

All of the electrical wiring, luminaires, equipment, and appurtenances related to electrical installations within a mobile home park, including the mobile home service equipment. (550) (CMP-7)

Park Trailer.

A unit that is built on a single chassis mounted on wheels and has a gross trailer area not exceeding 37 m^2 (400 ft^2) in the set-up mode. (552) (CMP-7)

Part-Winding Motors.

A part-winding start induction or synchronous motor is one that is arranged for starting by first energizing part of its primary (armature) winding and, subsequently, energizing the remainder of this winding in one or more steps. A standard part-winding start induction motor is arranged so that one-half of its primary winding can be energized initially, and, subsequently, the remaining half can be energized, both halves then carrying equal current. (CMP 11)

> Informational Note: A hermetic refrigerant motor-compressor is not considered a standard part-winding start induction motor.

Passenger Transportation Facilities.

Any area open to the public associated with passenger transportation such as an airport, bus terminal, highway rest stop and service area, marina, seaport, ferry slip, subway station, train station, or port of entry. (CMP-18)

Patient Bed Location.

The location of a patient sleeping bed, or the bed or procedure table of a Category 1 space. [**99:** 3.3.138] (CMP-15)

Patient Care–Related Electrical Equipment.

Electrical equipment appliance that is intended to be used for diagnostic, therapeutic, or monitoring purposes in a patient care vicinity. [**99:** 3.3.139] (517) (CMP-15)

Patient Care Space Category.

Any space of a health care facility wherein patients are intended to be examined or treated. [**99:** 3.3.145] (517) (CMP-15)

Informational Note No. 1: The health care facility's governing body designates patient care space in accordance with the type of patient care anticipated.

Informational Note No. 2: Business offices, corridors, lounges, day rooms, dining rooms, or similar areas typically are not classified as patient care spaces. [**99:** A.3.3.145]

Category 1 Space (Category 1).

Space in which failure of equipment or a system is likely to cause major injury or death of patients, staff, or visitors. [**99:** 3.3.140.1] (CMP-15)

Informational Note: These spaces, formerly known as critical care rooms, are typically where patients are intended to be subjected to invasive procedures and connected to line-operated, patient care–related appliances. Examples include, but are not limited to, special care patient rooms used for critical care, intensive care, and special care treatment rooms such as angiography laboratories, cardiac catheterization laboratories, delivery rooms, operating rooms, post-anesthesia care units, trauma rooms, and other similar rooms. [**99:** A.3.3.140.1]

Category 2 Space (Category 2).

Space in which failure of equipment or a system is likely to cause minor injury to patients, staff, or visitors. [**99:** 3.3.140.2] (CMP-15)

Informational Note: These spaces were formerly known as general care rooms. Examples include, but are not limited to, inpatient bedrooms, dialysis rooms, in vitro fertilization rooms, procedural rooms, and similar rooms. [**99:** A.3.3.140.2]

Category 3 Space (Category 3).

Space in which the failure of equipment or a system is not likely to cause injury to patients, staff, or visitors but can cause discomfort. [**99:** 3.3.140.3] (517) (CMP-15)

Informational Note: These spaces, formerly known as basic care rooms, are typically where basic medical or dental care, treatment, or examinations are performed. Examples include, but are not limited to, examination or treatment rooms in clinics, medical and dental offices, nursing homes, and limited care facilities. [**99:** A.3.3.140.3]

Category 4 Space (Category 4).

Space in which failure of equipment or a system is not likely to have a physical impact on patient care. [**99:** 3.3.140.4] (517) (CMP-15)

Informational Note: These spaces were formerly known as support rooms. Examples of support spaces include, but are not limited to, anesthesia work rooms, sterile supply, laboratories, morgues, waiting rooms, utility rooms, and lounges. [**99:** A.3.3.140.4]

Patient Care Vicinity.

A space, within a location intended for the examination and treatment of patients, extending 1.8 m (6 ft) beyond the normal location of the bed, chair, table, treadmill, or other device that supports the patient during examination and treatment and extending vertically to 2.3 m (7 ft 6 in.) above the floor. [**99:** 3.3.141] (517) (CMP-15)

Patient Equipment Grounding Point.

A jack or terminal that serves as the collection point for redundant grounding of electric appliances serving a patient care vicinity or for grounding other items in order to eliminate electromagnetic interference problems. [**99:** 3.3.142] (517) (CMP-15)

Performance Area.

The stage and audience seating area associated with a temporary stage structure, whether indoors or outdoors, constructed of scaffolding, truss, platforms, or similar devices, that is used for the presentation of theatrical or musical productions or for public presentations. (520) (CMP-15)

Permanent Amusement Attraction.

A ride device, entertainment device, or a combination of both that is installed such that portability or relocation is impracticable. (522) (CMP-15)

Permanently Installed Decorative Fountains and Reflection Pools.

Those that are constructed in the ground, on the ground, or in a building in such a manner that the fountain cannot be readily disassembled for storage, whether or not served by electrical circuits of any nature. These units are primarily constructed for their aesthetic value and are not intended for swimming or wading. (680) (CMP-17)

Personnel Protection System (as applied to EVSE).

A system of personnel protection devices and constructional features that when used together provide protection against electric shock of personnel. (625) (CMP-12)

Phase, Manufactured. (Manufactured Phase)

The phase that originates at the phase converter and is not solidly connected to either of the single-phase input conductors. (CMP-13)

Phase Converter.

An electrical device that converts single-phase power to 3-phase electric power. (CMP-13)

> Informational Note: Phase converters have characteristics that modify the starting torque and locked-rotor current of motors served, and consideration is required in selecting a phase converter for a specific load.

Phase Converter, Rotary. (Rotary-Phase Converter)

A device that consists of a rotary transformer and capacitor panel(s) that permits the operation of 3-phase loads from a single-phase supply. (455) (CMP-13)

Phase Converter, Static. (Static-Phase Converter)

A device without rotating parts, sized for a given 3-phase load to permit operation from a single-phase supply. (455) (CMP-13)

Photovoltaic Cell (PV). (Solar Cell).

The basic photovoltaic device that generates dc electricity when exposed to light. (CMP-4)

Pier.

A structure extending over the water and supported on a fixed foundation (fixed pier), or on flotation (floating pier), that provides access to the water. [**303:** 3.3.18] (CMP-7)

Pier, Fixed. (Fixed Pier)

Pier constructed on a permanent, fixed foundation, such as on piles, that permanently establishes the elevation of the structure deck with respect to land. [**303:** 3.3.18.2] (CMP-7)

Pier, Floating. (Floating Pier)

Pier designed with inherent flotation capability that allows the structure to float on the water surface and rise and fall with water level changes. [**303:** 3.3.18.3] (CMP-7)

Pinout Configuration.

The assignment of electrical functions to connector pins in a multicircuit connector. (CMP-15)

Pipeline.

A length of pipe including pumps, valves, flanges, control devices, strainers, and/or similar equipment for conveying fluids. (CMP-17)

Plenum.

A compartment or chamber to which one or more air ducts are connected and that forms part of the air distribution system. (CMP-3)

Plenum Cable, Cable Routing Assemblies, and Raceways.

Cables, cable routing assemblies, and raceways that have adequate fire-resistant and low smoke-producing characteristics and are suitable for use in ducts, plenums, and other spaces used for environmental air. (722) (CMP-3)

Point of Entrance.

The point within a building at which a wire or cable emerges from an external wall, the roof, or the floor. (CMP-16)

Pool.

Manufactured or field-constructed equipment designed to contain water and intended for use by persons for swimming, wading, immersion, recreational, or therapeutic purposes, but not including bodies of water incorporated as part of an industrial process, lakes, lagoons, surf parks, or other natural and artificially made bodies of water that could incorporate swimming and swimming areas. (680) (CMP-17)

> Informational Note: Natural and man-made bodies of water, which includes lakes, lagoons, surf parks, or other similar bodies of water, are addressed in Article 682 .

Pool, Immersion. (Immersion Pool)

A pool for ceremonial or ritual immersion of users, which is designed and intended to have its contents drained or discharged. (680) (CMP-17)

Pool, Permanently Installed Swimming, Wading, Immersion, and Therapeutic. (Permanently Installed Swimming, Wading, Immersion, and Therapeutic Pools)

Those that are permanently constructed or installed in the ground, partially in the ground, above ground, inside of a building, or on a building, whether or not served by electrical circuits. (680) (CMP-17)

Pool, Storable (Storable Immersion Pool). (Storable Pool)

Pools of any water depth, used for swimming, wading, or immersion, installed entirely on or above the ground that are intended to be stored when not in use or are designed for ease of relocation. (680) (CMP-17)

> Informational Note: A storable pool that is installed with a permanent deck around all or a portion of its perimeter is considered a permanently installed pool.

Pool Cover, Electrically Operated. (Electrically Operated Pool Cover)

Motor-driven equipment designed to cover and uncover the water surface of a pool by means of a flexible sheet or rigid frame. (680) (CMP-17)

Pool Lift, Electrically Powered. (Electrically Powered Pool Lift)

An electrically powered lift that provides accessibility for people with disabilities to and from a pool or spa. (680) (CMP-17)

Portable.

A device intended for indoor or outdoor use that is designed to be hand-carried from location to location, or easily transported without the use of other devices or equipment. (625) (CMP-12)

Portable.

X-ray equipment designed to be hand-carried. (660) (CMP-12)

Portable (as applied to equipment).

Equipment that is actually moved or can easily be moved from one place to another in normal use. (680) (CMP-17)

Portable Handlamp.

A cord- and plug-connected luminaire with a handle, and a hook for temporary mounting and hands-free operation. (CMP-18)

Portable Power Distribution Unit.

A power distribution box containing receptacles and overcurrent devices. (520) (CMP-15)

Informational Note: See ANSI/UL 1640, *Portable Power-Distribution Equipment* , for information on portable power distribution units.

Portable Structures.

Units designed to be moved including, but not limited to, amusement rides, attractions, concessions, tents, trailers, trucks, and similar units. (525) (CMP-15)

Portable Substation.

A portable assembly, usually mounted on a trailer, containing primary and secondary switchgear and a transformer. (530) (CMP-15)

Powder Filling "q".

Type of protection where electrical parts capable of igniting an explosive atmosphere are fixed in position and completely surrounded by filling material (glass or quartz powder) to prevent the ignition of an external explosive atmosphere. (CMP-14)

Informational Note: See ANSI/UL 60079-5, *Explosive Atmospheres — Part 5: Equipment protection by powder filling "q"* , for additional information.

Power Control System (PCS).

Equipment that monitors and controls power within an electrical system to prevent overload of an electrical service, feeder, conductor, or other power distribution equipment. (CMP-13)

Informational Note: A power control system may control generation, energy storage, loads, circuit controllers, or other equipment to manage power and may contain additional protective functions relative to EMS or grid interconnection functions.

Power Outlet.

An enclosed assembly that may include receptacles, circuit breakers, fuseholders, fused switches, buses, and watt-hour meter mounting means; intended to supply and control power to mobile homes, recreational vehicles, park trailers, or boats or to serve as a means for distributing power required to operate mobile or temporarily installed equipment. (CMP-7)

Power Outlet, Marina. (Marina Power Outlet)

An enclosed assembly that can include equipment such as receptacles, circuit breakers, fused switches, fuses, watt-hour meters, panelboards, and monitoring means identified for marina use. (555) (CMP-7)

Power Production Source (Power Source).

Electrical power production equipment other than a utility service, up to the source system disconnecting means. (CMP-4)

Informational Note: Examples of power production sources include engine and wind generators, solar photovoltaic systems, fuel cells, and energy storage systems.

Power Source Output Conductors.

The conductors between power production equipment and the service or other premises wiring. (CMP-4)

Power Sources.

A system of one or more off-site or one or more on-site power generation or storage components intended to provide power to nonessential electrical loads and the essential electrical system. [**99:** 3.3.155] (517) (CMP-15)

Power Supply (as applied to low-voltage suspended ceiling power distribution systems).

A Class 2 power supply connected between the branch-circuit power distribution system and the busbar low-voltage suspended ceiling power distribution system. (393) (CMP-18)

Power-Supply Cord.

An assembly consisting of an attachment plug and a length of flexible cord connected to utilization equipment. (CMP-6)

Premises.

The land and buildings located on the user's side of the point of demarcation between the communications service provider and the user. (800) (CMP-16)

Premises-Powered.

Using power provided locally from the premises. (CMP-16)

Premises Wiring (System).

Interior and exterior wiring, including power, lighting, control, and signal circuit wiring together with all their associated hardware, fittings, and wiring devices, both permanently and temporarily installed. This includes one of the following:

(1) Wiring from the service point to the outlets

(2) Wiring from and including the power source to the outlets if there is no service point

Such wiring does not include wiring internal to appliances, luminaires, motors, controllers, motor control centers, and similar equipment. (CMP-1)

> Informational Note: Power sources include, but are not limited to, interconnected or stand-alone batteries, solar photovoltaic systems, other distributed generation systems, or generators.

Pressurized.

The process of supplying an enclosure with a protective gas with or without continuous flow at sufficient pressure to prevent the entrance of combustible dust or ignitible fibers/flyings. (CMP-14)

Pressurized Enclosure "p".

Type of protection for electrical equipment that uses the technique of guarding against the ingress of the external atmosphere, which might be explosive, into an enclosure by maintaining a protective gas therein at a pressure above that of the external atmosphere. (CMP-14)

> Informational Note: See ANSI/UL-60079-2, *Explosive Atmospheres — Part 2: Equipment protection by pressurized enclosures "p"*, for additional information.

Pressurized Room "p".

A room volume protected by pressurization and of sufficient size to permit the entry of a person who might occupy the room. (CMP-14)

> Informational Note: See ANSI/UL 60079-13, *Explosive Atmospheres — Part 13: Equipment protection by pressurized room "p" and artificially ventilated room "v"* , for information on the requirements for rooms intended for human entry where pressurization is used as a means of reducing the risk of explosion.

Primary Pad.

A device external to the EV that transfers power via the contactless coupling as part of a wireless power transfer system. (625) (CMP-12)

Primary Source.

An electric utility or another source of power that acts as the main forming and stabilizing source in an electric power system. (CMP-4)

Prime Mover.

The machine that supplies the mechanical horsepower to a generator. (CMP-13)

Process Seal.

A seal between electrical systems and flammable or combustible process fluids where a failure could allow the migration of process fluids into the premises' wiring system. (CMP-14)

Informational Note: See ANSI/UL 122701, *Requirements for Process Sealing Between Electrical Systems and Flammable or Combustible Process Fluids* , for additional information.

Production Areas.

Areas where portable electrical equipment is used to implement the capture of images. (530) (CMP-15)

Projector, Nonprofessional. (Nonprofessional Projector)

Those types of projectors that do not comply with the definition of *Professional-Type Projector* . (540) (CMP-15)

Projector, Professional-Type. (Professional-Type Projector)

A type of projector using 35- or 70-mm film that has a minimum width of 35 mm (1 **3**⁄**8** in.) and has on each edge 212 perforations per meter (5.4 perforations per inch), or a type using carbon arc, xenon, or other light source equipment that develops hazardous gases, dust, or radiation. (540) (CMP-15)

Proscenium.

The wall and arch that separates the stage from the auditorium (i.e., house). (520) (CMP-15)

Protection by Enclosure "t".

Type of protection for explosive dust atmospheres where electrical equipment is provided with an enclosure providing dust ingress protection and a means to limit surface temperatures. (CMP-14)

Informational Note: See ANSI/UL 60079-31, *Explosive Atmospheres — Part 31: Equipment Dust Ignition Protection by Enclosure "t"* , for additional information.

Psychiatric Hospital.

A building used exclusively for the psychiatric care, on a 24-hour basis, of four or more inpatients. (517) (CMP-15)

Purged and Pressurized.

The process of (1) purging, supplying an enclosure with a protective gas at a sufficient flow and positive pressure to reduce the concentration of any flammable gas or vapor initially present to an acceptable level; and (2) pressurization, supplying an enclosure with a protective gas with or without continuous flow at sufficient pressure to prevent the entrance of a flammable gas or vapor, a combustible dust, or an ignitible fiber. (CMP-14)

Informational Note: See NFPA 496-2024, *Standard for Purged and Pressurized Enclosures for Electrical Equipment* , for additional information.

Purpose-Built.

A custom luminaire, a piece of lighting equipment, or an effect that is constructed for a specific purpose and is not serially manufactured or available for general sale. (530) (CMP-15)

PV DC Circuit (PV System DC Circuit).

Any dc conductor in PV source circuits, PV string circuits, and PV dc-to-dc converter circuits. (690) (CMP-4)

PV DC Circuit, Source. (PV Source Circuit)

The PV dc circuit conductors between modules in a PV string circuit, and from PV string circuits or dc combiners, to dc combiners, electronic power converters, or a dc PV system disconnecting means. (690) (CMP-4)

PV DC Circuit, String. (PV String Circuit)

The PV source circuit conductors of one or more series-connected PV modules. (690) (CMP-4)

PV Module (Module) (Solar PV Module).

A complete, environmentally protected unit consisting of solar cells and other components designed to produce dc power. (CMP-4)

PV (Photovoltaic) System (PV System) (Photovoltaic System).

The total components, circuits, and equipment up to and including the PV system disconnecting means that, in combination, convert solar energy into electric energy. (CMP-4)

Qualified Person.

One who has skills and knowledge related to the construction and operation of the electrical equipment and installations and has received safety training to recognize and avoid the hazards involved. (CMP-1)

> Informational Note: See NFPA *70E*-2024, *Standard for Electrical Safety in the Workplace*, for electrical safety training requirements.

Raceway.

An enclosed channel designed expressly for holding wires, cables, or busbars, with additional functions as permitted in this code. (CMP-8)

Raceway Cell.

A single enclosed tubular space in a cellular metal or concrete floor member, the axis of the cell being parallel to the axis of the floor member. (CMP-8)

Raceway, Cellular Metal Floor. (Cellular Metal Floor Raceway)

The hollow spaces of cellular metal floors, together with suitable fittings, that may be approved as enclosed channel for electrical conductors. (CMP-8)

Raceway, Communications. (Communications Raceway)

An enclosed channel of nonmetallic materials designed expressly for holding communications wires and cables; optical fiber cables; data cables associated with information technology and communications equipment; Class 2, Class 3, Class 4, and Type PLTC cables; and power-limited fire alarm cables in plenum, riser, and general-purpose applications. (CMP-3)

Raceway, Strut-Type Channel. (Strut-Type Channel Raceway)

A metal raceway that is intended to be mounted to the surface of or suspended from a structure, with associated accessories for the installation of electrical conductors and cables. (CMP-8)

Raceway, Surface Metal. (Surface Metal Raceway)

A metal raceway that is intended to be mounted to the surface of a structure, with associated couplings, connectors, boxes, and fittings for the installation of electrical conductors. (CMP-8)

Raceway, Surface Nonmetallic. (Surface Nonmetallic Raceway)

A nonmetallic raceway that is intended to be mounted to the surface of a structure, with associated couplings, connectors, boxes, and fittings for the installation of electrical conductors. (CMP-8)

Raceway, Underfloor. (Underfloor Raceway)

A raceway and associated components designed and intended for installation beneath or flush with the surface of a floor for the installation of cables and electrical conductors. (CMP-8)

Rail.

The structural support for the suspended ceiling system typically forming the ceiling grid supporting the ceiling tile and listed utilization equipment, such as sensors, actuators, A/V devices, and low-voltage luminaires and similar electrical equipment. (393) (CMP-18)

Rainproof.

Constructed, protected, or treated so as to prevent rain from interfering with the successful operation of the apparatus under specified test conditions. (CMP-1)

Raintight.

Constructed or protected so that exposure to a beating rain will not result in the entrance of water under specified test conditions. (CMP-1)

Rated-Load Current (RLC).

The current of a hermetic refrigerant motor-compressor resulting when it is operated at the rated load, rated voltage, and rated frequency of the equipment it serves. (440) (CMP-11)

Rated Output Power.

The amplifier manufacturer's stated or marked output power capability into its rated load. (640) (CMP-12)

Rated Power.

The output power of a wind turbine at its rated wind speed. (694) (CMP-4)

> Informational Note: See IEC 61400-12-1, *Power Performance Measurements of Electricity Producing Wind Turbines* , for the method for measuring wind turbine power output.

Receptacle.

A contact device installed at the outlet for the connection of an attachment plug, or for the direct connection of electrical utilization equipment designed to mate with the corresponding contact device. A single receptacle is a single contact device with no other contact device on the same yoke or strap. A multiple receptacle is two or more contact devices on the same yoke or strap. (CMP-18)

> Informational Note: A duplex receptacle is an example of a multiple receptacle that has two receptacles on the same yoke or strap.

Receptacle, Weather-Resistant (WR). (Weather-Resistant Receptacle)

A receptacle constructed to be resistant to the adverse effects of damp, wet, or outdoor locations. (CMP-18)

Receptacle, Weight-Supporting Ceiling (WSCR). (Weight-Supporting Ceiling Receptacle)

A contact device installed at an outlet box for the connection and support of luminaries or ceiling-suspended (paddle) fans using a weight-supporting attachment fitting (WSAF). (CMP-18)

> Informational Note: See ANSI/NEMA WD 6, *American National Standard for Wiring Devices — Dimensional Specifications* , for the standard configuration of weight-supporting ceiling receptacles and related weight-supporting attachment fittings.

Receptacle Outlet.

An outlet where the branch-circuit conductors are connected to one or more receptacles. (CMP-18)

Reconditioned Equipment.

Electromechanical systems, equipment, apparatus, or components that are restored to operating conditions. This process differs from normal servicing of equipment that remains within a facility, or replacement of listed equipment on a one-to-one basis. (CMP-1)

> Informational Note: The term *reconditioned* is frequently referred to as *rebuilt* , *refurbished* , or *remanufactured* .

Recreational Vehicle (RV) (Camping Trailer) (Motor Home) (Travel Trailer) (Truck Camper).

A vehicle or slide-in camper that is primarily designed as temporary living quarters for recreational, camping, or seasonal use; has its own motive power or is mounted on or towed by another vehicle; is regulated by the National Highway Traffic Safety Administration as a vehicle or vehicle equipment; does not require a special highway use permit for operation on the highways; and can be easily transported and set up on a daily basis by an individual. [**1192:** 3.3.52] (551) (CMP-7)

> Informational Note: See NFPA 1192-2026, *Standard on Recreational Vehicles* , Informative Annex A, for product types and definitions for motor homes and towable recreational vehicles.

Recreational Vehicle Park.

Any parcel or tract of land under the control of any person, organization, or governmental entity wherein two or more recreational vehicle, recreational park trailer, and/or other camping sites are offered for use by the public or members of an organization for overnight stays. (551) (CMP-7)

Recreational Vehicle Site.

A specific area within a recreational vehicle park or campground that is set aside for use by a camping unit. (551) (CMP-7)

Recreational Vehicle Site Supply Equipment.

A power outlet assembly located near the point of entrance of supply conductors to a recreational vehicle site and intended to constitute the disconnecting means for connected recreational vehicles. (551) (CMP-7)

Recreational Vehicle Stand.

That area of a recreational vehicle site intended for the placement of a recreational vehicle. (551) (CMP-7)

Reference Grounding Point.

The ground bus of the panelboard or isolated power system panel supplying the patient care room. [**99:** 3.3.158] (517) (CMP-15)

Relative Analgesia.

A state of sedation and partial block of pain perception produced in a patient by the inhalation of concentrations of nitrous oxide insufficient to produce loss of consciousness (conscious sedation). (517) (CMP-15)

Relay, Automatic Load Control (ALCR). (Automatic Load Control Relay)

An emergency lighting control device used to set normally dimmed or normally-off switched emergency lighting equipment to full power illumination levels in the event of a loss of the normal supply by bypassing the dimming/switching controls, and to return the emergency lighting equipment to normal status when the device senses the normal supply has been restored. (700) (CMP-13)

> Informational Note: See ANSI/UL 924, *Emergency Lighting and Power Equipment* , for the requirements covering automatic load control relays.

Remote-Control Circuit.

Any electrical circuit that controls any other circuit through a relay or an equivalent device. (CMP-3)

Remote Disconnect Control.

An electric device and circuit that controls a disconnecting means through a relay or equivalent device. (645) (CMP-12)

Resistance Heating Element.

A specific separate element to generate heat that is stand-alone, externally attached to, embedded in, integrated with, or internal to the object to be heated. (CMP-17)

> Informational Note: Tubular heaters, strip heaters, heating cable, heating tape, heating blankets, immersion heaters, and heating panels are examples of resistance heaters.

Restricted Industrial Establishment [as applied to hazardous (classified) locations].

Establishment with restricted public access, where the conditions of maintenance and supervision ensure that only qualified persons service the installation. (CMP-14)

Retrofit Kit.

A complete subassembly of parts and devices for field conversion of utilization equipment. (CMP-18)

Retrofit Kit, General Use. (General Use Retrofit Kit)

A kit that includes some, but not all, of the necessary parts to replace the illumination system of a host sign and installation instructions that identify the parts required to complete the subassembly in the field. (600) (CMP-18)

Retrofit Kit, Sign Specific. (Sign Specific Retrofit Kit)

A kit that includes all of the necessary parts and hardware to allow for field installation in a host sign, based on the included installation instructions. (600) (CMP-18)

Reverse Polarity Protection (Backfeed Protection).

A system that prevents two interconnected power supplies, connected positive to negative, from passing current from one power source into a second power source. (393) (CMP-18)

Ride Device.

A device or combination of devices that carry, convey, or direct a person(s) over or through a fixed or restricted course within a defined area for the primary purpose of amusement or entertainment. (522) (CMP-15)

Riser Cable, Cable Routing Assemblies, and Raceways.

Cables, cable routing assemblies, and raceways that have fire-resistant characteristics capable of preventing the carrying of fire from floor to floor and are suitable for use in a vertical run in a shaft or from floor to floor. (722) (CMP-3)

Road Show Connection Panel.

A type of patch panel designed to allow for road show connection of portable stage switchboards to fixed lighting outlets by means of permanently installed supplementary circuits. (520) (CMP-15)

Safe Zone.

Low probability of damage other than a slight swelling of the capacitor case, as identified by the case rupture curve of the capacitor. (460) (CMP-11)

Safety Circuit.

The part of a control system containing one or more devices that perform a safety-related function. [**79:** 3.3.95] (CMP-12)

> Informational Note: See NFPA 79-2024, *Electrical Standard for Industrial Machinery. Safety-related control system* and *safety interlock circuit* are common terms that can be used to refer to the safety circuit in other standards. The safety circuit can include hard-wired, communication, and software-related components.

Sealable Equipment.

Equipment enclosed in a case or cabinet that is provided with a means of sealing or locking so that live parts cannot be made accessible without opening the enclosure. (CMP-1)

> Informational Note: The equipment may or may not be operable without opening the enclosure.

Sealed [as applied to hazardous (classified) locations].

Constructed such that equipment is sealed effectively against entry of an external atmosphere and is not opened during normal operation or for any maintenance activities. (CMP-14)

> Informational Note: See ANSI/UL 121201, *Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations* , for additional information.

Sealed, Hermetically. (Hermetically Sealed)

Sealed against the entrance of an external atmosphere, such that the seal is made by fusion of metal to metal, ceramic to metal, or glass to metal. (CMP-14)

> Informational Note: See ANSI/UL 121201, *Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations* , for additional information.

Section Sign.

A sign or outline lighting system, shipped as subassemblies, that requires field-installed wiring between the subassemblies to complete the overall sign. The subassemblies are either physically joined to form a single sign unit or are installed as separate remote parts of an overall sign. (600) (CMP-18)

Selected Receptacles.

A minimal number of receptacles selected by the health care facility's governing body as necessary to provide essential patient care and facility services during loss of normal power. [**99:** 3.3.164] (517) (CMP-15)

Self-Contained Therapeutic Tubs or Hydrotherapeutic Tanks.

A factory-fabricated unit consisting of a therapeutic tub or hydrotherapeutic tank with all water-circulating, heating, and control equipment integral to the unit. Equipment may include pumps, air blowers, heaters, light controls, sanitizer generators, and so forth. (680) (CMP-17)

Separable Power Supply Cable Assembly.

A flexible cord or cable, including ungrounded, grounded, and equipment grounding conductors, provided with a cord connector, an attachment plug, and all other fittings, grommets, or devices installed for the purpose of delivering energy from the source of electrical supply to the truck or transport refrigerated unit (TRU) flanged surface inlet. (626) (CMP-12)

Separately Derived System.

An electrical power supply output, other than a service, having no direct connection(s) to circuit conductors of any other electrical source other than those established by grounding and bonding connections. (CMP-5)

Service.

The conductors and equipment connecting the serving utility to the wiring system of the premises served. (CMP-10)

Service Conductors.

The conductors from the service point to the service disconnecting means. (CMP-10)

Service Conductors, Overhead. (Overhead Service Conductors)

The overhead conductors between the service point and the first point of connection to the service-entrance conductors at the building or other structure. (CMP-10)

Service Conductors, Underground. (Underground Service Conductors)

The underground conductors between the service point and the first point of connection to the service-entrance conductors in a terminal box, meter, or other enclosure, inside or outside the building wall. (CMP-10)

> Informational Note: Where there is no terminal box, meter, or other enclosure, the point of connection is considered to be the point of entrance of the service conductors into the building.

Service Disconnect (Service Disconnecting Means).

A device that is connected to service conductors and disconnects the premises wiring system or equipment from the service conductors. (CMP-10)

Service Drop.

The overhead conductors between the serving utility and the service point. (CMP-10)

Service-Entrance Conductor Assembly.

Multiple single-insulated conductors twisted together without an overall covering, other than an optional binder intended only to keep the conductors together. (CMP-6)

Service-Entrance Conductors.

The service conductors between the terminals of the service equipment to the service drop, overhead service conductors, service lateral, or underground service conductors. (CMP-10)

Informational Note: Where service equipment is located outside the building walls, there could be no service-entrance conductors or they might be entirely outside the building.

Service Equipment.

The necessary equipment, consisting of a circuit breaker(s) or switch(es) and fuse(s) and their accessories, connected to the serving utility and intended to constitute the main control and disconnect of the serving utility. (CMP-10)

Service Equipment, Mobile Home. (Mobile Home Service Equipment)

The equipment containing the disconnecting means, overcurrent protective devices, and receptacles or other means for connecting a mobile home feeder assembly. (550) (CMP-7)

Service Lateral.

The underground conductors between the utility electric supply system and the service point. (CMP-10)

Service Point.

The point of connection between the facilities of the serving utility and the premises wiring. (CMP-10)

Informational Note: The service point can be described as the point of demarcation between where the serving utility ends and the premises wiring begins. The serving utility generally specifies the location of the service point based on the conditions of service.

Service Point, Communications. (Communications Service Point)

The point of connection between the communications service provider's network (outside plant) and the premises wiring (inside plant). (CMP-16)

Servicing.

The process of following a manufacturer's set of instructions or applicable industry standards to analyze, adjust, or perform prescribed actions upon equipment with the intention to preserve or restore the operational performance of the equipment. (CMP-1)

Informational Note: Servicing often encompasses maintenance and repair activities.

Shore Power.

The electrical equipment required to power a floating vessel including, but not limited to, the receptacle and cords. (555) (CMP-7)

Shoreline.

The farthest extent of standing water under the applicable conditions that determine the electrical datum plane for the specified body of water. (682) (CMP-7)

Short Circuit.

An abnormal connection (including an arc) of relatively low impedance, whether made accidentally or intentionally, between two or more points of different potential. (CMP-10)

Short-Circuit Current Rating.

The prospective symmetrical fault current at a nominal voltage to which equipment is able to be connected without sustaining damage exceeding defined acceptance criteria. (CMP-10)

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. (CMP-2)

Sign, Electric. (Electric Sign)

Electrically operated utilization equipment with words, symbols, art, or advertising designed to convey information or attract attention. (CMP-18)

Sign, Host. (Host Sign)

A sign or outline lighting system already installed in the field that is designated by a retroft kit for field conversion of the illumination system. (600) (CMP-18)

Sign, Photovoltaic (PV) Powered (PV Powered Sign). [Photovoltaic (PV) Powered Sign]

A complete sign powered by solar energy consisting of all components and subassemblies for installation either as an off-grid stand-alone, on-grid interactive, or non-grid interactive system. (600) (CMP-18)

Sign Body.

A portion of a sign that can provide protection from the weather and can additionally serve as an electrical enclosure. (600) (CMP-18)

Signaling Circuit.

Any electrical circuit that energizes signaling equipment. (CMP-3)

Simple Apparatus.

An electrical component or combination of components of simple construction with well-defined electrical parameters that does not generate more than 1.5 volts, 100 mA, and 25 mW, or a passive component that does not dissipate more than 1.3 watts and is compatible with the intrinsic safety of the circuit in which it is used. (CMP-14)

Informational Note No. 1: The following are examples of simple apparatus:

(1) Passive components; for example, switches, instrument connectors, plugs and sockets, junction boxes, resistance temperature devices, and simple semiconductor devices such as LEDs

(2) Sources of stored energy consisting of single components in simple circuits with well-defined parameters; for example, capacitors or inductors, whose values are considered when determining the overall safety of the system

(3) Sources of generated energy; for example, thermocouples and photocells, that do not generate more than 1.5 volts, 100 mA, and 25 mW

Informational Note No. 2: See ANSI/UL 913, *Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III, Division 1, Hazardous (Classified) Locations* , and ANSI/UL 60079-11, *Explosive Atmospheres — Part 11: Equipment Protection by Intrinsic Safety "i"* , for additional information.

Single-Pole Separable Connector.

A device that is installed at the ends of portable, flexible, single-conductor cable that is used to establish connection or disconnection between two cables or one cable and a single-pole, panel-mounted separable connector. (CMP-18)

Site-Isolating Device.

A pole-mounted disconnecting means installed at the distribution point for the purposes of isolation, system maintenance, emergency disconnection, or connection of optional standby systems. (547) (CMP-7)

Skeleton Tubing.

Neon tubing that is itself the sign or outline lighting and is not attached to an enclosure or sign body. (600) (CMP-18)

Slip.

A berthing space between or adjacent to piers, wharves, or docks; the water areas associated with boat occupation. [**303:** 3.3.21] (555) (CMP-7)

Informational Note: See the definition of *Berth* for additional information.

Solid-State Phase-Control Dimmer.

A solid-state dimmer where the wave shape of the steady-state current does not follow the wave shape of the applied voltage such that the wave shape is nonlinear. (CMP-15)

Solid-State Sine Wave Dimmer.

A solid-state dimmer where the wave shape of the steady-state current follows the wave shape of the applied voltage such that the wave shape is linear. (CMP-15)

Spa or Hot Tub.

A hydromassage pool, or tub for recreational or therapeutic use, not located in health care facilities, designed for immersion of users, and usually having a filter, heater, and motor-driven blower. It may be installed indoors or outdoors, on the ground or supporting structure, or in the ground or supporting structure. Generally, they are not designed or intended to have its contents drained or discharged after each use. (680) (CMP-17)

Spa or Hot Tub, Packaged Equipment Assembly. (Packaged Spa or Hot Tub Equipment Assembly)

A factory-fabricated unit consisting of water-circulating, heating, and control equipment mounted on a common base, intended to operate a spa or hot tub. Equipment can include pumps, air blowers, heaters, lights, controls, sanitizer generators, and so forth. (680) (CMP-17)

Spa or Hot Tub, Self-Contained. (Self-Contained Spa or Hot Tub)

Factory-fabricated unit consisting of a spa or hot tub vessel with all water-circulating, heating, and control equipment integral to the unit. Equipment can include pumps, air blowers, heaters, lights, controls, sanitizer generators, and so forth. (680) (CMP-17)

Spa or Hot Tub, Storable. (Storable Spa or Hot Tub)

Spas or hot tubs installed entirely on or above the ground that are intended to be stored when not in use and are designed for ease of relocation. (680) (CMP-17)

Space.

A portion of the health care facility designated by the health care facility's governing body that serves a specific purpose. [**99:** 3.3.171] (517) (CMP-15)

Special Permission.

The written consent of the authority having jurisdiction. (CMP-1)

Special Protection “s”.

Type of protection that permits design, assessment, and testing of equipment that cannot be fully assessed within a recognized type of protection or combination of recognized types of protection because of functional or operational limitations, but that can be demonstrated to provide the necessary equipment protection level (EPL). (CMP-14)

Informational Note: See ANSI/UL 60079-33, *Explosive Atmospheres — Part 33: Equipment Protection by Special Protection “s”* , for additional information.

Special-Purpose Multi-Circuit Cable System.

A portable branch-circuit distribution system consisting of one or more trunk cables and optional breakout assemblies or multi-circuit outlet enclosures. (520) (CMP-15)

Spider (Cable Splicing Block).

A device that contains busbars that are insulated from each other for the purpose of splicing or distributing power to portable cables and cords that are terminated with single-pole busbar connectors. (530) (CMP-15)

Spin Down.

A shutdown condition of the FESS, where energy is being dissipated and the flywheel rotor is slowing down to a stop. (706) (CMP-13)

Informational Note: A complete stop of a flywheel rotor cannot occur instantaneously because of the high kinetic energy of the rotor, but rather occurs over time as a result of friction forces acting on the rotor.

Splash Pad.

A fountain intended for recreational use by pedestrians and designed to contain no more than 25 mm (1 in.) of water depth. This definition does not include showers intended for hygienic rinsing prior to use of a pool, spa, or other water feature. (680) (CMP-17)

Spray Area.

Any fully enclosed, partly enclosed, or unenclosed area in which flammable or combustible vapors, mists, residues, dusts, or deposits are present due to the operation of spray processes, including:

(1) any area in the direct path of a spray application process;

(2) the interior of a spray booth, spray room, or limited finishing workstation, as herein defined;

(3) the interior of any exhaust plenum, eliminator section, or scrubber section;

(4) the interior of any exhaust duct or exhaust stack leading from a spray application process;

(5) the interior of any air recirculation path up to and including recirculation particulate filters;

(6) any solvent concentrator (pollution abatement) unit or solvent recovery (distillation) unit; and

(7) the inside of a membrane enclosure.

The following are not part of the spray area:

(1) fresh air make-up units;

(2) air supply ducts and air supply plenums;

(3) recirculation air supply ducts downstream of recirculation particulate filters; and

(4) exhaust ducts from solvent concentrator (pollution abatement) units. [**33:** 3.3.2.3] (CMP-14)

Informational Note No. 1: Unenclosed spray areas are locations outside of buildings or are localized operations within a larger room or space. Such areas are normally provided with some local vapor extraction/ventilation system. In automated operations, the area limits are the maximum area in the direct path of spray operations. In manual operations, the area limits are the maximum area of spray when aimed at 90 degrees to the application surface.

Informational Note No. 2: See definitions for *limited finishing workstation* and *membrane enclosure* for additional information.

Spray Area, Outdoor. (Outdoor Spray Area)

A spray area that is outside the confines of a building or that has a canopy or roof that does not limit the dissipation of the heat of a fire or dispersion of flammable vapors and does not restrict fire-fighting access and control. For the purpose of this standard, an outdoor spray area can be treated as an unenclosed spray area as defined in this code. [**33:** 3.3.2.3.1] (CMP-14)

Spray Area, Unenclosed. (Unenclosed Spray Area)

Any spray area that is not confined by a limited finishing workstation, spray booth, or spray room, as herein defined. [**33:** 3.3.2.3.2] (CMP-14)

Spray Booth.

A power-ventilated enclosure for a spray application operation or process that confines and limits the escape of the material being sprayed, including vapors, mists, dusts, and residues that are produced by the spraying operation and conducts or directs these materials to an exhaust system. [**33:** 3.3.19] (CMP-14)

> Informational Note: A spray booth is an enclosure or insert within a larger room used for spraying, coating, and/or dipping applications. A spray booth can be fully enclosed or have open front or face and can include a separate conveyor entrance and exit. The spray booth is provided with a dedicated ventilation exhaust with supply air from the larger room or from a dedicated air supply.

Spray Room.

A power-ventilated fully enclosed room with a specified fire resistance rating used exclusively for open spraying of flammable or combustible materials. [**33:** 3.3.20] (CMP-14)

Stage Effect (Special Effect).

An electrical or electromechanical piece of equipment used to simulate a distinctive visual or audible effect, such as a wind machine, lightning simulator, or sunset projector. (CMP-15)

Stage Equipment.

Equipment at any location on the premises integral to the stage production including, but not limited to, equipment for lighting, audio, special effects, rigging, motion control, projection, or video. (520) (CMP-15)

Stage Lighting Hoist.

A motorized lifting device that contains a mounting position for one or more luminaires, with wiring devices for connection of luminaires to branch circuits, and integral flexible cables to allow the luminaires to travel over the lifting range of the hoist while energized. (520) (CMP-15)

Stage Property.

An article or object used as a visual element in a motion picture or television production, except painted backgrounds (scenery) and costumes. (530) (CMP-15)

Stage Set.

A specific area set up with temporary scenery and properties designed and arranged for a particular scene in a motion picture or television production. (CMP-15)

Stage Switchboard, Fixed. (Fixed Stage Switchboard)

A permanently installed switchboard, panelboard, or rack containing dimmers or relays with associated overcurrent protective devices, or overcurrent protective devices alone, used primarily to feed stage equipment. (CMP-15)

Stage Switchboard, Portable. (Portable Stage Switchboard)

A portable rack or pack containing dimmers or relays with associated overcurrent protective devices, or overcurrent protective devices alone, used to feed stage equipment. (520) (CMP-15)

Stand Lamp.

A portable stand that contains a general-purpose luminaire or lampholder with guard for the purpose of providing general illumination on a stage, in an auditorium, or in a studio. (520) (CMP-15)

Stand-Alone System.

A system that is not connected to an electric power production and distribution network. (CMP-4)

Storage, Dry Stack. (Dry Stack Storage)

A facility, either covered or uncovered, constructed of horizontal and vertical structural members designed to allow placement of small boats in defined slots arranged both horizontally and vertically. [**303:** 3.3.24.2] (555) (CMP-7)

Stored-Energy Power Supply System (SEPSS).

A complete functioning EPSS powered by a stored-energy electrical source. (CMP-13)

Stranding, Compact. (Compact Stranding)

A conductor stranding method in which each layer of strands is pressed together to minimize the gaps between the strands so the overall diameter of the finished conductor is less than a concentric stranded conductor and less than a compressed stranded conductor. (CMP-6)

Stranding, Compressed. (Compressed Stranding)

A conductor stranding method in which the outer layer of strands is pressed together so the overall diameter of the finished conductor is less than a concentric stranded conductor but greater than a compact stranded conductor. (CMP-6)

Stranding, Concentric. (Concentric Stranding)

A conductor consisting of a straight central strand surrounded by one or more layers of strands, helically laid in a geometric pattern. (CMP-6)

Strip Light.

A luminaire with multiple lamps arranged in a row. (520) (CMP-15)

Structure.

That which is built or constructed, other than equipment. (CMP-1)

Structure, Relocatable. (Relocatable Structure)

A factory-assembled structure or structures transportable in one or more sections that are built on a permanent chassis and designed to be used as other than a dwelling unit without a permanent foundation. (545) (CMP-7)

> Informational Note: Examples of relocatable structures are those units that are equipped for sleeping purposes only, contractor's and other on-site offices, construction job dormitories, studio dressing rooms, banks, clinics, stores, shower facilities and restrooms, training centers, or for the display or demonstration of merchandise or machines.

Subassembly.

Component parts or a segment of a sign, retrofit kit, or outline lighting system that, when assembled, forms a complete unit or product. (600) (CMP-18)

Substation.

An assemblage of equipment (e.g., switches, interrupting devices, circuit breakers, buses, and transformers) through which electric energy is passed for the purpose of distribution, switching, or modifying its characteristics. (CMP-9)

Supervisory Control and Data Acquisition (SCADA).

An electronic system that provides monitoring and controls for the operation of the critical operations power system. (CMP-13)

> Informational Note: This can include the fire alarm system, security system, control of the HVAC, the start/stop/monitoring of the power supplies and electrical distribution system, annunciation and communications equipment to emergency personnel, facility occupants, and remote operators.

Support Areas.

Areas, other than fixed production offices, intended to support production and where image capture will not take place. Such areas include, but are not limited to, mobile production offices, storage, and workspaces; vehicles and trailers for cast, makeup, hair, lighting, grip, wardrobe, props, catering, and craft services; and portable restrooms. (530) (CMP-15)

Surge Arrester.

A protective device for limiting surge voltages by discharging or bypassing surge current; it also prevents continued flow of follow current while remaining capable of repeating these functions. (CMP-10)

Surge-Protective Device (SPD).

A protective device for limiting transient voltages by diverting or limiting surge current; it also prevents continued flow of follow current while remaining capable of repeating these functions and is designated as follows:

(1) Type 1: Permanently connected SPDs intended for installation between the secondary of the service transformer and the line side of the service disconnect overcurrent device

(2) Type 2: Permanently connected SPDs intended for installation on the load side of the service disconnect overcurrent device, including SPDs located at the branch panel

(3) Type 3: Point of utilization SPDs

(4) Type 4: Component SPDs, including discrete components, as well as assemblies. (CMP-10)

Informational Note: See UL 1449, *Standard for Surge Protective Devices* , for further information on SPDs.

Suspended Ceiling Grid.

A system that serves as a support for a finished ceiling surface and other utilization equipment. (393) (CMP-18)

Switch, Bypass Isolation. (Bypass Isolation Switch)

A manual, nonautomatic, or automatic operated device used in conjunction with a transfer switch to provide a means of bypass that directly connects the load conductors to a power source and allows the transfer switch to be isolated or disconnected. (CMP-13)

Switch, General-Use. (General-Use Switch)

A switch intended for use in general distribution and branch circuits. It is rated in amperes, and it is capable of interrupting its rated current at its rated voltage. (CMP-10)

Switch, General-Use Snap. (General-Use Snap Switch)

A form of general-use switch constructed so that it can be installed in device boxes or on box covers, or otherwise used in conjunction with wiring systems recognized by this code. (CMP-18)

Switch, Isolating. (Isolating Switch)

A switch intended for isolating an electrical circuit from the source of power. It has no interrupting rating, and it is intended to be operated only after the circuit has been opened by some other means. (CMP-10)

Switch, Motor-Circuit. (Motor-Circuit Switch)

A switch rated in horsepower that is capable of interrupting the maximum operating overload current of a motor of the same horsepower rating as the switch at the rated voltage. (CMP-11)

Switchboard.

A large single panel, frame, or assembly of panels on which are mounted on the face, back, or both, switches, overcurrent and other protective devices, buses, and usually instruments.(CMP-10)

Informational Note: These assemblies can be accessible from the rear or side as well as from the front and are not intended to be installed in cabinets.

Switchgear.

An assembly completely enclosed on all sides and top with sheet metal (except for ventilating openings and inspection windows) and containing primary power circuit switching, interrupting devices, or both, with buses and connections. The assembly may include control and auxiliary devices. Access to the interior of the enclosure is provided by doors, removable covers, or both. (CMP-10)

Informational Note: All switchgear subject to *NEC* requirements is metal enclosed. Switchgear rated below 1000 V or less may be identified as “low-voltage power circuit breaker switchgear.” Switchgear rated over 1000 V may be identified as “metal-enclosed switchgear” or “metal-clad switchgear.” Switchgear is available in non–arc-resistant or arc-resistant constructions.

Switching Device (as applied to equipment rated over 1000 volts ac, 1500 volts dc, nominal).

A device designed to close, open, or both, one or more electrical circuits. (CMP-9)

Cutout.

An assembly of a fuse support with either a fuseholder, fuse carrier, or disconnecting blade. The fuseholder or fuse carrier may include a conducting element (fuse link) or may act as the disconnecting blade by the inclusion of a nonfusible member.

Disconnecting Switch (or Isolating Switch).

A mechanical switching device used for isolating a circuit or equipment from a source of power.

Interrupter Switch.

A switching device capable of making, carrying, and interrupting specified currents.

Oil-Filled Cutout.

A cutout in which all or part of the fuse support and its fuse link or disconnecting blade is mounted in oil with complete immersion of the contacts and the fusible portion of the conducting element (fuse link) so that arc interruption by severing of the fuse link or by opening of the contacts will occur under oil.

Oil Switch.

A switching device having contacts that operate under oil (or askarel or other suitable liquid).

Regulator Bypass Switch.

A switching device or combination of switching devices designed to bypass equipment used to control voltage levels or related circuit characteristics.

System Isolation Equipment.

A redundantly monitored, remotely operated contactor-isolating system, packaged to provide the disconnection/isolation function, capable of verifiable operation from multiple remote locations by means of lockout switches, each having the capability of being padlocked in the “off” (open) position. (430) (CMP-11)

Tap Conductor.

A conductor, other than a service conductor, that has overcurrent protection ahead of its point of supply that exceeds the value permitted for similar conductors that are protected as described elsewhere in 240.4 . (240) (CMP-10)

Task Illumination.

Provisions for the minimum lighting required to carry out necessary tasks in the areas described in 517.34(A) , including safe access to supplies and equipment and access to exits. [**99:** 3.3.177] (517) (CMP-15)

Technical Power System.

An electrical distribution system where the equipment grounding conductor is isolated from the premises grounded conductor and the premises equipment grounding conductor except at a single grounded termination point within a branch-circuit panelboard, at the originating (main breaker) branch-circuit panelboard or at the premises grounding electrode. (640) (CMP-12)

Temporary Equipment.

Portable wiring and equipment intended for use with events of a transient or temporary nature where all equipment is presumed to be removed at the conclusion of the event. (640) (CMP-12)

Terminal (as applied to batteries).

That part of a cell, container, or battery to which an external connection is made (commonly identified as post, pillar, pole, or terminal post). (CMP-13)

Thermal Protector (as applied to motors).

A protective device for assembly as an integral part of a motor or motor-compressor that, when properly applied, protects the motor against dangerous overheating due to overload and failure to start. (CMP-11)

Informational Note: The thermal protector may consist of one or more sensing elements integral with the motor or motor-compressor and an external control device.

Thermal Resistivity.

The heat transfer capability through a substance by conduction. (CMP-6)

Informational Note: Thermal resistivity is the reciprocal of thermal conductivity and is designated Rho, which is expressed in the units °C-cm/W.

Thermally Protected (as applied to motors).

A motor or motor-compressor that is provided with a thermal protector. (CMP-11)

Top Shield.

A grounded metal shield covering under-carpet components of the flat conductor cable (Type FCC) system for the purposes of providing protection against physical damage. (324) (CMP-6)

Tower.

A pole or other structure that supports a wind turbine. (694) (CMP-4)

Transfer Switch.

An automatic or nonautomatic device for transferring one or more load conductor connections from one power source to another. (CMP-13)

Transfer Switch, Branch-Circuit Emergency Lighting (BCELTS). (Branch-Circuit Emergency Lighting Transfer Switch)

A device connected on the load side of a branch-circuit overcurrent protective device that transfers only emergency lighting loads from the normal power source to an emergency power source. (700) (CMP-13)

Informational Note: See ANSI/UL 1008, *Transfer Switch Equipment* , for information covering branch-circuit emergency lighting transfer switches.

Transfer Switch, Bypass Isolation. (Bypass Isolation Transfer Switch)

A transfer switch that provides a means to isolate the transfer switch. (CMP-13)

Transfer Switch, Meter-Mounted. (Meter-Mounted Transfer Switch)

A transfer switch connected between the utility meter and the meter base. (CMP-13)

Informational Note: Meter-mounted transfer switches can plug into the meter base. Transfer switches that incorporate the meter base in the transfer equipment assembly are not considered meter-mounted transfer switches.

Transformer.

Equipment, either single-phase or polyphase, that uses electromagnetic induction to convert current and voltage in a primary circuit into current and voltage in a secondary circuit. (CMP-9)

Transformer Secondary Conductor.

A conductor, other than a service conductor, that originates at the secondary winding terminals of a transformer. (CMP-10)

Transition Assembly.

An assembly to facilitate connection of the flat conductor cable (Type FCC) system to other wiring systems, incorporating (1) a means of electrical interconnection and (2) a suitable box or covering for providing electrical safety and protection against physical damage. (324) (CMP-6)

Transport Refrigerated Unit (TRU).

A trailer or container, with integrated cooling or heating, or both, used for the purpose of maintaining the desired environment of temperature-sensitive goods or products. (626) (CMP-12)

Transportable.

X-ray equipment that is to be installed in a vehicle or that may be readily disassembled for transport in a vehicle. (660) (CMP-12)

Truck.

A motor vehicle designed for the transportation of goods, services, and equipment. (626) (CMP-12)

Truck Coupler.

A truck flanged surface inlet and mating cord connector. (626) (CMP-12)

Truck Flanged Surface Inlet.

The device(s) on the truck into which the connector(s) is inserted to provide electric energy and other services. This device is part of the truck coupler. The truck flanged surface inlet is considered to be part of the truck and not part of the electrified truck parking space supply equipment. (626) (CMP-12)

Trunk Cable.

A portable extension cable containing six or more branch circuits, a male multipole plug, and a female multipole receptacle. (520) (CMP-15)

Tubing, Electrical Metallic (EMT). (Electrical Metallic Tubing)

An unthreaded thinwall raceway of circular cross section designed for the physical protection and routing of conductors and cables and for use as an equipment grounding conductor when installed utilizing appropriate fittings. (CMP-8)

Tubing, Electrical Nonmetallic (ENT). (Electrical Nonmetallic Tubing)

A nonmetallic, pliable, corrugated raceway of circular cross section with integral or associated couplings, connectors, and fittings for the installation of electrical conductors. It is composed of a material that is resistant to moisture and chemical atmospheres and is flame retardant.

A pliable raceway is a raceway that can be bent by hand with a reasonable force but without other assistance. (CMP-8)

Tubing, Flexible Metallic (FMT). (Flexible Metallic Tubing)

A metal raceway that is circular in cross section, flexible, and liquidtight without a nonmetallic jacket. (CMP-8)

Twofer.

An assembly containing one male plug and two female cord connectors used to connect two loads to one branch circuit. (520) (CMP-15)

Type of Protection “n”.

Type of protection where electrical equipment, in normal operation, is not capable of igniting a surrounding explosive gas atmosphere and a fault capable of causing ignition is not likely to occur. (CMP-14)

> Informational Note: See ANSI/UL 60079-15, *Explosive Atmospheres — Part 15: Equipment Protection by Type of Protection “n”*, for additional information.

Ungrounded.

Not connected to ground or to a conductive body that extends the ground connection. (CMP-5)

Uninterruptible Power Supply (UPS).

A device or system that provides quality and continuity of ac power through the use of a stored-energy device as the backup power source for a period of time when the normal power supply is incapable of performing acceptably. (CMP-13)

Unit Equipment.

A battery-equipped emergency luminaire that illuminates only as part of the emergency illumination system and is not illuminated when the normal supply is available. (CMP-13)

Utilization Equipment.

Equipment that utilizes electric energy for electronic, electromechanical, chemical, heating, lighting, or similar purposes. (CMP-1)

Valve Actuator Motor (VAM) Assemblies.

A manufactured assembly, used to operate a valve, consisting of an actuator motor and other components such as motor controllers, torque switches, limit switches, and overload protection. (430) (CMP-11)

Informational Note: VAMs typically have short-time duty and high-torque characteristics.

Ventilated.

Provided with a means to permit circulation of air sufficient to remove an excess of heat, fumes, or vapors. (CMP-14)

Vessel.

A container such as a barrel, drum, or tank for holding fluids or other material. (CMP-17)

Volatile Flammable Liquid.

A flammable liquid having a flash point below 38°C (100°F), or a flammable liquid whose temperature is above its flash point, or a Class II combustible liquid that has a vapor pressure not exceeding 276 kPa (40 psia) at 38°C (100°F) and whose temperature is above its flash point. (CMP-14)

Voltage (of a circuit).

The greatest root-mean-square (rms) (effective) difference of potential between any two conductors of the circuit concerned. (CMP-1)

Informational Note: Some systems, such as 3-phase 4-wire, single-phase 3-wire, and 3-wire direct current, may have various circuits of various voltages.

Voltage, High. (High Voltage)

A potential difference over 1000 volts ac, 1500 volts dc, nominal. (CMP-9)

Informational Note: Circuits and equipment rated at potential differences of more than 1000 volts ac, 1500 volts dc, and up to 52 kV, are also commonly referred to as medium voltage.

Voltage, Low. (Low Voltage)

An electromotive force rated 24 volts, nominal, or less. (552) (CMP-7)

Voltage, Nominal. (Nominal Voltage)

A nominal value assigned to a circuit or system for the purpose of conveniently designating its voltage class (e.g., 120/240 volts, 480Y/277 volts, 600 volts). (CMP-1)

Informational Note No. 1: The actual voltage at which a circuit operates can vary from the nominal within a range that permits satisfactory operation of equipment.

Informational Note No. 2: See ANSI C84.1-2011, *Voltage Ratings for Electric Power Systems and Equipment (60 Hz).*

Voltage, Nominal (as applied to battery or cell).(Nominal Voltage)

The value assigned to a cell or battery of a given voltage class for the purpose of convenient designation. The operating voltage of the cell or battery may vary above or below this value. (CMP-13)

Informational Note: The most common nominal cell voltages are 2 volts per cell for the lead-acid batteries, 1.2 volts per cell for alkali batteries, and 3.2 to 3.8 volts per cell for Li-ion batteries. Nominal voltages might vary with different chemistries.

Voltage to Ground.

For grounded circuits, the voltage between the given conductor and that point or conductor of the circuit that is grounded; for ungrounded circuits, the greatest voltage between the given conductor and any other conductor of the circuit. (CMP-1)

Watertight.

Constructed so that moisture will not enter the enclosure under specified test conditions. (CMP-1)

Weatherproof.

Constructed or protected so that exposure to the weather will not interfere with successful operation. (CMP-1)

> Informational Note: Rainproof, raintight, or watertight equipment can fulfill the requirements for weatherproof where varying weather conditions other than wetness, such as snow, ice, dust, or temperature extremes, are not a factor.

Wharf.

A structure at the shoreline that has a platform built along and parallel to a body of water with either an open deck or a superstructure. [**307:** 3.3.28] (555) (CMP-7)

Wind Turbine.

A mechanical device that converts wind energy to electrical energy. (CMP-4)

Wind Turbine Output Circuit. (Turbine Output Circuit)

The circuit conductors between the internal components of a wind turbine (which might include an alternator, integrated rectifier, controller, and/or inverter) and other equipment. (694) (CMP-4)

Wire.

A factory assembly of one or more insulated conductors without an overall covering. (805) (CMP-3)

Wireless Power Transfer (WPT).

The transfer of electrical energy from a power source to an electrical load via magnetic fields by a contactless means between a primary device and a secondary device. (625) (CMP-12)

Wireless Power Transfer Equipment (WPTE).

Equipment installed specifically for the purpose of transferring energy between the premises wiring and the electric vehicle without physical electrical contact. (625) (CMP-12)

> Informational Note No. 1: The general form of WPTE consists of two physical packages: a control box and a primary pad.
>
> Informational Note No. 2: Electric vehicle power export equipment and wireless power transfer equipment are sometimes contained in one set of equipment, sometimes referred to as a bidirectional WPTE.

Wireways, Metal. (Metal Wireways)

Sheet metal troughs with hinged or removable covers for housing and protecting electrical wires and cable and in which conductors are laid in place after the raceway has been installed as a complete system. (CMP-8)

Wireways, Nonmetallic. (Nonmetallic Wireways)

Flame-retardant, nonmetallic troughs with removable covers for housing and protecting electrical wires and cables in which conductors are laid in place after the raceway has been installed as a complete system. (CMP-8)

Wiring Device.

An electrical device that serves as either a connection point to facilitate the flow of current or as a control device in general distribution and branch circuits. (CMP-18)

> Informational Note: Examples of wiring devices include attachment plugs, receptacles, general-use snap switches, pendant switches, surface switches, dimmers, and electronic control switches and lighting control switches.

Work Surface.

A fixed, stationary, or portable surface typically intended for dry use and for tasks other than food or beverage preparation, food or beverage serving, personal lavation, or laundering that presents an incidental risk of spillage of smaller quantities of beverages and other liquids upon outlets mounted directly on or recessed in the surface. (CMP-2)

Informational Note No. 1: See UL 111, *Outline of Investigation for Multioutlet Assemblies*, and UL 962A, *Furniture Power Distribution Units*, which establish the performance evaluation criteria and construction criteria.

Informational Note No. 2: See 406.14(F), 406.14(G)(1), and 406.14(H) for information on receptacles for work surfaces distinguished from receptacles for counters and countertops.

Yoke (Strap).

The structural frame of a wiring device, such as a receptacle or switch, that serves as the mounting means. (CMP-18)

Zone.

A physically identifiable area (such as barriers or separation by distance) within an information technology equipment room, with dedicated power and cooling systems for the information technology equipment or systems. (645) (CMP-12)

Statement of Problem and Substantiation for Public Comment

A panelboard is a defined term and is defined as follows: “A single panel or group of panel units designed for assembly in the form of a single panel, including buses and automatic overcurrent devices, and equipped with or without switches for the control of light, heat, or power circuits; designed to be placed in a cabinet, enclosure, or cutout box placed in or against a wall, partition, or other support; and accessible only from the front.” Accordingly, what a panelboard is does not need to be restated within the definition of panelboard. Note that a key phrase in the definition of panelboard is “…designed to be placed in…” Accordingly, once the panelboard is actually “placed in” “a cabinet, enclosure, or cutout box” per this definition, it is no longer a panelboard which is, by definition, “…designed to be placed in a cabinet, enclosure, or cutout box…” – it is then something other than a panelboard. The phrase “an assembly” recognizes that this panelboard is actually assembled by “placing” the panelboard in a cabinet, enclosure, or cutout box. Notably, the panelboard is no longer stand-alone – it is now two distinct pieces of electrical equipment that have been combined by placing one in the other; a panelboard “placed in” either a cabinet, enclosure, or cutout box. Further, the defined term “approved” was used rather than the possibly unenforceable and vague term “suitable” per Table 3.2.1 in the NEC Style Manual. Importantly, this definition of “placed panelboard” differs significantly from, and is not in conflict with, the defined term “enclosed panelboard” in UL 67 for a number of reasons including, but not limited to, that “placed panelboard” rather than “enclosed panelboard” is being defined, that “placed in” was used rather than “installed in” to match the NEC definition of panelboard where “…designed to be placed in…” is used, and that “suitable” is replaced with “approved” (a defined term) to comply with Table 3.2.1 of the NEC Style Manual to remove this possibly vague and unenforceable word. It is recommended that this definition be assigned to CMP1 as the term is used in multiple NEC articles, including the general requirements within Article 110 which apply to Chapters 1-8 of the NEC.

Related Item

• FR-8903

Submitter Information Verification

Submitter Full Name: Palmer Hickman
Organization: Electrical Training Alliance
Street Address:
City:
State:
Zip:
Submittal Date: Tue Aug 06 17:39:39 EDT 2024

Committee: NEC-P10

Copyright Assignment

I, Palmer Hickman, hereby irrevocably grant and assign to the National Fire Protection Association (NFPA) all and full rights in copyright in this Public Comment (including both the Proposed Change and the Statement of Problem and Substantiation). I understand and intend that I acquire no rights, including rights as a joint author, in any publication of the NFPA in which this Public Comment in this or another similar or derivative form is used. I hereby warrant that I am the author of this Public Comment and that I have full power and authority to enter into this copyright assignment.

☑ By checking this box I affirm that I am Palmer Hickman, and I agree to be legally bound by the above Copyright Assignment and the terms and conditions contained therein. I understand and intend that, by checking this box, I am creating an electronic signature that will, upon my submission of this form, have the same legal force and effect as a handwritten signature

Public Comment No. 2058-NFPA 70-2024 [Definition: Disconnecting Means.]

Disconnecting Means.

A device, or group of devices, or other means by which the conductors of a circuit can be disconnected from their source of supply. A disconnecting means shall not be considered an outlet if part of a listed assembly. (CMP-1)

Statement of Problem and Substantiation for Public Comment

The proposed sentence provides clarity of when the load side of a disconnecting means is not considered an outlet.

Related Item

• PI #1774

Submitter Information Verification

Submitter Full Name: James Stallcup
Organization: Stallcup Electrical Education
Affiliation: Stallcup Electrical Education
Street Address:
City:
State:
Zip:
Submittal Date: Wed Aug 28 17:27:44 EDT 2024
Committee: NEC-P01

Public Comment No. 3-NFPA 70-2024 [Section No. A.1]

A.1

Table A.1(a) Product Safety Standards for Conductors and Equipment That Have an Associated Listing Requirement

Article	Standard Number	Standard Title
110	UL 10C-2016	Positive Pressure Fire Tests of Door Assemblies
	UL 305-2012	Panic Hardware
	UL 486D-2015	Sealed Wire Connector Systems
	UL 2043-2013	Fire Test for Heat and Visible Smoke Release for Discrete Products and Their Accessories Installed in Air-Handling Spaces
	UL 62275-2021	Cable Management Systems — Cable Ties for Electrical Installations
130	UL 60730-1	Automatic Electrical Controls
210	UL 498-2017	Attachment Plugs and Receptacles
	UL 935-2001	Fluorescent-Lamp Ballasts
	UL 943-2016	Ground Fault Circuit Interrupters
	UL 1029-1994	High-Intensity-Discharge Lamp Ballasts
	UL 1699-2017	Arc-Fault Circuit-Interrupters
	UL 1699A-2010	Outlet Branch Circuit Outlet Branch Circuit Arc-Fault Circuit-Interrupters
225	UL 6-2022	Electrical Rigid Metal Conduit — Steel
	UL 6A-2008	Electrical Rigid Metal Conduit — Aluminum, Red Brass and Stainless Steel
	UL 360-2013	Liquid-Tight Flexible Metal Conduit
	UL 651-2011	Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings
	UL 1242-2006	Electrical Intermediate Metal Conduit — Steel
	UL 1660-2019	Liquid-Tight Flexible Nonmetallic Conduit
	UL 2515-2019	Aboveground Reinforced Thermosetting Resin Conduit (RTRC) and Fittings
230	UL 6-2022	Electrical Rigid Metal Conduit — Steel
	UL 6A-2008	Electrical Rigid Metal Conduit — Aluminum, Red Brass and Stainless Steel
	UL 67-2018	Panelboards
	UL 98-2016	Enclosed and Dead-Front Switches
	UL 218-2015	Fire Pump Controllers
	UL 231-2016	Power Outlets
	UL 360-2013	Liquid-Tight Flexible Metal Conduit
	UL 414-2016	Meter Sockets
	UL 486A-486B-2016	Wire Connectors
	UL 486C-2018	Splicing Wire Connectors
	UL 489-2016	Molded-Case Circuit Breakers, Molded-Case Switches and Circuit-Breaker Enclosures
	UL 508-2018	Industrial Control Equipment
	UL 508A-2018	Industrial Control Panels
	UL 514B-2012	Conduit, Tubing and Cable Fittings
	UL 651-2011	Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings
	UL 845-2021	Motor Control Centers

Article	Standard Number	Standard Title
	UL 857-2009	Busways
	UL 869A-2006	Reference Standard for Service Equipment
	UL 891-2019	Switchboards
	UL 977-2012	Fused Power-Circuit Devices
	UL 1008-2014	Transfer Switch Equipment
	UL 1008M-2022	Meter-Mounted Transfer Switches
	UL 1008S-2012	Solid-State Transfer Switches
	UL 1053-2015	Ground-Fault Sensing and Relaying Equipment
	UL 1062-1997	Unit Substations
	UL 1066-2022	Low-Voltage AC and DC Power Circuit Breakers Used in Enclosures
	UL 1242-2006	Electrical Intermediate Metal Conduit — Steel
	UL 1429-2000	Pullout Switches
	UL 1449-2021	Surge Protective Devices
	UL 1558-2016	Metal-Enclosed Low-Voltage Power Circuit Breaker Switchgear
	UL 1660-2019	Liquid-Tight Flexible Nonmetallic Conduit
	UL 1740-2018	Robots and Robotic Equipment
	UL 1953-2020	Power Distribution Blocks
	UL 2011-2022	Machinery
	UL 2200-2012	Stationary Engine Generator Assemblies
	UL 2416-2015	Audio/Video, Information and Communication Technology Equipment Cabinet, Enclosure and Rack Systems
	UL 2446-2004	Unitary Boiler Room Systems
	UL 2565-2013	Industrial Metalworking and Woodworking Machine Tools
	UL 2735-2011	Electric Utility Meters
	UL 2745-2014	Meter Socket Adapters for Communications Equipment
	UL 2876-2022	Remote Racking Devices for Switchgear and Controlgear
	UL 4248-1-2022	Fuseholders — Part 1: General Requirements
	UL 60947-1-2012	Low-Voltage Switchgear and Controlgear — Part 1: General Rules
	UL 61800-5-1-2022	Adjustable Speed Electrical Power Drive Systems — Part 5-1: Safety Requirements — Electrical, Thermal and Energy
240	UL 248-1-2000	Low-Voltage Fuses — Part 1: General Requirements
	UL 248-2-2000	Low-Voltage Fuses — Part 2: Class C Fuses
	UL 248-3-2000	Low-Voltage Fuses — Part 2: Class CA and CB Fuses
	UL 248-4-2000	Low-Voltage Fuses — Part 4: Class CC Fuses
	UL 248-5-2000	Low-Voltage Fuses — Part 5: Class G Fuses
	UL 248-6-2000	Low-Voltage Fuses — Part 6: Class H Non-Renewable Fuses
	UL 248-8-2011	Low-Voltage Fuses — Part 8: Class J Fuses
	UL 248-9-2000	Low-Voltage Fuses — Part 9: Class K Fuses
	UL 248-10-2011	Low-Voltage Fuses — Part 10: Class L Fuses
	UL 248-11-2011	Low-Voltage Fuses — Part 11: Plug Fuses
	UL 248-12-2011	Low-Voltage Fuses — Part 12: Class R Fuses
	UL 248-15-2018	Low-Voltage Fuses — Part 15: Class T Fuses
	UL 248-17-2018	Low-Voltage Fuses — Part 17: Class CF Fuses

Article	Standard Number	Standard Title
	UL 248-18-2022	Low-Voltage Fuses — Part 18: Class CD Fuses
	UL 489-2016	Molded-Case Circuit Breakers, Molded-Case Switches, and Circuit-Breaker Enclosures
	UL 489I-2022	Solid State Molded-Case Circuit Breakers
	UL 943-2016	Ground-Fault Circuit-Interrupters
	UL 1053-2015	Ground-Fault Sensing and Relaying Equipment
	UL 1066-2022	Low-Voltage AC and DC Power Circuit Breakers Used in Enclosures
	UL 4248-1-2022	Fuseholders — Part 1: General Requirements
242	UL 1449-2021	Surge Protective Devices
250	UL 1-2005	Flexible Metal Conduit
	UL 4-2004	Armored Cable
	UL 5-2016	Surface Metal Raceways and Fittings
	UL 6-2022	Electrical Rigid Metal Conduit — Steel
	UL 6A-2008	Electrical Rigid Metal Conduit — Aluminum, Red Brass and Stainless Steel
	UL 153-2014	Portable Electric Luminaires
	UL 360-2013	Liquid-Tight Flexible Metal Conduit
	UL 467-2022	Grounding and Bonding Equipment
	UL 486A-486B-2018	Wire Connectors
	UL 486C-2018	Splicing Wire Connectors
	UL 486D-2015	Sealed Wire Connector Systems
	UL 498-2017	Attachment Plugs and Receptacles
	UL 504-2022	Mineral-Insulated, Metal-Sheathed Cable
	UL 514A-2013	Metallic Outlet Boxes
	UL 514B-2012	Conduit, Tubing, and Cable Fittings
	UL 797-2007	Electrical Metallic Tubing — Steel
	UL 797A-2014	Electrical Metallic Tubing — Aluminum
	UL 1242-2006	Electrical Intermediate Metal Conduit — Steel
	UL 1569-2018	Metal-Clad Cables
	UL 1652-2006	Flexible Metallic Tubing
300	UL 4-2004	Armored Cable
	UL 44-2018	Thermoset-Insulated Wires and Cables
	UL 83-2017	Thermoplastic-Insulated Wires and Cables
	UL 83A-2016	Fluoropolymer Insulated Wire
	UL 263-2011	Fire Tests of Building Construction and Materials
	UL 504-2022	Mineral-Insulated, Metal-Sheathed Cable
	UL 746C-2018	Polymeric Materials — Use in Electrical Equipment Evaluations
	UL 1569-2018	Metal-Clad Cable
	UL 1581-2001	Reference Standard for Electrical Wires, Cables, and Flexible Cords
	UL 2239-2015	Hardware for Support of Conduit, Tubing and Cable
	UL 2556-2021	Wire and Cable Test Methods
	UL 62275-2021	Cable Management Systems — Cable Ties for Electrical Installations
310	UL 44-2018	Thermoset-Insulated Wires and Cables

Article	Standard Number	Standard Title
	UL 83-2017	Thermoplastic-Insulated Wires and Cables
	UL 83A-2016	Fluoropolymer Insulated Wire
	UL 83B	Switchboard and Switchgear Wires and Cables
	UL 224-2021	Extruded Insulating Tubing
	UL 493-2018	Thermoplastic-Insulated Underground Feeder and Branch-Circuit Cables
	UL 854-2020	Service-Entrance Cables
	UL 1063-2017	Machine-Tool Wires and Cables
	UL 1441-2021	Coated Electrical Sleeving
	UL 1581-2021	Reference Standard for Electrical Wires, Cables, and Flexible Cords
312	UL 50-2015	Enclosures for Electrical Equipment
	UL 50E-2020	Enclosures for Electrical Equipment, Environmental Considerations
	UL 514C-2014	Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers
	UL 2808-2020	Energy Monitoring Equipment
	UL 61010-1-2012	Electrical Equipment for Measurement, Control, and Laboratory Use — Part 1: General Requirements
	UL 61010-2-030-2018	Electrical Equipment for Measurement, Control, and Laboratory Use — Part 2-030: Particular Requirements for Testing and Measuring Circuits
314	UL 50-2015	Enclosures for Electrical Equipment
	UL 50E-2020	Enclosures for Electrical Equipment, Environmental Considerations
	UL 486D-2015	Sealed Wire Connector Systems
	UL 498-2017	Attachment Plugs and Receptacles
	UL 498B-2022	Receptacles with Integral Switching Means
	UL 498D-2020	Attachment Plugs, Cord Connectors and Receptacles with Arcuate (Locking Type) Contacts
	UL 498E-2020	Attachment Plugs, Cord Connectors and Receptacles — Enclosure Types for Environmental Protection
	UL 514A-2013	Metallic Outlet Boxes
	UL 514B-2012	Conduit, Tubing, and Cable Fittings
	UL 514C-2014	Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers
	UL 514D-2013	Cover Plates for Flush-Mounted Wiring Devices
	UL 1953-2020	Power Distribution Blocks
315	ANSI C119.4	Electric Connectors — Connectors for Use between Aluminum-to-Aluminum and Aluminum-to-Copper Conductors Designed for Normal Operation at or Below 93ºC and Copper-to-Copper Conductors Designed for Normal Operation at or Below 100ºC
	IEEE 48	IEEE Standard for Test Procedures and Requirements for Alternating-Current Cable Terminations Used on Shielded Cables Having Laminated Insulation Rated 2.5 kV through 765 kV or Extruded Insulation Rated 2.5 kV through 500 kV
	IEEE 386	IEEE Standard for Separable Insulated Connector Systems for Power Distribution Systems Rated 2.5 kV through 35 kV
	IEEE 404	IEEE Standard for Extruded and Laminated Dielectric Shielded Cable Joints Rated 2.5 kV to 500 kV
	UL 4-2004	Armored Cable

Article	Standard Number	Standard Title
	UL 504-2022	Mineral-Insulated, Metal-Sheathed Cable
	UL 1072-2006	Medium Voltage Power Cables
	UL 1569-2018	Metal-Clad Cable
320	UL 4-2004	Armored Cable
	UL 44-2018	Thermoset-Insulated Wires and Cables
	UL 83-2017	Thermoplastic-Insulated Wires and Cables
	UL 83A-2016	Fluoropolymer Insulated Wire
	UL 514B-2012	Conduit, Tubing, and Cable Fittings
	UL 514C-2014	Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers
	UL 1063-2017	Machine-Tool Wires and Cables
	UL 1565-2022	Positioning Devices
	UL 2239-2015	Hardware for the Support of Conduit, Tubing, and Cable
322	UL 486A-486B-2018	Wire Connectors
	UL 498-2017	Attachment Plugs and Receptacles
	UL 514A-2013	Metallic Outlet Boxes
324	UL 486A-486B-2018	Wire Connectors
	UL 498-2017	Attachment Plugs and Receptacles
330	UL 44-2018	Thermoset-Insulated Wires and Cables
	UL 66-2023	Fixture Wire
	UL 83-2017	Thermoplastic-Insulated Wires and Cables
	UL 83A-2016	Fluoropolymer Insulated Wire
	UL 514B-2012	Conduit, Tubing, and Cable Fittings
	UL 1063-2017	Machine-Tool Wires and Cables
	UL 1565-2022	Positioning Devices
	UL 1569-2018	Metal-Clad Cables
	UL 2225-2013	Cables and Cable-Fittings For Use In Hazardous (Classified) Locations
	UL 2239-2015	Hardware for the Support of Conduit, Tubing, and Cable
332	UL 504-2022	Mineral-Insulated, Metal-Sheathed Cable
	UL 514B-2012	Conduit, Tubing and Cable Fittings
334	UL 719-2015	Nonmetallic-Sheathed Cables
	UL 2256-2001	Nonmetallic Sheathed Cable Interconnects
	UL 62275-2021	Cable Management Systems — Cable Ties for Electrical Installations
335	UL 2250-2017	Instrumentation Tray Cable
336	UL 514B-2012	Conduit, Tubing, and Cable Fittings
	UL 1277-2018	Electrical Power and Control Tray Cables with Optional Optical-Fiber Members
	UL 2225-2013	Cables and Cable-Fittings For Use In Hazardous (Classified) Locations
337	UL 1309A-2020	Cable for Use in Mobile Installations
338	UL 514B-2012	Conduit, Tubing, and Cable Fittings
	UL 854-2020	Service-Entrance Cables

Article	Standard Number	Standard Title
340	UL 514B-2012	Conduit, Tubing, and Cable Fittings
	UL 493-2018	Thermoplastic-Insulated Underground Feeder and Branch-Circuit Cables
342	UL 514B-2012	Conduit, Tubing, and Cable Fittings
	UL 1242-2006	Electrical Intermediate Metal Conduit — Steel
344	UL 6-2022	Electrical Rigid Metal Conduit — Steel
	UL 6A-2008	Electrical Rigid Metal Conduit — Aluminum, Red Brass and Stainless Steel
	UL 514B-2012	Conduit, Tubing, and Cable Fittings
348	UL 1-2005	Flexible Metal Conduit
	UL 62275-2021	Cable Management Systems — Cable Ties for Electrical Installations
350	UL 360-2013	Liquid-Tight Flexible Steel Conduit
	UL 514B-2012	Conduit, Tubing, and Cable Fittings
	UL 62275-2021	Cable Management Systems — Cable Ties for Electrical Installations
352	UL 651-2011	Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings
353	UL 651A-2011	Schedule 40 and 80 High Density Polyethylene (HDPE) Conduit
354	UL 1990-2013	Nonmetallic Underground HDPE Conduit with Conductors
355	UL 2420-2009	Belowground Reinforced Thermosetting Resin Conduit (RTRC) and Fittings
	UL 2515-2019	Aboveground Reinforced Thermosetting Resin Conduit (RTRC) and Fittings
	UL 2515A-2011	Supplemental Requirements for Extra-Heavy Wall Reinforced Thermosetting Resin Conduit (RTRC) and Fittings
356	UL 1660-2019	Liquid-Tight Flexible Nonmetallic Conduit
	UL 62275-2021	Cable Management Systems — Cable Ties for Electrical Installations
358	UL 514B-2012	Conduit, Tubing, and Cable Fittings
	UL 797-2007	Electrical Metallic Tubing — Steel
	UL 797A-2014	Electrical Metallic Tubing — Aluminum and Stainless Steel
360	UL 514B-2012	Conduit, Tubing, and Cable Fittings
	UL 1652-2006	Flexible Metallic Tubing
362	UL 1653-2019	Electrical Nonmetallic Tubing
	UL 62275-2021	Cable Management Systems — Cable Ties for Electrical Installations
366	UL 870-2016	Wireways, Auxiliary Gutters, and Associated Fittings
368	UL 509-2015	Bus Drop Cable
370	ANSI/CSA C22.2 No. 273	Cablebus
371	UL 1386-2022	Flexible Bus Systems
	UL 1387-2022	Flexible Insulated Bus
374	UL 209-2011	Cellular Metal Floor Raceways and Fittings
	UL 360-2013	Liquid-Tight Flexible Metal Conduit
	UL 1660-2019	Liquid-Tight Flexible Nonmetallic Conduit
376	UL 870-2016	Wireways, Auxiliary Gutters, and Associated Fittings

Article	Standard Number	Standard Title
	UL 1953-2020	Power Distribution Blocks
378	UL 870-2016	Wireways, Auxiliary Gutters, and Associated Fittings
382	UL 5A-2015	Nonmetallic Surface Raceways and Fittings
	UL183-2009	Manufactured Wiring Systems
	UL 467-2022	Grounding and Bonding Equipment
	UL 498-2017	Attachment Plugs and Receptacles
	UL 498D-2020	Attachment Plugs, Cord Connectors and Receptacles with Arcuate (Locking Type) Contacts
	UL 498E-2020	Attachment Plugs, Cord Connectors and Receptacles — Enclosure Types for Environmental Protection
	UL 498F-2020	Plugs, Socket-Outlets and Couplers with Arcuate (Locking Type) Contacts
	UL 498M-2020	Marine Shore Power Inlets
	UL 514D-2013	Cover Plates for Flush-Mounted Wiring Devices
	UL 746C-2018	Polymeric Materials — Use in Electrical Equipment Evaluations
	UL 943-2016	Ground-Fault Circuit-Interrupters
	UL 991-2004	Tests for Safety-Related Controls Employing Solid-State Devices
	UL 1077-2015	Supplementary Protectors for Use in Electrical Equipment
	UL 1699-2017	Arc-Fault Circuit-Interrupters
	UL 1998-2013	Software in Programmable Components
384	UL 5B-2004	Strut-Type Channel Raceways and Fittings
386	UL 5-2016	Surface Metal Raceways and Fittings
388	UL 5A-2015	Nonmetallic Surface Raceways and Fittings
392	UL 62275-2021	Cable Management Systems — Cable Ties for Electrical Installations
393	UL 13-2015	Power-Limited Circuit Cables
	UL 50-2015	Enclosures for Electrical Equipment, Non-Environmental Considerations
	UL 50E-2020	Enclosures for Electrical Equipment, Environmental Considerations
	UL 514C-2014	Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers
	UL 1310-2018	Class 2 Power Units
	UL 2043-2013	Fire Test for Heat and Visible Smoke Release for Discrete Products and Their Accessories Installed in Air-Handling Spaces
	UL 2577-2013	Suspended Ceiling Power Grid Systems and Equipment
	UL 62368-1-2012	Audio/Video, Information and Communication Technology Equipment — Part 1: Safety Requirements
396	UL 1072-2006	Medium-Voltage Power Cables
404	ANSI/NEMA WD 6–2016	Wiring Devices — Dimensional Specifications
	UL 20-2018	General-Use Snap Switches
	UL 98-2016	Enclosed and Dead-Front Switches
	UL 98A-2014	Open-Type Switches
	UL 363-2011	Knife Switches
	UL 489-2016	Automatic Electrical Controls for Household and Similar Use; Part 2: Particular Requirements for Timers and Time Switches
	UL 773-2016	Plug-In Locking Type Photocontrols for Use with Area Lighting

Article	Standard Number	Standard Title
	UL 773A-2016	Nonindustrial Photoelectric Switches for Lighting Control
	UL 917-2006	Clock-Operated Switches
	UL 977-2012	Fused Power-Circuit Devices
	UL 1066-2022	Low-Voltage AC and DC Power Circuit Breakers Used in Enclosures
	UL 1472-2015	Solid-State Dimming Controls
	UL 1429-2000	Pullout Switches
	UL 60730-1-2016	Automatic Electrical Controls — Part 1: General Requirements
	UL 60730-2-2020	Automatic Electrical Controls for Household and Similar Use; Part 2: Particular Requirements for Timers and Time Switches
	UL 60730-2-7-2014	Automatic Electrical Controls for Household and Similar Use; Part 2: Particular Requirements for Timers and Time Switches
406	UL 498-2017	Attachment Plugs and Receptacles
	UL 498B-2022	Receptacles with Integral Switching Means
	UL 498D-2020	Attachment Plugs, Cord Connectors and Receptacles with Arcuate (Locking Type) Contacts
	UL 498E-2020	Attachment Plugs, Cord Connectors and Receptacles — Enclosure Types for Environmental Protection
	UL 498F-2020	Plugs, Socket-Outlets and Couplers with Arcuate (Locking Type) Contacts
	UL 498M-2020	Marine Shore Power Inlets
	UL 514A-2013	Metallic Outlet Boxes
	UL 514C-2014	Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers
	UL 514D-2013	Cover Plates for Flush-Mounted Wiring Devices
	UL 943-2016	Ground-Fault Circuit-Interrupters
	UL 943B-2017	Appliance Leakage-Current Interrupters
	UL 943C-2012	Special Purpose Ground-Fault Circuit-Interrupters
	UL 970-2020	Retail Fixtures and Merchandising Displays
	UL 1053-2015	Ground-Fault Sensing and Relaying Equipment
		See 406.4(D)(8)
	UL 1286-2022	Office Furnishings Systems
	UL 1310-2018	Class 2 Power Units
	UL 1682-2017	Plugs, Receptacles, and Cable Connectors, of the Pin and Sleeve Type
	UL 1691-2021	Single Pole Locking-Type Separable Connectors
	UL 1699-2017	Arc-Fault Circuit-Interrupters
	UL 1699A-2010	Outlet Branch Circuit AFCIs
		See 406.4(D)(4)(1)
	UL 2999-2020	Individual Commercial Office Furnishings
408	UL 44-2018	Thermoset-Insulated Wires and Cables
	UL 67-2018	Panelboards
	UL 891-2019	Switchboards
	UL 1558-2016	Metal-Enclosed Low-Voltage Power Circuit Breaker Switchgear
409	UL 508-2018	Industrial Control Equipment
	UL 508A-2018	Industrial Control Panels

Article	Standard Number	Standard Title
410	ANSI/CSA-C22.2 No. 184.2	Solid-State Controls for Lighting Systems (SSCLS)
	UL 153-2014	Portable Electric Luminaires
	UL 496-2017	Lampholders
	UL 498-2017	Attachment Plugs and Receptacles
	UL 498B-2022	Receptacles with Integral Switching Means
	UL 498D-2020	Attachment Plugs, Cord Connectors and Receptacles with Arcuate (Locking Type) Contacts
	UL 498E-2020	Attachment Plugs, Cord Connectors and Receptacles — Enclosure Types for Environmental Protection
	UL 498F-2020	Plugs, Socket-Outlets and Couplers with Arcuate (Locking Type) Contacts
	UL 542-2005	Fluorescent Lamp Starters
	UL 588-2015	Seasonal and Holiday Decorative Products
	UL 935-2001	Fluorescent-Lamp Ballasts
	UL 943-2016	Ground-Fault Circuit-Interrupters
	UL 970-2020	Retail Fixtures and Merchandising Displays
	UL 1029-1994	High-Intensity-Discharge Lamp Ballasts
	UL 1029A-2006	Ignitors and Related Auxiliaries for HID Lamp Ballasts
	UL 1574-2004	Track Lighting Systems
	UL 1598-2008	Luminaires
	UL 1598B-2000	Luminaire Reflector Kits for Installation on Previously Installed Fluorescent Luminaires, Supplemental Requirements
	UL 1598C-2014	Light-Emitting Diode (LED) Retrofit Luminaire Conversion Kits
	UL 1993-2017	Self-Ballasted Lamps and Lamp Adapters
	UL 2388-2017	Flexible Lighting Products
	UL 8750-2015	Light Emitting Diode (LED) Equipment for Use in Lighting Products
	UL 8752-2012	Organic Light Emitting Diode (OLED) Panels
	UL 8753-2013	Field-Replaceable Light Emitting Diode (LED) Light Engines
	UL 8754-2013	Holders, Bases and Connectors for Solid-State (LED) Light Engines and Arrays
	UL 8800-2019	Horticultural Lighting Equipment and Systems
411	UL 1310-2018	Class 2 Power Units
	UL 1838-2003	Low-Voltage Landscape Lighting Systems
	UL 2108-2015	Low-Voltage Lighting Systems
	UL 5085-3-2006	Low Voltage Transformers — Part 3: Class 2 and Class 3 Transformers
422	ANSI/CSA-C22.2 No. 339	Hand-held motor-operated electric tools — Safety — Particular requirements for chain beam saws
	UL 22-2008	Amusement and Gaming Machines
	UL 73-2011	Motor-Operated Appliances
	UL 82-2017	Electric Gardening Appliances
	UL 122-2007	Photographic Equipment
	UL 141-2011	Garment Finishing Appliances
	UL 174-2004	Household Electric Storage Tank Water Heaters
	UL 197-2010	Commercial Electric Cooking Appliances

Article	Standard Number	Standard Title
	UL 283-2015	Air Fresheners and Deodorizers
	UL 399-2017	Drinking Water Coolers
	UL 430-2015	Waste Disposers
	UL 498-2017	Attachment Plugs and Receptacles
	UL 498D-2020	Attachment Plugs, Cord Connectors and Receptacles with Arcuate (Locking Type) Contacts
	UL 498E-2020	Attachment Plugs, Cord Connectors and Receptacles — Enclosure Types for Environmental Protection
	UL 498F-2020	Plugs, Socket-Outlets and Couplers with Arcuate (Locking Type) Contacts
	UL 499-2014	Electric Heating Appliances
	UL 507-2017	Electric Fans
	UL 514A-2013	Metallic Outlet Boxes
	UL 515-2015	Electrical Resistance Trace Heating for Commercial Applications
	UL 561-2011	Floor Finishing Machines
	UL 574-2003	Electric Oil Heaters
	UL 621-2010	Ice Cream Makers
	UL 705-2017	Power Ventilators
	UL 710B-2011	Recirculating Systems
	UL 749-2017	Household Dishwashers
	UL 751-2016	Vending Machines
	UL 763-2018	Motor-Operated Commercial Food Preparing Machines
	UL 778-2016	Motor-Operated Water Pumps
	UL 834-2004	Heating, Water Supply, and Power Boilers — Electric
	UL 858-2014	Household Electric Ranges
	UL 859	Household Electric Personal Grooming Appliances
	UL 875-2009	Electric Dry-Bath Heaters
	UL 921-2020	Commercial Dishwashers
	UL 923-2013	Microwave Cooking Appliances
	UL 943-2016	Ground-Fault Circuit-Interrupters
	UL 962-2014	Household and Commercial Furnishings
	UL 962A-2018	Furniture Power Distribution Units
	UL 979-2016	Water Treatment Appliances
	UL 982-2019	Motor-Operated Household Food Preparing Machines
	UL 987-2011	Stationary and Fixed Electric Tools
	UL 1017-2017	Vacuum Cleaners, Blower Cleaners, and Household Floor Finishing Machines
	UL 1026-2012	Household Electric Cooking and Food Serving Appliances
	UL 1086-2016	Household Trash Compactors
	UL 1090-2016	Electric Snow Movers
	UL 1206-2003	Electric Commercial Clothes-Washing Equipment
	UL 1240-2005	Electric Commercial Clothes-Drying Equipment
	UL 1278-2014	Movable and Wall- or Ceiling-Hung Electric Room Heaters
	UL 1447-2017	Electric Lawn Mowers

Article	Standard Number	Standard Title
	UL 1450-2010	Motor-Operated Air Compressors, Vacuum Pumps, and Painting Equipment
	UL 1453-2016	Electric Booster and Commercial Storage Tank Water Heaters
	UL 1576-2022	Flashlights and Lanterns
	UL 1594-2008	Sewing and Cutting Machines
	UL 1647-2015	Motor-Operated Massage and Exercise Machines
	UL 1727-2012	Commercial Electric Personal Grooming Appliances
	UL 1776-2002	High-Pressure Cleaning Machines
	UL 2157-2015	Electric Clothes Washing Machines and Extractors
	UL 2158-2018	Electric Clothes Dryers
	UL 2565-2013	Industrial Metalworking and Woodworking Machine Tools
	UL 60335-2-3-2004	Household and Similar Electrical Appliances, Part 2: Particular Requirements for Electric Irons
	UL 60335-2-8-2018	Household and Similar Electrical Appliances, Part 2: Particular Requirements for Shavers, Hair Clippers, and Similar Appliances
	UL 60335-2-24-2017	Household and Similar Electrical Appliances, Part 2: Particular Requirements for Refrigerating Appliances, Ice-Cream Appliances, and Ice-Makers
	UL 60335-2-40-2019	Household and Similar Electrical Appliances, Part 2: Particular Requirements for Electrical Heat Pumps, Air-Conditioners and Dehumidifiers
	UL 60335-2-67-2017	Household and Similar Electrical Appliances — Safety — Part 2-67: Particular Requirements for Floor Treatment Machines, For Commercial Use
	UL 60335-2-68-2020	Household and Similar Electrical Appliances — Safety — Part 2-68: Particular Requirements for Spray Extraction Machines, for Commercial Use
	UL 60335-2-79-2016	Household and Similar Electrical Appliances — Safety — Part 2-79: Particular Requirements for High Pressure Cleaners and Steam Cleaners
	UL 60730-2-9-2010	Automatic Electrical Controls; Part 2: Particular Requirements for Temperature Sensing Controls
	UL 60745-1-2007	Hand-Held Motor-Operated Electric Tools — Safety — Part 1: General Requirements
	UL 60745-2-1-2004	Hand-Held Motor-Operated Electric Tools — Safety — Part 2-1: Particular Requirements for Drills and Impact Drills
	UL 60745-2-2-2004	Hand-Held Motor-Operated Electric Tools — Safety — Part 2-2: Particular Requirements for Screwdrivers and Impact Wrenches
	UL 60745-2-3-2007	Hand-Held Motor-Operated Electric Tools — Safety — Part 2-3: Particular Requirements for Grinders, Polishers, and Disk-Type Sanders
	UL 60745-2-4-2004	Hand-Held Motor-Operated Electric Tools — Safety — Part 2-4: Particular Requirements for Sanders and Polishers Other Than Disk Type
	UL 60745-2-5-2012	Hand-Held Motor-Operated Electric Tools — Safety — Part 2-5: Particular Requirements for Circular Saws
	UL 60745-2-6-2004	Hand-Held Motor-Operated Electric Tools — Safety — Part 2-6: Particular Requirements for Hammers

Article	Standard Number	Standard Title
	UL 60745-2-8-2004	Hand-Held Motor-Operated Electric Tools — Safety — Part 2-8: Particular Requirements for Shears and Nibblers
	UL 60745-2-9-2004	Hand-Held Motor-Operated Electric Tools — Safety — Part 2-9: Particular Requirements for Tappers
	UL 60745-2-11-2004	Hand-Held Motor-Operated Electric Tools — Safety — Part 2-11: Particular Requirements for Reciprocating Saws
	UL 60745-2-12-2005	Hand-Held Motor-Operated Electric Tools — Safety — Part 2-12: Particular Requirements For Concrete Vibrators
	UL 60745-2-13-2011	Hand-Held Motor-Operated Electric Tools — Safety — Part 2-13: Particular Requirements For Chain Saws
	UL 60745-2-14-2004	Hand-Held Motor-Operated Electric Tools — Safety — Part 2-14: Particular Requirements for Planers
	UL 60745-2-15-2010	Hand-Held Motor-Operated Electric Tools — Safety — Part 2-15: Particular Requirements for Hedge Trimmers
	UL 60745-2-16-2009	Hand-Held Motor-Operated Electric Tools — Safety — Part 2-16: Particular Requirements for Tackers
	UL 60745-2-17-2011	Hand-Held Motor-Operated Electric Tools — Safety — Part 2-17: Particular Requirements for Routers and Trimmers
	UL 60745-2-18-2005	Hand-Held Motor-Operated Electric Tools — Safety — Part 2-18: Particular Requirements For Strapping Tools
	UL 60745-2-19-2005	Hand-Held Motor-Operated Electric Tools — Safety — Part 2-19: Particular Requirements for Jointers
	UL 60745-2-20-2005	Hand-Held Motor-Operated Electric Tools — Safety — Part 2-20: Particular Requirements for Band Saws
	UL 60745-2-21-2005	Hand-Held Motor-Operated Electric Tools — Safety — Part 2-21: Particular Requirements For Drain Cleaners
	UL 60745-2-22-2012	Hand-Held Motor-Operated electric Tools — Safety — Part 2-22: Particular Requirements for Cut-Off Machines
	UL 60745-2-23-2013	Hand-Held Motor-Operated electric Tools — Safety — Part 2-23: Particular Requirements for Die Grinders and Small Rotary Tools
	UL 62841-1-2015	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 1: General Requirements
	UL 62841-2-1-2018	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 2-1: Particular Requirements For Hand-Held Drills and Impact Drills
	UL 62841-2-2-2016	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 2-2: Particular Requirements For Screwdrivers And Impact Wrenches
	UL 62841-2-3-2021	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 2-3: Particular Requirements For Hand-Held Grinders, Polishers, and Disk-Type Sanders
	UL 62841-2-4-2015	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 2-4: Particular Requirements For Hand-Held Sanders And Polishers Other Than Disc Type
	UL 62841-2-5-2016	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 2-5: Particular Requirements For Hand-Held Circular Saws

Article	Standard Number	Standard Title
	UL 62841-2-8-2016	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 2-8: Particular Requirements For Hand-Held Shears and Nibblers
	UL 62841-2-9-2016	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 2-9: Particular Requirements For Hand-Held Tappers And Threaders
	UL 62841-2-10-2017	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 2-10: Particular Requirements For Hand-Held Mixers
	UL 62841-2-11-2017	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 2-11: Particular Requirements for Hand-Held Reciprocating Saws
	UL 62841-2-14-2016	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 2-14: Particular Requirements For Hand-Held Planers
	UL 62841-2-17-2018	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 2-17: Particular Requirements For Hand-Held Routers
	UL 62841-2-21-2018	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 2-21: Particular Requirements For Hand-Held Drain Cleaners
	UL 62841-3-1-2016	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 3-1: Particular Requirements For Transportable Table Saws
	UL 62841-3-4-2016	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 3-4: Particular Requirements for Transportable Bench Grinders
	UL 62841-3-6-2016	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 3-6: Particular Requirements For Transportable Diamond Drills with Liquid System
	UL 62841-3-9-2021	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 3-9: Particular Requirements For Transportable Mitre Saws
	UL 62841-3-10-2016	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 3-10: Particular Requirements for Transportable Cut-Off Machines
	UL 62841-3-12-2019	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 3-12: Particular Requirements for Transportable Threading Machines
	UL 62841-3-13-2018	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 3-13: Particular Requirements For Transportable Drills
	UL 62841-3-14-2019	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 3-14: Particular Requirements for Transportable Drain Cleaners
	UL 62841-3-1000-2019	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 3-1000: Particular Requirements for Transportable Laser Engravers
	UL 62841-4-1-2020	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 4-1: Particular Requirements for Chain Saws
	UL 62841-4-2-2019	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 4-2: Particular

Article	Standard Number	Standard Title
		Requirements for Hedge Trimmers
	UL 62841-4-1000-2020	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 4-1000: Particular Requirements For Utility Machines
424	UL 499-2014	Electric Heating Appliances
	UL 1042-2009	Electric Baseboard Heating Equipment
	UL 1673-2010	Electric Space Heating Cables
	UL 1693-2010	Electric Radiant Heating Panels and Heating Panel Sets
	UL 1995-2015	Heating and Cooling Equipment
	UL 1996-2009	Electric Duct Heaters
	UL 2021-2015	Fixed and Location-Dedicated Electric Room Heaters
	UL 2683-2020	Electric Heating Products for Floor and Ceiling Installation
425	UL 508-2018	Industrial Control Equipment
	UL 2021-2015	Fixed and Location-Dedicated Electric Room Heaters
426	IEEE 515	Testing, Design, Installation and Maintenance of Electrical Resistance Trace Heating for Industrial Applications
	UL 1588-2002	Roof and Gutter De-Icing Cable Units
	UL 2049-2006	Residential Pipe Heating Cable
427	IEEE 515	Testing, Design, Installation and Maintenance of Electrical Resistance Trace Heating for Industrial Applications
	UL 515-2015	Electrical Resistance Heat Tracing for Commercial Applications
	UL 2049-2006	Residential Pipe Heating Cable
430	UL 4-2004	Armored Cable
	UL 98-2016	Enclosed and Dead-Front Switches
	UL 489-2016	Molded-Case Circuit Breakers, Molded-Case Switches and Circuit-Breaker Enclosures
	UL 508-2018	Industrial Control Equipment
	UL 705-2017	Power Ventilators
	UL 745-1-2007	Portable Electric Tools
	UL 845-2021	Motor Control Centers
	UL 987-2011	Stationary and Fixed Electric Tools
	UL 1004-1-2012	Rotating Electrical Machines — General Requirements
	UL 1004-2-2014	Impedance Protected Motors
	UL 1004-3-2015	Thermally Protected Motors
	UL 1004-6-2012	Servo and Stepper Motors
	UL 1004-7-2018	Electronically Protected Motors
	UL 1004-8-2013	Inverter Duty Motors
	UL 1004-9-2016	Form Wound and Medium Voltage Rotating Electrical Machines
	UL 1066-2022	Low-Voltage AC and DC Power Circuit Breakers Used in Enclosures
	UL 1569-2018	Metal Clad Cables
	UL 1812-2013	Ducted Heat Recovery Ventilators
	UL 1815-2012	Nonducted Heat Recovery Ventilators
	UL 2565-2013	Industrial Metalworking and Woodworking Machine Tools

Article	Standard Number	Standard Title
	UL 60034-1-2018	Rotating Electrical Machines — Part 1: Rating and Performance
	UL 60335-2-40-2019	Household and Similar Electrical Appliances — Part 2: Particular Requirements for Electrical Heat Pumps, Air-Conditioners and Dehumidifiers
	UL 60730-2-22-2017	Automatic Electrical Controls — Part 2: Particular Requirements for Thermal Motor Protectors
	UL 60745-1-2007	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 1: General Requirements
	UL 60745-2-1-2004	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 2-1: Particular Requirements For Hand-Held Drills and Impact Drills
	UL 60745-2-2-2004	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 2-2: Particular Requirements For Screwdrivers And Impact Wrenches
	UL 60745-2-3-2007	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 2-3: Particular Requirements For Hand-Held Grinders, Polishers, and Disk-Type Sanders
	UL 60745-2-4-2004	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 2-4: Particular Requirements For Hand-Held Sanders And Polishers Other Than Disc Type
	UL 60745-2-5-2012	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 2-5: Particular Requirements For Hand-Held Circular Saws
	UL 60745-2-8-2004	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 2-8: Particular Requirements For Hand-Held Shears and Nibblers
	UL 60947-1-2022	Low-Voltage Switchgear and Controlgear — Part 1: General Rules
	UL 60947-4-1-2022	Low-Voltage Switchgear and Controlgear — Part 4-1: Contactors and Motor-Starters — Electromechanical Contactors and Motor-Starters
	UL 60947-4-2-2022	Low-Voltage Switchgear and Controlgear — Part 4-2: Contactors and Motor-Starters — AC Semiconductor Motor Controllers and Starters
	UL 60947-5-1-2022	Low-Voltage Switchgear and Controlgear — Part 5-1: Control Circuit Devices and Switching Elements — Electromechanical Control Circuit Devices
	UL 60947-5-2-2022	Low-Voltage Switchgear and Controlgear — Part 5-2: Control Circuit Devices and Switching Elements — Proximity Switches
	UL 61800-5-1-2012	Adjustable Speed Electrical Power Drive Systems — Part 5-1: Safety Requirements — Electrical, Thermal and Energy
	UL 62841-2-9-2016	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 2-9: Particular Requirements For Hand-Held Tappers And Threaders
	UL 62841-2-10-2017	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 2-10: Particular Requirements For Hand-Held Mixers
	UL 62841-2-11-2017	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 2-11: Particular Requirements for Hand-Held Reciprocating Saws

Article	Standard Number	Standard Title
	UL 62841-2-14-2016	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 2-14: Particular Requirements For Hand-Held Planers
	UL 62841-2-17-2018	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 2-17: Particular Requirements For Hand-Held Routers
	UL 62841-2-21-2018	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 2-21: Particular Requirements For Hand-Held Drain Cleaners
	UL 62841-3-1-2016	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 3-1: Particular Requirements For Transportable Table Saws
	UL 62841-3-4-2016	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 3-4: Particular Requirements for Transportable Bench Grinders
	UL 62841-3-6-2016	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 3-6: Particular Requirements For Transportable Diamond Drills with Liquid System
	UL 62841-3-9-2021	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 3-9: Particular Requirements For Transportable Mitre Saws
	UL 62841-3-10-2016	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 3-10: Particular requirements for Transportable Cut-Off Machines
	UL 62841-3-12-2019	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 3-12: Particular requirements for Transportable Threading Machines
	UL 62841-3-13-2018	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 3-13: Particular Requirements For Transportable Drills
	UL 62841-3-14-2019	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 3-14: Particular requirements for Transportable Drain Cleaners
	UL 62841-3-1000-2019	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 3-1000: Particular Requirements for Transportable Laser Engravers
	UL 62841-4-1-2020	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 4-1: Particular Requirements for Chain Saws
	UL 62841-4-2-2019	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 4-2: Particular Requirements for Hedge Trimmers
	UL 62841-4-1000-2020	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 4-1000: Particular Requirements For Utility Machines
440	UL 98-2016	Enclosed and Dead-Front Switches
	UL 416-1993	Refrigerated Medical Equipment
	UL 484-2014	Room Air Conditioners
	UL 489-2016	Molded-Case Circuit Breakers, Molded-Case Switches and Circuit-Breaker Enclosures
	UL 508-2018	Industrial Control Equipment
	UL 541-2016	Refrigerated Vending Machines

Article	Standard Number	Standard Title
	UL 563-2009	Ice Makers
	UL 1429-2000	Pullout Switches
	UL 1995-2015	Heating and Cooling Equipment
	UL 60335-2-24-2017	Household and Similar Electrical Appliances, Part 2: Particular Requirements for Refrigerating Appliances, Ice-Cream Appliances and Ice-Makers
	UL 60335-2-40-2019	Household and Similar Electrical Appliances, Part 2: Particular Requirements for Electrical Heat Pumps, Air-Conditioners and Dehumidifiers
	UL 60335-2-89-2017	Household and Similar Electrical Appliances — Safety — Part 2-89: Particular Requirements for Commercial Refrigerating Appliances with an Incorporated or Remote Refrigerant Unit or Compressor
	UL 60947-4-1-2022	Low-Voltage Switchgear and Controlgear — Part 4-1: Contactors and Motor-Starters — Electromechanical Contactors and Motor-Starters
	UL 60947-4-2-2022	Low-Voltage Switchgear and Controlgear — Part 4-2: Contactors and Motor-Starters — AC Semiconductor Motor Controllers and Starters
	UL 61800-5-1-2012	Adjustable Speed Electrical Power Drive Systems — Part 5-2: Safety Requirements — Functional
445	UL 508-2018	Industrial Control Equipment
	UL 943-2016	Ground-Fault Circuit-Interrupters
	UL 943C-2012	Special Purpose Ground-Fault Circuit-Interrupters
	UL 1004-4-2018	Electric Generators
	UL 1741-2021	Inverters, Converters, Controllers, and Interconnection System Equipment for Use With Distributed Energy Resources
	UL 2200-2012	Stationary Engine Generator Assemblies
450	UL 10C-2016	Positive Pressure Fire Tests of Door Assemblies
	UL 305-2012	Panic Hardware
	UL 340-2017	Tests for Comparative Flammability of Liquids
	UL 60730-2-14-2013	Automatic Electrical Controls; Part 2: Particular Requirements for Electric Actuators
480	UL 10C-2016	Positive Pressure Fire Tests of Door Assemblies
	UL 305-2012	Panic Hardware
	UL 1642-2020	Lithium Batteries
	UL 1973-2022	Batteries for Use in Stationary, Vehicle Auxiliary Power and Light Electric Rail (LER) Applications
	UL 1989-2013	Standby Batteries
	UL 2054-2021	Household and Commercial Batteries
	UL 4127-2014	Low Voltage Battery Cable
	UL 4128-2020	Intercell and Intertier Connectors for use in Electrochemical Battery System Applications
490	UL 347-2020	Medium-Voltage AC Contactors, Controllers, and Control Centers
	UL 347A-2021	Medium Voltage Power Conversion Equipment
	UL 347C-2014	Medium Voltage Solid State Resistive Load Controllers, Up to 15kV
	UL 1008A-2017	Transfer Switch Equipment, Over 1000 Volts

Article	Standard Number	Standard Title
500	FM 121303	Guide for Use of Detectors for Flammable Gases
	IEEE 844.1	Skin Effect Trace Heating of Pipelines, Vessels, Equipment, and Structures — General, Testing, Marking, and Documentation Requirements
	IEEE 1349	Guide for the Application of Electric Machines in Zone 2 and Class I, Division 2 Hazardous (Classified) Locations
	NFPA 33-2024	Standard for Spray Application Using Flammable or Combustible Materials
	NFPA 34-2024	Standard for Dipping, Coating, and Printing Processes Using Flammable or Combustible Liquids
	NFPA 496-2024	Standard for Purged and Pressurized Enclosures for Electrical Equipment
	UL 674-2022	Electric Motors and Generators for Use in Hazardous (Classified) Locations
	UL 698A-2018	Industrial Control Panels Relating to Hazardous (Classified) Locations
	UL 783-2003	Electric Flashlights and Lanterns for Use in Hazardous (Classified) Locations
	UL 823-2006	Electric Heaters For Use in Hazardous (Classified) Locations
	UL 844-2012	Electric Heaters For Use in Hazardous (Classified) Locations
	UL 913-1997	Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III, Division 1, Hazardous (Classified) Locations
	UL 1203-2013	Explosionproof and Dust-Ignition-Proof Electrical Equipment for Use in Hazardous (Classified) Locations
	UL 1389-2019	Plant Oil Extraction Equipment for Installation and Use in Ordinary (Unclassified) Locations and Hazardous (Classified) Locations
	UL 1836-2022	Electric Motors and Generators for Use in Class I, Division 2, Class I, Zone 2, Class II, Division 2 and Zone 22 Hazardous (Classified) Locations
	UL 2225-2013	Cable and Cable Fittings for Use in Hazardous (Classified) Locations
	UL 60079-28-2017	Explosive Atmospheres — Part 28: Protection of Equipment and Transmission Systems Using Optical Radiation.
	UL 60079-29-1-2019	Explosive Atmospheres — Part 29-1: Gas Detectors — Performance Requirements of Detectors for Flammable Gases
	UL 60079-29-4-2018	Explosive Atmospheres — Part 29-4: Gas Detectors — Performance Requirements of Open Path Detectors for Flammable Gases
	UL 60079-30-1-2017	Explosive Atmospheres — Electrical Resistance Trace Heating — General and Testing Requirements
	UL 60079-33-2021	Explosive Atmospheres — Part 33: Equipment Protection by Special Protection “s”
	UL 121201-2017	Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations
	UL 121303-2020	Guide for Use of Detectors for Flammable Gases
	UL 122001-2014	General Requirements for Electrical Ignition Systems for Internal Combustion Engines in Class I, Division 2 or Zone 2, Hazardous (Classified) Locations
	UL 122701-2022	Requirements for Process Sealing Between Electrical Systems and Flammable or Combustible Process Fluids

Article	Standard Number	Standard Title
501	IEEE 844.1	Skin Effect Trace Heating of Pipelines, Vessels, Equipment, and Structures — General, Testing, Marking, and Documentation Requirements
	IEEE 1349	Guide for the Application of Electric Machines in Zone 2 and Class I, Division 2 Hazardous (Classified) Locations
	NFPA 496-2024	Standard for Purged and Pressurized Enclosures for Electrical Equipment
	UL 674-2022	Electric Motors and Generators for Use in Hazardous (Classified) Locations
	UL 783-2003	Electric Flashlights and Lanterns for Use in Hazardous (Classified) Locations
	UL 823-2006	Electric Heaters For Use in Hazardous (Classified) Locations
	UL 844-2012	Luminaires for Use in Hazardous (Classified) Locations
	UL 1072-2006	Medium-Voltage Power Cables
	UL 1203-2013	Explosionproof and Dust-Ignition-Proof Electrical Equipment for Use in Hazardous (Classified) Locations
	UL 1277-2018	Electrical Power and Control Tray Cables with Optional Optical-Fiber Members
	UL 1309A-2020	Cable for Use in Mobile Applications
	UL 1836-2022	Electric Motors and Generators for Use in Class I, Division 2, Class I, Zone 2, Class II, Division 2 and Zone 22 Hazardous (Classified) Locations
	UL 2225-2013	Cable and Cable-Fittings for Use in Hazardous (Classified) Locations
	UL 60079-28-2017	Explosive Atmospheres — Part 28: Protection of Equipment and Transmission Systems Using Optical Radiation
	UL 60079-29-1-2019	Explosive Atmospheres — Part 29-1: Gas Detectors — Performance Requirements of Detectors for Flammable Gases
	UL 60079-29-4-2018	Explosive Atmospheres — Part 29-4: Gas Detectors — Performance Requirements of Open Path Detectors for Flammable Gases
	UL 60079-30-1-2017	Explosive Atmospheres — Part 30-1: Electrical Resistance Trace Heating — General and Testing Requirements
	UL 60079-33-2021	Explosive Atmospheres — Part 33: Equipment Protection by Special Protection “s”
	UL 121201-2017	Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations
	UL 122001-2014	General Requirements for Electrical Ignition Systems for Internal Combustion Engines in Class I, Division 2 or Zone 2, Hazardous (Classified) Locations
	UL 122701-2022	Requirements for Process Sealing Between Electrical Systems and Flammable or Combustible Process Fluids
502	IEEE 844.1	Skin Effect Trace Heating of Pipelines, Vessels, Equipment, and Structures — General, Testing, Marking, and Documentation Requirements
	NFPA 496-2024	Standard for Purged and Pressurized Enclosures for Electrical Equipment
	UL 674-2022	Electric Motors and Generators for Use in Hazardous (Classified) Locations

Article	Standard Number	Standard Title
	UL 783-2003	Electric Flashlights and Lanterns for Use in Hazardous (Classified) Locations
	UL 823-2006	Electric Heaters For Use in Hazardous (Classified) Locations
	UL 844-2012	Luminaires for Use in Hazardous (Classified) Locations
	UL 1203-2013	Explosionproof and Dust-Ignition-Proof Electrical Equipment for Use in Hazardous (Classified) Locations
	UL 1309A-2020	Cable for Mobile Installations
	UL 1836-2022	Outline of Investigation for Electric Motors and Generators for Use in Class I, Division 2, Class I, Zone 2, Class II, Division 2 and Zone 22 Hazardous (Classified) Locations
	UL 2225-2013	Cable and Cable-Fittings for Use in Hazardous (Classified) Locations
	UL 60079-28-2017	Explosive Atmospheres — Part 28: Protection of Equipment and Transmission Systems Using Optical Radiation
	UL 60079-30-1-2017	Explosive Atmospheres — Electrical Resistance Trace Heating — General and Testing Requirements
	UL 60079-33-2021	Explosive Atmospheres — Part 33: Equipment Protection by Special Protection “s”
	UL 121201-2017	Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations
503	IEEE 844.1	Skin Effect Trace Heating of Pipelines, Vessels, Equipment, and Structures — General, Testing, Marking, and Documentation Requirements
	UL 823-2006	Electric Heaters For Use in Hazardous (Classified) Locations
	UL 844-2012	Luminaires for Use in Hazardous (Classified) Locations
	UL 1836-2022	Electric Motors and Generators for Use in Class I, Division 2, Class I, Zone 2, Class II, Division 2 and Zone 22 Hazardous (Classified) Locations
	UL 60079-30-1-2017	Explosive Atmospheres — Electrical Resistance Trace Heating — General and Testing Requirements
	UL 121201-2017	Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations
504	UL 698A-2018	Industrial Control Panels Relating to Hazardous (Classified) Locations
	UL 913-1997	Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III, Division 1, Hazardous (Classified) Locations
	UL 120202-2014	Recommendations for the Preparation, Content, and Organization of Intrinsic Safety Control Drawings
505	FM 121303	Guide for Use of Detectors for Flammable Gases
	IEEE 844.1	Skin Effect Trace Heating of Pipelines, Vessels, Equipment, and Structures — General, Testing, Marking, and Documentation Requirements
	IEEE 1349	Guide for the Application of Electric Machines in Zone 2 and Class I, Division 2 Hazardous (Classified) Locations
	UL 1309A-2020	Cable for Mobile Installations
	UL 2225-2013	Cable and Cable-Fittings for Use in Hazardous (Classified) Locations
	UL 60079-0-2013	Explosive Atmospheres — Part 0: Equipment — General Requirements

Article	Standard Number	Standard Title
	UL 60079-1-2015	Explosive Atmospheres — Part 1: Equipment Protection by Flameproof Enclosures “d”
	UL 60079-2-2017	Explosive Atmospheres — Part 2: Equipment protection by pressurized enclosure “p”
	UL 60079-5-2016	Explosive Gas Atmospheres — Part 5: Type of Protection — Powder Filling “q”
	UL 60079-6-2016	Explosive Atmospheres — Part 6: Equipment Protection by Liquid Immersion “o”
	UL 60079-7-2008	Explosive Atmospheres — Part 7: Equipment Protection by Increased Safety “e”
	UL 60079-10-1	Explosive Atmospheres — Part 10-1: Classification of Areas — Explosive Gas Atmospheres
	UL 60079-11-2013	Explosive Atmospheres — Part 11: Equipment Protection by Intrinsic Safety “i”
	UL 60079-13-2022	Explosive Atmospheres — Part 13: Equipment Protection by Pressurized Room “p” and Artificially Ventilated Room “v”
	UL 60079-15-2013	Explosive Atmospheres — Part 15: Equipment Protection by Type of Protection “n”
	UL 60079-18-2015	Explosive Atmospheres — Part 18: Equipment Protection by Encapsulation “m”
	UL 60079-25-2011	Explosive Atmospheres — Part 25: Intrinsically Safe Electrical Systems
	UL 60079-26-2017	Explosive Atmospheres — Part 26: Equipment with Equipment Protection Level (EPL) Ga
	UL 60079-28-2017	Explosive Atmospheres — Part 28: Protection of Equipment and Transmission Systems Using Optical Radiation
	UL 60079-29-1-2019	Explosive Atmospheres — Part 29-1: Gas Detectors — Performance Requirements of Detectors for Flammable Gases
	UL 60079-29-4-2018	Explosive Atmospheres — Part 29-4: Gas Detectors — Performance Requirements of Open Path Detectors for Flammable Gases
	UL 60079-30-1-2017	Explosive Atmospheres — Part 30-1: Electrical Resistance Trace Heating — General and Testing Requirements
	UL 60079-33-2021	Explosive Atmospheres — Part 33: Equipment Protection by Special Protection “s”
	UL 80079-36-2021	Explosive Atmospheres — Part 36: Non-Electrical Equipment for Explosive Atmospheres — Basic Method and Requirements
	UL 80079-37-2021	Explosive Atmospheres — Part 37: Non-Electrical Equipment for Explosive Atmospheres — Non Electrical Type of Protection Constructional Safety “c”, Control of Ignition Source “b”, Liquid Immersion “k”
	UL 121303-2020	Guide for Use of Detectors for Flammable Gases
	UL 122701-2022	Requirements for Process Sealing Between Electrical Systems and Flammable or Combustible Process Fluids
506	IEEE 844.1	Skin Effect Trace Heating of Pipelines, Vessels, Equipment, and Structures — General, Testing, Marking, and Documentation Requirements
	UL 698A-2018	Industrial Control Panels Relating to Hazardous (Classified) Locations
	UL 2225-2013	Cable and Cable-Fittings for Use in Hazardous (Classified) Locations

Article	Standard Number	Standard Title
	UL 60079-0-2013	Explosive Atmospheres — Part 0: Equipment — General Requirements
	UL 60079-2-2017	Explosive atmospheres — Part 2: Equipment protection by pressurized enclosure “p”
	UL 60079-11-2013	Explosive Atmospheres — Part 11: Equipment Protection by Intrinsic Safety "i"
	UL 60079-18-2015	Explosive Atmospheres — Part 18: Equipment Protection by Encapsulation “m”
	UL 60079-25-2011	Explosive Atmospheres — Part 25: Intrinsically Safe Electrical Systems
	UL 60079-28-2017	Explosive Atmospheres — Part 28: Protection of Equipment and Transmission Systems Using Optical Radiation
	UL 60079-30-1-2017	Explosive Atmospheres — Electrical Resistance Trace Heating — General and Testing Requirements
	UL 60079-31-2015	Explosive Atmospheres — Part 31: Equipment Dust Ignition Protection by Enclosure “t”
	UL 60079-33-2021	Explosive Atmospheres — Part 33: Equipment Protection by Special Protection “s”
	UL 62784	Vacuum Cleaners and Dust Extractors Providing Equipment Protection Level Dc for the Collection of Combustible Dusts — Particular Requirements
	UL 80079-36-2021	Explosive Atmospheres — Part 36: Non-Electrical Equipment for Explosive Atmospheres — Basic Method and Requirements
	UL 80079-37-2021	Explosive Atmospheres — Part 37: Non-Electrical Equipment for Explosive Atmospheres — Non Electrical Type of Protection Constructional Safety “c”, Control of Ignition Source “b“, Liquid Immersion “k”
512	UL 1389-2019	Plant Oil Extraction Equipment for Installation and Use in Ordinary (Unclassified) Locations and Hazardous (Classified) Locations
516	NFPA 33-2024	Standard for Spray Application Using Flammable or Combustible Materials
	NFPA 34-2024	Standard for Dipping, Coating, and Printing Processes Using Flammable or Combustible Liquids
	UL 844-2012	Luminaires for Use in Hazardous (Classified) Locations
517	AAMI ES 60601-1	Medical electrical equipment — Part 1: General requirements for basic safety and essential performance
	UL 5-2016	Surface Metal Raceways and Fittings
	UL 5A-2015	Nonmetallic Surface Raceways and Fittings
	UL 467-2022	Grounding and Bonding Equipment
	UL 498-2017	Attachment Plugs and Receptacles
	UL 498D-2020	Attachment Plugs, Cord Connectors and Receptacles with Arcuate (Locking Type) Contacts
	UL 498E-2020	Attachment Plugs, Cord Connectors and Receptacles — Enclosure Types for Environmental Protection
	UL 498F-2020	Plugs, Socket-Outlets and Couplers with Arcuate (Locking Type) Contacts
	UL 651-2011	Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings
	UL 1022-2012	Line Isolation Monitors
	UL 1047-2015	Isolated Power Systems Equipment

Article	Standard Number	Standard Title
	UL 1286-2022	Office Furnishing Systems
	UL 2930-2020	Cord-and-Plug-connected Health Care Facility Outlet Assemblies
	UL 60601-1-2003	Medical Electrical Equipment — Part 1: General Requirements for Safety
	UL 122701-2022	Requirements for Process Sealing Between Electrical Systems and Flammable or Combustible Process Fluids
518	UL 498-2017	Attachment Plugs and Receptacles
	UL 498D-2020	Attachment Plugs, Cord Connectors and Receptacles with Arcuate (Locking Type) Contacts
	UL 498E-2020	Attachment Plugs, Cord Connectors and Receptacles — Enclosure Types for Environmental Protection
	UL 498F-2020	Plugs, Socket-Outlets and Couplers with Arcuate (Locking Type) Contacts
	UL 943-2016	Ground-Fault Circuit-Interrupters
	UL 943C-2012	Special Purpose Ground-Fault Circuit-Interrupters
	UL 2305-2001	Exhibition Display Units, Fabrication and Installation
520	UL 62-2018	Flexible Cords and Cables
	UL 334-2022	Theater Lighting Distribution and Control Equipment
	UL 489-2016	Attachment Plugs and Receptacles
	UL 1573-2003	Stage and Studio Luminaires and Connector Strips
	UL 1640-2016	Portable Power-Distribution Equipment
	UL 1691-2021	Single Pole Locking-Type Separable Connectors
522	UL 13-2015	Power Limited Circuit Cables
	UL 1063-2017	Machine-Tool Wires and Cables
	UL 2250-2017	Instrumentation Tray Cable
525	UL 62-2018	Flexible Cords and Cables
	UL 817-2015	Cord Sets and Power-Supply Cords
	UL 943-2016	Ground-Fault Circuit-Interrupters
	UL 943C-2012	Special Purpose Ground-Fault Circuit-Interrupters
	UL 1691-2021	Single Pole Locking-Type Separable Connectors
530	UL 62-2-18	Flexible Cords and Cables
	UL 1479-2-15	Fire Tests of Penetration Firestops
	UL 1573-2003	Stage and Studio Luminaires and Connector Strips
	UL 1680-2003	Stage and Lighting Cables
	UL 1691-2021	Single Pole Locking-Type Separable Connectors
	UL 1836-2022	Electric Motors and Generators for Use in Class I, Division 2, Class I, Zone 2, Class II, Division 2 and Zone 22 Hazardous (Classified) Locations
	UL 62368-1-2012	Audio/Video, Information and Communication Technology Equipment — Part 1: Safety Requirements
540	UL 67-2018	Panelboards
	UL 943-2016	Ground-Fault Circuit Interrupters
	UL 1640-2016	Portable Power-Distribution Equipment
	UL 62368-1-2012	Audio/Video, Information and Communication Technology Equipment — Part 1: Safety Requirements

Article	Standard Number	Standard Title
545	UL 5-2016	Surface Metal Raceways and Fittings
	UL 5A-2015	Nonmetallic Surface Raceways and Fittings
	UL 5B-2004	Strut-Type Channel Raceways and Fittings
	UL 5C-2016	Surface Raceways and Fittings for Use with Data, Signal, and Control Circuits
	UL 20-2018	General Use Snap Switches
	UL 209-2011	Cellular Metal Floor Raceways and Fittings
	UL 498-2017	Attachment Plugs and Receptacles
	UL 498D-2020	Attachment Plugs, Cord Connectors and Receptacles with Arcuate (Locking Type) Contacts
	UL 498E-2020	Attachment Plugs, Cord Connectors and Receptacles — Enclosure Types for Environmental Protection
	UL 498F-2020	Plugs, Socket-Outlets and Couplers with Arcuate (Locking Type) Contacts
	UL 514A-2013	Metallic Outlet Boxes
	UL 514C-2014	Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers
	UL 2024-2014	Cable Routing Assemblies and Communications Raceways
547	UL 50-2015	Enclosures for Electrical Equipment, Non-Environmental Considerations
	UL 50E-2020	Enclosures for Electrical Equipment, Environmental Considerations
	UL 62-2018	Flexible Cords and Cables
	UL 514A-2013	Metallic Outlet Boxes
	UL 514B-2012	Conduit, Tubing, and Cable Fittings
	UL 514C-2014	Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers
	UL 1598-2008	Luminaires
	UL 2225-2013	Cable and Cable-Fittings for Use in Hazardous (Classified) Locations
550	UL 6-2022	Electrical Rigid Metal Conduit — Steel
	UL 6A-2008	Electrical Rigid Metal Conduit — Aluminum, Red Brass and Stainless Steel
	UL 83-2017	Thermoplastic-Insulated Wires and Cables
	UL 307A-2018	Liquid Fuel-Burning Heating Appliances for Manufactured Homes and Recreational Vehicles
	UL 307B-2006	Gas-Burning Heating Appliances for Manufactured Homes and Recreational Vehicles
	UL 360-2013	Liquid-Tight Flexible Metal Conduit
	UL 467-2022	Grounding and Bonding Equipment
	UL 498-2017	Attachment Plugs and Receptacles
	UL 498D-2020	Attachment Plugs, Cord Connectors and Receptacles with Arcuate (Locking Type) Contacts
	UL 498E-2020	Attachment Plugs, Cord Connectors and Receptacles — Enclosure Types for Environmental Protection
	UL 498F-2020	Plugs, Socket-Outlets and Couplers with Arcuate (Locking Type) Contacts
	UL 651-2011	Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings
	UL 817-2015	Cord Sets and Power-Supply Cords
	UL 1242-2006	Electrical Intermediate Metal Conduit — Steel

Article	Standard Number	Standard Title
	UL 1462-2006	Mobile Home Pipe Heating Cable
	UL 1598-2008	Luminaires
	UL 1660-2019	Liquid-Tight Flexible Nonmetallic Conduit
	UL 2108-2015	Low-Voltage Lighting Systems
	UL 2515-2019	Aboveground Reinforced Thermosetting Resin Conduit (RTRC) and Fittings
551	UL 6-2022	Electrical Rigid Metal Conduit — Steel
	UL 6A-2008	Electrical Rigid Metal Conduit — Aluminum, Red Brass and Stainless Steel
	UL 62-2018	Flexible Cords and Cables
	UL 231-2016	Power Outlets
	UL 234-2005	Low Voltage Lighting Fixtures for use in Recreational Vehicles
	UL 360-2013	Liquid-Tight Flexible Metal Conduit
	UL 467-2022	Grounding and Bonding Equipment
	UL 486C-2018	Splicing Wire Connectors
	UL 498-2017	Attachment Plugs and Receptacles
	UL 498D-2020	Attachment Plugs, Cord Connectors and Receptacles with Arcuate (Locking Type) Contacts
	UL 498E-2020	Attachment Plugs, Cord Connectors and Receptacles — Enclosure Types for Environmental Protection
	UL 498F-2020	Plugs, Socket-Outlets and Couplers with Arcuate (Locking Type) Contacts
	UL 514A-2013	Metallic Outlet Boxes
	UL 514C-2014	Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers
	UL 514D-2013	Cover Plates for Flush-Mounted Wiring Devices
	UL 651-2011	Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings
	UL 817-2015	Cord Sets and Power-Supply Cords
	UL 943-2016	Ground-Fault Circuit-Interrupters
	UL 1004-4-2018	Electric Generators
	UL 1008-2014	Transfer Switch Equipment
	UL 1008M-2022	Transfer Switch Equipment, Meter Mounted
	UL 1008S-2012	Solid-State Transfer Switches
	UL 1242-2006	Electrical Intermediate Metal Conduit — Steel
	UL 1449-2021	Surge Protective Devices
	UL 1598-2008	Luminaires
	UL 1660-2019	Liquid-Tight Flexible Nonmetallic Conduit
	UL 2200-2012	Stationary Engine Generator Assemblies
	UL 2515-2019	Aboveground Reinforced Thermosetting Resin Conduit (RTRC) and Fittings
	UL 60730-1-2009	Automatic Electrical Controls; Part 1: General Requirements
	UL 60730-2-9-2010	Automatic Electrical Controls; Part 2: Particular Requirements for Temperature Sensing Controls
552	SAE J1128-2015	Low Voltage Primary Cable, for Types GXL, HDT, and SXL
	SAE J1127-2015	Low Voltage Battery Cable, for Types SGT and SGR
	UL 6-2022	Electrical Rigid Metal Conduit — Steel

Article	Standard Number	Standard Title
	UL 6A-2008	Electrical Rigid Metal Conduit — Aluminum, Red Brass and Stainless Steel
	UL 50-2015	Enclosures for Electrical Equipment, Non-Environmental Considerations
	UL 50E-2020	Enclosures for Electrical Equipment, Environmental Considerations
	UL 62-2018	Flexible Cords and Cables
	UL 67-2018	Panelboards
	UL 231-2016	Power Outlets
	UL 234-2005	Low Voltage Lighting Fixtures for Use in Recreational Vehicles
	UL 360-2013	Liquid-Tight Flexible Metal Conduit
	UL 430-2015	Waste Disposers
	UL 467-2022	Grounding and Bonding Equipment
	UL 514A-2013	Metallic Outlet Boxes
	UL 514B-2012	Conduit, Tubing, and Cable Fittings
	UL 514C-2014	Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers
	UL 651-2011	Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings
	UL 817-2015	Cord Sets and Power-Supply Cords
	UL 916-2015	Energy Management Equipment
	UL 943-2016	Ground-Fault Circuit-Interrupters
	UL 1004-4-2018	Electric Generators
	UL 1242-2006	Electrical Intermediate Metal Conduit — Steel
	UL 1563-2009	Electric Spas, Equipment Assemblies, and Associated Equipment
	UL 1598-2008	Luminaires
	UL 1660-2019	Liquid-Tight Flexible Nonmetallic Conduit
	UL 2108-2015	Low Voltage Lighting Systems
	UL 2200-2012	Stationary Engine Generator Assemblies
	UL 2515-2019	Aboveground Reinforced Thermosetting Resin Conduit (RTRC) and Fittings
555	UL 6-2022	Electrical Rigid Metal Conduit — Steel
	UL 6A-2008	Electrical Rigid Metal Conduit — Aluminum, Red Brass and Stainless Steel
	UL 231-2016	Power Outlets
	UL 486D-2015	Sealed Wire Connector Systems
	UL 651-2011	Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings
	UL 676-2015	Underwater Luminaires and Submersible Junction Boxes
	UL 943-2016	Ground-Fault Circuit-Interrupters
	UL 1053-2015	Ground-Fault Sensing and Relaying Equipment
	UL 1399	Leakage Current Measurement Devices for Use in Marina Applications
	UL 1650-2015	Portable Power Cable
	UL 2515-2019	Aboveground Reinforced Thermosetting Resin Conduit (RTRC) and Fittings
590	UL 496-2017	Lampholders
	UL 514B-2012	Conduit, Tubing, and Cable Fittings
	UL 588-2015	Seasonal and Holiday Decorative Products

Article	Standard Number	Standard Title
	UL 817-2015	Cord Sets
	UL 943-2016	Ground-Fault Circuit-Interrupters
	UL 1088-2015	Temporary Lighting Strings
	UL 1377-2019	Wire used in Low Voltage Seasonal Lighting Products In Circuits With a Maximum Available Power of 15W
	UL 1640-2016	Portable Power-Distribution Equipment
600	UL 1-2005	Flexible Metal Conduit
	UL 5-2016	Surface Metal Raceways and Fittings
	UL 5A-2015	Nonmetallic Surface Raceways and Fittings
	UL 13-2015	Power-Limited Circuit Cables
	UL 48-2011	Electric Signs
	UL 50-2015	Enclosures for Electrical Equipment, Non-Environmental Considerations
	UL 50E-2020	Enclosures for Electrical Equipment, Environmental Considerations
	UL 98B-2015	Enclosed and Dead-Front Switches for Use in Photovoltaic Systems
	UL 248-19-2015	Low-Voltage Fuses — Part 19: Photovoltaic Fuses
	UL 360-2013	Liquid-Tight Flexible Metal Conduit
	UL 489B-2016	Molded-Case Circuit Breakers, Molded-Case Switches, and Circuit-Breaker Enclosures For Use With Photovoltaic (PV) Systems
	UL 508I-2015	Disconnect Switches Intended for Use in Photovoltaic Systems
	UL 814-2011	Gas-Tube-Sign Cable
	UL 879-2009	Electric Sign Components
	UL 879A-2012	LED Sign and Sign Retrofit Kits
	UL 879B-2002	Polymeric Enclosure Systems for the Splice Between Neon Tubing Electrode Leads and GTO Cable, and the GTO Cable Leading to the Splice
	UL 943-2016	Ground-Fault Circuit-Interrupters
	UL 1310-2018	Class 2 Power Units
	UL 1660-2019	Liquid-Tight Flexible Nonmetallic Conduit
	UL 1699B-2018	Photovoltaic (PV) DC Arc-Fault Circuit Protection
	UL 1741-2021	Inverters, Converters, Controllers and Interconnection System Equipment for Use With Distributed Energy Resources
	UL 2161-2016	Neon Transformers and Power Supplies
	UL 2703-2015	Mounting Systems, Mounting Devices, Clamping/Retention Devices, and Ground Lugs for Use with Flat-Plate Photovoltaic Modules and Panels
	UL 3001-2023	Distributed Energy Generation and Storage Systems
	UL 3003-2015	Distributed Generation Cables
	UL 3703-2015	Solar Trackers
	UL 4703-2014	Photovoltaic Wire
	UL 6703-2014	Connectors for Use in Photovoltaic Systems
	UL 7103-2019	Investigation for Building-Integrated Photovoltaic Roof Coverings
	UL 8703-2011	Concentrator Photovoltaic Modules and Assemblies
	UL 9703-2018	Distributed Generation Wiring Harnesses
	UL 61730-1-2022	Photovoltaic (PV) Module Safety Qualification — Part 1: Requirements For Construction

Article	Standard Number	Standard Title
	UL 61730-2-2022	Photovoltaic (PV) Module Safety Qualification — Part 2: Requirements For Testing
	UL 62109-2014	Power Converters for Use in Photovoltaic Power Systems — Part 1: General Requirements
	UL 62368-1-2012	Audio/Video, Information and Communication Technology Equipment — Part 1: Safety Requirements
604	UL 1-2005	Flexible Metal Conduit
	UL 4-2004	Armored Cable
	UL 5-2016	Surface Metal Raceways and Fittings
	UL 5A-2015	Nonmetallic Surface Raceways and Fittings
	UL 5B-2004	Strut-Type Channel Raceways and Fittings
	UL 5C-2016	Surface Raceways and Fittings for Use with Data, Signal, and Control Circuits
	UL 62-2018	Flexible Cords and Cables
	UL 183-2009	Manufactured Wiring Systems
	UL 209-2011	Cellular Metal Floor Raceways and Fittings
	UL 360-2013	Liquid-Tight Flexible Metal Conduit
	UL 797-2007	Electrical Metallic Tubing — Steel
	UL 797A-2014	Electrical Metallic Tubing — Aluminum and Stainless Steel
	UL 857-2009	Busways
	UL 1569-2018	Metal-Clad Cables
	UL 2024-2014	Cable Routing Assemblies and Communications Raceways
605	UL 962-2014	Household and Commercial Furnishings
	UL 1286-2022	Office Furnishings Systems
	UL 1310-2018	Class 2 Power Units
	UL 2999-2020	Individual Commercial Office Furnishings
	UL 5085-3-2006	Low Voltage Transformers — Part 3: Class 2 and Class 3 Transformers
	UL 62368-1-2012	Audio/Video, Information and Communication Technology Equipment — Part 1: Safety Requirements
610	UL 62-2018	Flexible Cords and Cables
	UL 2273-2019	Festoon Cable
620	UL 62-2018	Flexible Cords and Cables
	UL 83-2017	Thermoplastic-Insulated Wires and Cables
	UL 98-2016	Enclosed and Dead-Front Switches
	UL 104-2016	Elevator Door Locking Devices and Contacts
	UL 489-2016	Molded-Case Circuit Breakers, Molded-Case Switches and Circuit-Breaker Enclosures
	UL 508-2018	Industrial Control Equipment
	UL 508A-2018	Industrial Control Panels
	UL 1066-2022	Low-Voltage AC and DC Power Circuit Breakers Used in Enclosures
	UL 1310-2018	Class 2 Power Units
	UL 1449-2021	Surge Protective Devices
	UL 1685-2015	Vertical-Tray Fire-Propagation and Smoke-Release Test for Electrical and Optical-Fiber Cables
	UL 2556-2021	Wire and Cable Test Methods

Article	Standard Number	Standard Title
	UL 62368-1-2012	Audio/Video, Information and Communication Technology Equipment — Part 1: Safety Requirements
625	UL 62-2018	Flexible Cords and Cables
	UL 1650-2015	Portable Power Cable
	UL 1741-2021	Inverters, Converters, Controllers and Interconnection System Equipment for Use With Distributed Energy Resources
	UL 2202-2022	DC Charging Equipment for Electric Vehicles
	UL 2231-1-2012	Personnel Protection Systems for Electric Vehicle (EV) Supply Circuits — Part 1: General Requirements
	UL 2231-2-2012	Personnel Protection Systems for Electric Vehicle (EV) Supply Circuits — Part 2: Particular Requirements for Protection Devices for Use in Charging Systems
	UL 2251-2017	Plugs, Receptacles and Couplers for Electrical Vehicles
	UL 2580-2020	Batteries for Use in Electric Vehicles
	UL 2594-2022	Electric Vehicle Supply Equipment
	UL 9741-2021	Electric Vehicle Power Export Equipment (EVPE)
	UL 60730-1	Automatic Electrical Controls
626	UL 62-2018	Flexible Cords and Cables
	UL 231-2016	Power Outlets
	UL 498-2017	Attachment Plugs and Receptacles
	UL 498D-2020	Attachment Plugs, Cord Connectors and Receptacles with Arcuate (Locking Type) Contacts
	UL 498E-2020	Attachment Plugs, Cord Connectors and Receptacles — Enclosure Types for Environmental Protection
	UL 498F-2020	Plugs, Socket-Outlets and Couplers with Arcuate (Locking Type) Contacts
	UL 817-2015	Cord Sets and Power-Supply Cords
	UL 1651-2015	Optical Fiber Cable
	UL 1686-2012	Pin and Sleeve Configurations
630	UL 551-2009	Transformer-Type Arc-Welding Machines
640	UL 13-2015	Power Limited Circuit Cables
	UL 62-2018	Flexible Cords and Cables
	UL 813-1996	Commercial Audio Equipment
	UL 1310-2018	Class 2 Power Units
	UL 1419-2016	Professional Video and Audio Equipment
	UL 1492-1996	Audio-Video Products and Accessories
	UL 1711-2006	Amplifiers for Fire Protective Signaling Systems
	UL 2269-2021	Optical Fiber/Communications/Signaling/Coaxial Cable Outlet Boxes
	UL 6500-1999	Audio/Video and Musical Instrument Apparatus for Household, Commercial, and Similar General Use
	UL 60065-2015	Audio, Video and Similar Electronic Apparatus — Safety Requirements
	UL 62368-1-2012	Audio/Video, Information and Communication Technology Equipment — Part 1: Safety Requirements
645	UL 38-2008	Manual Signaling Boxes for Fire Alarm Systems
	UL 268-2023	Smoke Detectors for Fire Alarm Systems

Article	Standard Number	Standard Title
	UL 444-2017	Communications Cables
	UL 464-2016	Audible Signaling Devices for Fire Alarm and Signaling Systems, Including Accessories
	UL 497B-2004	Protectors for Data Communications and Fire Alarm Circuits
	UL 833-2021	Control Units and Accessories for Fire Alarm Systems
	UL 864-2014	Control Units and Accessories for Fire Alarm Systems
	UL 1424-2015	Cables for Power-Limited Fire-Alarm Circuits
	UL 1425-2015	Cables for Non-Power-Limited Fire-Alarm Circuits
	UL 1449-2021	Surge Protective Devices
	UL 1480-2016	Speakers for Fire Alarm and Signaling Systems, Including Accessories
	UL 1638-2016	Visible Signaling Devices for Fire Alarm and Signaling Systems, Including Accessories
	UL 1651-2015	Optical Fiber Cable
	UL 1685-2015	Vertical-Tray Fire-Propagation and Smoke-Release Test for Electrical and Optical-Fiber Cables
	UL 1690-2015	Data-Processing Cable
	UL 1778-2014	Uninterruptible Power Systems
	UL 2024-2014	Cable Routing Assemblies and Communications Raceways
	UL 60950-1-2007	Information Technology Equipment Safety — Part 1: General Requirements
	UL 60950-21-2003	Information Technology Equipment Safety — Part 21: Remote Power Feeding
	UL 60950-22-2017	Information Technology Equipment Safety — Part 22: Equipment to be Installed Outdoors
	UL 60950-23-2007	Information Technology Equipment Safety — Part 23: Large Data Storage Equipment
	UL 62368-1-2012	Audio/Video, Information and Communication Technology Equipment — Part 1: Safety Requirements
646	UL 10C-2016	Positive Pressure Fire Tests of Door Assemblies
	UL 62-2018	Flexible Cords and Cables
	UL 67-2018	Panelboards
	UL 98-2016	Enclosed and Dead-Front Switches
	UL 305-2012	Panic Hardware
	UL 347-2020	Medium-Voltage AC Contactors, Controllers, and Control Centers
	UL 489-2016	Molded-Case Circuit Breakers, Molded-Case Switches and Circuit-Breaker Enclosures
	UL 508-2018	Industrial Control Equipment
	UL 508A-2018	Industrial Control Panels
	UL 845-2021	Motor Control Centers
	UL 869A-2006	Reference Standard for Service Equipment
	UL 891-2019	Switchboards
	UL 924-2016	Emergency Lighting and Power Equipment
	UL 977-2012	Fused Power-Circuit Devices
	UL 1008-2014	Transfer Switch Equipment
	UL 1008A-2017	Transfer Switch Equipment, Over 1000 Volts

Article	Standard Number	Standard Title
	UL 1008M-2022	Meter-Mounted Transfer Switches
	UL 1008S-2012	Solid-State Transfer Switches
	UL 1062-1997	Unit Substations
	UL 1066-2022	Low-Voltage AC and DC Power Circuit Breakers Used in Enclosures
	UL 1429-2000	Pullout Switches
	UL 1449-2021	Surge Protective Devices
	UL 1655-2009	Community-Antenna Television Cables
	UL 1989-2013	Standby Batteries
	UL 2755-2018	Modular Data Centers
	UL 62368-1-2012	Audio/Video, Information and Communication Technology Equipment — Part 1: Safety Requirements
647	UL 1598-2008	Luminaires
650	UL 1310-2018	Class 2 Power Units
	UL 1581-2001	Reference Standard for Electrical Wires, Cables, and Flexible Cords
	UL 62368-1-2012	Audio/Video, Information and Communication Technology Equipment — Part 1: Safety Requirements
670	ANSI/CSA-C22.2 No. 19085-1	Woodworking machines — Safety — Part 1: Common requirements
	UL 508-2018	Industrial Control Equipment
	UL 61800-5-1-2012	Adjustable Speed Electrical Power Drive Systems — Part 5-1: Safety Requirements — Electrical, Thermal and Energy
675	UL 493-2018	Thermoplastic-Insulated Underground Feeder and Branch-Circuit Cables
	UL 1581-2001	Reference Standard for Electrical Wires, Cables, and Flexible Cords
680	UL 6-2022	Electrical Rigid Metal Conduit — Steel
	UL 6A-2008	Electrical Rigid Metal Conduit — Aluminum, Red Brass and Stainless Steel
	UL 20-2018	General Use Snap-Switches
	UL 62-2018	Flexible Cords and Cables
	UL 360-2013	Liquid-Tight Flexible Metal Conduit
	UL 379-2013	Power Units for Fountain, Swimming Pool, and Spa Luminaires
	UL 467-2022	Grounding and Bonding Equipment
	UL 486D-2015	Sealed Wire Connector Systems
	UL 489-2016	Molded-Case Circuit Breakers, Molded-Case Switches and Circuit-Breaker Enclosures
	UL 651-2011	Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings
	UL 676-2015	Underwater Luminaires and Submersible Junction Boxes
	UL 676A-2003	Potting Compounds for Swimming Pool, Fountain, and Spa Equipment
	UL 943-2016	Ground-Fault Circuit-Interrupters
	UL 943C-2012	Special Purpose Ground-Fault Circuit-Interrupters
	UL 1004-10-2020	Pool Pump Motors
	UL 1081-2016	Swimming Pool Pumps, Filters, and Chlorinators
	UL 1241-2003	Junction Boxes for Swimming Pool Luminaires
	UL 1242-2006	Electrical Intermediate Metal Conduit — Steel
	UL 1261-2016	Electric Water Heaters for Pools and Tubs

Article	Standard Number	Standard Title
	UL 1563-2009	Electric Spas, Equipment Assemblies, and Associated Equipment
	UL 1569-2018	Metal-Clad Cables
	UL 1660-2019	Liquid-Tight Flexible Nonmetallic Conduit
	UL 1795-2016	Hydromassage Bathtubs
	UL 2420-2009	Belowground Reinforced Thermosetting Resin Conduit (RTRC) and Fittings
	UL 2452-2006	Electric Swimming Pool and Spa Cover Operators
	UL 2515-2019	Aboveground Reinforced Thermosetting Resin Conduit (RTRC) and Fittings
	UL 2515A-2011	Supplemental Requirements for Extra Heavy Wall Reinforced Thermosetting Resin Conduit (RTRC) and Fittings
	UL 2995-2016	Lifts for Swimming Pools and Spas
	UL 60335-2-1000-2017	Household and Similar Electrical Appliances: Particular Requirements for Electrically Powered Pool Lifts
682	UL 486D-2015	Sealed Wire Connector Systems
	UL 943-2016	Ground-Fault Circuit-Interrupters
	UL 1053-2015	Ground-Fault Sensing and Relaying Equipment
	UL 1650-2015	Portable Power Cable
	UL 1838-2003	Low Voltage Landscape Lighting Systems
690	UL 98B-2015	Enclosed and Dead-Front Switches for Use in Photovoltaic Systems
	UL 248-19-2015	Low-Voltage Fuses — Part 19: Photovoltaic Fuses
	UL 467-2022	Grounding and Bonding Equipment
	UL 489B-2016	Molded-Case Circuit Breakers, Molded-Case Switches, and Circuit-Breaker Enclosures For Use With Photovoltaic (PV) Systems
	UL 508I-2015	Disconnect Switches Intended for Use in Photovoltaic Systems
	UL 1569-2018	Metal-Clad Cables
	UL 1699B-2018	Photovoltaic (PV) DC Arc-Fault Circuit Protection
	UL 1703-2002	Flat-Plate Photovoltaic Modules and Panels
	UL 1741-2021	Inverters, Converters, Controllers and Interconnection System Equipment for Use with Distributed Energy Resources
	UL 2703-2015	Mounting Systems, Mounting Devices, Clamping/Retention Devices, and Ground Lugs for Use with Flat-Plate Photovoltaic Modules and Panels
	UL 3001-2023	Distributed Energy Generation and Storage Systems
	UL 3003-2015	Distributed Generation Cables
	UL 3703-2015	Solar Trackers
	UL 3730-2014	Photovoltaic Junction Boxes
	UL 3741-2020	Photovoltaic Hazard Control
	UL 4703-2014	Photovoltaic Wire
	UL 6703-2014	Connectors for Use in Photovoltaic Systems
	UL 7103-2019	Investigation for Building-Integrated Photovoltaic Roof Coverings
	UL 8703-2011	Concentrator Photovoltaic Modules and Assemblies
	UL 8801-2022	Photovoltaic Luminaire Systems
	UL 9703-2018	Distributed Generation Wiring Harnesses
	UL 9741-2021	Electric Vehicle Power Export Equipment (EVPE)

Article	Standard Number	Standard Title
	UL 61730-1-2022	Photovoltaic (PV) Module Safety Qualification — Part 1: Requirements for Construction
	UL 61730-2-2022	Photovoltaic (PV) Module Safety Qualification — Part 2: Requirements for Testing
	UL 62109-1-2014	Power Converters for Use in Photovoltaic Power Systems — Part 1: General Requirements
	UL 62109-2	Power Converters for Use in Photovoltaic Power Systems — Part 2: Particular Requirements for Inverters
	UL 62275-2021	Cable Management Systems — Cable Ties for Electrical Installations
692	UL 2262-2012	Fuel Cell Modules for Use in Portable and Stationary Equipment
	UL 2262A-2011	Borohydride Fuel Cartridges with Integral Fuel Processing for Use with Portable Fuel Cell Power Systems or Similar Equipment
	UL 2265-2012	Fuel Cell Power Units and Fuel Storage Containers for Portable Devices
	UL 2265A-2018	Hand-held or Hand-Transportable Fuel Cell Power Units with Disposable Methanol Fuel Cartridges for use in Original Equipment Manufacturer's Information Technology Equipment
	UL 2265C-2006	Hand-Held or Hand-Transportable Alkaline (Direct Borohydride) Fuel Cell Power Units and Borohydride Fuel Cartridges For Use With Consumer Electronics or Information Technology Equipment
	UL 2266-2007	Electromagnetic Compatibility, Electrical Safety, and Physical Protection of Stationary and Portable Fuel Cell Power Systems for Use with Commercial Network Telecommunications Equipment
	UL 2267-2020	Fuel Cell Power Systems for Installation in Industrial Electric Trucks
694	UL 467-2022	Grounding and Bonding Equipment
	UL 489C-2012	Molded-Case Circuit Breakers and Molded-Case Switches for Use with Wind Turbines
	UL 1741-2021	Inverters, Converters, Controllers and Interconnection System Equipment for Use With Distributed Energy Resources
	UL 2227-2007	Flexible Motor Supply Cable and Wind Turbine Tray Cable
	UL 2736-2010	Single Pole Separable Interconnecting Cable Connectors for Use with Wind Turbine Generating Systems
	UL 4143-2018	Wind Turbine Generator — Life Time Extension (LTE)
	UL 6141-2016	Wind Turbines Permitting Entry of Personnel
	UL 6142-2012	Small Wind Turbine Generating Systems
695	UL 6-2022	Electrical Rigid Metal Conduit — Steel
	UL 6A-2008	Electrical Rigid Metal Conduit — Aluminum, Red Brass and Stainless Steel
	UL 218-2015	Fire Pump Controllers
	UL 448-2020	Centrifugal Stationary Pumps for Fire-Protection Service
	UL 448B-2023	Residential Fire Pumps Intended for One- and Two-Family Dwellings and Manufactured Homes
	UL 448C-2023	Stationary, Rotary-Type, Positive-Displacement Pumps for Fire Protection Service
	UL 651-2011	Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings
	UL 1004-5-2014	Fire Pump Motors
	UL 1242-2006	Electrical Intermediate Metal Conduit — Steel
	UL 1569-2018	Metal-Clad Cables

Article	Standard Number	Standard Title
	UL 1724-2006	Fire Tests for Electrical Circuit Protective Systems
	UL 2196-2017	Fire Test for Circuit Integrity of Fire-Resistive Power, Instrumentation, Control and Data Cables
	UL 2515-2019	Aboveground Reinforced Thermosetting Resin Conduit (RTRC) and Fittings
700	UL 924-2016	Emergency Lighting and Power Equipment
	UL 1008-2014	Transfer Switch Equipment
	UL 1008A-2017	Transfer Switch Equipment, Over 1000 Volts
	UL 1449-2021	Surge Protective Devices
	UL 1724-2006	Fire Tests for Electrical Circuit Protective Systems
	UL 2196-2017	Fire Test for Circuit Integrity of Fire-Resistive Power, Instrumentation, Control and Data Cables
	UL 2200-2012	Stationary Engine Generator Assemblies
701	UL 924-2016	Emergency Lighting and Power Equipment
	UL 1008-2014	Transfer Switch Equipment
	UL 1008A-2017	Transfer Switch Equipment, Over 1000 Volts
702	UL 98-2016	Enclosed and Dead-Front Switches
	UL 1008-2014	Transfer Switch Equipment
	UL 1008A-2017	Transfer Switch Equipment, Over 1000 Volts
	UL 1008M-2022	Meter-Mounted Transfer Switches
	UL 1008S-2012	Solid-State Transfer Switches
705	UL 62-2018	Flexible Cords and Cables
	UL 98-2016	Enclosed and Dead-Front Switches
	UL 486D-2015	Sealed Wire Connector Systems
	UL 489-2016	Molded-Case Circuit Breakers, Molded-Case Switches and Circuit-Breaker Enclosures
	UL 1066-2022	Low-Voltage AC and DC Power Circuit Breakers Used in Enclosures
	UL 1429-2000	Pullout Switches
	UL 1741-2021	Inverters, Converters, Controllers and Interconnection System Equipment for Use With Distributed Energy Resources
	UL 2200-2012	Stationary Engine Generator Assemblies
	UL 3001	Distributed Energy Resource Systems
	UL 3003-2015	Distributed Generation Cables
	UL 3010	Single Site Energy Systems
	UL 6141-2016	Wind Turbines Permitting Entry of Personnel
	UL 6142-2012	Small Wind Turbine Systems
	UL 9540-2020	Energy Storage Systems and Equipment
	UL 9741-2021	Electric Vehicle Power Export Equipment (EVPE)
	UL 62109-1	Power Converters for Use in Photovoltaic Power Systems — Part 1: General Requirements
	UL 62109-2	Power Converters for Use in Photovoltaic Power Systems — Part 2: Particular Requirements for Inverters
706	UL 248-2-2000	Low-Voltage Fuses — Part 2: Class C Fuses
	UL 248-3-2000	Low-Voltage Fuses — Part 3: Class CA and CB Fuses
	UL 248-4-2000	Low-Voltage Fuses — Part 4: Class CC Fuses

Article	Standard Number	Standard Title
	UL 248-5-2000	Low-Voltage Fuses — Part 5: Class G Fuses
	UL 248-6-2000	Low-Voltage Fuses — Part 6: Class H Non-Renewable Fuses
	UL 248-8-2011	Low-Voltage Fuses — Part 8: Class J Fuses
	UL 248-9-2000	Low-Voltage Fuses — Part 9: Class K Fuses
	UL 248-10-2011	Low-Voltage Fuses — Part 10: Class L Fuses
	UL 248-12-2011	Low-Voltage Fuses — Part 12: Class R Fuses
	UL 248-15-2018	Low-Voltage Fuses — Part 15: Class T Fuses
	UL 248-17-2018	Low-Voltage Fuses — Part 17: Class CF Fuses
	UL 248-18-2022	Low-Voltage Fuses — Part 18: Class CD Fuses
	UL 489-2016	Molded-Case Circuit Breakers, Molded-Case Switches and Circuit-Breaker Enclosures
	UL 489H-2017	Molded-Case Circuit Breakers, Molded-Case Switches, and Circuit-Breaker Enclosures, for Use with Direct Current (DC) Microgrids
	UL 1066-2022	Low-Voltage AC and DC Power Circuit Breakers Used in Enclosures
	UL 1741-2021	Inverters, Converters, Controllers and Interconnection System Equipment for Use With Distributed Energy Resources
	UL 9540-2020	Energy Storage Systems and Equipment
708	UL 1-2005	Flexible Metal Conduit
	UL 4-2004	Armored Cable
	UL 83-2017	Thermoplastic-Insulated Wires and Cables
	UL 360-2013	Liquid-Tight Flexible Metal Conduit
	UL 493-2018	Thermoplastic-Insulated Underground Feeder and Branch-Circuit Cables
	UL 497A-2001	Secondary Protectors for Communications Circuits
	UL 1008-2014	Transfer Switch Equipment
	UL 1008A-2017	Transfer Switch Equipment, Over 1000 Volts
	UL 1008M-2022	Meter-Mounted Transfer Switches
	UL 1008S-2012	Solid-State Transfer Switches
	UL 1569-2018	Metal-Clad Cables
	UL 2196-2017	Fire Test for Circuit Integrity of Fire-Resistive Power, Instrumentation, Control and Data Cables
710	UL 1741-2021	Inverters, Converters, Controllers and Interconnection System Equipment for Use With Distributed Energy Resources
	UL 2200-2012	Stationary Engine Generator Assemblies
	UL 8801-2022	Photovoltaic Luminaire Systems
	UL 9540-2020	Energy Storage Systems and Equipment
	UL 9741-2021	Electric Vehicle Power Export Equipment (EVPE)
	UL 62109-1-2014	Power Converters for use in Photovoltaic Power Systems — Part 1: General Requirements
	UL 62109-2	Power Converters for Use in Photovoltaic Power Systems — Part 2: Particular Requirements for Inverters
722	UL 13-2015	Power-Limited Circuit Cables
	UL 444-2017	Communications Cables
	UL 1424-2015	Cables for Power-Limited Fire-Alarm Circuits
	UL 1651-2015	Optical Fiber Cable

Article	Standard Number	Standard Title
	UL 1666-2007	Test for Flame Propagation Height of Electrical and Optical-Fiber Cables Installed Vertically in Shafts
	UL 1685-2015	Vertical-Tray Fire-Propagation and Smoke- Release Test for Electrical and Optical-Fiber Cables
	UL 1724-2006	Fire Tests for Electrical Circuit Protective Systems
	UL 2024-2019	Commercial Closed-Circuit Television Equipment
	UL 2196-2017	Fire Test for Circuit Integrity of Fire-Resistive Power, Instrumentation, Control and Data Cables
	UL 2556-2021	Wire and Cable Test Methods
725	UL 1310-2018	Class 2 Power Units
	UL 5085-3-2006	Low Voltage Transformers — Part 3: Class 2 and Class 3 Transformers
	UL 9990-2021	Information and Communication Technology (ICT) Power Cables
	UL 60730-1	Automatic Electrical Controls
	UL 61010-2-201-2018	Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use — Part 2-201: Particular Requirements for Control Equipment
	UL 61800-5-1-2012	Adjustable Speed Electrical Power Drive Systems — Part 5-1: Safety Requirements — Electrical, Thermal and Energy
	UL 62368-1-2012	Audio/Video, Information and Communication Technology Equipment — Part 1: Safety Requirements
726	UL 1400-1-2022	Fault-Managed Power Systems — Part 1 General Requirements
	UL 1400-2-2022	Fault-Managed Power Systems — Part 2 Requirements for Cables
	UL 1666-2007	Test for Flame Propagation Height of Electrical and Optical-Fiber Cables Installed Vertically in Shafts
	UL 1685-2015	Vertical-Tray Fire-Propagation and Smoke-Release Test for Electrical and Optical-Fiber Cables
	UL 2556-2021	Wire and Cable Test Methods
728	UL 5-2016	Surface Metal Raceways and Fittings
	UL 5A-2015	Nonmetallic Surface Raceways and Fittings
	UL 5B-2004	Strut-Type Channel Raceways and Fittings
	UL 5C-2016	Surface Raceways and Fittings for Use with Data, Signal, and Control Circuits
	UL 209-2011	Cellular Metal Floor Raceways and Fittings
	UL 467-2022	Grounding and Bonding Equipment
	UL 514A-2013	Metallic Outlet Boxes
	UL 514C-2014	Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers
	UL 568-2002	Nonmetallic Cable Tray Systems
	UL 884-2016	Underfloor Raceways and Fittings
	UL 1724-2006	Fire Tests for Electrical Circuit Protective Systems
	UL 2024-2014	Cable Routing Assemblies and Communications Raceways
	UL 2196-2017	Fire Test for Circuit Integrity of Fire-Resistive Power, Instrumentation, Control and Data Cables
760	UL 268-2023	Smoke Detectors for Fire Alarm Systems
	UL 268A-2008	Smoke Detectors for Duct Application
	UL 486C-2018	Splicing Wire Connectors
	UL 497B-2004	Protectors for Data Communication and Fire Alarm Circuits

Article	Standard Number	Standard Title
	UL 1424-2015	Cables for Power-Limited Fire-Alarm Circuits
	UL 1425-2015	Cables for Non–Power-Limited Fire-Alarm Circuits
	UL 1480-2016	Speakers for Fire Alarm and Signaling Systems, Including Accessories
	UL 1666-2007	Test for Flame Propagation Height of Electrical and Optical-Fiber Cables Installed Vertically in Shafts
	UL 1685-2015	Vertical-Tray Fire-Propagation and Smoke-Release Test for Electrical and Optical-Fiber Cables
	UL 2196-2017	Fire Test for Circuit Integrity of Fire-Resistive Power, Instrumentation, Control and Data Cables
	UL 60730-2-14-2013	Automatic Electrical Controls; Part 2: Particular Requirements for Electric Actuators
770	UL 467-2022	Grounding and Bonding Equipment
	UL 568-2002	Nonmetallic Cable Tray Systems
	UL 1651-2015	Optical Fiber Cable
	UL 2024-2014	Optical Fiber and Communication Cable Raceway
	UL 2196-2017	Fire Test for Circuit Integrity of Fire-Resistive Power, Instrumentation, Control and Data Cables
	UL 62275-2021	Cable Management Systems — Cable Ties for Electrical Installations
800	UL 444-2017	Communications Cables
	UL 467-2022	Grounding and Bonding Equipment
	UL 489A-2008	Circuit Breakers for Use in Communication Equipment
	UL 497-2001	Protectors for Paired-Conductor Communications Circuits
	UL 497A-2001	Secondary Protectors for Communications Circuits
	UL 497C-2001	Protectors for Coaxial Communications Circuits
	UL 497E-2011	Protectors for Antenna Lead-In Conductors
	UL 523-2006	Telephone Service Drop Wire
	UL 568-2002	Nonmetallic Cable Tray Systems
	UL 723-2018	Test for Surface Burning Characteristics of Building Materials
	UL 1581-2001	Reference Standard for Electrical Wires, Cables, and Flexible Cords
	UL 1666-2007	Test for Flame Propagation Height of Electrical and Optical-Fiber Cables Installed Vertically in Shafts
	UL 1685-2015	Vertical-Tray Fire-Propagation and Smoke-Release Test for Electrical and Optical-Fiber Cables
	UL 1724-2006	Outline for Fire Tests for Electrical Circuit Protective Systems
	UL 1863-2004	Communication Circuit Accessories
	UL 2024-2014	Cable Routing Assemblies and Communications Raceways
	UL 2043-2013	Fire Test for Heat and Visible Smoke Release for Discrete Products and Their Accessories Installed in Air-Handling Spaces
	UL 2196-2017	Tests for Fire Resistive Cables
	UL 2556-2021	Wire and Cable Test Methods
	UL 62275-2021	Cable Management Systems — Cable Ties for Electrical Installations
	UL 62368-1	Audio/Video, Information and Communication Technology Equipment — Part 1: Safety Requirements
805		

Article	Standard Number	Standard Title
	UL 497-2001	Protectors for Paired-Conductor Communications Circuits
	UL 497A-2001	Secondary Protectors for Communications Circuits
	UL 497C-2001	Protectors for Coaxial Communications Circuits
	UL 497E-2011	Protectors for Antenna Lead-In Conductors
	UL 523-2015	Telephone Service Drop Wire
	UL 62368-1-2012	Audio/Video, Information and Communication Technology Equipment — Part 1: Safety Requirements
810	UL 150-2004	Antenna Rotators
	UL 452-2006	Antenna-Discharge Units
	UL 467-2022	Grounding and Bonding Equipment
	UL 497E-2011	Protectors for Antenna Lead-In Conductors
820	UL 444-2017	Communications Cables
	UL 497E-2011	Protectors for Antenna Lead-In Conductors
	UL 1655-2009	Community-Antenna Television Cables
830	UL 444-2017	Communications Cables
	UL 497A-2001	Secondary Protectors for Communications Circuits
	UL 497C-2001	Protectors for Coaxial Communications Circuits
	UL 497E-2011	Protectors for Antenna Lead-In Conductors
	UL 62368-1-2012	Audio/Video, Information and Communication Technology Equipment — Part 1: Safety Requirements
840	UL 444-2017	Communications Cables
	UL 467-2022	Grounding and Bonding Equipment
	UL 498A-2008	Current Taps and Adapters
	UL 1310-2018	Class 2 Power Units
	UL 1651-2015	Optical Fiber Cable
	UL 1863-2004	Communication Circuit Accessories
	UL 2024-2014	Cable Routing Assemblies and Communications Raceways
	UL 62368-1-2012	Audio/Video, Information and Communication Technology Equipment — Part 1: Safety Requirements
Tables 11(A) and 11(B)	UL 1310-2018	Class 2 Power Units
	UL 1434-1998	Thermistor-Type Devices
	UL 5085-3-2006	Low Voltage Transformers — Part 3: Class 2 and Class 3 Transformers
	UL 62368-1-2012	Audio/Video, Information and Communication Technology Equipment — Part 1: Safety Requirements
Tables 12(A) and 12(B)	UL 1310-2018	Class 2 Power Units
	UL 1434-1998	Thermistor-Type Devices

Article	Standard Number	Standard Title
	UL 5085-3-2006	Low Voltage Transformers — Part 3: Class 2 and Class 3 Transformers
	UL 62368-1-2012	Audio/Video, Information and Communication Technology Equipment — Part 1: Safety Requirements

Table A.1(b) Product Safety Standards for Conductors and Equipment That Do Not Have an Associated Listing Requirement

Article	Standard Number	Standard Title
110	NEMA CY 10000-2023	Cybersecurity Implementation Guidance for Connected Electrical Infrastructure
	UL 969-2017	Marking and Labeling Systems
	UL 9691-2021	Recommended Practice for Nameplates for Use in Electrical Installations
210	UL 1053-2015	Ground-Fault Sensing and Relaying Equipment
215	UL 1053-2015	Ground-Fault Sensing and Relaying Equipment
235	UL 6-2022	Electrical Rigid Metal Conduit — Steel
	UL 6A-2008	Electrical Rigid Metal Conduit — Aluminum, Red Brass and Stainless Steel
	UL 347	Medium-Voltage AC Contactors, Controllers, and Control Centers
	UL 360	Liquid-Tight Flexible Metal Conduit
	UL 486C-2018	Splicing Wire Connectors
	UL 514B-2012	Conduit, Tubing and Cable Fittings
	UL 651-2011	Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings
	UL 1008A-2017	Transfer Switch Equipment, Over 1000 Volts
	UL 1242-2006	Electrical Intermediate Metal Conduit — Steel
	UL 1660-2019	Liquid-Tight Flexible Nonmetallic Conduit
	UL 2200-2012	Stationary Engine Generator Assemblies
	UL 2515-2019	Aboveground Reinforced Thermosetting Resin Conduit (RTRC) and Fittings
	UL 2876-2022	Remote Racking Devices for Switchgear and Controlgear
240	NEMA CY 10000-2023	Cybersecurity Implementation Guidance for Connected Electrical Infrastructure
245	IEEE C37.09	IEEE Standard Test Procedures for AC High-Voltage Circuit Breakers with Rated Maximum Voltage Above 1000 V
	IEEE C37.41	IEEE Standard Design Tests for High-Voltage (>1000 V) Fuses and Accessories
	IEEE C37.42	IEEE Standard Specifications for High-Voltage (>1000 V) Fuses and Accessories
	NEMA C37.54	NEMA Standard Indoor AC High Voltage Circuit Breakers Applied as Removable Elements in Metal-Enclosed Switchgear — Conformance Test Procedures
300	UL 635-2012	Insulating Bushings
314	UL 514B-2012	Conduit, Tubing, and Cable Fittings
	UL 2239-2015	Hardware for the Support of Conduit, Tubing and Cable
	UL 3004	Outline of Investigation for Medium Voltage Junction Boxes
320	UL 514A-2013	Metallic Outlet Boxes

Article	Standard Number	Standard Title
	UL 2239-2015	Hardware for the Support of Conduit, Tubing and Cable
322	UL 5-2016	Surface Metal Raceways and Fittings
	UL 2239-2015	Hardware for the Support of Conduit, Tubing and Cable
324	UL 5-2016	Surface Metal Raceways and Fittings
	UL 2239-2015	Hardware for the Support of Conduit, Tubing and Cable
330	UL 2239-2015	Hardware for the Support of Conduit, Tubing and Cable
332	UL 1565-2022	Positioning Devices
	UL 2239-2015	Hardware for the Support of Conduit, Tubing and Cable
334	UL 6-2022	Electrical Rigid Metal Conduit — Steel
	UL 6A-2008	Electrical Rigid Metal Conduit — Aluminum, Red Brass and Stainless Steel
	UL 514B-2012	Conduit, Tubing, and Cable Fittings
	UL 651-2011	Schedule 40 and 80 Rigid PVC Conduit
	UL 797-2007	Electrical Metallic Tubing — Steel
	UL 797A-2014	Electrical Metallic Tubing — Aluminum and Stainless Steel
	UL 1242-2006	Electrical Intermediate Metal Conduit — Steel
	UL 1565-2022	Positioning Devices
	UL 2239-2015	Hardware for the Support of Conduit, Tubing and Cable
	UL 2420-2009	Belowground Reinforced Thermosetting Resin Conduit (RTRC) and Fittings
	UL 2515-2019	Aboveground Reinforced Thermosetting Resin Conduit (RTRC) and Fittings
	UL 2515A-2011	Supplemental Requirements for Extra Heavy Wall Reinforced Thermosetting Resin Conduit (RTRC) and Fittings.
335	UL 2250-2017	Instrumentation Tray Cable
337	UL 1565-2022	Positioning Devices
	UL 2239-2015	Hardware for the Support of Conduit, Tubing and Cable
340	UL 493-2018	Thermoplastic-Insulated Underground Feeder and Branch-Circuit Cables
342	UL 635-2012	Insulating Bushings
	UL 2239-2015	Hardware for the Support of Conduit, Tubing and Cable
344	UL 635-2012	Insulating Bushings
	UL 2239-2015	Hardware for the Support of Conduit, Tubing and Cable
348	UL 2239-2015	Hardware for the Support of Conduit, Tubing and Cable
350	UL 2239-2015	Hardware for the Support of Conduit, Tubing and Cable
352	UL 635-2012	Insulating Bushings
	UL 2239-2015	Hardware for the Support of Conduit, Tubing and Cable
353	UL 635-2012	Insulating Bushings
355	UL 635-2012	Insulating Bushings
	UL 2239-2015	Hardware for the Support of Conduit, Tubing and Cable
356	UL 2239-2015	Hardware for the Support of Conduit, Tubing and Cable
358	UL 2239-2015	Hardware for the Support of Conduit, Tubing and Cable
362	UL 2239-2015	Hardware for the Support of Conduit, Tubing and Cable
368	UL 857-2009	Busways
392	UL 568-2002	Nonmetallic Cable Tray Systems
400	UL 62-2018	Flexible Cords and Cables

Article	Standard Number	Standard Title
	UL 498-2017	Attachment Plugs and Receptacles
	UL 498B-2022	Receptacles with Integral Switching Means
	UL 498D-2020	Attachment Plugs, Cord Connectors and Receptacles with Arcuate (Locking Type) Contacts
	UL 498E-2020	Attachment Plugs, Cord Connectors and Receptacles — Enclosure Types for Environmental Protection
	UL 514B-2012	Conduit, Tubing, and Cable Fittings
	UL 817-2015	Cord Sets and Power-Supply Cords
	UL 1650-2015	Portable Power Cable
	UL 1680-2003	Stage and Lighting Cables
402	UL 66-2023	Fixture Wire
408	UL 50-2015	Enclosures for Electrical Equipment, Non-Environmental Considerations
	UL 50E-2020	Enclosures for Electrical Equipment, Environmental Considerations
409	UL 1436	Outlet Circuit Testers and Other Similar Indicating Devices
	UL 61010-1	Electrical Equipment for Measurement, Control, and Laboratory Use — Part 1: General Requirements
	UL 61010-2-030	Electrical Equipment for Measurement, Control, and Laboratory Use — Part 2-30: Particular Requirements for Testing and Measuring Circuits
424	UL 834-2004	Heating, Water Supply, and Power Boilers — Electric
	UL 1693-2010	Electric Radiant Heating Panels and Heating Panel Sets
	UL 1995-2015	Heating and Cooling Equipment
	UL 1996-2009	Electric Duct Heaters
	UL 60335-1-2204	Safety of Household and Similar Electrical Appliances, Part 1: General Requirements
	UL 60335-2-40-2019	Household and Similar Electrical Appliances — Safety — Part 2–40: Part 2–40: Particular Requirements for Electrical Heat Pumps, Air-Conditioners and Dehumidifiers
425	UL 834-2004	Heating, Water Supply, and Power Boilers — Electric
426	UL 1588-2002	Roof and Gutter De-Icing Cable Units
427	UL 515-2015	Electrical Resistance Trace Heating for Commercial Applications
	UL 1462-2006	Mobile Home Pipe Heating Cable
	UL 2049-2006	Residential Pipe Heating Cable
430	UL 248-13-2022	Low Voltage Fuses — Part 13: Semiconductor Fuses
	UL 347	Medium-Voltage AC Contactors, Controllers, and Control Centers
	UL 347A	Medium Voltage Power Conversion Equipment
445	UL 3001-2023	Distributed Energy Generation and Storage Systems
	UL 3010	Single Site Energy Systems
450	IEEE C57.12.00	IEEE Standard for General Requirements for Liquid-Immersed Distribution, Power, and Regulating Transformers
	IEEE C57.12.28	IEEE Standard for Pad-Mounted Equipment — Enclosure Integrity
	IEEE C57.12.29	IEEE C57.12.29 IEEE Standard for Pad-Mounted Equipment — Enclosure Integrity for Coastal Environments
	IEEE C57.16	IEEE Standard for Requirements, Terminology, and Test Code for Dry-Type Air-Core Series-Connected Reactors
	UL 50-2015	Enclosures for Electrical Equipment, Non-Environmental Considerations

Article	Standard Number	Standard Title
	UL 50E-2020	Enclosures for Electrical Equipment, Environmental Considerations
	UL 248-1-2022	Low-Voltage Fuses — Part 1: General Requirements
	UL 248-2-2000	Low-Voltage Fuses — Part 2: Class C Fuses
	UL 248-3-2000	Low-Voltage Fuses — Part 3: Class CA and CB Fuses
	UL 248-4-2000	Low-Voltage Fuses — Part 4: Class CC Fuses
	UL 248-5-2000	Low-Voltage Fuses — Part 5: Class G Fuses
	UL 248-8-2011	Low-Voltage Fuses — Part 8: Class J Fuses
	UL 248-9-2000	Low-Voltage Fuses — Part 9: Class K Fuses
	UL 489-2016	Molded-Case Circuit Breakers, Molded-Case Switches and Circuit-Breaker Enclosures
	UL 1561-2011	Dry-Type General Purpose and Power Transformers
	UL 1562	Standard for Transformers, Distribution, Dry-Type Over 600 Volts
	UL 5085-2-2021	Low Voltage Transformers — Part 2: General Purpose Transformers
460	UL 810-2019	Capacitors
	UL 1283-2017	Electromagnetic Interference Filters
	UL 60384-14-2014	Fixed Capacitors for Use in Electronic Equipment — Part 14: Sectional Specification: Fixed Capacitors for Electromagnetic Interference Suppression and Connection to the Supply Mains
470	UL 508-2018	Industrial Control Equipment
	UL 1283-2017	Electromagnetic Interference Filters
495	IEEE C37.09	IEEE Standard Test Procedures for AC High-Voltage Circuit Breakers with Rated Maximum Voltage Above 1000 V
	IEEE C37.20.2	IEEE Standard for Metal-Clad Switchgear
	IEEE C37.20.3	IEEE Standard for Metal-Enclosed Interrupter Switchgear (1 kV–38 kV)
	IEEE C37.20.4	IEEE Standard for Indoor AC Switches (1 kV to 38 kV) for Use in Metal-Enclosed Switchgear
	IEEE C37.20.6	IEEE Standard for 4.76 kV to 38 kV Rated Ground and Test Devices Used in Enclosures
	IEEE C37.20.9	IEEE Standard for Metal-Enclosed Switchgear Rated 1 kV to 52 kV Incorporating Gas Insulating Systems
	IEEE C37.23	IEEE Standard for Metal-Enclosed Bus
	IEEE C37.41	IEEE Standard Design Tests for High-Voltage (>1000 V) Fuses and Accessories
	IEEE C37.42	IEEE Standard Specifications for High-Voltage (>1000 V) Fuses and Accessories
	IEEE C37.59	IEEE Standard for Requirements for Conversion of Power Switchgear Equipment
	IEEE C37.60	IEEE International Standard — High-voltage switchgear and controlgear — Part 111: Automatic circuit reclosers for alternating current systems up to and including 38 kV
	IEEE C37.74	IEEE Standard Requirements for Subsurface, Vault, and Padmounted Load-Interrupter Switchgear and Fused Load-Interrupter Switchgear for Alternating Current Systems up to 38 kV
	NEMA C37.54	American National Standard for Indoor AC High Voltage Circuit Breakers Applied as Removable Elements in Metal-Enclosed Switchgear — Conformance Test Procedures

Article	Standard Number	Standard Title
	NEMA C37.55	American National Standard for Switchgear — Medium Voltage Metal-Clad Assemblies — Conformance Test Procedures
	NEMA C37.57	American National Standard for Switchgear — Metal-Enclosed Interrupter Switchgear Assemblies — Conformance Testing
	NEMA C37.58	American National Standard for Switchgear — Indoor AC Medium Voltage Switches for Use in Metal-Enclosed Switchgear — Conformance Test Procedures
	UL 347	Medium-Voltage AC Contactors, Controllers, and Control Centers
	UL 347A	Medium Voltage Power Conversion Equipment
	UL 347C	Outline of Investigation for Medium Voltage Solid State Resistive Load Controllers, Up to 15KV
	UL 1008A-2017	Transfer Switch Equipment, Over 1000 Volts
	UL 2748	Arcing Fault Quenching Equipment
	UL 2877	Power Supplies, Medium Voltage
	UL 3004	Outline of Investigation for Medium Voltage Junction Boxes
500	ANSI/IEEE C2	National Electrical Safety Code, Section 127A, Coal Handling Areas
	ANSI/UL 121203	Recommended Practice for Portable/Personal Electronic Products Suitable for Use in Class I, Division 2, Class I, Zone 2, Class II, Division 2, Class III, Division 1, Class III, Division 2, Zone 21 and Zone 22 Hazardous (Classified) Locations
	API RP 14F	Recommended Practice for Design and Installation of Electrical Systems for Fixed and Floating Offshore Petroleum Facilities for Unclassified and Class I, Division 1 and Division 2 Locations
	API RP 500	Recommended Practice for Classification of Locations of Electrical Installations at Petroleum Facilities Classified as Class I, Division 1 and Division 2
	API RP 2003	Protection Against Ignitions Arising Out of Static Lightning and Stray Currents.
	ASHRAE 15	Safety Standard for Refrigeration Systems.
	ASME B1.20.1	Pipe Threads, General Purpose (Inch)
	IEEE 844.2	Standard for Skin Effect Trace Heating of Pipelines, Vessels, Equipment, and Structures — Application Guide for Design, Installation, Testing, Commissioning, and Maintenance
	IEEE 60079-30-2	IEEE/IEC International Standard for Explosive atmospheres — Part 30-2: Electrical resistance trace heating — Application guide for design, installation, and maintenance
	IIAR 2	Standard for Safe Design of Closed-Circuit Ammonia Refrigeration Systems
	ISA-12.10	Area Classification in Hazardous (Classified) Dust Locations
	ISO 965-1	ISO general purpose metric screw threads — Tolerances — Part 1: Principles and basic data
	ISO 965-3	ISO general purpose metric screw threads — Tolerances — Part 3: Deviations for constructional screw threads
	NFPA 30-2024	Flammable and Combustible Liquids Code
	NFPA 32-2021	Standard for Drycleaning Facilities
	NFPA 33-2024	Standard for Spray Application Using Flammable or Combustible Materials
	NFPA 34-2024	Standard for Dipping, Coating, and Printing Processes Using Flammable or Combustible Liquids

Article	Standard Number	Standard Title
	NFPA 35-2021	Standard for the Manufacture of Organic Coatings
	NFPA 36-2025	Standard for Solvent Extraction Plants
	NFPA 45-2024	Standard on Fire Protection for Laboratories Using Chemicals
	NFPA 55-2026	Compressed Gases and Cryogenic Fluids Code
	NFPA 58-2024	Liquefied Petroleum Gas Code
	NFPA 59-2024	Utility LP-Gas Plant Code
	NFPA 77-2024	Recommended Practice on Static Electricity
	NFPA 497-2024	Recommended Practice for the Classification of Flammable Liquids, Gases, or Vapors and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas
	NFPA 499-2024	Recommended Practice for the Classification of Combustible Dusts and of Hazardous (Classified) Locations for Electrical Installation in Chemical Process Areas
	NFPA 780-2026	Standard for the Installation of Lightning Protection Systems
	NFPA 820-2024	Standard for Fire Protection in Wastewater Treatment and Collection Facilities
	UL 60079-29-2-2018	Explosive Atmospheres — Part 29-2: Gas detectors — Selection, installation, use and maintenance of detectors for flammable gases and oxygen
	UL 120002-2022	Certificate Standard for AEx Equipment for Hazardous (Classified) Locations
	UL 120101-2019	Definitions and Information Pertaining to Electrical Equipment in Hazardous (Classified) Locations
	UL 121303-2020	Guide for Combustible Gas Detection as a Method of Protection
501	UL 62-2018	Flexible Cord and Cable
	UL 504-2022	Mineral-Insulated, Metal-Sheathed Cable
503	NFPA 505-2024	Fire Safety Standard for Powered Industrial Trucks Including Type Designations, Areas of Use, Conversions, Maintenance, and Operations
504	ISA-RP 12.06.01	Recommended Practice for Wiring Methods for Hazardous (Classified) Locations Instrumentation — Part 1: Intrinsic Safety
505	ANSI/API RP 14FZ	Recommended Practice for Design and Installation of Electrical Systems for Fixed and Floating Offshore Petroleum Facilities for Unclassified and Class I, Zone 0, Zone 1, and Zone 2 Locations
	API RP 505	Recommended Practice for Classification of Locations for Electrical Installations at Petroleum Facilities Classified as Class I, Zone 0, Zone 1, and Zone 2
	API RP 2003	Protection Against Ignitions Arising Out of Static Lightning and Stray Currents.
	ASME B1.20.1	Pipe Threads, General Purpose (Inch)
	EI 15	Model Code of Safe Practice, Part 15: Area Classification Code for Installations Handling Flammable Fluids
	IEEE 844.2	Skin Effect Trace Heating of Pipelines, Vessels, Equipment, and Structures — Application Guide for Design, Installation, Testing, Commissioning, and Maintenance

Article	Standard Number	Standard Title
	IEEE 60079-30-2	Explosive Atmospheres — Part 30-2: Electrical resistance trace heating — Application guide for design, installation and maintenance
	IIAR 2	Standard for Safe Design of Closed-Circuit Ammonia Refrigeration Systems
	ISA-60079-10-1 (12.24.01)	Explosive Atmospheres — Part 10-1: Classification of Areas — Explosive gas atmospheres
	ISA-60079-29-2	Explosive Atmospheres — Part 29-2: Gas detectors — Selection, installation, use and maintenance of detectors for flammable gases and oxygen
	ISO 965-1	ISO general purpose metric screw threads — Tolerances — Part 1: Principles and basic data
	ISO 965-3	ISO general purpose metric screw threads — Tolerances — Part 3: Deviations for constructional screw threads
	NFPA 30-2024	Flammable and Combustible Liquids Code
	NFPA 77-2024	Recommended Practice on Static Electricity
	NFPA 497-2024	Recommended Practice for the Classification of Flammable Liquids, Gases, or Vapors and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas
	NFPA 780-2026	Standard for the Installation of Lightning Protection Systems
	UL 80079-20-1-2020	Explosive Atmospheres — Part 20-1: Material Characteristics for Gas and Vapour Classification — Test Methods and Data
	UL 120101-2019	Definitions and Information Pertaining to Electrical Equipment in Hazardous (Classified) Locations
	UL 121303-2020	Guide for Use of Detectors for Flammable Gases
506	ASME B1.20.1	Pipe Threads, General Purpose (Inch)
	IEEE 844.2	Skin Effect Trace Heating of Pipelines, Vessels, Equipment, and Structures — Application Guide for Design, Installation, Testing, Commissioning, and Maintenance
	IEEE 60079-30-2	Explosive Atmospheres — Part 30-2: Electrical resistance trace heating — Application guide for design, installation and maintenance
	ISA-60079-10-2 (12.10.05)	Explosive Atmospheres — Part 10-2: Classification of Areas — Combustible Dust Atmospheres
	NFPA 499-2024	Recommended Practice for the Classification of Combustible Dusts and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas
511	NFPA 30A-2024	Code for Motor Fuel Dispensing Facilities and Repair Garages
	NFPA 88A-2023	Standard for Parking Structures
512	ICC IFC	International Fire Code
	NFPA 1-2023	Fire Code
	NFPA 30-2024	Flammable and Combustible Liquids Code
	NFPA 33-2024	Standard for Spray Application Using Flammable or Combustible Materials
	NFPA 36-2025	Standard for Solvent Extraction Plants

Article	Standard Number	Standard Title
	NFPA 58-2024	Liquefied Petroleum Gas Code
	NFPA 70B-2023	Standard for Electrical Equipment Maintenance
	NFPA 497-2024	Recommended Practice for the Classification of Flammable Liquids, Gases, or Vapors and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas
513	NFPA 30-2024	Flammable and Combustible Liquids Code
	NFPA 33-2024	Standard for Spray Application Using Flammable or Combustible Materials
	NFPA 409-2022	Standard on Aircraft Hangars
514	NFPA 2-2023	Hydrogen Technologies Code
	NFPA 30A-2024	Code for Motor Fuel Dispensing Facilities and Repair Garages
	NFPA 52-2023	Vehicular Natural Gas Fuel Systems Code
	NFPA 58-2024	Liquefied Petroleum Gas Code
	NFPA 59-2024	Utility LP-Gas Plant Code
	NFPA 303-2026	Fire Protection Standard for Marinas and Boatyards
515	NFPA 30-2024	Flammable and Combustible Liquids Code
516	NFPA 13-2025	Standard for the Installation of Sprinkler Systems
	NFPA 33-2024	Standard for Spray Application Using Flammable or Combustible Materials
	NFPA 34-2024	Standard for Dipping, Coating, and Printing Processes Using Flammable or Combustible Liquids
	NFPA 77-2024	Recommended Practice on Static Electricity
	NFPA 91-2026	Standard for Exhaust Systems for Air Conveying of Vapors, Gases, Mists, and Particulate Solids
	NFPA 701-2023	Standard Methods of Fire Tests for Flame Propagation of Textiles and Films
620	UL 4-2004	Armored Cable
	UL 44-2018	Thermoset-Insulated Wires and Cables
	UL 66-2023	Fixture Wire
	UL 504-2022	Mineral Insulated Wire
	UL 1063-2017	Machine-Tool Wires and Cables
	UL 1569-2018	Metal-Clad Cable
625	UL 3001-2023	Distributed Energy Generation and Storage Systems
	UL 3010	Single Site Energy Systems
630	UL 1276-2015	Welding Cable
650	UL 1651-2015	Optical Fiber Cable
660	UL 62-2018	Flexible Cords and Cables
	UL 817-2015	Cord Sets and Power Supply Cords
668	UL 4-2004	Armored Cable
	UL 62-2018	Flexible Cords and Cables
670	UL 1740-2018	Standard for Robots and Robotic Equipment
	UL 2011-2022	Machinery

Article	Standard Number	Standard Title
	UL 3100	Standard for Automated Mobile Platforms (AMPs)
675	UL 44-2018	Thermoset-Insulated Wires and Cables
	UL 83-2017	Thermoplastic-Insulated Wires and Cables
	UL 83A-2016	Fluoropolymer Insulated Wire
	UL 1063-2017	Machine-Tool Wires and Cables
	UL 1263-2020	Irrigation Cable
690	UL 3001-2023	Distributed Energy Generation and Storage Systems
	UL 3010	Single Site Energy Systems
691	UL 3001-2023	Distributed Energy Generation and Storage Systems
	UL 3010	Single Site Energy Systems
692	UL 44-2018	Thermoset-Insulated Wires and Cables
	UL 83-2017	Thermoplastic-Insulated Wires and Cables
	UL 83A-2016	Fluoropolymer Insulated Wire
	UL 1063-2017	Machine-Tool Wires and Cables
	UL 3001-2023	Distributed Energy Generation and Storage Systems
	UL 3010	Single Site Energy Systems
694	UL 44-2018	Thermoset-Insulated Wires and Cables
	UL 62-2018	Flexible Cords and Cables
	UL 83-2017	Thermoplastic-Insulated Wires and Cables
	UL 83A-2016	Fluoropolymer Insulated Wire
	UL 1063-2017	Machine-Tool Wires and Cables
	UL 3001-2023	Distributed Energy Generation and Storage Systems
	UL 3010	Single Site Energy Systems
700	UL 3001-2023	Distributed Energy Generation and Storage Systems
	UL 3008	Automatic Interconnection Switches for Emergency Systems
701	UL 3001-2023	Distributed Energy Generation and Storage Systems
	UL 3008	Automatic Interconnection Switches for Emergency Systems
702	UL 3001-2023	Distributed Energy Generation and Storage Systems
705	UL 3001-2023	Distributed Energy Generation and Storage Systems
	UL 3010	Single Site Energy Systems
708	NEMA CY 10000-2023	Cybersecurity Implementation Guidance for Connected Electrical Infrastructure
710	UL 3001-2023	Distributed Energy Generation and Storage Systems
	UL 3010	Single Site Energy Systems

Additional Proposed Changes

File Name	Description	Approved
Annex_A_Public_Comment_2026_NEC_2024-08-21.pdf	Informative Annex A Product Safety Standards - Tables A.1(a) and A.1(b)	✓

Statement of Problem and Substantiation for Public Comment

Revise Annex A Tables A.1(a) and A.1(b) with proposed changes in the attached file as follows:
1. UL standard publication dates have been replaced with UL standard's most recent edition number. Note that non-UL standards are not included in this public comment.
2. UL standard titles have been updated to match the current titles.
3. UL standards have been added or deleted based on proposed changes in the first draft.

Related Item

• Annex A •

Submitter Information Verification

Submitter Full Name: Charles Mercier
Organization: UL Standards & Engagement
Affiliation: ULSE
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jul 10 09:42:12 EDT 2024
Committee: NEC-P01

A.1

Table A.1(a) Product Safety Standards for Conductors and Equipment That Have an Associated Listing Requirement

Article	Standard Number	Standard Title
110	UL 10C, third edition	Positive Pressure Fire Tests of Door Assemblies
	UL 305, sixth edition	Panic Hardware
	UL 486D, seventh edition	Sealed Wire Connector Systems
	UL 2043, fifth edition	Fire Test for Heat and Visible Smoke Release for Discrete Products and Their Accessories Installed in Air-Handling Spaces
	UL 62275, third edition	Cable Management Systems — Cable Ties for Electrical Installations
130	UL 3141, first edition	Power Control Systems
	UL 60730-1, fifth edition	Automatic Electrical Controls — Part 1: General Requirements
210	UL 498, sixteenth edition	Attachment Plugs and Receptacles
	UL 935, tenth edition	Fluorescent-Lamp Ballasts
	UL 943, fifth edition	Ground Fault Circuit Interrupters
	UL 1029, fifth edition	High-Intensity-Discharge Lamp Ballasts
	UL 1699, third edition	Arc-Fault Circuit-Interrupters
	UL 1699A, second edition	~~Outlet Branch Circuit~~ Outlet Branch Circuit Arc-Fault Circuit-Interrupters
225	UL 6, fifteenth edition	Electrical Rigid Metal Conduit — Steel
	UL 6A, second edition	Electrical Rigid Metal Conduit — Aluminum, Red Brass and Stainless Steel
	UL 360, seventh edition	Liquid-Tight Flexible Metal Conduit
	UL 651, eighth edition	Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings
	UL 1242, fourth edition	Electrical Intermediate Metal Conduit — Steel
	UL 1660, sixth edition	Liquid-Tight Flexible Nonmetallic Conduit
	UL 2515, second edition	Aboveground Reinforced Thermosetting Resin Conduit (RTRC) and Fittings
230	UL 6, fifteenth edition	Electrical Rigid Metal Conduit — Steel
	UL 6A, second edition	Electrical Rigid Metal Conduit — Aluminum, Red Brass and Stainless Steel
	UL 67, thirteenth edition	Panelboards
	UL 98, fourteenth edition	Enclosed and Dead-Front Switches
	UL 218, third edition	Fire Pump Controllers
	UL 231, tenth edition	Power Outlets
	UL 360, seventh edition	Liquid-Tight Flexible Metal Conduit
	UL 414, ninth edition	Meter Sockets
	UL 486A-486B, third edition	Wire Connectors
	UL 486C, eighth edition	Splicing Wire Connectors
	UL 489, thirteenth edition	Molded-Case Circuit Breakers, Molded-Case Switches and Circuit-Breaker Enclosures
	UL 508, eighteenth edition	Industrial Control Equipment
	UL 508A, third edition	Industrial Control Panels
	UL 514B, sixth edition	Conduit, Tubing, and Cable Fittings
	UL 651, eighth edition	Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings
	UL 845, sixth edition	Motor Control Centers
	UL 857, thirteenth edition	Busways
	UL 869A, fourth edition	Reference Standard for Service Equipment
	UL 891, twelfth edition	Switchboards
	UL 977, fifth edition	Fused Power-Circuit Devices
	UL 1008, ninth edition	Transfer Switch Equipment
	UL 1008M, first edition	Transfer Switch Equipment, Meter-Mounted~~Meter-Mounted Transfer Switches~~
	UL 1008S, first edition	Solid-State Transfer Switches
	UL 1053, seventh edition	Ground-Fault Sensing and Relaying Equipment
	UL 1062, third edition	Unit Substations
	UL 1066, fifth edition	Power Circuit Breakers up to 1000 V AC and 1500 V DC Used in Enclosures~~Low-Voltage AC and DC Power Circuit Breakers Used in Enclosures~~
	UL 1242, fourth edition	Electrical Intermediate Metal Conduit — Steel
	UL 1429, fourth edition	Pullout Switches
	UL 1449, fifth edition	Surge Protective Devices
	UL 1558, fifth edition	Metal-Enclosed Low-Voltage Power Circuit Breaker Switchgear
	UL 1660, sixth edition	Liquid-Tight Flexible Nonmetallic Conduit
	UL 1740, fourth edition	Robots and Robotic Equipment
	UL 1953, seventh edition	Power Distribution Blocks
	UL 2011, seventh edition	Machinery
	UL 2200, third edition	Stationary Engine Generator Assemblies
	UL 2416, first edition	Audio/Video, Information and Communication Technology Equipment Cabinet, Enclosure and Rack Systems
	UL 2446, first edition	Unitary Boiler Room Systems
	UL 2565, first edition	Industrial Metalworking and Woodworking Machine Tools

	UL 2735, first edition	Electric Utility Meters
	UL 2745, first edition	Meter Socket Adapters for Communications Equipment
	UL 2876, first edition	Remote Racking Devices for Switchgear and Controlgear
	UL 4248-1, third edition	Fuseholders — Part 1: General Requirements
	UL 60947-1, sixth edition	Low-Voltage Switchgear and Controlgear — Part 1: General Rules
	UL 61800-5-1, second edition	Adjustable Speed Electrical Power Drive Systems — Part 5-1: Safety Requirements — Electrical, Thermal and Energy
240	UL 248-1, fourth edition	Low-Voltage Fuses — Part 1: General Requirements
	UL 248-2, second edition	Low-Voltage Fuses — Part 2: Class C Fuses
	UL 248-3, second edition	Low-Voltage Fuses — Part 2: Class CA and CB Fuses
	UL 248-4, second edition	Low-Voltage Fuses — Part 4: Class CC Fuses
	UL 248-5, second edition	Low-Voltage Fuses — Part 5: Class G Fuses
	UL 248-6, second edition	Low-Voltage Fuses — Part 6: Class H Non-Renewable Fuses
	UL 248-8, third edition	Low-Voltage Fuses — Part 8: Class J Fuses
	UL 248-9, second edition	Low-Voltage Fuses — Part 9: Class K Fuses
	UL 248-10, third edition	Low-Voltage Fuses — Part 10: Class L Fuses
	UL 248-11, third edition	Low-Voltage Fuses — Part 11: Plug Fuses
	UL 248-12, third edition	Low-Voltage Fuses — Part 12: Class R Fuses
	UL 248-15, third edition	Low-Voltage Fuses — Part 15: Class T Fuses
	UL 248-17, fifth edition	Low-Voltage Fuses — Part 17: Class CF Fuses
	UL 248-18, first edition	Low-Voltage Fuses — Part 18: Class CD Fuses
	UL 489, thirteenth edition	Molded-Case Circuit Breakers, Molded-Case Switches, and Circuit-Breaker Enclosures
	UL 489I, second edition	Solid State Molded-Case Circuit Breakers
	UL 943, fifth edition	Ground-Fault Circuit-Interrupters
	UL 1053, seventh edition	Ground-Fault Sensing and Relaying Equipment
	UL 1066, fifth edition	Power Circuit Breakers up to 1000 V AC and 1500 V DC Used in Enclosures ~~Low-Voltage AC and DC Power Circuit Breakers Used in Enclosures~~
	UL 4248-1, third edition	Fuseholders — Part 1: General Requirements
242	UL 1449, fifth edition	Surge Protective Devices
250	UL 1, eleventh edition	Flexible Metal Conduit
	UL 4, fifteenth edition	Armored Cable
	UL 5, fifteenth edition	Surface Metal Raceways and Fittings
	UL 6, fifteenth edition	Electrical Rigid Metal Conduit — Steel
	UL 6A, second edition	Electrical Rigid Metal Conduit — Aluminum, Red Brass and Stainless Steel
	UL 153, thirteenth edition	Portable Electric Luminaires
	UL 360, seventh edition	Liquid-Tight Flexible Metal Conduit
	UL 467, eleventh edition	Grounding and Bonding Equipment
	UL 486A-486B, third edition	Wire Connectors
	UL 486C, eighth edition	Splicing Wire Connectors
	UL 486D, seventh edition	Sealed Wire Connector Systems
	UL 498, sixteenth edition	Attachment Plugs and Receptacles
	UL 504, third edition	Mineral-Insulated, Metal-Sheathed Cable
	UL 514A, eleventh edition	Metallic Outlet Boxes
	UL 514B, sixth edition	Conduit, Tubing, and Cable Fittings
	UL 797, ninth edition	Electrical Metallic Tubing — Steel
	UL 797A, third edition	Electrical Metallic Tubing — Aluminum and Stainless Steel
	UL 1242, fourth edition	Electrical Intermediate Metal Conduit — Steel
	UL 1569, fifth edition	Metal-Clad Cables
	UL 1652, third edition	Flexible Metallic Tubing
270	UL 1, eleventh edition	Flexible Metal Conduit
	UL 6, fifteenth edition	Electrical Rigid Metal Conduit — Steel
	UL 6A, second edition	Electrical Rigid Metal Conduit — Aluminum, Red Brass and Stainless Steel
	UL 360, seventh edition	Liquid-Tight Flexible Metal Conduit
	UL 467, eleventh edition	Grounding and Bonding Equipment
	UL 486A-486B, third edition	Wire Connectors
	UL 486C, eighth edition	Splicing Wire Connectors
	UL 486D, seventh edition	Sealed Wire Connector Systems
	UL 514A, eleventh edition	Metallic Outlet Boxes
	UL 514B, sixth edition	Conduit, Tubing, and Cable Fittings
	UL 797, ninth edition	Electrical Metallic Tubing — Steel
	UL 797A, third edition	Electrical Metallic Tubing — Aluminum and Stainless Steel
	UL 1242, fourth edition	Electrical Intermediate Metal Conduit — Steel
	UL 1569, fifth edition	Metal-Clad Cables
300	UL 4, fifteenth edition	Armored Cable
	UL 44, nineteenth edition	Thermoset-Insulated Wires and Cables

	UL 83, sixteenth edition	Thermoplastic-Insulated Wires and Cables
	UL 83A, first edition	Fluoropolymer Insulated Wire
	UL 263, fourteenth edition	Fire Tests of Building Construction and Materials
	UL 504, third edition	Mineral-Insulated, Metal-Sheathed Cable
	UL 746C, seventh edition	Polymeric Materials — Use in Electrical Equipment Evaluations
	UL 1569, fifth edition	Metal-Clad Cables
	UL 1581, fourth edition	Reference Standard for Electrical Wires, Cables, and Flexible Cords
	UL 2239, second edition	Hardware for the Support of Conduit, Tubing, and Cable
	UL 2556, fifth edition	Wire and Cable Test Methods
	UL 62275, third edition	Cable Management Systems — Cable Ties for Electrical Installations
310	UL 44, nineteenth edition	Thermoset-Insulated Wires and Cables
	UL 83, sixteenth edition	Thermoplastic-Insulated Wires and Cables
	UL 83A, first edition	Fluoropolymer Insulated Wire
	UL 83B, first edition	Switchboard and Switchgear Wires and Cables
	UL 224, seventh edition	Extruded Insulating Tubing
	UL 493, tenth edition	Thermoplastic-Insulated Underground Feeder and Branch-Circuit Cables
	UL 504, third edition	Mineral-Insulated, Metal-Sheathed Cable
	UL 854, twelfth edition	Service-Entrance Cables
	UL 1063, ninth edition	Machine-Tool Wires and Cables
	UL 1441, fifth edition	Coated Electrical Sleeving
	UL 1581, fourth edition	Reference Standard for Electrical Wires, Cables, and Flexible Cords
312	UL 50, fourteenth edition	Enclosures for Electrical Equipment, Non-Environmental Considerations
	UL 50E, third edition	Enclosures for Electrical Equipment, Environmental Considerations
	UL 514C, fourth edition	Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers
	UL 2808, first edition	Energy Monitoring Equipment
	UL 61010-1, third edition	Electrical Equipment for Measurement, Control, and Laboratory Use — Part 1: General Requirements
	UL 61010-2-030, second edition	Electrical Equipment for Measurement, Control, and Laboratory Use — Part 2-030: Particular Requirements for Testing and Measuring Circuits
314	UL 50, fourteenth edition	Enclosures for Electrical Equipment, Non-Environmental Considerations
	UL 50E, third edition	Enclosures for Electrical Equipment, Environmental Considerations
	UL 486D, seventh edition	Sealed Wire Connector Systems
	UL 498, sixteenth edition	Attachment Plugs and Receptacles
	UL 498B, first edition	Receptacles with Integral Switching Means
	UL 498D, first edition	Attachment Plugs, Cord Connectors and Receptacles with Arcuate (Locking Type) Contacts
	UL 498E, first edition	Attachment Plugs, Cord Connectors and Receptacles — Enclosure Types for Environmental Protection
	UL 514A, eleventh edition	Metallic Outlet Boxes
	UL 514B, sixth edition	Conduit, Tubing, and Cable Fittings
	UL 514C, fourth edition	Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers
	UL 514D, second edition	Cover Plates for Flush-Mounted Wiring Devices
	UL 1953, seventh edition	Power Distribution Blocks
315	ANSI C119.4	Electric Connectors — Connectors for Use between Aluminum-to-Aluminum and Aluminum-to-Copper Conductors Designed for Normal Operation at or Below 93ºC and Copper-to-Copper Conductors Designed for Normal Operation at or Below 100ºC
	IEEE 48	IEEE Standard for Test Procedures and Requirements for Alternating-Current Cable Terminations Used on Shielded Cables Having Laminated Insulation Rated 2.5 kV through 765 kV or Extruded Insulation Rated 2.5 kV through 500 kV
	IEEE 386	IEEE Standard for Separable Insulated Connector Systems for Power Distribution Systems Rated 2.5 kV through 35 kV
	IEEE 404	IEEE Standard for Extruded and Laminated Dielectric Shielded Cable Joints Rated 2.5 kV to 500 kV
	UL 4, fifteenth edition	Armored Cable
	UL 504, third edition	Mineral-Insulated, Metal-Sheathed Cable
	UL 1072, fourth edition	Medium Voltage Power Cables
	UL 1569, fifth edition	Metal-Clad Cables
320	UL 4, fifteenth edition	Armored Cable
	UL 44, nineteenth edition	Thermoset-Insulated Wires and Cables
	~~UL 83, sixteenth edition~~	~~Thermoplastic-Insulated Wires and Cables~~
	~~UL 83A, first edition~~	~~Fluoropolymer Insulated Wire~~
	UL 514B, sixth edition	Conduit, Tubing, and Cable Fittings
	UL 514C, fourth edition	Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers
	~~UL 1063, ninth edition~~	~~Machine-Tool Wires and Cables~~

	UL 1565, sixth edition	Positioning Devices
	UL 2239, second edition	Hardware for the Support of Conduit, Tubing, and Cable
322	UL 486A-486B, third edition	Wire Connectors
	UL 498, sixteenth edition	Attachment Plugs and Receptacles
	UL 514A, eleventh edition	Metallic Outlet Boxes
324	UL 486A-486B, third edition	Wire Connectors
	UL 498, sixteenth edition	Attachment Plugs and Receptacles
330	~~UL 44, nineteenth edition~~	~~Thermoset-Insulated Wires and Cables~~
	~~UL 66, third edition~~	~~Fixture Wire~~
	~~UL 83, sixteenth edition~~	~~Thermoplastic-Insulated Wires and Cables~~
	~~UL 83A, first edition~~	~~Fluoropolymer Insulated Wire~~
	UL 514B, sixth edition	Conduit, Tubing, and Cable Fittings
	~~UL 1063, ninth edition~~	~~Machine-Tool Wires and Cables~~
	UL 1565, sixth edition	Positioning Devices
	UL 1569, fifth edition	Metal-Clad Cables
	UL 2225, fifth edition	Cables and Cable-Fittings For Use In Hazardous (Classified) Locations
	UL 2239, second edition	Hardware for the Support of Conduit, Tubing, and Cable
332	UL 504, third edition	Mineral-Insulated, Metal-Sheathed Cable
	UL 514B, sixth edition	Conduit, Tubing, and Cable Fittings
334	UL 719, thirteenth edition	Nonmetallic-Sheathed Cables
	UL 2256, first edition	Nonmetallic Sheathed Cable Interconnects
	UL 62275, third edition	Cable Management Systems — Cable Ties for Electrical Installations
335	UL 2250, third edition	Instrumentation Tray Cable
336	UL 514B, sixth edition	Conduit, Tubing, and Cable Fittings
	UL 1277, sixth edition	Electrical Power and Control Tray Cables with Optional Optical-Fiber Members
	UL 2225, fifth edition	Cables and Cable-Fittings For Use In Hazardous (Classified) Locations
337	UL 1309A, first edition	Cable for Use in Mobile Installations
338	UL 514B, sixth edition	Conduit, Tubing, and Cable Fittings
	UL 854, twelfth edition	Service-Entrance Cables
340	UL 514B, sixth edition	Conduit, Tubing, and Cable Fittings
	UL 493, tenth edition	Thermoplastic-Insulated Underground Feeder and Branch-Circuit Cables
342	UL 514B, sixth edition	Conduit, Tubing, and Cable Fittings
	UL 1242, fourth edition	Electrical Intermediate Metal Conduit — Steel
344	UL 6, fifteenth edition	Electrical Rigid Metal Conduit — Steel
	UL 6A, second edition	Electrical Rigid Metal Conduit — Aluminum, Red Brass and Stainless Steel
	UL 514B, sixth edition	Conduit, Tubing, and Cable Fittings
348	UL 1, eleventh edition	Flexible Metal Conduit
	UL 62275, third edition	Cable Management Systems — Cable Ties for Electrical Installations
350	UL 360, seventh edition	Liquid-Tight Flexible Steel Conduit
	UL 514B, sixth edition	Conduit, Tubing, and Cable Fittings
	UL 62275, third edition	Cable Management Systems — Cable Ties for Electrical Installations
352	UL 651, eighth edition	Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings
353	UL 651A, sixth edition	~~Schedule 40 and 80~~ High Density Polyethylene (HDPE) Conduit
354	UL 1990, fourth edition	Nonmetallic Underground HDPE Conduit with Conductors
355	UL 2420, first edition	Belowground Reinforced Thermosetting Resin Conduit (RTRC) and Fittings
	UL 2515, second edition	Aboveground Reinforced Thermosetting Resin Conduit (RTRC) and Fittings
	UL 2515A, first edition	Supplemental Requirements for Extra-Heavy Wall Reinforced Thermosetting Resin Conduit (RTRC) and Fittings
356	UL 1660, sixth edition	Liquid-Tight Flexible Nonmetallic Conduit
	UL 62275, third edition	Cable Management Systems — Cable Ties for Electrical Installations
358	UL 514B, sixth edition	Conduit, Tubing, and Cable Fittings
	UL 797, ninth edition	Electrical Metallic Tubing — Steel
	UL 797A, third edition	Electrical Metallic Tubing — Aluminum and Stainless Steel
360	UL 514B, sixth edition	Conduit, Tubing, and Cable Fittings
	UL 1652, third edition	Flexible Metallic Tubing
362	UL 1653, third edition	Electrical Nonmetallic Tubing
	UL 62275, third edition	Cable Management Systems — Cable Ties for Electrical Installations
366	UL 870, ninth edition	Wireways, Auxiliary Gutters, and Associated Fittings
368	UL 509, second edition	Bus Drop Cable
370	ANSI/CSA C22.2 No. 273	Cablebus
371	UL 1386, first edition	Flexible Bus Systems
	UL 1387, first edition	Flexible Insulated Bus
374	UL 209, tenth edition	Cellular Metal Floor Raceways and Fittings
	UL 360, seventh edition	Liquid-Tight Flexible Metal Conduit
	UL 1660, sixth edition	Liquid-Tight Flexible Nonmetallic Conduit
376	UL 870, ninth edition	Wireways, Auxiliary Gutters, and Associated Fittings

	UL 1953, seventh edition	Power Distribution Blocks
378	UL 870, ninth edition	Wireways, Auxiliary Gutters, and Associated Fittings
382	UL 5A, fourth edition	Nonmetallic Surface Raceways and Fittings
	UL 183, fourth edition	Manufactured Wiring Systems
	UL 467, eleventh edition	Grounding and Bonding Equipment
	UL 498, sixteenth edition	Attachment Plugs and Receptacles
	UL 498D, first edition	Attachment Plugs, Cord Connectors and Receptacles with Arcuate (Locking Type) Contacts
	UL 498E, first edition	Attachment Plugs, Cord Connectors and Receptacles — Enclosure Types for Environmental Protection
	UL 498F, first edition	Plugs, Socket-Outlets and Couplers with Arcuate (Locking Type) Contacts
	UL 498M, first edition	Marine Shore Power Inlets
	UL 514D, second edition	Cover Plates for Flush-Mounted Wiring Devices
	UL 746C, seventh edition	Polymeric Materials — Use in Electrical Equipment Evaluations
	UL 943, fifth edition	Ground-Fault Circuit-Interrupters
	UL 991, third edition	Tests for Safety-Related Controls Employing Solid-State Devices
	UL 1077, seventh edition	Supplementary Protectors for Use in Electrical Equipment
	UL 1699, third edition	Arc-Fault Circuit-Interrupters
	UL 1998, third edition	Software in Programmable Components
384	UL 5B, second edition	Strut-Type Channel Raceways and Fittings
386	UL 5, fifteenth edition	Surface Metal Raceways and Fittings
388	UL 5A, fourth edition	Nonmetallic Surface Raceways and Fittings
392	UL 62275, third edition	Cable Management Systems — Cable Ties for Electrical Installations
393	UL 13, fourth edition	Power-Limited Circuit Cables
	UL 50, fourteenth edition	Enclosures for Electrical Equipment, Non-Environmental Considerations
	UL 50E, third edition	Enclosures for Electrical Equipment, Environmental Considerations
	UL 514C, fourth edition	Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers
	UL 1310, seventh edition	Class 2 Power Units
	UL 2043, fifth edition	Fire Test for Heat and Visible Smoke Release for Discrete Products and Their Accessories Installed in Air-Handling Spaces
	UL 2577, first edition	Suspended Ceiling Power Grid Systems and Equipment
	UL 62368-1, third edition	Audio/Video, Information and Communication Technology Equipment — Part 1: Safety Requirements
396	UL 1072, fourth edition	Medium-Voltage Power Cables
404	ANSI/NEMA WD 6–2016	Wiring Devices — Dimensional Specifications
404	UL 20, fourteenth edition	General-Use Snap Switches
	UL 98, fourteenth edition	Enclosed and Dead-Front Switches
	UL 98A, second edition	Open-Type Switches
	UL 363, eleventh edition	Knife Switches
	UL 489, thirteenth edition	Molded-Case Circuit Breakers, Molded-Case Switches and Circuit-Breaker Enclosures ~~Automatic Electrical Controls for Household and Similar Use; Part 2: Particular Requirements for Timers and Time Switches~~
	UL 773, fifth edition	Plug-In Locking Type Photocontrols for Use with Area Lighting
	UL 773A, sixth edition	Nonindustrial Photoelectric Switches for Lighting Control
	UL 917, fifth edition	Clock-Operated Switches
	UL 977, fifth edition	Fused Power-Circuit Devices
	UL 1066, fifth edition	Power Circuit Breakers up to 1000 V AC and 1500 V DC Used in Enclosures ~~Low-Voltage AC and DC Power Circuit Breakers Used in Enclosures~~
	UL 1472, second edition	Solid-State Dimming Controls
	UL 1429, fourth edition	Pullout Switches
	UL 60730-1, fifth edition	Automatic Electrical Controls — Part 1: General Requirements
	~~UL 60730-2-7, third edition~~	~~Automatic Electrical Controls for Household and Similar Use; Part 2-7: Particular Requirements for Timers and Time Switches~~
	UL 60730-2-7, third edition	Automatic Electrical Controls ~~for Household and Similar Use; —~~ Part 2-7: Particular Requirements for Timers and Time Switches
406	UL 498, sixteenth edition	Attachment Plugs and Receptacles
	UL 498B, first edition	Receptacles with Integral Switching Means
	UL 498D, first edition	Attachment Plugs, Cord Connectors and Receptacles with Arcuate (Locking Type) Contacts
	UL 498E, first edition	Attachment Plugs, Cord Connectors and Receptacles — Enclosure Types for Environmental Protection
	UL 498F, first edition	Plugs, Socket-Outlets and Couplers with Arcuate (Locking Type) Contacts
	UL 498M, first edition	Marine Shore Power Inlets
	UL 514A, eleventh edition	Metallic Outlet Boxes
	UL 514C, fourth edition	Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers
	UL 514D, second edition	Cover Plates for Flush-Mounted Wiring Devices

	UL 943, fifth edition	Ground-Fault Circuit-Interrupters
	UL 943B, third edition	Appliance Leakage-Current Interrupters
	UL 943C, second edition	Special Purpose Ground-Fault Circuit-Interrupters
	UL 970, first edition	Retail Fixtures and Merchandis~~e~~ing Displays
	UL 1053, seventh edition	Ground-Fault Sensing and Relaying Equipment See 406.4(D)(8)
	UL 1286, sixth edition	Office Furnishings Systems
	UL 1310, seventh edition	Class 2 Power Units
	UL 1682, fifth edition	Plugs, Receptacles, and Cable Connectors, of the Pin and Sleeve Type
	UL 1691, second edition	Single Pole Locking-Type Separable Connectors
	UL 1699, third edition	Arc-Fault Circuit-Interrupters
	UL 1699A, second edition	Outlet Branch Circuit Arc-Fault Circuit-Interrupters ~~AFCIs~~ See 406.4(D)(4)(1)
	UL 2999, first edition	Individual Commercial Office Furnishings
408	UL 44, nineteenth edition	Thermoset-Insulated Wires and Cables
	UL 67, thirteenth edition	Panelboards
	UL 891, twelfth edition	Switchboards
	UL 1558, fifth edition	Metal-Enclosed Low-Voltage Power Circuit Breaker Switchgear
409	UL 508, eighteenth edition	Industrial Control Equipment
	UL 508A, third edition	Industrial Control Panels
410	ANSI/CSA-C22.2 No. 184.2	Solid-State Controls for Lighting Systems (SSCLS)
410	UL 153, thirteenth edition	Portable Electric Luminaires
	UL 496, fourteenth edition	Lampholders
	UL 498, sixteenth edition	Attachment Plugs and Receptacles
	UL 498B, first edition	Receptacles with Integral Switching Means
	UL 498D, first edition	Attachment Plugs, Cord Connectors and Receptacles with Arcuate (Locking Type) Contacts
	UL 498E, first edition	Attachment Plugs, Cord Connectors and Receptacles — Enclosure Types for Environmental Protection
	UL 498F, first edition	Plugs, Socket-Outlets and Couplers with Arcuate (Locking Type) Contacts
	UL 542, ninth edition	Fluorescent Lamp Starters
	UL 588, nineteenth edition	Seasonal and Holiday Decorative Products
	UL 935, tenth edition	Fluorescent-Lamp Ballasts
	UL 943, fifth edition	Ground-Fault Circuit-Interrupters
	UL 970, first edition	Retail Fixtures and Merchandis~~e~~ing Displays
	UL 1029, fifth edition	High-Intensity-Discharge Lamp Ballasts
	UL 1029a, first edition	Ignitors and Related Auxiliaries for HID Lamp Ballasts
	UL 1574, third edition	Track Lighting Systems
	UL 1598, fifth edition	Luminaires
	UL 1598B, first edition	Luminaire Reflector Kits for Installation on Previously Installed Fluorescent Luminaires, Supplemental Requirements
	UL 1598C, second edition	Light-Emitting Diode (LED) Retrofit Luminaire Conversion Kits
	UL 1993, sixth edition	Self-Ballasted Lamps and Lamp Adapters
	UL 2388, second edition	Flexible Lighting Products
	UL 8750, second edition	Light Emitting Diode (LED) Equipment for Use in Lighting Products
	UL 8752, second edition	Organic Light Emitting Diode (OLED) Panels
	UL 8753, second edition	Field-Replaceable Light Emitting Diode (LED) Light Engines
	UL 8754, second edition	Holders, Bases and Connectors for Solid-State (LED) Light Engines and Arrays
	UL 8800, first edition	Horticultural Lighting Equipment and Systems
	UL 8802, first edition	Ultraviolet (UV) Germicidal Equipment and Systems
	UL 8803, first edition	Portable UV Germicidal Equipment With Uncontained UV Sources
411	UL 1310, seventh edition	Class 2 Power Units
	UL 1838, third edition	Low-Voltage Landscape Lighting Systems
	UL 2108, second edition	Low-_Voltage Lighting Systems
	UL 5085-3, first edition	Low Voltage Transformers — Part 3: Class 2 and Class 3 Transformers
422	ANSI/CSA-C22.2 No. 339	Hand-held motor-operated electric tools — Safety — Particular requirements for chain beam saws
422	UL 22, sixth edition	Amusement and Gaming Machines
	UL 73, tenth edition	Motor-Operated Appliances
	UL 82, ninth edition	Electric Gardening Appliances
	UL 122, fifth edition	Photographic Equipment
	UL 141, ninth edition	Garment Finishing Appliances
	UL 174, eleventh edition	Household Electric Storage Tank Water Heaters
	UL 197, tenth edition	Commercial Electric Cooking Appliances
	UL 283, third edition	Air Fresheners and Deodorizers

UL 325, seventh edition	Door, Drapery, Gate, Louver, and Window Operators and Systems
UL 399, eighth edition	Drinking Water Coolers
UL 430, eighth edition	Waste Disposers
UL 498, sixteenth edition	Attachment Plugs and Receptacles
UL 498D, first edition	Attachment Plugs, Cord Connectors and Receptacles with Arcuate (Locking Type) Contacts
UL 498E, first edition	Attachment Plugs, Cord Connectors and Receptacles — Enclosure Types for Environmental Protection
UL 498F, first edition	Plugs, Socket-Outlets and Couplers with Arcuate (Locking Type) Contacts
UL 499, fourteenth edition	Electric Heating Appliances
UL 507, tenth edition	Electric Fans
UL 514A, eleventh edition	Metallic Outlet Boxes
UL 515, second edition	Electrical Resistance Trace Heating for Commercial Applications
UL 561, seventh edition	Floor Finishing Machines
UL 574, eighth edition	Electric Oil Heaters
UL 621, seventh edition	Ice Cream Makers
UL 705, seventh edition	Power Ventilators
UL 710B, second edition	Recirculating Systems
UL 749, twelfth edition	Household Dishwashers
UL 751, ninth edition	Vending Machines
UL 763, fifth edition	Motor-Operated Commercial Food Preparing Machines
UL 778, sixth edition	Motor-Operated Water Pumps
UL 834, fifth edition	Heating, Water Supply, and Power Boilers — Electric
UL 858, sixteenth edition	Household Electric Ranges
UL 859, eleventh edition	Household Electric Personal Grooming Appliances
UL 875, tenth edition	Electric Dry-Bath Heaters
UL 921, eighth edition	Commercial Dishwashers
UL 923, seventh edition	Microwave Cooking Appliances
UL 943, fifth edition	Ground-Fault Circuit-Interrupters
UL 962, fifth edition	Household and Commercial Furnishings
UL 962A, sixth edition	Furniture Power Distribution Units
UL 979, second edition	Water Treatment Appliances
UL 982, eighth edition	Motor-Operated Household Food Preparing Machines
UL 987, eighth edition	Stationary and Fixed Electric Tools
UL 1017, tenth edition	Vacuum Cleaners, Blower Cleaners, and Household Floor Finishing Machines
UL 1026, sixth edition	Household Electric Cooking and Food Serving Appliances
UL 1086, sixth edition	Household Trash Compactors
UL 1090, seventh edition	Electric Snow Movers
UL 1206, fourth edition	Electric Commercial Clothes-Washing Equipment
UL 1240, fourth edition	Electric Commercial Clothes-Drying Equipment
UL 1278, fourth edition	Movable and Wall- or Ceiling-Hung Electric Room Heaters
UL 1447, sixth edition	Electric Lawn Mowers
UL 1450, fourth edition	Motor-Operated Air Compressors, Vacuum Pumps, and Painting Equipment
UL 1453, sixth edition	Electric Booster and Commercial Storage Tank Water Heaters
UL 1576, second edition	Flashlights and Lanterns
UL 1594, fourth edition	Sewing and Cutting Machines
UL 1647, sixth edition	Motor-Operated Massage and Exercise Machines
UL 1727, fifth edition	Commercial Electric Personal Grooming Appliances
UL 1776, third edition	High-Pressure Cleaning Machines
UL 2157, fourth edition	Electric Clothes Washing Machines and Extractors
UL 2158, sixth edition	Electric Clothes Dryers
UL 2565, first edition	Industrial Metalworking and Woodworking Machine Tools
UL 60335-2-3, sixth edition	Household and Similar Electrical Appliances~~,~~ - Safety - Part 2-3: Particular Requirements for Electric Irons
UL 60335-2-8, sixth edition	Household and Similar Electrical Appliances~~,~~ — Safety — Part 2-8: Particular Requirements for Shavers, Hair Clippers, and Similar Appliances
UL 60335-2-24, third edition	Household and Similar Electrical Appliances~~,~~ - Safety - Part 2-24: Particular Requirements for Refrigerating Appliances, Ice-Cream Appliances, and Ice-Makers
UL 60335-2-40, fourth edition	Household and Similar Electrical Appliances — Safety — Part 2-40: Particular Requirements for Electrical Heat Pumps, Air-Conditioners and Dehumidifiers
UL 60335-2-67, second edition	Household and Similar Electrical Appliances — Safety — Part 2-67: Particular Requirements for Floor Treatment Machines, For Commercial Use
UL 60335-2-68, first edition	Household and Similar Electrical Appliances — Safety — Part 2-68: Particular Requirements for Spray Extraction Machines, for Commercial Use

UL 60335-2-79, first edition	Household and Similar Electrical Appliances — Safety — Part 2-79: Particular Requirements for High Pressure Cleaners and Steam Cleaners
UL 60730-2-9, fourth edition	Automatic Electrical Controls; Part 2-9: Particular Requirements for Temperature Sensing Controls
UL 60745-1, fourth edition	Hand-Held Motor-Operated Electric Tools — Safety — Part 1: General Requirements
UL 60745-2-1, second edition	Hand-Held Motor-Operated Electric Tools — Safety — Part 2-1: Particular Requirements for Drills and Impact Drills
UL 60745-2-2, second edition	Hand-Held Motor-Operated Electric Tools — Safety — Part 2-2: Particular Requirements for Screwdrivers and Impact Wrenches
UL 60745-2-3, second edition	Hand-Held Motor-Operated Electric Tools — Safety — Part 2-3: Particular Requirements for Grinders, Polishers, and Disk-Type Sanders
UL 60745-2-4, second edition	Hand-Held Motor-Operated Electric Tools — Safety — Part 2-4: Particular Requirements for Sanders and Polishers Other Than Disk Type
UL 60745-2-5, fifth edition	Hand-Held Motor-Operated Electric Tools — Safety — Part 2-5: Particular Requirements for Circular Saws
UL 60745-2-6, second edition	Hand-Held Motor-Operated Electric Tools — Safety — Part 2-6: Particular Requirements for Hammers
UL 60745-2-8, second edition	Hand-Held Motor-Operated Electric Tools — Safety — Part 2-8: Particular Requirements for Shears and Nibblers
UL 60745-2-9, second edition	Hand-Held Motor-Operated Electric Tools — Safety — Part 2-9: Particular Requirements for Tappers
UL 60745-2-11, second edition	Hand-Held Motor-Operated Electric Tools — Safety — Part 2-11: Particular Requirements for Reciprocating Saws
UL 60745-2-12, second edition	Hand-Held Motor-Operated Electric Tools — Safety — Part 2-12: Particular Requirements For Concrete Vibrators
UL 60745-2-13, first edition	Hand-Held Motor-Operated Electric Tools — Safety — Part 2-13: Particular Requirements For Chain Saws
UL 60745-2-14, second edition	Hand-Held Motor-Operated Electric Tools — Safety — Part 2-14: Particular Requirements for Planers
UL 60745-2-15, first edition	Hand-Held Motor-Operated Electric Tools — Safety — Part 2-15: Particular Requirements for Hedge Trimmers
UL 60745-2-16, first edition	Hand-Held Motor-Operated Electric Tools — Safety — Part 2-16: Particular Requirements for Tackers
UL 60745-2-17, third edition	Hand-Held Motor-Operated Electric Tools — Safety — Part 2-17: Particular Requirements for Routers and Trimmers
UL 60745-2-18, first edition	Hand-Held Motor-Operated Electric Tools — Safety — Part 2-18: Particular Requirements For Strapping Tools
UL 60745-2-19, first edition	Hand-Held Motor-Operated Electric Tools — Safety — Part 2-19: Particular Requirements for Jointers
UL 60745-2-20, first edition	Hand-Held Motor-Operated Electric Tools — Safety — Part 2-20: Particular Requirements for Band Saws
UL 60745-2-21, first edition	Hand-Held Motor-Operated Electric Tools — Safety — Part 2-21: Particular Requirements For Drain Cleaners
UL 60745-2-22, first edition	Hand-Held Motor-Operated electric Tools — Safety — Part 2-22: Particular Requirements for Cut-Off Machines
UL 60745-2-23, first edition	Hand-Held Motor-Operated electric Tools — Safety — Part 2-23: Particular Requirements for Die Grinders and Small Rotary Tools
UL 62841-1, first edition	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 1: General Requirements
UL 62841-2-1, first edition	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 2-1: Particular Requirements For Hand-Held Drills and Impact Drills
UL 62841-2-2, first edition	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 2-2: Particular Requirements For Hand-Held Screwdrivers And Impact Wrenches
UL 62841-2-3, first edition	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 2-3: Particular Requirements For Hand-Held Grinders, Disc-Type Polishers, and Disk-Type Sanders
UL 62841-2-4, first edition	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 2-4: Particular Requirements For Hand-Held Sanders And Polishers Other Than Disc Type
UL 62841-2-5, first edition	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 2-5: Particular Requirements For Hand-Held Circular Saws

	UL 62841-2-8, first edition	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 2-8: Particular Requirements For Hand-Held Shears and Nibblers
	UL 62841-2-9, first edition	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 2-9: Particular Requirements For Hand-Held Tappers And Threaders
	UL 62841-2-10, first edition	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 2-10: Particular Requirements For Hand-Held Mixers
	UL 62841-2-11, first edition	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 2-11: Particular Requirements for Hand-Held Reciprocating Saws
	UL 62841-2-14, first edition	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 2-14: Particular Requirements For Hand-Held Planers
	UL 62841-2-17, first edition	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 2-17: Particular Requirements For Hand-Held Routers
	UL 62841-2-21, first edition	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 2-21: Particular Requirements For Hand-Held Drain Cleaners
	UL 62841-3-1, first edition	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 3-1: Particular Requirements For Transportable Table Saws
	UL 62841-3-4, first edition	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 3-4: Particular Requirements for Transportable Bench Grinders
	UL 62841-3-6, first edition	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 3-6: Particular Requirements For Transportable Diamond Drills with Liquid System
	UL 62841-3-9, second edition	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 3-9: Particular Requirements For Transportable Mitre Saws
	UL 62841-3-10, first edition	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 3-10: Particular Requirements for Transportable Cut-Off Machines
	UL 62841-3-12, first edition	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 3-12: Particular Requirements for Transportable Threading Machines
	UL 62841-3-13, first edition	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 3-13: Particular Requirements For Transportable Drills
	UL 62841-3-14, first edition	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 3-14: Particular Requirements for Transportable Drain Cleaners
	UL 62841-3-1000, first edition	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 3-1000: Particular Requirements for Transportable Laser Engravers
	UL 62841-4-1, first edition	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 4-1: Particular Requirements for Chain Saws
	UL 62841-4-2, first edition	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 4-2: Particular Requirements for Hedge Trimmers
	UL 62841-4-1000, first edition	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 4-1000: Particular Requirements For Utility Machines
424	UL 499, fourteenth edition	Electric Heating Appliances
	UL 1042, fifth edition	Electric Baseboard Heating Equipment
	UL 1673, third edition	Electric Space Heating Cables
	UL 1693, third edition	Electric Radiant Heating Panels and Heating Panel Sets
	UL 1995, fifth edition	Heating and Cooling Equipment
	UL 1996, fourth edition	Electric Duct Heaters
	UL 2021, fourth edition	Fixed and Location-Dedicated Electric Room Heaters
	UL 2683, first edition	Electric Heating Products for Floor and Ceiling Installation

425	UL 508, eighteenth edition	Industrial Control Equipment
	UL 2021, fourth edition	Fixed and Location-Dedicated Electric Room Heaters
426	IEEE 515	Testing, Design, Installation and Maintenance of Electrical Resistance Trace Heating for Industrial Applications
426	UL 1588, fourth edition	Roof and Gutter De-Icing Cable Units
	UL 2049, fourth edition	Residential Pipe Heating Cable
427	IEEE 515	Testing, Design, Installation and Maintenance of Electrical Resistance Trace Heating for Industrial Applications
427	UL 515, second edition	Electrical Resistance Trace Heat ~~Tracing~~ for Commercial Applications
	UL 2049, fourth edition	Residential Pipe Heating Cable
430	UL 4, fifteenth edition	Armored Cable
	UL 98, fourteenth edition	Enclosed and Dead-Front Switches
	UL 489, thirteenth edition	Molded-Case Circuit Breakers, Molded-Case Switches and Circuit-Breaker Enclosures
	UL 508, eighteenth edition	Industrial Control Equipment
	UL 705, seventh edition	Power Ventilators
	UL 745-1, second edition	Portable Electric Tools
	UL 845, sixth edition	Motor Control Centers
	UL 987, eighth edition	Stationary and Fixed Electric Tools
	UL 1004-1, second edition	Rotating Electrical Machines — General Requirements
	UL 1004-2, second edition	Impedance Protected Motors
	UL 1004-3, second edition	Thermally Protected Motors
	UL 1004-6, second edition	Servo and Stepper Motors
	UL 1004-7, third edition	Electronically Protected Motors
	UL 1004-8, second edition	Inverter Duty Motors
	UL 1004-9, first edition	Form Wound and Medium Voltage Rotating Electrical Machines
	UL 1066, fifth edition	Power Circuit Breakers up to 1000 V AC and 1500 V DC Used in Enclosures ~~Low-Voltage AC and DC Power Circuit Breakers Used in Enclosures~~
	UL 1569, fifth edition	Metal-Clad Cables
	UL 1812, fourth edition	Ducted Heat Recovery Ventilators
	UL 1815, fifth edition	Nonducted Heat Recovery Ventilators
	UL 2565, first edition	Industrial Metalworking and Woodworking Machine Tools
	UL 60034-1, third edition	Rotating Electrical Machines — Part 1: Rating and Performance
	UL 60335-2-40, fourth edition	Household and Similar Electrical Appliances — Safety — Part 2-40: Particular Requirements for Electrical Heat Pumps, Air-Conditioners and Dehumidifiers
	UL 60730-2-22, first edition	Automatic Electrical Controls — Part 2-22: Particular Requirements for Thermal Motor Protectors
	UL 60745-1, fourth edition	~~Electric~~ Hand-Held Motor-Operated Hand-Held Tools~~, Transportable Tools And Lawn And Garden Machinery~~ — Safety — Part 1: General Requirements
	UL 60745-2-1, second edition	~~Electric~~ Hand-Held Motor-Operated Hand-Held Tools~~, Transportable Tools And Lawn And Garden Machinery~~ — Safety — Part 2-1: Particular Requirements For Hand-Held Drills and Impact Drills
	UL 60745-2-2, second edition	~~Electric~~ Hand-Held Motor-Operated Hand-Held Tools~~, Transportable Tools And Lawn And Garden Machinery~~ — Safety — Part 2-2: Particular Requirements For Screwdrivers And Impact Wrenches
	UL 60745-2-3, second edition	~~Electric~~ Hand-Held Motor-Operated Electric ~~Hand-Held~~ Tools~~, Transportable Tools And Lawn And Garden Machinery~~ — Safety — Part 2-3: Particular Requirements For Hand-Held Grinders, Polishers, and Disk-Type Sanders
	UL 60745-2-4, second edition	~~Electric~~ Hand-Held Motor-Operated Electric ~~Hand-Held~~ Tools~~, Transportable Tools And Lawn And Garden Machinery~~ — Safety — Part 2-4: Particular Requirements For Hand-Held Sanders And Polishers Other Than Disc Type
	UL 60745-2-5, fifth edition	~~Electric~~ Hand-Held Motor-Operated Electric Tools~~Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery~~ — Safety — Part 2-5: Particular Requirements For Hand-Held Circular Saws
	UL 60745-2-8, second edition	~~Electric~~ Hand-Held Motor-Operated Electric ~~Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery~~ — Safety — Part 2-8: Particular Requirements For Hand-Held Shears and Nibblers
	UL 60947-1, sixth edition	Low-Voltage Switchgear and Controlgear — Part 1: General Rules
	UL 60947-4-1, fourth edition	Low-Voltage Switchgear and Controlgear — Part 4-1: Contactors and Motor-Starters — Electromechanical Contactors and Motor-Starters
	UL 60947-4-2, second edition	Low-Voltage Switchgear and Controlgear — Part 4-2: Contactors and Motor-Starters — AC Semiconductor Motor Controllers and Starters
	UL 60947-5-1, fourth edition	Low-Voltage Switchgear and Controlgear — Part 5-1: Control Circuit Devices and Switching Elements — Electromechanical Control Circuit Devices

	UL 60947-5-2, fourth edition	Low-Voltage Switchgear and Controlgear — Part 5-2: Control Circuit Devices and Switching Elements — Proximity Switches
	UL 61800-5-1, second edition	Adjustable Speed Electrical Power Drive Systems — Part 5-1: Safety Requirements — Electrical, Thermal and Energy
	UL 62841-2-9, first edition	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 2-9: Particular Requirements For Hand-Held Tappers And Threaders
	UL 62841-2-10, first edition	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 2-10: Particular Requirements For Hand-Held Mixers
	UL 62841-2-11, first edition	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 2-11: Particular Requirements for Hand-Held Reciprocating Saws
	UL 62841-2-14, first edition	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 2-14: Particular Requirements For Hand-Held Planers
	UL 62841-2-17, first edition	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 2-17: Particular Requirements For Hand-Held Routers
	UL 62841-2-21, first edition	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 2-21: Particular Requirements For Hand-Held Drain Cleaners
	UL 62841-3-1, first edition	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 3-1: Particular Requirements For Transportable Table Saws
	UL 62841-3-4, first edition	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 3-4: Particular Requirements for Transportable Bench Grinders
	UL 62841-3-6, first edition	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 3-6: Particular Requirements For Transportable Diamond Drills with Liquid System
	UL 62841-3-9, second edition	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 3-9: Particular Requirements For Transportable Mitre Saws
	UL 62841-3-10, first edition	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 3-10: Particular requirements for Transportable Cut-Off Machines
	UL 62841-3-12, first edition	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 3-12: Particular requirements for Transportable Threading Machines
	UL 62841-3-13, first edition	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 3-13: Particular Requirements For Transportable Drills
	UL 62841-3-14, first edition	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 3-14: Particular requirements for Transportable Drain Cleaners
	UL 62841-3-1000, first edition	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 3-1000: Particular Requirements for Transportable Laser Engravers
	UL 62841-4-1, first edition	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 4-1: Particular Requirements for Chain Saws
	UL 62841-4-2, first edition	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 4-2: Particular Requirements for Hedge Trimmers
	UL 62841-4-1000, first edition	Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery — Safety — Part 4-1000: Particular Requirements For Utility Machines
440	UL 98, fourteenth edition	Enclosed and Dead-Front Switches
	UL 416, fourth edition	Refrigerated Medical Equipment
	UL 484, ninth edition	Room Air Conditioners
	UL 489, thirteenth edition	Molded-Case Circuit Breakers, Molded-Case Switches and Circuit-Breaker Enclosures
	UL 508, eighteenth edition	Industrial Control Equipment
	UL 541, ninth edition	Refrigerated Vending Machines

	UL 563, eighth edition	Ice Makers
	UL 1429, fourth edition	Pullout Switches
	UL 1995, fifth edition	Heating and Cooling Equipment
	UL 60335-2-24, third edition	Household and Similar Electrical Appliances~~,~~ - Safety - Part 2-24: Particular Requirements for Refrigerating Appliances, Ice-Cream Appliances, and Ice-Makers
	UL 60335-2-40, fourth edition	Household and Similar Electrical Appliances — Safety — Part 2-40: Particular Requirements for Electrical Heat Pumps, Air-Conditioners and Dehumidifiers
	UL 60335-2-89, second edition	Household and Similar Electrical Appliances — Safety — Part 2-89: Particular Requirements for Commercial Refrigerating Appliances and Ice-Makers with an Incorporated or Remote Refrigerant Unit or Compressor
	UL 60947-4-1, fourth edition	Low-Voltage Switchgear and Controlgear — Part 4-1: Contactors and Motor-Starters — Electromechanical Contactors and Motor-Starters
	UL 60947-4-2, second edition	Low-Voltage Switchgear and Controlgear — Part 4-2: Contactors and Motor-Starters — AC Semiconductor Motor Controllers and Starters
	UL 61800-5-~~1~~2, second edition	Adjustable Speed Electrical Power Drive Systems — Part 5-2: Safety Requirements — Functional
445	UL 508, eighteenth edition	Industrial Control Equipment
	UL 943, fifth edition	Ground-Fault Circuit-Interrupters
	UL 943C, second edition	Special Purpose Ground-Fault Circuit-Interrupters
	UL 1004-4, third edition	Electric Generators
	UL 1741, third edition	Inverters, Converters, Controllers~~,~~ and Interconnection System Equipment for Use With Distributed Energy Resources
	UL 2200, third edition	Stationary Engine Generator Assemblies
450	UL 10C, third edition	Positive Pressure Fire Tests of Door Assemblies
	UL 305, sixth edition	Panic Hardware
	UL 340, sixth edition	Tests for Comparative Flammability of Liquids
	UL 60730-2-14, third edition	Automatic Electrical Controls; Part 2-14: Particular Requirements for Electric Actuators
480	UL 10C, third edition	Positive Pressure Fire Tests of Door Assemblies
	UL 305, sixth edition	Panic Hardware
	UL 1642, sixth edition	Lithium Batteries
	UL 1973, third edition	Batteries for Use in Stationary and Motive Auxiliary Power Applications~~, Vehicle Auxiliary Power and Light Electric Rail (LER) Applications~~
	UL 1989, sixth edition	Valve Regulated or Vented Batteries with Aqueous Electrolytes ~~Standby Batteries~~
	UL 2054, third edition	Household and Commercial Batteries
	UL 4127, second edition	Low Voltage Battery Cable
	UL 4128, fifth edition	Intercell and Intertier Connectors for use in Electrochemical Battery System Applications
490	UL 347, seventh edition	Medium-Voltage AC Contactors, Controllers, and Control Centers
	UL 347A, second edition	Medium Voltage Power Conversion Equipment
	UL 347C, first edition	Medium Voltage Solid State Resistive Load Controllers, Up to 15kV
	UL 1008A, second edition	Transfer Switch Equipment, Over 1000 Volts
500	FM 121303	Guide for Use of Detectors for Flammable Gases
	IEEE 844.1	Skin Effect Trace Heating of Pipelines, Vessels, Equipment, and Structures — General, Testing, Marking, and Documentation Requirements
	IEEE 1349	Guide for the Application of Electric Machines in Zone 2 and Class I, Division 2 Hazardous (Classified) Locations
	NFPA 33-2024	Standard for Spray Application Using Flammable or Combustible Materials
	NFPA 34-2024	Standard for Dipping, Coating, and Printing Processes Using Flammable or Combustible Liquids
	NFPA 496-2024	Standard for Purged and Pressurized Enclosures for Electrical Equipment
500	UL 674, sixth edition	Electric Motors and Generators for Use in Hazardous (Classified) Locations
	UL 698A, fourth edition	Industrial Control Panels Relating to Hazardous (Classified) Locations
	UL 783, sixth edition	Electric Flashlights and Lanterns for Use in Hazardous (Classified) Locations
	UL 823, ninth edition	Electric Heaters For Use in Hazardous (Classified) Locations
	UL 844, thirteenth edition	Luminaires for Use in Hazardous (Classified) ~~Electric Heaters For Use in Hazardous (Classified) Locations~~
	UL 913, eighth edition	Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III, Division 1, Hazardous (Classified) Locations
	UL 1203, sixth edition	Explosionproof and Dust-Ignition-Proof Electrical Equipment for Use in Hazardous (Classified) Locations
	UL 1389, first edition	Plant Oil Extraction Equipment for Installation and Use in Ordinary (Unclassified) Locations and Hazardous (Classified) Locations

	UL 1836, sixth edition	Electric Motors and Generators for Use in Class I, Division 2, Class I, Zone 2, Class II, Division 2 and Zone 22 Hazardous (Classified) Locations
	UL 2225, fifth edition	Cables and Cable Fittings for Use in Hazardous (Classified) Locations
	UL 60079-28, second edition	Explosive Atmospheres — Part 28: Protection of Equipment and Transmission Systems Using Optical Radiation.
	UL 60079-29-1, second edition	Explosive Atmospheres — Part 29-1: Gas Detectors — Performance Requirements of Detectors for Flammable Gases
	UL 60079-29-4, first edition	Explosive Atmospheres — Part 29-4: Gas Detectors — Performance Requirements of Open Path Detectors for Flammable Gases
	UL 60079-30-1, first edition	Explosive Atmospheres — Part 30-1: Electrical Resistance Trace Heating — General and Testing Requirements
	UL 60079-33, first edition	Explosive Atmospheres — Part 33: Equipment Protection by Special Protection “s”
	UL 121201, ninth edition	Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations
	UL 121303, first edition	Guide for Use of Detectors for Flammable Gases
	UL 122001, first edition	General Requirements for Electrical Ignition Systems for Internal Combustion Engines in Class I, Division 2 or Zone 2, Hazardous (Classified) Locations
	UL 122701, fourth edition	Requirements for Process Sealing Between Electrical Systems and Flammable or Combustible Process Fluids
501	IEEE 844.1	Skin Effect Trace Heating of Pipelines, Vessels, Equipment, and Structures — General, Testing, Marking, and Documentation Requirements
	IEEE 1349	Guide for the Application of Electric Machines in Zone 2 and Class I, Division 2 Hazardous (Classified) Locations
	NFPA 496-2024	Standard for Purged and Pressurized Enclosures for Electrical Equipment
501	UL 674, sixth edition	Electric Motors and Generators for Use in Hazardous (Classified) Locations
	UL 783, sixth edition	Electric Flashlights and Lanterns for Use in Hazardous (Classified) Locations
	UL 823, ninth edition	Electric Heaters For Use in Hazardous (Classified) Locations
	UL 844, thirteenth edition	Luminaires for Use in Hazardous (Classified) Locations
	UL 1072, fourth edition	Medium-Voltage Power Cables
	UL 1203, sixth edition	Explosionproof and Dust-Ignition-Proof Electrical Equipment for Use in Hazardous (Classified) Locations
	UL 1277, sixth edition	Electrical Power and Control Tray Cables with Optional Optical-Fiber Members
	UL 1309A, first edition	Cable for Use in Mobile Installations ~~Applications~~
	UL 1836, sixth edition	Electric Motors and Generators for Use in Class I, Division 2, Class I, Zone 2, Class II, Division 2 and Zone 22 Hazardous (Classified) Locations
	UL 2225, fifth edition	Cables and Cable Fittings for Use in Hazardous (Classified) Locations
	UL 60079-28, second edition	Explosive Atmospheres — Part 28: Protection of Equipment and Transmission Systems Using Optical Radiation
	UL 60079-29-1, second edition	Explosive Atmospheres — Part 29-1: Gas Detectors — Performance Requirements of Detectors for Flammable Gases
	UL 60079-29-4, first edition	Explosive Atmospheres — Part 29-4: Gas Detectors — Performance Requirements of Open Path Detectors for Flammable Gases
	UL 60079-30-1, first edition	Explosive Atmospheres — Part 30-1: Electrical Resistance Trace Heating — General and Testing Requirements
	UL 60079-33, first edition	Explosive Atmospheres — Part 33: Equipment Protection by Special Protection “s”
	UL 121201, ninth edition	Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations
	UL 122001, first edition	General Requirements for Electrical Ignition Systems for Internal Combustion Engines in Class I, Division 2 or Zone 2, Hazardous (Classified) Locations
	UL 122701, fourth edition	Requirements for Process Sealing Between Electrical Systems and Flammable or Combustible Process Fluids
502	IEEE 844.1	Skin Effect Trace Heating of Pipelines, Vessels, Equipment, and Structures — General, Testing, Marking, and Documentation Requirements
	NFPA 496-2024	Standard for Purged and Pressurized Enclosures for Electrical Equipment
502	UL 674, sixth edition	Electric Motors and Generators for Use in Hazardous (Classified) Locations
	UL 783, sixth edition	Electric Flashlights and Lanterns for Use in Hazardous (Classified) Locations
	UL 823, ninth edition	Electric Heaters For Use in Hazardous (Classified) Locations
	UL 844, thirteenth edition	Luminaires for Use in Hazardous (Classified) Locations
	UL 1203, sixth edition	Explosionproof and Dust-Ignition-Proof Electrical Equipment for Use in Hazardous (Classified) Locations
	UL 1309A, first edition	Cable for Use in Mobile Installations

	UL 1836, sixth edition	~~Outline of Investigation for~~ Electric Motors and Generators for Use in Class I, Division 2, Class I, Zone 2, Class II, Division 2 and Zone 22 Hazardous (Classified) Locations
	UL 2225, fifth edition	Cables and Cable Fittings for Use in Hazardous (Classified) Locations
	UL 60079-28, second edition	Explosive Atmospheres — Part 28: Protection of Equipment and Transmission Systems Using Optical Radiation
	UL 60079-30-1, first edition	Explosive Atmospheres — Part 30-1: Electrical Resistance Trace Heating — General and Testing Requirements
	UL 60079-33, first edition	Explosive Atmospheres — Part 33: Equipment Protection by Special Protection “s”
	UL 121201, ninth edition	Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations
503	IEEE 844.1	Skin Effect Trace Heating of Pipelines, Vessels, Equipment, and Structures — General, Testing, Marking, and Documentation Requirements
503	UL 823, ninth edition	Electric Heaters For Use in Hazardous (Classified) Locations
	UL 844, thirteenth edition	Luminaires for Use in Hazardous (Classified) Locations
	UL 1836, sixth edition	Electric Motors and Generators for Use in Class I, Division 2, Class I, Zone 2, Class II, Division 2 and Zone 22 Hazardous (Classified) Locations
	UL 60079-30-1, first edition	Explosive Atmospheres — Part 30-1: Electrical Resistance Trace Heating — General and Testing Requirements
	UL 121201, ninth edition	Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations
504	UL 698A, fourth edition	Industrial Control Panels Relating to Hazardous (Classified) Locations
	UL 913, eighth edition	Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III, Division 1, Hazardous (Classified) Locations
	UL 120202, first edition	Recommendations for the Preparation, Content, and Organization of Intrinsic Safety Control Drawings
505	FM 121303	Guide for Use of Detectors for Flammable Gases
	IEEE 844.1	Skin Effect Trace Heating of Pipelines, Vessels, Equipment, and Structures — General, Testing, Marking, and Documentation Requirements
	IEEE 1349	Guide for the Application of Electric Machines in Zone 2 and Class I, Division 2 Hazardous (Classified) Locations
505	UL 1309A, first edition	Cable for Use in Mobile Installations
	UL 2225, fifth edition	Cables and Cable Fittings for Use in Hazardous (Classified) Locations
	UL 60079-0, seventh edition	Explosive Atmospheres — Part 0: Equipment — General Requirements
	UL 60079-1, seventh edition	Explosive Atmospheres — Part 1: Equipment Protection by Flameproof Enclosures “d”
	UL 60079-2, sixth edition	Explosive Atmospheres — Part 2: Equipment protection by pressurized enclosure “p”
	UL 60079-5, fourth edition	Explosive ~~Gas~~ Atmospheres — Part 5: Type of Equipment protection by powder filling ~~Protection — Powder Filling “q”~~
	UL 60079-6, fourth edition	Explosive Atmospheres — Part 6: Equipment Protection by Liquid Immersion “o”
	UL 60079-7, fifth edition	Explosive Atmospheres — Part 7: Equipment Protection by Increased Safety “e”
	UL 60079-10-1, first edition	Explosive Atmospheres — Part 10-1: Classification of Areas — Explosive Gas Atmospheres
	UL 60079-11, sixth edition	Explosive Atmospheres — Part 11: Equipment Protection by Intrinsic Safety “i”
	UL 60079-13, second edition	Explosive Atmospheres — Part 13: Equipment Protection by Pressurized Room “p” and Artificially Ventilated Room “v”
	UL 60079-15, fifth edition	Explosive Atmospheres — Part 15: Equipment Protection by Type of Protection “n”
	UL 60079-18, fourth edition	Explosive Atmospheres — Part 18: Equipment Protection by Encapsulation “m”
	UL 60079-25, second edition	Explosive Atmospheres — Part 25: Intrinsically Safe Electrical Systems
	UL 60079-26, third edition	Explosive Atmospheres — Part 26: Equipment with Equipment Protection Level (EPL) Ga
	UL 60079-28, second edition	Explosive Atmospheres — Part 28: Protection of Equipment and Transmission Systems Using Optical Radiation
	UL 60079-29-1, second edition	Explosive Atmospheres — Part 29-1: Gas Detectors — Performance Requirements of Detectors for Flammable Gases
	UL 60079-29-4, first edition	Explosive Atmospheres — Part 29-4: Gas Detectors — Performance Requirements of Open Path Detectors for Flammable Gases

	UL 60079-30-1, first edition	Explosive Atmospheres — Part 30-1: Electrical Resistance Trace Heating — General and Testing Requirements
	UL 60079-33, first edition	Explosive Atmospheres — Part 33: Equipment Protection by Special Protection “s”
	UL 60079-46, first Edition	Recommended Practice for Explosive Atmospheres - Part 46: Equipment Assemblies
	UL 80079-36, first edition	Explosive Atmospheres — Part 36: Non-Electrical Equipment for Explosive Atmospheres — Basic Method and Requirements
	UL 80079-37, first edition	Explosive Atmospheres — Part 37: Non-Electrical Equipment for Explosive Atmospheres — Non Electrical Type of Protection Constructional Safety “c”, Control of Ignition Source “b”, Liquid Immersion “k”
	UL 121303, first edition	Guide for Use of Detectors for Flammable Gases
	UL 122701, fourth edition	Requirements for Process Sealing Between Electrical Systems and Flammable or Combustible Process Fluids
506	IEEE 844.1	Skin Effect Trace Heating of Pipelines, Vessels, Equipment, and Structures — General, Testing, Marking, and Documentation Requirements
506	UL 698A, fourth edition	Industrial Control Panels Relating to Hazardous (Classified) Locations
	UL 2225, fifth edition	Cables and Cable Fittings for Use in Hazardous (Classified) Locations
	UL 60079-0, seventh edition	Explosive Atmospheres — Part 0: Equipment — General Requirements
	UL 60079-2, sixth edition	Explosive atmospheres — Part 2: Equipment protection by pressurized enclosure “p”
	UL 60079-11, sixth edition	Explosive Atmospheres — Part 11: Equipment Protection by Intrinsic Safety "i"
	UL 60079-18, fourth edition	Explosive Atmospheres — Part 18: Equipment Protection by Encapsulation “m”
	UL 60079-25, second edition	Explosive Atmospheres — Part 25: Intrinsically Safe Electrical Systems
	UL 60079-28, second edition	Explosive Atmospheres — Part 28: Protection of Equipment and Transmission Systems Using Optical Radiation
	UL 60079-30-1, first edition	Explosive Atmospheres — Part 30-1: Electrical Resistance Trace Heating — General and Testing Requirements
	UL 60079-31, second edition	Explosive Atmospheres — Part 31: Equipment Dust Ignition Protection by Enclosure “t”
	UL 60079-33, first edition	Explosive Atmospheres — Part 33: Equipment Protection by Special Protection “s”
	UL 60079-46, first Edition	Recommended Practice for Explosive Atmospheres - Part 46: Equipment Assemblies
	UL 62784, first edition	Vacuum Cleaners and Dust Extractors Providing Equipment Protection Level Dc for the Collection of Combustible Dusts — Particular Requirements
	UL 80079-36, first edition	Explosive Atmospheres — Part 36: Non-Electrical Equipment for Explosive Atmospheres — Basic Method and Requirements
	UL 80079-37, first edition	Explosive Atmospheres — Part 37: Non-Electrical Equipment for Explosive Atmospheres — Non Electrical Type of Protection Constructional Safety “c”, Control of Ignition Source “b“, Liquid Immersion “k”
512	UL 1389, first edition	Plant Oil Extraction Equipment for Installation and Use in Ordinary (Unclassified) Locations and Hazardous (Classified) Locations
516	NFPA 33-2024	Standard for Spray Application Using Flammable or Combustible Materials
	NFPA 34-2024	Standard for Dipping, Coating, and Printing Processes Using Flammable or Combustible Liquids
516	UL 844, thirteenth edition	Luminaires for Use in Hazardous (Classified) Locations
517	AAMI ES 60601-1	Medical electrical equipment — Part 1: General requirements for basic safety and essential performance
517	UL 5, fifteenth edition	Surface Metal Raceways and Fittings
	UL 5A, fourth edition	Nonmetallic Surface Raceways and Fittings
	UL 467, eleventh edition	Grounding and Bonding Equipment
	UL 498, sixteenth edition	Attachment Plugs and Receptacles
	UL 498D, first edition	Attachment Plugs, Cord Connectors and Receptacles with Arcuate (Locking Type) Contacts
	UL 498E, first edition	Attachment Plugs, Cord Connectors and Receptacles — Enclosure Types for Environmental Protection
	UL 498F, first edition	Plugs, Socket-Outlets and Couplers with Arcuate (Locking Type) Contacts
	UL 651, eighth edition	Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings
	UL 1022, fifth edition	Line Isolation Monitors
	UL 1047, sixth edition	Isolated Power Systems Equipment
	UL 1286, sixth edition	Office Furnishing Systems
	UL 2930, first edition	Cord-and-Plug-connected Health Care Facility Outlet Assemblies

	UL 60601-1, first edition	Medical Electrical Equipment — Part 1: General Requirements for Safety
	UL 122701, fourth edition	Requirements for Process Sealing Between Electrical Systems and Flammable or Combustible Process Fluids
518	UL 498, sixteenth edition	Attachment Plugs and Receptacles
	UL 498D, first edition	Attachment Plugs, Cord Connectors and Receptacles with Arcuate (Locking Type) Contacts
	UL 498E, first edition	Attachment Plugs, Cord Connectors and Receptacles — Enclosure Types for Environmental Protection
	UL 498F, first edition	Plugs, Socket-Outlets and Couplers with Arcuate (Locking Type) Contacts
	UL 943, fifth edition	Ground-Fault Circuit-Interrupters
	UL 943C, second edition	Special Purpose Ground-Fault Circuit-Interrupters
	UL 2305, first edition	Exhibition Display Units, Fabrication and Installation
520	UL 62, twentieth edition	Flexible Cords and Cables
	UL 334, second edition	Theater Lighting Distribution and Control Equipment
	UL 4~~9898~~, sixteenth edition	Attachment Plugs and Receptacles
	UL 817, twelfth edition	Cord Sets and Power-Supply Cords
	UL 891, twelth edition	Switchboards
	UL 1573, fourth edition	Stage and Studio Luminaires and Connector Strips
	UL 1640, fourth edition	Portable Power-Distribution Equipment
	UL 1691, second edition	Single Pole Locking-Type Separable Connectors
522	UL 13, fourth edition	Power-Limited Circuit Cables
	UL 1063, ninth edition	Machine-Tool Wires and Cables
	UL 2250, third edition	Instrumentation Tray Cable
525	UL 62, twentieth edition	Flexible Cords and Cables
	UL 817, twelfth edition	Cord Sets and Power-Supply Cords
	UL 943, fifth edition	Ground-Fault Circuit-Interrupters
	UL 943C, second edition	Special Purpose Ground-Fault Circuit-Interrupters
	UL 1691, second edition	Single Pole Locking-Type Separable Connectors
530	UL 62, twentieth edition	Flexible Cords and Cables
	UL 1479, fourth edition	Fire Tests of Penetration Firestops
	UL 1573, fourth edition	Stage and Studio Luminaires and Connector Strips
	UL 1680, second edition	Stage and Lighting Cables
	UL 1691, second edition	Single Pole Locking-Type Separable Connectors
	UL 1836, sixth edition	Electric Motors and Generators for Use in Class I, Division 2, Class I, Zone 2, Class II, Division 2 and Zone 22 Hazardous (Classified) Locations
	UL 62368-1, third edition	Audio/Video, Information and Communication Technology Equipment — Part 1: Safety Requirements
540	UL 67, thirteenth edition	Panelboards
	UL 943, fifth edition	Ground-Fault Circuit Interrupters
	UL 1640, fourth edition	Portable Power-Distribution Equipment
	UL 62368-1, third edition	Audio/Video, Information and Communication Technology Equipment — Part 1: Safety Requirements
545	UL 5, fifteenth edition	Surface Metal Raceways and Fittings
	UL 5A, fourth edition	Nonmetallic Surface Raceways and Fittings
	UL 5B, second edition	Strut-Type Channel Raceways and Fittings
	UL 5C, third edition	Surface Raceways and Fittings for Use with Data, Signal, and Control Circuits
	UL 20, fourteenth edition	General-Use Snap Switches
	UL 209, tenth edition	Cellular Metal Floor Raceways and Fittings
	UL 498, sixteenth edition	Attachment Plugs and Receptacles
	UL 498D, first edition	Attachment Plugs, Cord Connectors and Receptacles with Arcuate (Locking Type) Contacts
	UL 498E, first edition	Attachment Plugs, Cord Connectors and Receptacles — Enclosure Types for Environmental Protection
	UL 498F, first edition	Plugs, Socket-Outlets and Couplers with Arcuate (Locking Type) Contacts
	UL 514A, eleventh edition	Metallic Outlet Boxes
	UL 514C, fourth edition	Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers
	UL 2024, fifth edition	Cable Routing Assemblies and Communications Raceways
547	UL 50, fourteenth edition	Enclosures for Electrical Equipment, Non-Environmental Considerations
	UL 50E, third edition	Enclosures for Electrical Equipment, Environmental Considerations
	UL 62, twentieth edition	Flexible Cords and Cables
	UL 514A, eleventh edition	Metallic Outlet Boxes
	UL 514B, sixth edition	Conduit, Tubing, and Cable Fittings
	UL 514C, fourth edition	Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers
	UL 1598, fifth edition	Luminaires
	UL 2225, fifth edition	Cables and Cable Fittings for Use in Hazardous (Classified) Locations
550	UL 6, fifteenth edition	Electrical Rigid Metal Conduit — Steel

	UL 6A, second edition	Electrical Rigid Metal Conduit — Aluminum, Red Brass and Stainless Steel
	UL 83, sixteenth edition	Thermoplastic-Insulated Wires and Cables
	UL 307A, ninth edition	Liquid Fuel-Burning Heating Appliances for Manufactured Homes and Recreational Vehicles
	UL 307B, fifth edition	Gas-Burning Heating Appliances for Manufactured Homes and Recreational Vehicles
	UL 360, seventh edition	Liquid-Tight Flexible Metal Conduit
	UL 467, eleventh edition	Grounding and Bonding Equipment
	UL 498, sixteenth edition	Attachment Plugs and Receptacles
	UL 498D, first edition	Attachment Plugs, Cord Connectors and Receptacles with Arcuate (Locking Type) Contacts
	UL 498E, first edition	Attachment Plugs, Cord Connectors and Receptacles — Enclosure Types for Environmental Protection
	UL 498F, first edition	Plugs, Socket-Outlets and Couplers with Arcuate (Locking Type) Contacts
	UL 651, eighth edition	Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings
	UL 817, twelfth edition	Cord Sets and Power-Supply Cords
	UL 1242, fourth edition	Electrical Intermediate Metal Conduit — Steel
	UL 1462, fourth edition	Mobile Home Pipe Heating Cable
	UL 1598, fifth edition	Luminaires
	UL 1660, sixth edition	Liquid-Tight Flexible Nonmetallic Conduit
	UL 2108, second edition	Low-_Voltage Lighting Systems
	UL 2515, second edition	Aboveground Reinforced Thermosetting Resin Conduit (RTRC) and Fittings
551	UL 6, fifteenth edition	Electrical Rigid Metal Conduit — Steel
	UL 6A, second edition	Electrical Rigid Metal Conduit — Aluminum, Red Brass and Stainless Steel
	UL 62, twentieth edition	Flexible Cords and Cables
	UL 231, tenth edition	Power Outlets
	UL 234, fifth edition	Low Voltage Lighting Fixtures for use in Recreational Vehicles
	UL 360, seventh edition	Liquid-Tight Flexible Metal Conduit
	UL 467, eleventh edition	Grounding and Bonding Equipment
	UL 486C, eighth edition	Splicing Wire Connectors
	UL 498, sixteenth edition	Attachment Plugs and Receptacles
	UL 498D, first edition	Attachment Plugs, Cord Connectors and Receptacles with Arcuate (Locking Type) Contacts
	UL 498E, first edition	Attachment Plugs, Cord Connectors and Receptacles — Enclosure Types for Environmental Protection
	UL 498F, first edition	Plugs, Socket-Outlets and Couplers with Arcuate (Locking Type) Contacts
	UL 514A, eleventh edition	Metallic Outlet Boxes
	UL 514C, fourth edition	Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers
	UL 514D, second edition	Cover Plates for Flush-Mounted Wiring Devices
	UL 651, eighth edition	Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings
	UL 817, twelfth edition	Cord Sets and Power-Supply Cords
	UL 943, fifth edition	Ground-Fault Circuit-Interrupters
	UL 1004-4, third edition	Electric Generators
	UL 1008, ninth edition	Transfer Switch Equipment
	UL 1008M, first edition	Transfer Switch Equipment, Meter-MountedMeter-Mounted Transfer Switches
	UL 1008S, first edition	Solid-State Transfer Switches
	UL 1242, fourth edition	Electrical Intermediate Metal Conduit — Steel
	UL 1449, fifth edition	Surge Protective Devices
	UL 1598, fifth edition	Luminaires
	UL 1660, sixth edition	Liquid-Tight Flexible Nonmetallic Conduit
	UL 2200, third edition	Stationary Engine Generator Assemblies
	UL 2299, first edition	Ground Monitor Interrupters
	UL 2515, second edition	Aboveground Reinforced Thermosetting Resin Conduit (RTRC) and Fittings
	UL 60730-1, fifth edition	Automatic Electrical Controls; — Part 1: General Requirements
	UL 60730-2-9, fourth edition	Automatic Electrical Controls; Part 2-9: Particular Requirements for Temperature Sensing Controls
552	SAE J1128-2015	Low Voltage Primary Cable, for Types GXL, HDT, and SXL
	SAE J1127-2015	Low Voltage Battery Cable, for Types SGT and SGR
552	UL 6, fifteenth edition	Electrical Rigid Metal Conduit — Steel
	UL 6A, second edition	Electrical Rigid Metal Conduit — Aluminum, Red Brass and Stainless Steel
	UL 50, fourteenth edition	Enclosures for Electrical Equipment, Non-Environmental Considerations
	UL 50E, third edition	Enclosures for Electrical Equipment, Environmental Considerations
	UL 62, twentieth edition	Flexible Cords and Cables
	UL 67, thirteenth edition	Panelboards
	UL 231, tenth edition	Power Outlets
	UL 234, fifth edition	Low Voltage Lighting Fixtures for Use in Recreational Vehicles

	UL 360, seventh edition	Liquid-Tight Flexible Metal Conduit
	UL 430, eighth edition	Waste Disposers
	UL 467, eleventh edition	Grounding and Bonding Equipment
	UL 514A, eleventh edition	Metallic Outlet Boxes
	UL 514B, sixth edition	Conduit, Tubing, and Cable Fittings
	UL 514C, fourth edition	Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers
	UL 651, eighth edition	Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings
	UL 817, twelfth edition	Cord Sets and Power-Supply Cords
	UL 916, fifth edition	Energy Management Equipment
	UL 943, fifth edition	Ground-Fault Circuit-Interrupters
	UL 1004-4, third edition	Electric Generators
	UL 1242, fourth edition	Electrical Intermediate Metal Conduit — Steel
	UL 1563, sixth edition	Electric Spas, Equipment Assemblies, and Associated Equipment
	UL 1598, fifth edition	Luminaires
	UL 1660, sixth edition	Liquid-Tight Flexible Nonmetallic Conduit
	UL 2108, second edition	Low Voltage Lighting Systems
	UL 2200, third edition	Stationary Engine Generator Assemblies
	UL 2515, second edition	Aboveground Reinforced Thermosetting Resin Conduit (RTRC) and Fittings
555	UL 6, fifteenth edition	Electrical Rigid Metal Conduit — Steel
	UL 6A, second edition	Electrical Rigid Metal Conduit — Aluminum, Red Brass and Stainless Steel
	UL 231, tenth edition	Power Outlets
	UL 486D, seventh edition	Sealed Wire Connector Systems
	UL 651, eighth edition	Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings
	UL 676, ninth edition	Underwater Luminaires and Submersible Junction Boxes
	UL 943, fifth edition	Ground-Fault Circuit-Interrupters
	UL 1053, seventh edition	Ground-Fault Sensing and Relaying Equipment
	UL 1399, first edition	Leakage Current Measurement Devices for Use in Marina Applications
	UL 1650, first edition	Portable Power Cable
	UL 2515, second edition	Aboveground Reinforced Thermosetting Resin Conduit (RTRC) and Fittings
590	UL 496, fourteenth edition	Lampholders
	UL 514B, sixth edition	Conduit, Tubing, and Cable Fittings
	UL 588, nineteenth edition	Seasonal and Holiday Decorative Products
	UL 817, twelfth edition	Cord Sets and Power-Supply Cords
	UL 943, fifth edition	Ground-Fault Circuit-Interrupters
	UL 1088, seventh edition	Temporary Lighting Strings
	UL 1377, first edition	Wire used in Low Voltage Seasonal Lighting Products In Circuits With a Maximum Available Power of 15W
	UL 1640, fourth edition	Portable Power-Distribution Equipment
600	UL 1, eleventh edition	Flexible Metal Conduit
	UL 5, fifteenth edition	Surface Metal Raceways and Fittings
	UL 5A, fourth edition	Nonmetallic Surface Raceways and Fittings
	UL 13, fourth edition	Power-Limited Circuit Cables
	UL 48, fifteenth edition	Electric Signs
	UL 50, fourteenth edition	Enclosures for Electrical Equipment, Non-Environmental Considerations
	UL 50E, third edition	Enclosures for Electrical Equipment, Environmental Considerations
	UL 98B, third edition	Enclosed and Dead-Front Switches for Use in Photovoltaic Systems
	UL 248-19, first edition	Low-Voltage Fuses — Part 19: Photovoltaic Fuses
	UL 360, seventh edition	Liquid-Tight Flexible Metal Conduit
	UL 489B, first edition	Molded-Case Circuit Breakers, Molded-Case Switches, and Circuit-Breaker Enclosures For Use With Photovoltaic (PV) Systems
	UL 508I, second edition	Disconnect Switches Intended for Use in Photovoltaic Systems
	UL 814, twelfth edition	Gas-Tube-Sign Cable
	UL 879, ninth edition	Electric Sign Components
	UL 879A, first edition	LED Sign and Sign Retrofit Kits
	UL 879B, first edition	Polymeric Enclosure Systems for the Splice Between Neon Tubing Electrode Leads and GTO Cable, and the GTO Cable Leading to the Splice
	UL 943, fifth edition	Ground-Fault Circuit-Interrupters
	UL 1310, seventh edition	Class 2 Power Units
	UL 1660, sixth edition	Liquid-Tight Flexible Nonmetallic Conduit
	UL 1699B, first edition	Photovoltaic (PV) DC Arc-Fault Circuit Protection
	UL 1741, third edition	Inverters, Converters, Controllers and Interconnection System Equipment for Use With Distributed Energy Resources
	UL 2161, second edition	Neon Transformers and Power Supplies
	UL 2703, first edition	Mounting Systems, Mounting Devices, Clamping/Retention Devices, and Ground Lugs for Use with Flat-Plate Photovoltaic Modules and Panels
	UL 3001, first edition	Distributed Energy Generation and Storage Systems

	UL 3003, first edition	Distributed Generation Cables
	UL 3703, first edition	Solar Trackers
	UL 4703, first edition	Photovoltaic Wire
	UL 6703, first edition	Connectors for Use in Photovoltaic Systems
	UL 7103, first edition	Investigation for Building-Integrated Photovoltaic Roof Coverings
	UL 8703, third edition	Concentrator Photovoltaic Modules and Assemblies
	UL 9703, third edition	Distributed Generation Wiring Harnesses
	UL 61730-1, second edition	Photovoltaic (PV) Module Safety Qualification — Part 1: Requirements For Construction
	UL 61730-2, second edition	Photovoltaic (PV) Module Safety Qualification — Part 2: Requirements For Testing
	UL 62109-1, first edition	Power Converters for Use in Photovoltaic Power Systems — Part 1: General Requirements
	UL 62109-2, first edition	Power Converters for Use in Photovoltaic Power Systems — Part 1: Particular Requirements for Inverters
	UL 62368-1, third edition	Audio/Video, Information and Communication Technology Equipment — Part 1: Safety Requirements
604	UL 1, eleventh edition	Flexible Metal Conduit
	UL 4, fifteenth edition	Armored Cable
	UL 5, fifteenth edition	Surface Metal Raceways and Fittings
	UL 5A, fourth edition	Nonmetallic Surface Raceways and Fittings
	UL 5B, second edition	Strut-Type Channel Raceways and Fittings
	UL 5C, third edition	Surface Raceways and Fittings for Use with Data, Signal, and Control Circuits
	UL 62, twentieth edition	Flexible Cords and Cables
	UL 183, fourth edition	Manufactured Wiring Systems
	UL 209, tenth edition	Cellular Metal Floor Raceways and Fittings
	UL 360, seventh edition	Liquid-Tight Flexible Metal Conduit
	UL 797, ninth edition	Electrical Metallic Tubing — Steel
	UL 797A, third edition	Electrical Metallic Tubing — Aluminum and Stainless Steel
	UL 857, thirteenth edition	Busways
	UL 1569, fifth edition	Metal-Clad Cables
	UL 2024, fifth edition	Cable Routing Assemblies and Communications Raceways
605	UL 962, fifth edition	Household and Commercial Furnishings
	UL 962A, sixth edition	Furniture Power Distribution Units
	UL 1286, sixth edition	Office Furnishings Systems
	UL 1310, seventh edition	Class 2 Power Units
	UL 2999, first edition	Individual Commercial Office Furnishings
	UL 5085-3, first edition	Low Voltage Transformers — Part 3: Class 2 and Class 3 Transformers
	UL 62368-1, third edition	Audio/Video, Information and Communication Technology Equipment — Part 1: Safety Requirements
610	UL 62, twentieth edition	Flexible Cords and Cables
	UL 2273, second edition	Festoon Cable
620	UL 62, twentieth edition	Flexible Cords and Cables
	UL 83, sixteenth edition	Thermoplastic-Insulated Wires and Cables
	UL 98, fourteenth edition	Enclosed and Dead-Front Switches
	UL 104, twelfth edition	Elevator Door Locking Devices and Contacts
	UL 489, thirteenth edition	Molded-Case Circuit Breakers, Molded-Case Switches and Circuit-Breaker Enclosures
	UL 508, eighteenth edition	Industrial Control Equipment
	UL 508A, third edition	Industrial Control Panels
	UL 1066, fifth edition	Power Circuit Breakers up to 1000 V AC and 1500 V DC Used in Enclosures ~~Low-Voltage AC and DC Power Circuit Breakers Used in Enclosures~~
	UL 1310, seventh edition	Class 2 Power Units
	UL 1449, fifth edition	Surge Protective Devices
	UL 1685, fourth edition	Vertical-Tray Fire-Propagation and Smoke-Release Test for Electrical and Optical-Fiber Cables
	UL 2556, fifth edition	Wire and Cable Test Methods
	UL 62368-1, third edition	Audio/Video, Information and Communication Technology Equipment — Part 1: Safety Requirements
625	UL 62, twentieth edition	Flexible Cords and Cables
	UL 1650, first edition	Portable Power Cable
	UL 1741, third edition	Inverters, Converters, Controllers and Interconnection System Equipment for Use With Distributed Energy Resources
	UL 2202, third edition	DC Charging Equipment for Electric Vehicles
	UL 2231-1, second edition	Personnel Protection Systems for Electric Vehicle (EV) Supply Circuits — Part 1: General Requirements

	UL 2231-2, second edition	Personnel Protection Systems for Electric Vehicle (EV) Supply Circuits — Part 2: Particular Requirements for Protection Devices for Use in Charging Systems
	UL 2251, fourth edition	Plugs, Receptacles and Couplers for Electrical Vehicles
	UL 2580, third edition	Batteries for Use in Electric Vehicles
	UL 2594, third edition	Electric Vehicle Supply Equipment
	UL 9741, first edition	Electric Vehicle Power Export Equipment (EVPE)
	UL 60730-1, fifth edition	Automatic Electrical Controls — Part 1: General Requirements
626	UL 62, twentieth edition	Flexible Cords and Cables
	UL 231, tenth edition	Power Outlets
	UL 498, sixteenth edition	Attachment Plugs and Receptacles
	UL 498D, first edition	Attachment Plugs, Cord Connectors and Receptacles with Arcuate (Locking Type) Contacts
	UL 498E, first edition	Attachment Plugs, Cord Connectors and Receptacles — Enclosure Types for Environmental Protection
	UL 498F, first edition	Plugs, Socket-Outlets and Couplers with Arcuate (Locking Type) Contacts
	UL 817, twelfth edition	Cord Sets and Power-Supply Cords
	UL 1651, fourth edition	Optical Fiber Cable
	UL 1686, fifth edition	Pin and Sleeve Configurations
627	UL 9741A	Onboard Electric Vehicle Power Export and Import Equipment
630	UL 551, eighth edition	Transformer-Type Arc-Welding Machines
640	UL 13, fourth edition	Power-Limited Circuit Cables
	UL 62, twentieth edition	Flexible Cords and Cables
	UL 813, seventh edition	Commercial Audio Equipment
	UL 1310, seventh edition	Class 2 Power Units
	UL 1419, fourth edition	Professional Video and Audio Equipment
	UL 1492, second edition	Audio-Video Products and Accessories
	UL 1711, fourth edition	Amplifiers for Fire Protective Signaling Systems
	UL 2269, fourth edition	Optical Fiber/Communications/Signaling/Coaxial Cable Outlet Boxes
	UL 6500, second edition	Audio/Video and Musical Instrument Apparatus for Household, Commercial, and Similar General Use
	UL 60065, eighth edition	Audio, Video and Similar Electronic Apparatus — Safety Requirements
	UL 62368-1, third edition	Audio/Video, Information and Communication Technology Equipment — Part 1: Safety Requirements
645	UL 38, eighth edition	Manual Signaling Boxes for Fire Alarm Systems
	UL 268, eighth edition	Smoke Detectors for Fire Alarm Systems
	UL 444, fifth edition	Communications Cables
	UL 464, eleventh edition	Audible Signaling Devices for Fire Alarm and Signaling Systems, Including Accessories
	UL 497B, fourth edition	Protectors for Data Communications and Fire Alarm Circuits
	UL 833, first edition	Control Units and Accessories for Fire Alarm Systems
	UL 864, eleventh edition	Control Units and Accessories for Fire Alarm Systems
	UL 1424, fourth edition	Cables for Power-Limited Fire-Alarm Circuits
	UL 1425, third edition	Cables for Non-Power-Limited Fire-Alarm Circuits
	UL 1449, fifth edition	Surge Protective Devices
	UL 1480, seventh edition	Speakers for Fire Alarm and Signaling Systems, Including Accessories
	UL 1638, sixth edition	Visible Signaling Devices for Fire Alarm and Signaling Systems, Including Accessories
	UL 1651, fourth edition	Optical Fiber Cable
	UL 1685, fourth edition	Vertical-Tray Fire-Propagation and Smoke-Release Test for Electrical and Optical-Fiber Cables
	UL 1690, fourth edition	Data-Processing Cable
	UL 1778, fifth edition	Uninterruptible Power Systems
	UL 2024, fifth edition	Cable Routing Assemblies and Communications Raceways
	UL 60950-1, second edition	Information Technology Equipment — Safety — Part 1: General Requirements
	UL 60950-21, first edition	Information Technology Equipment — Safety — Part 21: Remote Power Feeding
	UL 60950-22, second edition	Information Technology Equipment — Safety — Part 22: Equipment to be Installed Outdoors
	UL 60950-23, first edition	Information Technology Equipment — Safety — Part 23: Large Data Storage Equipment
	UL 62368-1, third edition	Audio/Video, Information and Communication Technology Equipment — Part 1: Safety Requirements
646	UL 10C, third edition	Positive Pressure Fire Tests of Door Assemblies
	UL 62, twentieth edition	Flexible Cords and Cables
	UL 67, thirteenth edition	Panelboards

	UL 98, fourteenth edition	Enclosed and Dead-Front Switches
	UL 305, sixth edition	Panic Hardware
	UL 347, seventh edition	Medium-Voltage AC Contactors, Controllers, and Control Centers
	UL 489, thirteenth edition	Molded-Case Circuit Breakers, Molded-Case Switches and Circuit-Breaker Enclosures
	UL 508, eighteenth edition	Industrial Control Equipment
	UL 508A, third edition	Industrial Control Panels
	UL 845, sixth edition	Motor Control Centers
	UL 869A, fourth edition	Reference Standard for Service Equipment
	UL 891, twelfth edition	Switchboards
	UL 924, tenth edition	Emergency Lighting and Power Equipment
	UL 977, fifth edition	Fused Power-Circuit Devices
	UL 1008, ninth edition	Transfer Switch Equipment
	UL 1008A, second edition	Transfer Switch Equipment, Over 1000 Volts
	UL 1008M, first edition	Transfer Switch Equipment, Meter-MountedMeter-Mounted Transfer Switches
	UL 1008S, first edition	Solid-State Transfer Switches
	UL 1062, third edition	Unit Substations
	UL 1066, fifth edition	Power Circuit Breakers up to 1000 V AC and 1500 V DC Used in Enclosures Low-Voltage AC and DC Power Circuit Breakers Used in Enclosures
	UL 1429, fourth edition	Pullout Switches
	UL 1449, fifth edition	Surge Protective Devices
	UL 1655, second edition	Community-Antenna Television Cables
	UL 1989, sixth edition	Valve Regulated or Vented Batteries with Aqueous Electrolytes Standby Batteries
	UL 2755, second edition	Modular Data Centers
	UL 62368-1, third edition	Audio/Video, Information and Communication Technology Equipment — Part 1: Safety Requirements
647	UL 1598, fifth edition	Luminaires
650	UL 1310, seventh edition	Class 2 Power Units
	UL 1581, fourth edition	Reference Standard for Electrical Wires, Cables, and Flexible Cords
	UL 62368-1, third edition	Audio/Video, Information and Communication Technology Equipment — Part 1: Safety Requirements
670	ANSI/CSA-C22.2 No. 19085-1	Woodworking machines — Safety — Part 1: Common requirements
670	UL 508, eighteenth edition	Industrial Control Equipment
	UL 61800-5-1, second edition	Adjustable Speed Electrical Power Drive Systems — Part 5-1: Safety Requirements — Electrical, Thermal and Energy
675	UL 493, tenth edition	Thermoplastic-Insulated Underground Feeder and Branch-Circuit Cables
	UL 1581, fourth edition	Reference Standard for Electrical Wires, Cables, and Flexible Cords
680	UL 6, fifteenth edition	Electrical Rigid Metal Conduit — Steel
	UL 6A, second edition	Electrical Rigid Metal Conduit — Aluminum, Red Brass and Stainless Steel
	UL 20, fourteenth edition	General-Use Snap Switches
	UL 62, twentieth edition	Flexible Cords and Cables
	UL 360, seventh edition	Liquid-Tight Flexible Metal Conduit
	UL 379, first edition	Power Units for Fountain, Swimming Pool, and Spa Luminaires
	UL 467, eleventh edition	Grounding and Bonding Equipment
	UL 486D, seventh edition	Sealed Wire Connector Systems
	UL 489, thirteenth edition	Molded-Case Circuit Breakers, Molded-Case Switches and Circuit-Breaker Enclosures
	UL 651, eighth edition	Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings
	UL 676, ninth edition	Underwater Luminaires and Submersible Junction Boxes
	UL 676A, third edition	Potting Compounds for Swimming Pool, Fountain, and Spa Equipment
	UL 943, fifth edition	Ground-Fault Circuit-Interrupters
	UL 943C, second edition	Special Purpose Ground-Fault Circuit-Interrupters
	UL 1004-10, first edition	Pool Pump Motors
	UL 1081, seventh edition	Swimming Pool Pumps, Filters, and Chlorinators
	UL 1241, seventh edition	Junction Boxes for Swimming Pool Luminaires
	UL 1242, fourth edition	Electrical Intermediate Metal Conduit — Steel
	UL 1261, sixth edition	Electric Water Heaters for Pools and Tubs
	UL 1563, sixth edition	Electric Spas, Equipment Assemblies, and Associated Equipment
	UL 1569, fifth edition	Metal-Clad Cables
	UL 1660, sixth edition	Liquid-Tight Flexible Nonmetallic Conduit
	UL 1795, fifth edition	Hydromassage Bathtubs
	UL 2420, first edition	Belowground Reinforced Thermosetting Resin Conduit (RTRC) and Fittings
	UL 2452, first edition	Electric Swimming Pool and Spa Cover Operators
	UL 2515, second edition	Aboveground Reinforced Thermosetting Resin Conduit (RTRC) and Fittings

	UL 2515A, first edition	Supplemental Requirements for Extra Heavy Wall Reinforced Thermosetting Resin Conduit (RTRC) and Fittings
	UL 2995, first edition	Lifts for Swimming Pools and Spas
	UL 60335-2-1000, first edition	Household and Similar Electrical Appliances: Particular Requirements for Electrically Powered Pool Lifts
682	UL 486D, seventh edition	Sealed Wire Connector Systems
	UL 943, fifth edition	Ground-Fault Circuit-Interrupters
	UL 1053, seventh edition	Ground-Fault Sensing and Relaying Equipment
	UL 1650, first edition	Portable Power Cable
	UL 1838, third edition	Low Voltage Landscape Lighting Systems
690	UL 98B, third edition	Enclosed and Dead-Front Switches for Use in Photovoltaic Systems
	UL 248-19, first edition	Low-Voltage Fuses — Part 19: Photovoltaic Fuses
	UL 467, eleventh edition	Grounding and Bonding Equipment
	UL 489B, first edition	Molded-Case Circuit Breakers, Molded-Case Switches, and Circuit-Breaker Enclosures For Use With Photovoltaic (PV) Systems
	UL 508I, second edition	Disconnect Switches Intended for Use in Photovoltaic Systems
	UL 1569, fifth edition	Metal-Clad Cables
	UL 1699B, first edition	Photovoltaic (PV) DC Arc-Fault Circuit Protection
	UL 1703, third edition	Flat-Plate Photovoltaic Modules and Panels
	UL 1741, third edition	Inverters, Converters, Controllers and Interconnection System Equipment for Use with Distributed Energy Resources
	UL 2703, first edition	Mounting Systems, Mounting Devices, Clamping/Retention Devices, and Ground Lugs for Use with Flat-Plate Photovoltaic Modules and Panels
	UL 3001, first edition	Distributed Energy Generation and Storage Systems
	UL 3003, first edition	Distributed Generation Cables
	UL 3703, first edition	Solar Trackers
	UL 3730, first edition	Photovoltaic Junction Boxes
	UL 3741, first edition	Photovoltaic Hazard Control
	UL 4703, first edition	Photovoltaic Wire
	UL 6703, first edition	Connectors for Use in Photovoltaic Systems
	UL 7103, first edition	Investigation for Building-Integrated Photovoltaic Roof Coverings
	UL 8703, third edition	Concentrator Photovoltaic Modules and Assemblies
	UL 8801, first edition	Photovoltaic (PV) Luminaire Systems
	UL 9703, third edition	Distributed Generation Wiring Harnesses
	UL 9741, first edition	Electric Vehicle Power Export Equipment (EVPE)
	UL 61730-1, second edition	Photovoltaic (PV) Module Safety Qualification — Part 1: Requirements for Construction
	UL 61730-2, second edition	Photovoltaic (PV) Module Safety Qualification — Part 2: Requirements for Testing
	UL 62109-1, first edition	Power Converters for Use in Photovoltaic Power Systems — Part 1: General Requirements
	UL 62109-2, first edition	Power Converters for Use in Photovoltaic Power Systems — Part 2: Particular Requirements for Inverters
	UL 62275, third edition	Cable Management Systems — Cable Ties for Electrical Installations
692	UL 2262, second edition	Fuel Cell Modules for Use in Portable and Stationary Equipment
	UL 2262A, second edition	Borohydride Fuel Cartridges with Integral Fuel Processing for Use with Portable Fuel Cell Power Systems or Similar Equipment
	UL 2265, first edition	Fuel Cell Power Units and Fuel Storage Containers for Portable Devices
	~~UL 2265A, second edition~~	~~Hand-held or Hand-Transportable Fuel Cell Power Units with Disposable Methanol Fuel Cartridges for use in Original Equipment Manufacturer's Information Technology Equipment~~
	UL 2265C, first edition	Hand-Held or Hand-Transportable Alkaline (Direct Borohydride) Fuel Cell Power Units and Borohydride Fuel Cartridges For Use With Consumer Electronics or Information Technology Equipment
	UL 2266, first edition	Electromagnetic Compatibility, Electrical Safety, and Physical Protection of Stationary and Portable Fuel Cell Power Systems for Use with Commercial Network Telecommunications Equipment
	UL 2267, third edition	Fuel Cell Power Systems for Installation in Industrial Electric Trucks
694	UL 467, eleventh edition	Grounding and Bonding Equipment
	UL 489C, first edition	Molded-Case Circuit Breakers and Molded-Case Switches for Use with Wind Turbines
	UL 1741, third edition	Inverters, Converters, Controllers and Interconnection System Equipment for Use With Distributed Energy Resources
	UL 22277, fifth edition	Flexible Motor Supply Cable and Wind Turbine Tray Cable
	UL 2736, first edition	Single Pole Separable Interconnecting Cable Connectors for Use with Wind Turbine Generating Systems

	UL 4143, first edition	Wind Turbine Generator — Life Time Extension (LTE)
	UL 6141, first edition	Wind Turbines Permitting Entry of Personnel
	UL 6142, first edition	Small Wind Turbine ~~Generating~~ Systems
695	UL 6, fifteenth edition	Electrical Rigid Metal Conduit — Steel
	UL 6A, second edition	Electrical Rigid Metal Conduit — Aluminum, Red Brass and Stainless Steel
	UL 218, third edition	Fire Pump Controllers
	UL 448, twelfth edition	Centrifugal Stationary Pumps for Fire-Protection Service
	UL 448B, second edition	Residential Fire Pumps Intended for One- and Two-Family Dwellings and Manufactured Homes
	UL 448C, second edition	Stationary, Rotary-Type, Positive-Displacement Pumps for Fire Protection Service
	UL 651, eighth edition	Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings
	UL 1004-5, second edition	Fire Pump Motors
	UL 1242, fourth edition	Electrical Intermediate Metal Conduit — Steel
	UL 1569, fifth edition	Metal-Clad Cables
	UL 1724, third edition	Fire Tests for Electrical Circuit Protective Systems
	UL 2196, second edition	Fire Test for Circuit Integrity of Fire-Resistive Power, Instrumentation, Control and Data Cables
	UL 2515, second edition	Aboveground Reinforced Thermosetting Resin Conduit (RTRC) and Fittings
700	UL 924, tenth edition	Emergency Lighting and Power Equipment
	UL 1008, ninth edition	Transfer Switch Equipment
	UL 1008A, second edition	Transfer Switch Equipment, Over 1000 Volts
	UL 1449, fifth edition	Surge Protective Devices
	UL 1724, third edition	Fire Tests for Electrical Circuit Protective Systems
	UL 2196, second edition	Fire Test for Circuit Integrity of Fire-Resistive Power, Instrumentation, Control and Data Cables
	UL 2200, third edition	Stationary Engine Generator Assemblies
701	UL 924, tenth edition	Emergency Lighting and Power Equipment
	UL 1008, ninth edition	Transfer Switch Equipment
	UL 1008A, second edition	Transfer Switch Equipment, Over 1000 Volts
702	UL 98, fourteenth edition	Enclosed and Dead-Front Switches
	UL 1008, ninth edition	Transfer Switch Equipment
	UL 1008A, second edition	Transfer Switch Equipment, Over 1000 Volts
	UL 1008M, first edition	Transfer Switch Equipment, Meter-Mounted~~Meter-Mounted Transfer Switches~~
	UL 1008S, first edition	Solid-State Transfer Switches
705	UL 62, twentieth edition	Flexible Cords and Cables
	UL 98, fourteenth edition	Enclosed and Dead-Front Switches
	UL 486D, seventh edition	Sealed Wire Connector Systems
	UL 489, thirteenth edition	Molded-Case Circuit Breakers, Molded-Case Switches and Circuit-Breaker Enclosures
	UL 1066, fifth edition	Power Circuit Breakers up to 1000 V AC and 1500 V DC Used in Enclosures ~~Low-Voltage AC and DC Power Circuit Breakers Used in Enclosures~~
	UL 1429, fourth edition	Pullout Switches
	UL 1741, third edition	Inverters, Converters, Controllers and Interconnection System Equipment for Use With Distributed Energy Resources
	UL 2200, third edition	Stationary Engine Generator Assemblies
	UL 3001, first edition	Distributed Energy Generation and Storage Systems ~~Resource Systems~~
	UL 3003, first edition	Distributed Generation Cables
	~~UL 3010, first edition~~	~~Single Site Energy Systems~~
	UL 6141, first edition	Wind Turbines Permitting Entry of Personnel
	UL 6142, first edition	Small Wind Turbine Systems
	UL 9540, third edition	Energy Storage Systems and Equipment
	UL 9741, first edition	Electric Vehicle Power Export Equipment (EVPE)
	UL 62109-1, first edition	Power Converters for Use in Photovoltaic Power Systems — Part 1: General Requirements
	UL 62109-2, first edition	Power Converters for Use in Photovoltaic Power Systems — Part 2: Particular Requirements for Inverters
706	UL 248-2, second edition	Low-Voltage Fuses — Part 2: Class C Fuses
	UL 248-3, second edition	Low-Voltage Fuses — Part 3: Class CA and CB Fuses
	UL 248-4, second edition	Low-Voltage Fuses — Part 4: Class CC Fuses
	UL 248-5, second edition	Low-Voltage Fuses — Part 5: Class G Fuses
	UL 248-6, second edition	Low-Voltage Fuses — Part 6: Class H Non-Renewable Fuses
	UL 248-8, third edition	Low-Voltage Fuses — Part 8: Class J Fuses
	UL 248-9, second edition	Low-Voltage Fuses — Part 9: Class K Fuses
	UL 248-10, third edition	Low-Voltage Fuses — Part 10: Class L Fuses
	UL 248-12, third edition	Low-Voltage Fuses — Part 12: Class R Fuses

	UL 248-15, third edition	Low-Voltage Fuses — Part 15: Class T Fuses
	UL 248-17, fifth edition	Low-Voltage Fuses — Part 17: Class CF Fuses
	UL 248-18, first edition	Low-Voltage Fuses — Part 18: Class CD Fuses
	UL 489, thirteenth edition	Molded-Case Circuit Breakers, Molded-Case Switches and Circuit-Breaker Enclosures
	UL 489H, first edition	Molded-Case Circuit Breakers, Molded-Case Switches, and Circuit-Breaker Enclosures, for Use with Direct Current (DC) Microgrids
	UL 1066, fifth edition	Power Circuit Breakers up to 1000 V AC and 1500 V DC Used in Enclosures ~~Low-Voltage AC and DC Power Circuit Breakers Used in Enclosures~~
	UL 1741, third edition	Inverters, Converters, Controllers and Interconnection System Equipment for Use With Distributed Energy Resources
	UL 9540, third edition	Energy Storage Systems and Equipment
708	UL 1, eleventh edition	Flexible Metal Conduit
	UL 4, fifteenth edition	Armored Cable
	UL 83, sixteenth edition	Thermoplastic-Insulated Wires and Cables
	UL 360, seventh edition	Liquid-Tight Flexible Metal Conduit
	UL 493, tenth edition	Thermoplastic-Insulated Underground Feeder and Branch-Circuit Cables
	UL 497A, third edition	Secondary Protectors for Communications Circuits
	UL 1008, ninth edition	Transfer Switch Equipment
	UL 1008A, second edition	Transfer Switch Equipment, Over 1000 Volts
	UL 1008M, first edition	Transfer Switch Equipment, Meter-Mounted ~~Meter-Mounted Transfer Switches~~
	UL 1008S, first edition	Solid-State Transfer Switches
	UL 1569, fifth edition	Metal-Clad Cables
	UL 2196, second edition	Fire Test for Circuit Integrity of Fire-Resistive Power, Instrumentation, Control and Data Cables
710	UL 1741, third edition	Inverters, Converters, Controllers and Interconnection System Equipment for Use With Distributed Energy Resources
	UL 2200, third edition	Stationary Engine Generator Assemblies
	UL 8801, first edition	Photovoltaic (PV) Luminaire Systems
	UL 9540, third edition	Energy Storage Systems and Equipment
	UL 9741, first edition	Electric Vehicle Power Export Equipment (EVPE)
	UL 62109-1, first edition	Power Converters for use in Photovoltaic Power Systems — Part 1: General Requirements
	UL 62109-2, first edition	Power Converters for Use in Photovoltaic Power Systems — Part 2: Particular Requirements for Inverters
722	UL 13, fourth edition	Power-Limited Circuit Cables
	UL 444, fifth edition	Communications Cables
	UL 1424, fourth edition	Cables for Power-Limited Fire-Alarm Circuits
	UL 1651, fourth edition	Optical Fiber Cable
	UL 1666, fifth edition	Test for Flame Propagation Height of Electrical and Optical-Fiber Cables Installed Vertically in Shafts
	UL 1685, fourth edition	Vertical-Tray Fire-Propagation and Smoke-Release Test for Electrical and Optical-Fiber Cables
	UL 1724, third edition	Fire Tests for Electrical Circuit Protective Systems
	UL 2024, forth edition	Commercial Closed-Circuit Television Equipment
	UL 2196, second edition	Fire Test for Circuit Integrity of Fire-Resistive Power, Instrumentation, Control and Data Cables
	UL 2556, fifth edition	Wire and Cable Test Methods
725	UL 1310, seventh edition	Class 2 Power Units
	UL 5085-3, first edition	Low Voltage Transformers — Part 3: Class 2 and Class 3 Transformers
	UL 9990, first edition	Information and Communication Technology (ICT) Power Cables
	UL 60730-1, fifth edition	Automatic Electrical Controls — Part 1: General Requirements
	UL 61010-2-201, second edition	Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use — Part 2-201: Particular Requirements for Control Equipment
	UL 61800-5-1, second edition	Adjustable Speed Electrical Power Drive Systems — Part 5-1: Safety Requirements — Electrical, Thermal and Energy
	UL 62368-1, third edition	Audio/Video, Information and Communication Technology Equipment — Part 1: Safety Requirements
726	UL 1400-1, first edition	Fault-Managed Power Systems — ~~Part~~ 1 General Requirements
	UL 1400-2, first edition	Fault-Managed Power Systems — ~~Part~~ 2 Requirements for Cables
	UL 1666, fifth edition	Test for Flame Propagation Height of Electrical and Optical-Fiber Cables Installed Vertically in Shafts
	UL 1685, fourth edition	Vertical-Tray Fire-Propagation and Smoke-Release Test for Electrical and Optical-Fiber Cables
	UL 2556, fifth edition	Wire and Cable Test Methods
728	UL 5, fifteenth edition	Surface Metal Raceways and Fittings

	UL 5A, fourth edition	Nonmetallic Surface Raceways and Fittings
	UL 5B, second edition	Strut-Type Channel Raceways and Fittings
	UL 5C, third edition	Surface Raceways and Fittings for Use with Data, Signal, and Control Circuits
	UL 209, tenth edition	Cellular Metal Floor Raceways and Fittings
	UL 467, eleventh edition	Grounding and Bonding Equipment
	UL 514A, eleventh edition	Metallic Outlet Boxes
	UL 514C, fourth edition	Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers
	UL 568, first edition	Nonmetallic Cable Tray Systems
	UL 884, thirteenth edition	Underfloor Raceways and Fittings
	UL 1724, third edition	Fire Tests for Electrical Circuit Protective Systems
	UL 2024, fifth edition	Cable Routing Assemblies and Communications Raceways
	UL 2196, second edition	Fire Test for Circuit Integrity of Fire-Resistive Power, Instrumentation, Control and Data Cables
750	UL 467, eleventh edition	Grounding and Bonding Equipment
	UL 497, seventh edition	Protectors for Paired-Conductor Communications Circuits
	UL 497A, third edition	Secondary Protectors for Communications Circuits
	UL 497B, forth edition	Protectors for Data Communications and Fire-Alarm Circuits
	UL 497C, second edition	Protectors for Coaxial Communications Circuits
	UL 497E, forth edition	Protectors for Antenna Lead-In Conductors
760	UL 268, eighth edition	Smoke Detectors for Fire Alarm Systems
	UL 268A, fourth edition	Smoke Detectors for Duct Application
	UL 486C, eighth edition	Splicing Wire Connectors
	UL 497B, fourth edition	Protectors for Data Communications and Fire Alarm Circuits
	UL 1424, fourth edition	Cables for Power-Limited Fire-Alarm Circuits
	UL 1425, third edition	Cables for Non–Power-Limited Fire-Alarm Circuits
	UL 1480, seventh edition	Speakers for Fire Alarm and Signaling Systems, Including Accessories
	UL 1666, fifth edition	Test for Flame Propagation Height of Electrical and Optical-Fiber Cables Installed Vertically in Shafts
	UL 1685, fourth edition	Vertical-Tray Fire-Propagation and Smoke-Release Test for Electrical and Optical-Fiber Cables
	UL 2196, second edition	Fire Test for Circuit Integrity of Fire-Resistive Power, Instrumentation, Control and Data Cables
	UL 60730-2-14, third edition	Automatic Electrical Controls; Part 2-14: Particular Requirements for Electric Actuators
770	UL 467, eleventh edition	Grounding and Bonding Equipment
	UL 568, first edition	Nonmetallic Cable Tray Systems
	UL 1651, fourth edition	Optical Fiber Cable
	UL 2024, fifth edition	Cable Routing Assemblies and Communications Raceways~~Optical Fiber and Communication Cable Raceway~~
	UL 2196, second edition	Fire Test for Circuit Integrity of Fire-Resistive Power, Instrumentation, Control and Data Cables
	UL 62275, third edition	Cable Management Systems — Cable Ties for Electrical Installations
800	UL 444, fifth edition	Communications Cables
	UL 467, eleventh edition	Grounding and Bonding Equipment
	UL 489A, first edition	Circuit Breakers for Use in Communication Equipment
	UL 497, seventh edition	Protectors for Paired-Conductor Communications Circuits
	UL 497A, third edition	Secondary Protectors for Communications Circuits
	UL 497C, second edition	Protectors for Coaxial Communications Circuits
	UL 497E, fourth edition	Protectors for Antenna Lead-In Conductors
	UL 523, second edition	Telephone Service Drop Wire
	UL 568, first edition	Nonmetallic Cable Tray Systems
	UL 723, eleventh edition	Test for Surface Burning Characteristics of Building Materials
	UL 1581, fourth edition	Reference Standard for Electrical Wires, Cables, and Flexible Cords
	UL 1666, fifth edition	Test for Flame Propagation Height of Electrical and Optical-Fiber Cables Installed Vertically in Shafts
	UL 1685, fourth edition	Vertical-Tray Fire-Propagation and Smoke-Release Test for Electrical and Optical-Fiber Cables
	UL 1724, third edition	~~Outline for~~ Fire Tests for Electrical Circuit Protective Systems
	UL 1863, fourth edition	Communications-Circuit Accessories
	UL 2024, fifth edition	Cable Routing Assemblies and Communications Raceways
	UL 2043, fifth edition	Fire Test for Heat and Visible Smoke Release for Discrete Products and Their Accessories Installed in Air-Handling Spaces
	UL 2196, second edition	Fire Test for Circuit Integrity of Fire-Resistive Power, Instrumentation, Control and Data Cables~~Tests for Fire Resistive Cables~~
	UL 2556, fifth edition	Wire and Cable Test Methods
	UL 62275, third edition	Cable Management Systems — Cable Ties for Electrical Installations

	UL 62368-1, third edition	Audio/Video, Information and Communication Technology Equipment — Part 1: Safety Requirements
805	UL 497, seventh edition	Protectors for Paired-Conductor Communications Circuits
	UL 497A, third edition	Secondary Protectors for Communications Circuits
	UL 497C, second edition	Protectors for Coaxial Communications Circuits
	UL 497E, fourth edition	Protectors for Antenna Lead-In Conductors
	UL 523, second edition	Telephone Service Drop Wire
	UL 62368-1, third edition	Audio/Video, Information and Communication Technology Equipment — Part 1: Safety Requirements
810	UL 150, fourth edition	Antenna Rotators
	UL 452, seventh edition	Antenna-Discharge Units
	UL 467, eleventh edition	Grounding and Bonding Equipment
	UL 497E, fourth edition	Protectors for Antenna Lead-In Conductors
820	UL 444, fifth edition	Communications Cables
	UL 497E, fourth edition	Protectors for Antenna Lead-In Conductors
	UL 1655, second edition	Community-Antenna Television Cables
830	UL 444, fifth edition	Communications Cables
	UL 497A, third edition	Secondary Protectors for Communications Circuits
	UL 497C, second edition	Protectors for Coaxial Communications Circuits
	UL 497E, fourth edition	Protectors for Antenna Lead-In Conductors
	UL 62368-1, third edition	Audio/Video, Information and Communication Technology Equipment — Part 1: Safety Requirements
840	UL 444, fifth edition	Communications Cables
	UL 467, eleventh edition	Grounding and Bonding Equipment
	UL 498A, second edition	Current Taps and Adapters
	UL 1310, seventh edition	Class 2 Power Units
	UL 1651, fourth edition	Optical Fiber Cable
	UL 1863, fourth edition	Communications-Circuit Accessories
	UL 2024, fifth edition	Cable Routing Assemblies and Communications Raceways
	UL 62368-1, third edition	Audio/Video, Information and Communication Technology Equipment — Part 1: Safety Requirements
Tables 11(A) and 11(B)	UL 1310, seventh edition	Class 2 Power Units
	UL 1434, first edition	Thermistor-Type Devices
	UL 5085-3, first edition	Low Voltage Transformers — Part 3: Class 2 and Class 3 Transformers
	UL 62368-1, third edition	Audio/Video, Information and Communication Technology Equipment — Part 1: Safety Requirements
Tables 12(A) and 12(B)	UL 1310, seventh edition	Class 2 Power Units
	UL 1434, first edition	Thermistor-Type Devices
	UL 5085-3, first edition	Low Voltage Transformers — Part 3: Class 2 and Class 3 Transformers
	UL 62368-1, third edition	Audio/Video, Information and Communication Technology Equipment — Part 1: Safety Requirements

Table A.1(b) Product Safety Standards for Conductors and Equipment That Do Not Have an Associated Listing Requirement

Article	Standard Number, Edition	Standard Title
110	NEMA CY 10000-2023	Cybersecurity Implementation Guidance for Connected Electrical Infrastructure
110	UL 969, fifth edition	Marking and Labeling Systems
	UL 9691, first edition	Recommended Practice for Nameplates for Use in Electrical Installations
210	UL 1053, seventh edition	Ground-Fault Sensing and Relaying Equipment
215	UL 1053, seventh edition	Ground-Fault Sensing and Relaying Equipment
235	UL 6, fifteenth edition	Electrical Rigid Metal Conduit — Steel
	UL 6A, second edition	Electrical Rigid Metal Conduit — Aluminum, Red Brass and Stainless Steel
	UL 347, seventh edition	Medium-Voltage AC Contactors, Controllers, and Control Centers
	UL 360, seventh edition	Liquid-Tight Flexible Metal Conduit
	UL 486C, eighth edition	Splicing Wire Connectors
	UL 514B, sixth edition	Conduit, Tubing, and Cable Fittings
	UL 651, eighth edition	Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings
	UL 1008A, second edition	Transfer Switch Equipment, Over 1000 Volts
	UL 1242, fourth edition	Electrical Intermediate Metal Conduit — Steel
	UL 1660, sixth edition	Liquid-Tight Flexible Nonmetallic Conduit
	UL 2200, third edition	Stationary Engine Generator Assemblies
	UL 2515, second edition	Aboveground Reinforced Thermosetting Resin Conduit (RTRC) and Fittings
	UL 2876, first edition	Remote Racking Devices for Switchgear and Controlgear
240	NEMA CY 10000-2023	Cybersecurity Implementation Guidance for Connected Electrical Infrastructure

245	IEEE C37.09	IEEE Standard Test Procedures for AC High-Voltage Circuit Breakers with Rated Maximum Voltage Above 1000 V
	IEEE C37.41	IEEE Standard Design Tests for High-Voltage (>1000 V) Fuses and Accessories
	IEEE C37.42	IEEE Standard Specifications for High-Voltage (>1000 V) Fuses and Accessories
	NEMA C37.54	NEMA Standard Indoor AC High Voltage Circuit Breakers Applied as Removable Elements in Metal-Enclosed Switchgear — Conformance Test Procedures
300	UL 635, third edition	Insulating Bushings
314	UL 514B, sixth edition	Conduit, Tubing, and Cable Fittings
	UL 2239, second edition	Hardware for the Support of Conduit, Tubing, and Cable
	UL 3004, second edition	Outline of Investigation for Medium Voltage Junction Boxes
320	UL 514A, eleventh edition	Metallic Outlet Boxes
	UL 2239, second edition	Hardware for the Support of Conduit, Tubing, and Cable
322	UL 5, fifteenth edition	Surface Metal Raceways and Fittings
	UL 2239, second edition	Hardware for the Support of Conduit, Tubing, and Cable
324	UL 5, fifteenth edition	Surface Metal Raceways and Fittings
	UL 2239, second edition	Hardware for the Support of Conduit, Tubing, and Cable
330	UL 2239, second edition	Hardware for the Support of Conduit, Tubing, and Cable
332	UL 1565, sixth edition	Positioning Devices
	UL 2239, second edition	Hardware for the Support of Conduit, Tubing, and Cable
334	UL 6, fifteenth edition	Electrical Rigid Metal Conduit — Steel
	UL 6A, second edition	Electrical Rigid Metal Conduit — Aluminum, Red Brass and Stainless Steel
	UL 514B, sixth edition	Conduit, Tubing, and Cable Fittings
	UL 651, eighth edition	Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings~~Schedule 40 and 80 Rigid PVC Conduit~~
	UL 797, ninth edition	Electrical Metallic Tubing — Steel
	UL 797A, third edition	Electrical Metallic Tubing — Aluminum and Stainless Steel
	UL 1242, fourth edition	Electrical Intermediate Metal Conduit — Steel
	UL 1565, sixth edition	Positioning Devices
	UL 2239, second edition	Hardware for the Support of Conduit, Tubing, and Cable
	UL 2420, first edition	Belowground Reinforced Thermosetting Resin Conduit (RTRC) and Fittings
	UL 2515, second edition	Aboveground Reinforced Thermosetting Resin Conduit (RTRC) and Fittings
	UL 2515A, first edition	Supplemental Requirements for Extra Heavy Wall Reinforced Thermosetting Resin Conduit (RTRC) and Fittings.
335	UL 2250, third edition	Instrumentation Tray Cable
337	UL 1565, sixth edition	Positioning Devices
	UL 2239, second edition	Hardware for the Support of Conduit, Tubing, and Cable
340	UL 493, tenth edition	Thermoplastic-Insulated Underground Feeder and Branch-Circuit Cables
342	UL 635, third edition	Insulating Bushings
	UL 2239, second edition	Hardware for the Support of Conduit, Tubing, and Cable
344	UL 635, third edition	Insulating Bushings
	UL 2239, second edition	Hardware for the Support of Conduit, Tubing, and Cable
348	UL 2239, second edition	Hardware for the Support of Conduit, Tubing, and Cable
350	UL 2239, second edition	Hardware for the Support of Conduit, Tubing, and Cable
352	UL 635, third edition	Insulating Bushings
	UL 2239, second edition	Hardware for the Support of Conduit, Tubing, and Cable
353	UL 635, third edition	Insulating Bushings
355	UL 635, third edition	Insulating Bushings
	UL 2239, second edition	Hardware for the Support of Conduit, Tubing, and Cable
356	UL 2239, second edition	Hardware for the Support of Conduit, Tubing, and Cable
358	UL 2239, second edition	Hardware for the Support of Conduit, Tubing, and Cable
362	UL 2239, second edition	Hardware for the Support of Conduit, Tubing, and Cable
368	UL 857, thirteenth edition	Busways
392	UL 568, first edition	Nonmetallic Cable Tray Systems
400	UL 62, twentieth edition	Flexible Cords and Cables
	UL 498, sixteenth edition	Attachment Plugs and Receptacles
	UL 498B, first edition	Receptacles with Integral Switching Means
	UL 498D, first edition	Attachment Plugs, Cord Connectors and Receptacles with Arcuate (Locking Type) Contacts
	UL 498E, first edition	Attachment Plugs, Cord Connectors and Receptacles — Enclosure Types for Environmental Protection
	UL 514B, sixth edition	Conduit, Tubing, and Cable Fittings
	UL 817, twelfth edition	Cord Sets and Power-Supply Cords
	UL 1650, first edition	Portable Power Cable

	UL 1680, second edition	Stage and Lighting Cables
	UL 2263, first edition	Electric Vehicle Cable
	NEMA WC 58-2017	Portable and Power Feeder Cables for Use in Mines and Similar Applications
402	UL 66, third edition	Fixture Wire
408	UL 50, fourteenth edition	Enclosures for Electrical Equipment, Non-Environmental Considerations
	UL 50E, third edition	Enclosures for Electrical Equipment, Environmental Considerations
409	UL 1436, sixth edition	Outlet Circuit Testers and Other Similar Indicating Devices
	UL 61010-1, third edition	Electrical Equipment for Measurement, Control, and Laboratory Use — Part 1: General Requirements
	UL 61010-2-030, second edition	Electrical Equipment for Measurement, Control, and Laboratory Use — Part 2-30: Particular Requirements for Testing and Measuring Circuits
424	UL 834, fifth edition	Heating, Water Supply, and Power Boilers — Electric
	UL 1693, third edition	Electric Radiant Heating Panels and Heating Panel Sets
	UL 1995, fifth edition	Heating and Cooling Equipment
	UL 1996, fourth edition	Electric Duct Heaters
	UL 60335-1, sixth edition	Safety of Household and Similar Electrical Appliances, Part 1: General Requirements
	UL 60335-2-40, fourth edition	Household and Similar Electrical Appliances — Safety — Part 2–40: ~~Part 2–40:~~ Particular Requirements for Electrical Heat Pumps, Air-Conditioners and Dehumidifiers
425	UL 834, fifth edition	Heating, Water Supply, and Power Boilers — Electric
426	UL 1588, fourth edition	Roof and Gutter De-Icing Cable Units
427	UL 515, second edition	Electrical Resistance Trace Heating for Commercial Applications
	UL 1462, fourth edition	Mobile Home Pipe Heating Cable
	UL 2049, fourth edition	Residential Pipe Heating Cable
430	UL 248-13, third edition	Low Voltage Fuses — Part 13: Semiconductor Fuses
	UL 347, seventh edition	Medium-Voltage AC Contactors, Controllers, and Control Centers
	UL 347A, second edition	Medium Voltage Power Conversion Equipment
445	UL 3001, first edition	Distributed Energy Generation and Storage Systems
	~~UL 3010, first edition~~	~~Single Site Energy Systems~~
450	IEEE C57.12.00	IEEE Standard for General Requirements for Liquid-Immersed Distribution, Power, and Regulating Transformers
	IEEE C57.12.28	IEEE Standard for Pad-Mounted Equipment — Enclosure Integrity
	IEEE C57.12.29	IEEE C57.12.29 IEEE Standard for Pad-Mounted Equipment — Enclosure Integrity for Coastal Environments
	IEEE C57.16	IEEE Standard for Requirements, Terminology, and Test Code for Dry-Type Air-Core Series-Connected Reactors
450	UL 50, fourteenth edition	Enclosures for Electrical Equipment, Non-Environmental Considerations
	UL 50E, third edition	Enclosures for Electrical Equipment, Environmental Considerations
	UL 248-1, fourth edition	Low-Voltage Fuses — Part 1: General Requirements
	UL 248-2, second edition	Low-Voltage Fuses — Part 2: Class C Fuses
	UL 248-3, second edition	Low-Voltage Fuses — Part 3: Class CA and CB Fuses
	UL 248-4, second edition	Low-Voltage Fuses — Part 4: Class CC Fuses
	UL 248-5, second edition	Low-Voltage Fuses — Part 5: Class G Fuses
	UL 248-8, third edition	Low-Voltage Fuses — Part 8: Class J Fuses
	UL 248-9, second edition	Low-Voltage Fuses — Part 9: Class K Fuses
	UL 489, thirteenth edition	Molded-Case Circuit Breakers, Molded-Case Switches and Circuit-Breaker Enclosures
	UL 1561, fourth edition	Dry-Type General Purpose and Power Transformers
	UL 1562, fourth edition	~~Standard for~~ Transformers, Distribution, Dry-Type Over 600 Volts
	UL 5085-2, second edition	Low Voltage Transformers — Part 2: General Purpose Transformers
460	UL 810, sixth edition	Capacitors
	UL 1283, seventh edition	Electromagnetic Interference Filters
	UL 60384-14, second edition	Fixed Capacitors for Use in Electronic Equipment — Part 14: Sectional Specification: Fixed Capacitors for Electromagnetic Interference Suppression and Connection to the Supply Mains
470	UL 508, eighteenth edition	Industrial Control Equipment
	UL 1283, seventh edition	Electromagnetic Interference Filters
495	IEEE C37.09	IEEE Standard Test Procedures for AC High-Voltage Circuit Breakers with Rated Maximum Voltage Above 1000 V
	IEEE C37.20.2	IEEE Standard for Metal-Clad Switchgear
	IEEE C37.20.3	IEEE Standard for Metal-Enclosed Interrupter Switchgear (1 kV–38 kV)
	IEEE C37.20.4	IEEE Standard for Indoor AC Switches (1 kV to 38 kV) for Use in Metal-Enclosed Switchgear
	IEEE C37.20.6	IEEE Standard for 4.76 kV to 38 kV Rated Ground and Test Devices Used in Enclosures

	IEEE C37.20.9	IEEE Standard for Metal-Enclosed Switchgear Rated 1 kV to 52 kV Incorporating Gas Insulating Systems
	IEEE C37.23	IEEE Standard for Metal-Enclosed Bus
	IEEE C37.41	IEEE Standard Design Tests for High-Voltage (>1000 V) Fuses and Accessories
	IEEE C37.42	IEEE Standard Specifications for High-Voltage (>1000 V) Fuses and Accessories
	IEEE C37.59	IEEE Standard for Requirements for Conversion of Power Switchgear Equipment
	IEEE C37.60	IEEE International Standard — High-voltage switchgear and controlgear — Part 111: Automatic circuit reclosers for alternating current systems up to and including 38 kV
	IEEE C37.74	IEEE Standard Requirements for Subsurface, Vault, and Padmounted Load-Interrupter Switchgear and Fused Load-Interrupter Switchgear for Alternating Current Systems up to 38 kV
	NEMA C37.54	American National Standard for Indoor AC High Voltage Circuit Breakers Applied as Removable Elements in Metal-Enclosed Switchgear — Conformance Test Procedures
	NEMA C37.55	American National Standard for Switchgear — Medium Voltage Metal-Clad Assemblies — Conformance Test Procedures
	NEMA C37.57	American National Standard for Switchgear — Metal-Enclosed Interrupter Switchgear Assemblies — Conformance Testing
	NEMA C37.58	American National Standard for Switchgear — Indoor AC Medium Voltage Switches for Use in Metal-Enclosed Switchgear — Conformance Test Procedures
495	UL 347, seventh edition	Medium-Voltage AC Contactors, Controllers, and Control Centers
	UL 347A, second edition	Medium Voltage Power Conversion Equipment
	UL 347C, first edition	~~Outline of Investigation for~~ Medium Voltage Solid State Resistive Load Controllers, Up to 15KV
	UL 1008A, second edition	Transfer Switch Equipment, Over 1000 Volts
	UL 2748, first edition	Arcing Fault Quenching Equipment
	UL 2877, fourth edition	Power Supplies, Medium Voltage
	UL 3004, second edition	Outline of Investigation for Medium Voltage Junction Boxes
500	ANSI/IEEE C2	National Electrical Safety Code, Section 127A, Coal Handling Areas
	ANSI/UL 121203	Recommended Practice for Portable/Personal Electronic Products Suitable for Use in Class I, Division 2, Class I, Zone 2, Class II, Division 2, Class III, Division 1, Class III, Division 2, Zone 21 and Zone 22 Hazardous (Classified) Locations
	API RP 14F	Recommended Practice for Design and Installation of Electrical Systems for Fixed and Floating Offshore Petroleum Facilities for Unclassified and Class I, Division 1 and Division 2 Locations
	API RP 500	Recommended Practice for Classification of Locations of Electrical Installations at Petroleum Facilities Classified as Class I, Division 1 and Division 2
	API RP 2003	Protection Against Ignitions Arising Out of Static Lightning and Stray Currents.
	ASHRAE 15	Safety Standard for Refrigeration Systems.
	ASME B1.20.1	Pipe Threads, General Purpose (Inch)
	IEEE 844.2	Standard for Skin Effect Trace Heating of Pipelines, Vessels, Equipment, and Structures — Application Guide for Design, Installation, Testing, Commissioning, and Maintenance
	IEEE 60079-30-2	IEEE/IEC International Standard for Explosive atmospheres — Part 30-2: Electrical resistance trace heating — Application guide for design, installation, and maintenance
	IIAR 2	Standard for Safe Design of Closed-Circuit Ammonia Refrigeration Systems
	ISA-12.10	Area Classification in Hazardous (Classified) Dust Locations
	ISO 965-1	ISO general purpose metric screw threads — Tolerances — Part 1: Principles and basic data
	ISO 965-3	ISO general purpose metric screw threads — Tolerances — Part 3: Deviations for constructional screw threads
	NFPA 30-2024	Flammable and Combustible Liquids Code
	NFPA 32-2021	Standard for Drycleaning Facilities
	NFPA 33-2024	Standard for Spray Application Using Flammable or Combustible Materials
	NFPA 34-2024	Standard for Dipping, Coating, and Printing Processes Using Flammable or Combustible Liquids
	NFPA 35-2021	Standard for the Manufacture of Organic Coatings

	NFPA 36-2025	Standard for Solvent Extraction Plants
	NFPA 45-2024	Standard on Fire Protection for Laboratories Using Chemicals
	NFPA 55-2026	Compressed Gases and Cryogenic Fluids Code
	NFPA 58-2024	Liquefied Petroleum Gas Code
	NFPA 59-2024	Utility LP-Gas Plant Code
	NFPA 77-2024	Recommended Practice on Static Electricity
	NFPA 497-2024	Recommended Practice for the Classification of Flammable Liquids, Gases, or Vapors and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas
	NFPA 499-2024	Recommended Practice for the Classification of Combustible Dusts and of Hazardous (Classified) Locations for Electrical Installation in Chemical Process Areas
	NFPA 780-2026	Standard for the Installation of Lightning Protection Systems
	NFPA 820-2024	Standard for Fire Protection in Wastewater Treatment and Collection Facilities
500	UL 60079-29-2, second edition	Explosive Atmospheres — Part 29-2: Gas detectors — Selection, installation, use and maintenance of detectors for flammable gases and oxygen
	UL 120002, second edition	Recommended Practice for Certificates for ~~Certificate Standard for AEx~~ Equipment for Hazardous (Classified) Locations
	UL 120101, first edition	Definitions and Information Pertaining to Electrical Equipment in Hazardous ~~(Classified)~~ Locations
	UL 121303, first edition	Guide for Use of Detectors for Flammable Gases ~~Combustible Gas Detection as a Method of Protection~~
501	UL 62, twentieth edition	Flexible Cords and Cables
	UL 504, third edition	Mineral-Insulated, Metal-Sheathed Cable
503	NFPA 505-2024	Fire Safety Standard for Powered Industrial Trucks Including Type Designations, Areas of Use, Conversions, Maintenance, and Operations
504	ISA-RP 12.06.01	Recommended Practice for Wiring Methods for Hazardous (Classified) Locations Instrumentation — Part 1: Intrinsic Safety
505	ANSI/API RP 14FZ	Recommended Practice for Design and Installation of Electrical Systems for Fixed and Floating Offshore Petroleum Facilities for Unclassified and Class I, Zone 0, Zone 1, and Zone 2 Locations
	API RP 505	Recommended Practice for Classification of Locations for Electrical Installations at Petroleum Facilities Classified as Class I, Zone 0, Zone 1, and Zone 2
	API RP 2003	Protection Against Ignitions Arising Out of Static Lightning and Stray Currents.
	ASME B1.20.1	Pipe Threads, General Purpose (Inch)
	EI 15	Model Code of Safe Practice, Part 15: Area Classification Code for Installations Handling Flammable Fluids
	IEEE 844.2	Skin Effect Trace Heating of Pipelines, Vessels, Equipment, and Structures — Application Guide for Design, Installation, Testing, Commissioning, and Maintenance
	IEEE 60079-30-2	Explosive Atmospheres — Part 30-2: Electrical resistance trace heating — Application guide for design, installation and maintenance
	IIAR 2	Standard for Safe Design of Closed-Circuit Ammonia Refrigeration Systems
	ISA-60079-10-1 (12.24.01)	Explosive Atmospheres — Part 10-1: Classification of Areas — Explosive gas atmospheres
	ISA-60079-29-2	Explosive Atmospheres — Part 29-2: Gas detectors — Selection, installation, use and maintenance of detectors for flammable gases and oxygen
	ISO 965-1	ISO general purpose metric screw threads — Tolerances — Part 1: Principles and basic data
	ISO 965-3	ISO general purpose metric screw threads — Tolerances — Part 3: Deviations for constructional screw threads
	NFPA 30-2024	Flammable and Combustible Liquids Code
	NFPA 77-2024	Recommended Practice on Static Electricity
	NFPA 497-2024	Recommended Practice for the Classification of Flammable Liquids, Gases, or Vapors and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas
	NFPA 780-2026	Standard for the Installation of Lightning Protection Systems
505	UL 80079-20-1, first edition	Explosive Atmospheres — Part 20-1: Material Characteristics for Gas and Vapour Classification — Test Methods and Data
	UL 120101, first edition	Definitions and Information Pertaining to Electrical Equipment in Hazardous ~~(Classified)~~ Locations
	UL 121303, first edition	Guide for Use of Detectors for Flammable Gases
506	ASME B1.20.1	Pipe Threads, General Purpose (Inch)

	IEEE 844.2	Skin Effect Trace Heating of Pipelines, Vessels, Equipment, and Structures — Application Guide for Design, Installation, Testing, Commissioning, and Maintenance
	IEEE 60079-30-2	Explosive Atmospheres — Part 30-2: Electrical resistance trace heating — Application guide for design, installation and maintenance
	ISA-60079-10-2 (12.10.05)	Explosive Atmospheres — Part 10-2: Classification of Areas — Combustible Dust Atmospheres
	NFPA 499-2024	Recommended Practice for the Classification of Combustible Dusts and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas
511	NFPA 30A-2024	Code for Motor Fuel Dispensing Facilities and Repair Garages
	NFPA 88A-2023	Standard for Parking Structures
512	ICC IFC	International Fire Code
	NFPA 1-2023	Fire Code
	NFPA 30-2024	Flammable and Combustible Liquids Code
	NFPA 33-2024	Standard for Spray Application Using Flammable or Combustible Materials
	NFPA 36-2025	Standard for Solvent Extraction Plants
	NFPA 58-2024	Liquefied Petroleum Gas Code
	NFPA 70B-2023	Standard for Electrical Equipment Maintenance
	NFPA 497-2024	Recommended Practice for the Classification of Flammable Liquids, Gases, or Vapors and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas
513	NFPA 30-2024	Flammable and Combustible Liquids Code
	NFPA 33-2024	Standard for Spray Application Using Flammable or Combustible Materials
	NFPA 409-2022	Standard on Aircraft Hangars
514	NFPA 2-2023	Hydrogen Technologies Code
	NFPA 30A-2024	Code for Motor Fuel Dispensing Facilities and Repair Garages
	NFPA 52-2023	Vehicular Natural Gas Fuel Systems Code
	NFPA 58-2024	Liquefied Petroleum Gas Code
	NFPA 59-2024	Utility LP-Gas Plant Code
	NFPA 303-2026	Fire Protection Standard for Marinas and Boatyards
515	NFPA 30-2024	Flammable and Combustible Liquids Code
516	NFPA 13-2025	Standard for the Installation of Sprinkler Systems
	NFPA 33-2024	Standard for Spray Application Using Flammable or Combustible Materials
	NFPA 34-2024	Standard for Dipping, Coating, and Printing Processes Using Flammable or Combustible Liquids
	NFPA 77-2024	Recommended Practice on Static Electricity
	NFPA 91-2026	Standard for Exhaust Systems for Air Conveying of Vapors, Gases, Mists, and Particulate Solids
	NFPA 701-2023	Standard Methods of Fire Tests for Flame Propagation of Textiles and Films
620	UL 4, fifteenth edition	Armored Cable
	UL 44, nineteenth edition	Thermoset-Insulated Wires and Cables
	UL 66, third edition	Fixture Wire
	UL 504, third edition	Mineral-Insulated, Metal-Sheathed Cable ~~Mineral Insulated Wire~~
	UL 1063, ninth edition	Machine-Tool Wires and Cables
	UL 1569, fifth edition	Metal-Clad Cables
625	UL 3001, first edition	Distributed Energy Generation and Storage Systems
	~~UL 3010, first edition~~	~~Single Site Energy Systems~~
630	UL 1276, third edition	Welding Cable
650	UL 1651, fourth edition	Optical Fiber Cable
660	UL 62, twentieth edition	Flexible Cords and Cables
	UL 817, twelfth edition	Cord Sets and Power-Supply Cords
668	UL 4, fifteenth edition	Armored Cable
	UL 62, twentieth edition	Flexible Cords and Cables
670	UL 1740, fourth edition	Standard for Robots and Robotic Equipment
	UL 2011, seventh edition	Machinery
	UL 3100, first edition	~~Standard for~~ Automated Mobile Platforms (AMPs)
675	UL 44, nineteenth edition	Thermoset-Insulated Wires and Cables
	UL 83, sixteenth edition	Thermoplastic-Insulated Wires and Cables
	UL 83A, first edition	Fluoropolymer Insulated Wire
	UL 1063, ninth edition	Machine-Tool Wires and Cables
	UL 1263, sixth edition	Irrigation Cable
690	UL 3001, first edition	Distributed Energy Generation and Storage Systems
	~~UL 3010, first edition~~	~~Single Site Energy Systems~~
691	UL 3001, first edition	Distributed Energy Generation and Storage Systems
	~~UL 3010, first edition~~	~~Single Site Energy Systems~~

692	UL 44, nineteenth edition	Thermoset-Insulated Wires and Cables
	UL 83, sixteenth edition	Thermoplastic-Insulated Wires and Cables
	UL 83A, first edition	Fluoropolymer Insulated Wire
	UL 1063, ninth edition	Machine-Tool Wires and Cables
	UL 3001, first edition	Distributed Energy Generation and Storage Systems
	~~UL 3010, first edition~~	~~Single Site Energy Systems~~
694	UL 44, nineteenth edition	Thermoset-Insulated Wires and Cables
	UL 62, twentieth edition	Flexible Cords and Cables
	UL 83, sixteenth edition	Thermoplastic-Insulated Wires and Cables
	UL 83A, first edition	Fluoropolymer Insulated Wire
	UL 1063, ninth edition	Machine-Tool Wires and Cables
	UL 3001, first edition	Distributed Energy Generation and Storage Systems
	~~UL 3010, first edition~~	~~Single Site Energy Systems~~
700	UL 3001, first edition	Distributed Energy Generation and Storage Systems
	UL 3008, third edition	Automatic Interconnection Switches for Emergency Systems
701	UL 3001, first edition	Distributed Energy Generation and Storage Systems
	UL 3008, third edition	Automatic Interconnection Switches for Emergency Systems
702	UL 3001, first edition	Distributed Energy Generation and Storage Systems
705	UL 3001, first edition	Distributed Energy Generation and Storage Systems
	~~UL 3010, first edition~~	~~Single Site Energy Systems~~
708	NEMA CY 10000-2023	Cybersecurity Implementation Guidance for Connected Electrical Infrastructure
710	UL 3001, first edition	Distributed Energy Generation and Storage Systems
	~~UL 3010, first edition~~	~~Single Site Energy Systems~~

Public Comment No. 865-NFPA 70-2024 [Article 100]

Article 100 Definitions

Scope. This article contains only those definitions essential to the application of this code. It is not intended to include commonly defined general terms or commonly defined technical terms from related codes and standards. An article number in parentheses following the definition indicates that the definition only applies to that article.

Informational Note: A definition that is followed by a reference in brackets has been extracted from one of the following standards. Only editorial changes were made to the extracted text to make it consistent with this code.

(1) NFPA 30A-2024, *Code for Motor Fuel Dispensing Facilities and Repair Garages*

(2) NFPA 33-2024, *Standard for Spray Application Using Flammable or Combustible Materials*

(3) NFPA 75-2024, *Standard for the Fire Protection of Information Technology Equipment*

(4) NFPA 79-2024, *Electrical Standard for Industrial Machinery*

(5) NFPA 99-2024, *Health Care Facilities Code*

(6) NFPA 101® -2024, *Life Safety Code*®

(7) NFPA 110-2025, *Standard for Emergency and Standby Power Systems*

(8) NFPA 303-2026, *Fire Protection Standard for Marinas and Boatyards*

(9) NFPA 307-2026, *Standard for the Construction and Fire Protection of Marine Terminals, Piers, and Wharves*

(10) NFPA 499-2024, *Recommended Practice for the Classification of Combustible Dusts and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas*

(11) NFPA 501-2024, *Standard on Manufactured Housing*

(12) NFPA 790-2024, *Standard for Competency of Third-Party Field Evaluation Bodies*

(13) NFPA 1192-2026, *Standard on Recreational Vehicles*

Accessible (as applied to equipment).

Capable of being reached for operation, renewal, and inspection. (CMP-1)

Accessible (as applied to wiring methods).

Capable of being removed or exposed without damaging the building structure or finish or not permanently closed in or blocked by the structure, other electrical equipment, other building systems, or finish of the building. (CMP-1)

Accessible, Readily. (Readily Accessible)

Capable of being reached quickly for operation, renewal, or inspection without requiring those to whom ready access is requisite to take actions, such as to use tools (other than keys), to climb over or under, to remove obstacles, or to resort to portable ladders, and so forth. (CMP-1)

Informational Note: Use of keys is a common practice under controlled or supervised conditions and a common alternative to the ready access requirements under such supervised conditions as provided elsewhere in the *NEC*.

Adapter.

A device used to adapt a circuit from one configuration of an attachment plug or receptacle to another configuration with the same current rating. (520) (CMP-15)

Adjustable Speed Drive.

Power conversion equipment that provides a means of adjusting the speed of an electric motor. (CMP-11)

Informational Note: A variable frequency drive is one type of electronic adjustable speed drive that controls the rotational speed of an ac electric motor by controlling the frequency and voltage of the electrical power supplied to the motor.

Adjustable Speed Drive System.

A combination of an adjustable speed drive, its associated motor(s), and auxiliary equipment. (CMP-11)

Aircraft Painting Hangar.

An aircraft hangar constructed for the express purpose of spraying, coating, and/or dipping applications and provided with dedicated ventilation supply and exhaust. (CMP-14)

Ambulatory Health Care Occupancy.

An occupancy used to provide services or treatment simultaneously to four or more patients that provides, on an outpatient basis, one or more of the following:

(1) Treatment for patients that renders the patients incapable of taking action for self-preservation under emergency conditions without the assistance of others.

(2) Anesthesia that renders the patients incapable of taking action for self-preservation under emergency conditions without the assistance of others.

(3) Treatment for patients who, due to the nature of their injury or illness, are incapable of taking action for self-preservation under emergency conditions without the assistance of others.

[***101*** **:** 3.3.198.1] (517) (CMP-15)

Ampacity.

The maximum current, in amperes, that a conductor can carry continuously under the conditions of use without exceeding its temperature rating. (CMP-6)

Amplifier (Audio Amplifier) (Pre-Amplifier).

Electronic equipment that increases the current or voltage, or both, of an audio signal intended for use by another piece of audio equipment. Amplifier is the term used to denote an audio amplifier. (640) (CMP-12)

Appliance.

Utilization equipment, generally other than industrial, that is normally built in a standardized size or type and is installed or connected as a unit to perform one or more functions such as clothes washing, air-conditioning, food mixing, and deep frying. (CMP-17)

Applicator.

The device used to transfer energy between the output circuit and the object or mass to be heated. (665) (CMP-12)

Approved.

Acceptable to the authority having jurisdiction. (CMP-1)

Arc-Fault Circuit Interrupter (AFCI).

A device intended to provide protection from the effects of arc faults by recognizing characteristics unique to arcing and by functioning to de-energize the circuit when an arc fault is detected. (CMP-2)

Array (PV Array) (Solar PV Array).

A mechanically and electrically integrated grouping of solar PV modules with mounting system, including any attached system components such as inverters or dc-to-dc converters and attached associated wiring. (690) (CMP-4)

Artificially Ventilated Room “v”.

A room volume protected by artificial ventilation and of sufficient size to permit the entry of a person who might occupy the room. (CMP-14)

Informational Note: see ANSI/UL 60079-13, *Explosive Atmospheres — Part 13: Equipment Protection by Pressurized Room “p” and Artificially Ventilated Room “v”* , for information on the requirements for rooms intended for human entry where artificial ventilation is used as a means of reducing the risk of explosion.

Askarel.

A generic term for a group of nonflammable synthetic chlorinated hydrocarbons used as electrical insulating media. (CMP-9)

Informational Note: Askarels of various compositional types are used. Under arcing conditions, the gases produced, while consisting predominantly of noncombustible hydrogen chloride, can include varying amounts of combustible gases, depending on the askarel type.

Associated Apparatus.

Apparatus in which the circuits are not necessarily intrinsically safe themselves but that affects the energy in the intrinsically safe circuits and is relied on to maintain intrinsic safety. Such apparatus is one of the following:

(1) Electrical apparatus that has an alternative type of protection for use in the appropriate hazardous (classified) location

(2) Electrical apparatus not so protected that shall not be used within a hazardous (classified) location

(CMP-14)

Informational Note No. 1: Associated apparatus has identified intrinsically safe connections for intrinsically safe apparatus and also might have connections for nonintrinsically safe apparatus.

Informational Note No. 2: An example of associated apparatus is an intrinsic safety barrier, which is a network designed to limit the energy (voltage and current) available to the protected circuit in the hazardous (classified) location under specified fault conditions.

Informational Note No. 3: See ANSI/UL 913, *Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III, Division 1, Hazardous (Classified) Locations* ; ANSI/UL 60079-11, *Explosive Atmospheres — Part 11: Equipment Protection by Intrinsic Safety "i"* ; and ANSI/ISA RP 12.06.01, *Recommended Practice for Wiring Methods for Hazardous (Classified) Locations Instrumentation — Part 1: Intrinsic Safety* , for additional information.

Associated Nonincendive Field Wiring Apparatus.

Apparatus in which the circuits are not necessarily nonincendive themselves but that affects the energy in nonincendive field wiring circuits and is relied on to maintain nonincendive energy levels. Such apparatus is one of the following:

(1) Electrical apparatus that has an alternative type of protection for use in the appropriate hazardous (classified) location

(2) Electrical apparatus not so protected that shall not be used within a hazardous (classified) location

(CMP-14)

Informational Note No. 1: Associated nonincendive field wiring apparatus has designated associated nonincendive field wiring apparatus connections for nonincendive field wiring apparatus and also might have connections for other electrical apparatus.

Informational Note No. 2: See ANSI/UL 121201, *Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations* , for additional information.

Attachment Fitting, Weight-Supporting (WSAF) (Weight-Supporting Attachment Fitting).

A device that, by insertion into a weight-supporting ceiling receptacle, establishes a connection between the conductors of the attached utilization equipment and the branch-circuit conductors connected to the weight-supporting ceiling receptacle. (CMP-18)

Informational Note No. 1: A weight-supporting attachment fitting is different from an attachment plug because no cord is associated with the fitting. A weight-supporting attachment fitting in combination with a weight-supporting ceiling receptacle secures the associated utilization equipment in place and supports its weight.

Informational Note No. 2: See ANSI/NEMA WD 6, *American National Standard for Wiring Devices — Dimensional Specifications* , for the standard configuration of weight-supporting attachment fittings and related weight-supporting ceiling receptacles.

Attachment Plug (Plug Cap) (Plug).

A device that, by insertion in a receptacle, establishes a connection between the conductors of the attached flexible cord and the conductors connected permanently to the receptacle. (CMP-18)

Audio Autotransformer.

A transformer with a single winding and multiple taps intended for use with an amplifier loudspeaker signal output. (640) (CMP-12)

Audio Signal Processing Equipment (Audio Equipment).

Electrically operated equipment that produces, processes, or both, electronic signals that, when appropriately amplified and reproduced by a loudspeaker, produce an acoustic signal within the range of normal human hearing (typically 20–20 kHz). Within Article 640, the terms equipment and audio equipment are assumed to be equivalent to audio signal processing equipment. (640) (CMP-12)

Informational Note: This equipment includes, but is not limited to, loudspeakers; headphones; pre-amplifiers; microphones and their power supplies; mixers; MIDI (musical instrument digital interface) equipment or other digital control systems; equalizers, compressors, and other audio signal processing equipment; and audio media recording and playback equipment, including turntables, tape decks and disk players (audio and multimedia), synthesizers, tone generators, and electronic organs. Electronic organs and synthesizers may have integral or separate amplification and loudspeakers. With the exception of amplifier outputs, virtually all such equipment is used to process signals (using analog or digital techniques) that have nonhazardous levels of voltage or current.

Audio System.

The totality of all equipment and interconnecting wiring used to fabricate a fully functional audio signal processing, amplification, and reproduction system. (640) (CMP-12)

Audio Transformer.

A transformer with two or more electrically isolated windings and multiple taps intended for use with an amplifier loudspeaker signal output. (640) (CMP-12)

Authority Having Jurisdiction (AHJ).

An organization, office, or individual responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, an installation, or a procedure. (CMP-1)

Informational Note: The phrase “authority having jurisdiction,” or its acronym AHJ, is used in NFPA documents in a broad manner, since jurisdictions and approval agencies vary, as do their responsibilities. Where public safety is primary, the authority having jurisdiction may be a federal, state, local, or other regional department or individual such as a fire chief; fire marshal; chief of a fire prevention bureau, labor department, or health department; building official; electrical inspector; or others having statutory authority. For insurance purposes, an insurance inspection department, rating bureau, or other insurance company representative may be the authority having jurisdiction. In many circumstances, the property owner or his or her designated agent assumes the role of the authority having jurisdiction; at government installations, the commanding officer or departmental official may be the authority having jurisdiction.

Automatic.

Performing a function without the necessity of human intervention. (CMP-1)

Bathroom.

An area including a sink with one or more of the following: a toilet, a urinal, a tub, a shower, a bidet, or similar plumbing fixtures. (CMP-2)

Battery.

A single cell or a group of cells connected together electrically in series, in parallel, or a combination of both. (CMP-13)

Battery, Flow. (Flow Battery)

An energy storage component that stores its active materials in the form of one or two electrolytes external to the reactor interface. When in use, the electrolytes are transferred between reactor and storage tanks. (706) (CMP-13)

Informational Note: Three commercially available flow battery technologies are zinc air, zinc bromine, and vanadium redox, sometimes referred to as *pumped electrolyte ESS* .

Battery, Sealed. (Sealed Battery)

A battery that has no provision for the routine addition of water or electrolyte or for external measurement of electrolyte specific gravity and might contain pressure relief venting. (CMP-13)

Battery, Stationary Standby. (Stationary Standby Battery)

A battery that spends the majority of the time on continuous float charge or in a high state of charge, in readiness for a discharge event. (CMP-13)

Informational Note: Uninterruptible Power Supply (UPS) batteries are an example that falls under this definition.

Battery-Powered Lighting Units.

Individual unit equipment for backup illumination consisting of a rechargeable battery; a battery-charging means; provisions for one or more lamps mounted on the equipment, or with terminals for remote lamps, or both; and a relaying device arranged to energize the lamps automatically upon failure of the supply to the unit equipment. (517) (CMP-15)

Berth.

The water space to be occupied by a boat or other vessel alongside or between bulkheads, piers, piles, fixed and floating docks, or any similar access structure. [**303:** 3.3.2] (555) (CMP-7)

Informational Note: See the definition of *Slip* for additional information.

Bipolar Circuit.

A dc circuit that is comprised of two monopole circuits, each having an opposite polarity connected to a common reference point. (CMP-4)

Block.

A square or portion of a city, town, or village enclosed by streets and including the alleys so enclosed, but not any street. (800) (CMP-16)

Boatyard.

A facility used for constructing, repairing, servicing, hauling from the water, storing (on land and in water), and launching of boats. [**303:** 3.3.3] (555) (CMP-7)

Bodies of Water, Artificially Made. (Artificially Made Bodies of Water)

Bodies of water that have been constructed or modified to fit some decorative or commercial purpose such as, but not limited to, aeration ponds, fish farm ponds, storm retention basins, treatment ponds, and irrigation (channel) facilities. Water depths may vary seasonally or be controlled. (682) (CMP-7)

Bodies of Water, Natural. (Natural Bodies of Water)

Bodies of water such as lakes, streams, ponds, rivers, and other naturally occurring bodies of water, which may vary in depth throughout the year. (682) (CMP-7)

Bonded (Bonding).

Connected to establish electrical continuity and conductivity. (CMP-5)

Bonding Conductor (Bonding Jumper).

A conductor that ensures the required electrical conductivity between metal parts that are required to be electrically connected. (CMP-5)

Bonding Conductor, Equipment. (Equipment Bonding Conductor)

The connection between two or more portions of the equipment grounding conductor. (CMP-5)

Bonding Conductor, Grounding Electrode (Grounding Electrode Bonding Jumper). (Grounding Electrode Bonding Conductor)

A conductor, other than the grounding electrode conductor, used to interconnect two or more grounding electrodes to form the grounding electrode system. (CMP-5)

Bonding Conductor, Main (Main Bonding Jumper). (Main Bonding Conductor)

The connection between the grounded circuit conductor and the equipment grounding conductor, or the supply-side bonding conductor, or both, at the service equipment. (CMP-5)

Bonding Conductor, Supply-Side (Supply-Side Bonding Jumper). (Supply-Side Bonding Conductor)

A conductor installed on the supply side of a service or within a service equipment enclosure(s), or for a separately derived system, that ensures the required electrical conductivity between metal parts required to be electrically connected. (CMP-5)

Bonding Conductor, System (System Bonding Jumper). (System Bonding Conductor)

The connection between the grounded circuit conductor and the supply-side bonding conductor, or the equipment grounding conductor, or both, at a separately derived system. (CMP-5)

Bonding Jumper, Impedance. (Impedance Bonding Jumper).

The connection in an impedance grounded system between the equipment grounding conductor(s) and the grounding electrode side of the impedance grounding device. (CMP-5)

Border Light.

A permanently installed overhead strip light. (520) (CMP-15)

Bottom Shield.

A protective layer that is installed between the floor and flat conductor cable (Type FCC) to protect the cable from physical damage and may or may not be incorporated as an integral part of the cable. (324) (CMP-6)

Branch Circuit (Branch-Circuit).

The circuit conductors between the final overcurrent device protecting the circuit and the outlet(s). (CMP-2)

Branch Circuit, Appliance. (Appliance Branch Circuit)

A branch circuit that supplies energy to one or more outlets to which appliances are to be connected and that has no permanently connected luminaires that are not a part of an appliance. (CMP-2)

Branch Circuit, General-Purpose. (General-Purpose Branch Circuit)

A branch circuit that supplies two or more receptacles or outlets for lighting and appliances. (CMP-2)

Branch Circuit, Individual. (Individual Branch Circuit)

A branch circuit that supplies only one utilization equipment. (CMP-2)

Branch Circuit, Motor. (Motor Branch Circuit)

The circuit conductors, including equipment, between the motor branch-circuit short-circuit and ground-fault protective device and an individual motor. (CMP-11)

Branch Circuit, Multiwire. (Multiwire Branch Circuit)

A branch circuit that consists of two or more ungrounded conductors that have a voltage between them, and a neutral conductor that has equal voltage between it and each ungrounded conductor of the circuit and that is connected to the neutral conductor of the system. (CMP-2)

Branch-Circuit Selection Current (BCSC).

The value in amperes to be used instead of the rated-load current in determining the ratings of motor branch-circuit conductors, disconnecting means, controllers, and branch-circuit short-circuit and ground-fault protective devices wherever the running overload protective device permits a sustained current greater than the specified percentage of the rated-load current. The value of branch-circuit selection current will always be equal to or greater than the marked rated-load current. (440) (CMP-11)

Breakout Assembly.

An adapter used to connect a multipole connector containing two or more branch circuits to multiple individual branch-circuit connectors. (520) (CMP-15)

Broadband.

Wide bandwidth data transmission that transports multiple signals, protocols, and traffic types over various media types. (CMP-16)

Building.

A structure that stands alone or that is separated from adjoining structures by fire walls. (CMP-1)

Building, Floating. (Floating Building)

A building that floats on water, is moored in a permanent location, and has a premises wiring system served through connection by permanent wiring to an electrical supply system not located on the premises. (CMP-7)

Building, Manufactured. (Manufactured Building)

Any building that is of closed construction and is made or assembled in manufacturing facilities on or off the building site for installation, or for assembly and installation on the building site, other than manufactured homes, mobile homes, park trailers, or recreational vehicles. (545) (CMP-7)

Building Component.

Any subsystem, subassembly, or other system designed for use in or integral with or as part of a structure, which can include structural, electrical, mechanical, plumbing, and fire protection systems, and other systems affecting health and safety. (545) (CMP-7)

Building System.

Plans, specifications, and documentation for a system of manufactured building or for a type or a system of building components, which can include structural, electrical, mechanical, plumbing, and fire protection systems, and other systems affecting health and safety, and including such variations thereof as are specifically permitted by regulation, and which variations are submitted as part of the building system or amendment thereto. (545) (CMP-7)

Bulkhead.

A vertical structural wall, usually of stone, timber, metal, concrete, or synthetic material, constructed along, and generally parallel to, the shoreline to retain earth as an extension of the upland, and often to provide suitable water depth at the waterside face. [**303:** 3.3.5] (555) (CMP-7)

Bull Switch.

An externally operated wall-mounted safety switch that can contain overcurrent protection and is designed for the connection of portable cables and cords. (530) (CMP-15)

Bundled.

Cables or conductors that are tied, wrapped, taped, or otherwise periodically bound together. (520) (CMP-15)

Busbar (as applied to low-voltage suspended ceiling power distribution systems).

A noninsulated conductor electrically connected to the source of supply and physically supported on an insulator providing a power rail for connection to utilization equipment, such as sensors, actuators, A/V devices, low-voltage luminaire assemblies, and similar electrical equipment. (393) (CMP-18)

Busbar Support (as applied to low-voltage suspended ceiling power distribution systems).

An insulator that runs the length of a section of suspended ceiling bus rail that serves to support and isolate the busbars from the suspended grid rail. (393) (CMP-18)

Busway.

A raceway consisting of a metal enclosure containing factory-mounted, bare or insulated conductors, which are usually copper or aluminum bars, rods, or tubes. (CMP-8)

Cabinet.

An enclosure that is designed for either surface mounting or flush mounting and is provided with a frame, mat, or trim in which a swinging door or doors are or can be hung. (CMP-8)

Cable, Abandoned. (Abandoned Cable)

Installed cable that is not terminated at equipment other than a termination fitting or a connector and is not identified for future use with a tag. (CMP-3)

> Informational Note: See 640.6(B) , 645.6(G) , 760.25, 770.25, 790.25, and 800.25 for requirements covering the removal of abandoned cables.

Cable, Armored (Type AC). (Armored Cable)

A fabricated assembly of insulated conductors in a flexible interlocked metallic armor. (CMP-6)

Cable, Circuit Integrity (CI). (Circuit Integrity Cable)

Cable(s) marked with the suffix “-CI” used for remote-control, signaling, power-limited, fire alarm, optical fiber, or communications systems that supply critical circuits to ensure survivability for continued circuit operation for a specified time under fire conditions. (CMP-3)

> Informational Note: See 772.4 for power circuits installed for survivability.

Cable, Coaxial. (Coaxial Cable)

A cylindrical assembly composed of a conductor centered inside a metallic tube or shield, separated by a dielectric material, and usually covered by an insulating jacket. (CMP-3)

Cable, Festoon. (Festoon Cable)

Single- and multiple-conductor cable intended for use and installation where flexibility is required. (610) (CMP-12)

Cable, Flat Conductor (Type FCC). (Flat Conductor Cable)

Three or more separate flat copper conductors placed horizontally edge-to-edge and enclosed within an insulating assembly. (324) (CMP-6)

Cable, Instrumentation Tray (Type ITC). (Instrumentation Tray Cable)

A factory assembly of two or more insulated conductors, with or without an equipment grounding conductor(s), enclosed in a nonmetallic sheath. (CMP-3)

Cable, Integrated Gas Spacer (Type IGS). (Integrated Gas Spacer Cable)

A factory assembly of one or more conductors, each individually insulated and enclosed in a loose fit, nonmetallic flexible conduit as an integrated gas spacer cable rated 0 volts through 600 volts. (CMP-6)

Cable, Limited Use. (Limited-Use Cable)

Cables that are intended to be used with protection such as a raceway or for specific restricted applications. (CMP-3)

> Informational Note: Limited use cables are denoted by an “X” suffix, for example Types CL2X or CMX.

Cable, Medium Voltage(Type MV). (Medium Voltage Cable)

A single or multiconductor solid dielectric insulated cable rated 2001 volts up to and including 35,000 volts, nominal. (CMP-6)

Cable, Metal Clad (Type MC). (Metal Clad Cable)

A factory assembly of one or more insulated circuit conductors with or without optical fiber members enclosed in an armor of interlocking metal tape, or a smooth or corrugated metallic sheath. (CMP-6)

Cable, Metallic Conductor. (Metallic Conductor Cable)

A factory assembly of two or more conductors having an overall covering. (CMP-3)

Cable, Mineral-Insulated, Metal-Sheathed (Type MI). (Mineral-Insulated, Metal-Sheathed Cable)

A factory assembly of one or more conductors insulated with a highly compressed refractory mineral insulation and enclosed in a liquidtight and gastight continuous copper or alloy steel sheath. (CMP-6)

Cable, Nonmetallic-Sheathed.

A factory assembly of two or more insulated conductors enclosed within an overall nonmetallic jacket. (CMP-6)

Cable, Nonmetallic-Sheathed (Type NM).

Insulated circuit conductors and a bare, covered, or insulated equipment grounding conductor enclosed within an overall nonmetallic jacket. (CMP-6)

Cable, Nonmetallic-Sheathed (Type NMC).

Insulated circuit conductors and a bare, covered, or insulsated equipment grounding conductor enclosed within an overall, corrosion resistant, nonmetallic jacket. (CMP-6)

Cable, Optical Fiber. (Optical Fiber Cable)

A factory assembly or field assembly of one or more optical fibers having an overall covering. (CMP-16)

> Informational Note: A field-assembled optical fiber cable is an assembly of one or more optical fibers within a jacket. The jacket, without optical fibers, is installed in a manner similar to conduit or raceway. Once the jacket is installed, the optical fibers are inserted into the jacket, completing the cable assembly.

Cable, Optical Fiber, Conductive. (Conductive Optical Fiber Cable)

A factory assembly of one or more optical fibers having an overall covering and containing non-current-carrying conductive member(s) such as metallic strength member(s), metallic vapor barrier(s), metallic armor, or metallic sheath. (CMP-16)

Cable, Optical Fiber, Hybrid. (Hybrid Optical Fiber Cable)

A cable containing optical fibers and current-carrying electrical conductors. (CMP-16)

Cable, Optical Fiber, Nonconductive. (Nonconductive Optical Fiber Cable)

A factory assembly of one or more optical fibers having an overall covering and containing no electrically conductive materials. (CMP-16)

Cable, Optical Fiber, Protected. (Protected Optical Fiber Cable)

Optical fiber cable protected from releasing optical radiation into the atmosphere during normal operating conditions and foreseeable malfunctions by additional armoring, conduit, cable tray, or raceway. (CMP-14)

> Informational Note: See ANSI/UL 60079-28, *Explosive Atmospheres — Part 28: Protection of Equipment and Transmission Systems Using Optical Radiation* , for additional information.

Cable, Portable Power Feeder. (Portable Power Feeder Cable)

One or more flexible shielded insulated power conductors enclosed in a flexible covering rated from 2001 to 25,000 volts. (CMP-6)

Cable, Power and Control Tray (Type TC). (Power and Control Tray Cable)

A factory assembly of two or more insulated conductors, with or without associated bare or covered equipment grounding conductors, under a nonmetallic jacket. (CMP-6)

Cable, Power-Limited Tray (Type PLTC). (Power-Limited Tray Cable)

A factory assembly of two or more insulated conductors rated at 300 volts, with or without associated bare or insulated equipment grounding conductors, under a nonmetallic jacket. (CMP-3)

Cable, Service. (Service Cable)

Service conductors made up in the form of a cable. (CMP-10)

Cable, Service Entrance. (Service Entrance Cable)

A single conductor or multiconductor cable provided with an overall covering, primarily used for services. (CMP-6)

Cable, Service Entrance (Type SE).

Service-entrance cable having a flame-retardant, moisture-resistant covering. (CMP-6)

Cable, Service Entrance (Type USE).

Service-entrance cable, identified for underground use, having a moisture-resistant covering, but not required to have a flame-retardant covering. (CMP-6)

Cable, Type P.

A factory assembly of one or more insulated flexible tinned copper conductors, with associated equipment grounding conductor(s), with or without a braided metallic armor and with an overall nonmetallic jacket. (CMP-6)

Cable, Under Carpet. (Under Carpet Cable)

Cables that are intended to be used under carpeting, floor covering, modular tiles, and planks. (722) (CMP-3)

Cable, Underground Feeder and Branch-Circuit (Type UF). (Underground Feeder and Branch-Circuit Cable)

A factory assembly of one or more insulated conductors with an integral or an overall covering of nonmetallic material suitable for direct burial in the earth. (CMP-6)

Cable Assembly, Flat (Type FC). (Flat Cable Assembly)

An assembly of parallel conductors formed integrally with an insulating material web specifically designed for field installation in surface metal raceway. (CMP-6)

Cable Bundle.

A group of cables that are tied together or in contact with one another in a closely packed configuration for at least 1.0 m (40 in.). (CMP-3)

> Informational Note: Random or loose installation of individual cables can result in less heating. Combing of the cables can result in less heat dissipation and more signal cross talk between cables.

Cable Connector.

A connector designed to join flat conductor cables (Type FCC) without using a junction box. (324) (CMP-6)

Cable Connector [as applied to hazardous (classified) locations].

An electrical device that is part of a cable assembly and that, by insertion of two mating configurations, establishes a connection between the conductors of the cable assembly and the conductors of a fixed piece of equipment. (CMP-14)

Informational Note No. 1: See ANSI/UL 121201, *Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations* , for information on the use of cable connectors.

Informational Note No. 2: Cable connectors in other than hazardous (classified) locations are referred to as male and female fittings.

Informational Note No. 3: See ANSI/UL 2238, *Cable Assemblies and Fittings for Industrial Control and Signal Distribution* , and ANSI/UL 2237, *Multi-Point Interconnection Power Cable Assemblies for Industrial Machinery* , for examples of standards on male and female fittings in other than hazardous (classified) locations.

Cable Joint.

A connection consisting of an insulation system and a connector where two (or more) medium voltage (Type MV) cables are joined together. (CMP-6)

Cable Management System.

An apparatus designed to control and organize lengths of cable or cord. (CMP-12)

Cable Routing Assembly.

A single channel or connected multiple channels, as well as associated fittings, forming a structural system that is used to support and route communications wires and cables, optical fiber cables, data cables associated with information technology and communications equipment, Class 2, Class 3, Class 4, and Type PLTC cables, and power-limited fire alarm cables in plenum, riser, and general-purpose applications. (CMP-3)

Cable Sheath.

A single or multiple layers of a protective covering that holds and protects the conductors or optical fibers, or both, contained inside. (CMP-3)

Cable System, Fire-Resistive. (Fire-Resistive Cable System)

A cable and components used to ensure survivability of critical circuits for a specified time under fire conditions. (CMP-3)

Cable System, Flat Conductor. (Flat Conductor Cable System)

A complete wiring system for branch circuits that is designed for installation under carpet squares. (324) (CMP-6)

Informational Note: The FCC system includes Type FCC cable and associated shielding, connectors, terminators, adapters, boxes, and receptacles.

Cable Termination.

A connection consisting of an insulation system and a connector and installed on a medium voltage (Type MV) cable to connect from a cable to a device, such as equipment. (CMP-6)

Cable Tie.

A band or length of material employing a locking device, used for bundling, securing, and/or supporting cable, flexible conduit, or flexible tubing.

Informational Note: The following are cable tie and cable tie fixing device type designations:

(1) Type(s) 1, 11, 2, 21, 2S, or 21S are evaluated for use in cable management applications.

(2) Type(s) 2S or 21S are also evaluated for securing and supporting cable, flexible conduit, and flexible tubing.

Cable Tie Fixing Device.

A component, such as a block or bracket, specifically designed to secure cable tie(s) to a mounting surface.

Informational Note: The following are cable tie and cable tie fixing device type designations:

(1) Type(s) 1, 11, 2, 21, 2S, or 21S are evaluated for use in cable management applications.

(2) Type(s) 2S or 21S are also evaluated for securing and supporting cable, flexible conduit, and flexible tubing.

Cable Tie Integral Device.

A single component, as produced, incorporating a cable tie and a cable tie fixing device that are not separable.

Note: The following are cable tie and cable tie fixing device type designations:

(1) Type(s) 1, 11, 2, 21, 2S, or 21S are evaluated for use in cable management applications.

(2) Type(s) 2S or 21S are also evaluated for securing and supporting cable, flexible conduit, and flexible tubing.

Cable Tray System.

A unit or assembly of units or sections and associated fittings forming a structural system used to securely fasten or support cables and raceways. (CMP-8)

Cablebus.

An assembly of units or sections with insulated conductors having associated fittings forming a structural system used to securely fasten or support conductors and conductor terminations in a completely enclosed, ventilated, protective metal housing. This assembly is designed to carry fault current and to withstand the magnetic forces of such current. (CMP-8)

Informational Note: Cablebus is ordinarily assembled at the point of installation from the components furnished or specified by the manufacturer in accordance with instructions for the specific job.

Cannabis Oil Booths.

Enclosed areas used to house cannabis oil equipment and systems.

Informational Note: Cannabis oil booths can be designed to house a single piece or multiple pieces of cannabis oil equipment. Booths range in size and can be large enough to permit entrance of personnel to perform the processing tasks.

Cannabis Oil Extraction Equipment.

Equipment that uses flammable materials (solvents) in the process of extracting the plant oil from the plant material.

Informational Note: Extraction equipment can use flammable materials as solvents to extract the plant oil from the plant material by saturating the plant material in a vented container, sealed container, or pressure vessel. Typical flammable materials used in the extraction process include butane, ethanol, hexane, pentane, propane, and LPG.

Cannabis Oil Post-Processing Equipment.

Equipment that is used in the final processing stages of the extracted plant oil (e.g., vacuum ovens, rotary evaporators, solvent recovery pumps).

Cannabis Oil Preparatory Equipment.

Equipment that is used to prepare the plant material for subsequent extraction of the plant oil (e.g., trimming, deseeding, drying/curing).

Cannabis Oil Systems.

Any combination of cannabis oil equipment needed for the overall extraction process (e.g., cannabis oil preparatory equipment, cannabis oil extraction equipment, cannabis oil booths, cannabis oil post-processing equipment).

Cell (as applied to batteries).

The basic electrochemical unit, characterized by an anode and a cathode, used to receive, store, and deliver electrical energy. (CMP-13)

Cell, Sealed. (Sealed Cell)

A cell that has no provision for the routine addition of water or electrolyte or for external measurement of electrolyte specific gravity and might contain pressure relief venting. (CMP-13)

Cell Line.

An assembly of electrically interconnected electrolytic cells supplied by a source of direct-current power. (CMP-12)

Cell Line Attachments and Auxiliary Equipment.

A term that includes, but is not limited to, auxiliary tanks; process piping; ductwork; structural supports; exposed cell line conductors; conduits and other raceways; pumps, positioning equipment, and cell cutout or bypass electrical devices. Auxiliary equipment includes tools, welding machines, crucibles, and other portable equipment used for operation and maintenance within the electrolytic cell line working zone. In the cell line working zone, auxiliary equipment includes the exposed conductive surfaces of ungrounded cranes and crane-mounted cell-servicing equipment. (668) (CMP-12)

Charge Controller.

Equipment that controls dc voltage or dc current, or both, and that is used to charge a battery or other energy storage device. (CMP-13)

Charger Power Converter.

The device used to convert energy from the power grid to a high-frequency output for wireless power transfer. (625) (CMP-12)

Child Care Facility.

A building or structure, or portion thereof, for educational, supervisory, or personal care services for more than four children 7 years old or less. (406) (CMP-18)

Circuit, Power-Limited. (Power-Limited Circuit)

An electrical circuit that is designed to provide acceptable protection from fire initiation and electrical shock by limiting the amount of power delivered into a fault by the power supply. (CMP-3)

Circuit Breaker.

A device designed to open and close a circuit by nonautomatic means and to open the circuit automatically on a predetermined overcurrent without damage to itself when properly applied within its rating. (CMP-10)

Informational Note: The automatic opening means can be integral, direct acting with the circuit breaker, or remote from the circuit breaker.

Circuit Breaker, Adjustable. (Adjustable Circuit Breaker)

A qualifying term indicating that the circuit breaker can be set to trip at various values of current, time, or both, within a predetermined range. (CMP-10)

Circuit Breaker, Instantaneous Trip. (Instantaneous Trip Circuit Breaker)

A qualifying term indicating that no delay is purposely introduced in the tripping action of the circuit breaker. (CMP-10)

Circuit Breaker, Inverse Time. (Inverse Time Circuit Breaker)

A qualifying term indicating that there is a delay purposely introduced in the tripping action of the circuit breaker, and the delay decreases as the magnitude of the current increases. (CMP-10)

Circuit Breaker, Nonadjustable. (Nonadjustable Circuit Breaker)

A qualifying term indicating that the circuit breaker does not have any adjustment to alter the value of the current at which it will trip or the time required for its operation. (CMP-10)

Class 1 Circuit.

The portion of the wiring system between the load side of the Class 1 power source and the connected equipment. (CMP-3)

Class 2 Circuit.

The portion of the wiring system between the load side of a Class 2 power source and the connected equipment. (CMP-3)

Informational Note: The design of a Class 2 circuit considers safety from a fire initiation standpoint and provides acceptable protection from electric shock due to its power limitations.

Class 3 Circuit.

The portion of the wiring system between the load side of a Class 3 power source and the connected equipment. (CMP-3)

Informational Note: The design of a Class 3 circuit considers safety from a fire initiation standpoint. Since higher levels of voltage and current than a Class 2 circuit are permitted, additional safeguards are specified to provide acceptable protection from electric shock.

Class 4 Circuit.

The portion of the wiring system between the load side of a Class 4 transmitter and the Class 4 receiver or Class 4 utilization equipment, as appropriate. (CMP-3)

Informational Note No. 1: A Class 4 circuit is also commonly referred to as a fault-managed power circuit.

Informational Note No. 2: Due to the active monitoring and control of the voltage and current provided, a Class 4 circuit considers safety from a fire initiation standpoint and provides acceptable protection from electric shock.

Class 4 Device.

Any active device connected to the Class 4 circuit; examples include a Class 4 transmitter, a Class 4 receiver, or Class 4 utilization equipment. (CMP-3)

Class 4 Power System.

An actively monitored and controlled system consisting of one or more Class 4 transmitters and one or more Class 4 receivers connected by a cabling system. (CMP-3)

Class 4 Receiver.

A device that accepts Class 4 power and converts it for use by utilization equipment. (CMP-3)

Class 4 Transmitter.

A device that sources Class 4 power. (726) (CMP-3)

> Informational Note: A Class 4 transmitter is different from traditional power sources in that it monitors the line for faults (both line-to-line and line-to-ground) and ceases power transmission if a fault is sensed.

Class 4 Utilization Equipment.

Devices that are directly powered by a Class 4 transmitter without the need for a separate Class 4 receiver (the receiver is integrated into the equipment). (CMP-3)

Closed Construction.

Any building, building component, assembly, or system manufactured in such a manner that all concealed parts of processes of manufacture cannot be inspected after installation at the building site without disassembly, damage, or destruction. (545) (CMP-7)

Clothes Closet.

A nonhabitable room or space intended primarily for storage of garments and apparel. (CMP-1)

Clothes Closet Storage Space.

The area within a clothes closet in which combustible materials can be kept. (410) (CMP-18)

Collector Rings.

An assembly of slip rings for transferring electric energy from a stationary to a rotating member. (675) (CMP-7)

Combiner (DC). (dc Combiner) (Direct-Current Combiner)

An enclosure that includes devices used to connect two or more PV system dc circuits in parallel. (690) (CMP-4)

Combustible Dust.

Solid particles that are 500 µm or smaller (i.e., material passing a U.S. No. 35 Standard Sieve as defined in ASTM E11-17, *Standard Specification for Woven Wire Test Sieve Cloth and Test Sieves*) that can form an explosible mixture when suspended in air at standard atmospheric pressure and temperature. [**499:** 3.3.3] (CMP-14)

> Informational Note: See ASTM E1226, *Standard Test Method for Explosibility of Dust Clouds* ; ISO 6184-1, *Explosion protection systems — Part 1: Determination of explosion indices of combustible dusts in air* ; or ANSI/UL 80079-20-2, *Explosive Atmospheres — Part 20-2: Material Characteristics — Combustible Dusts Test Methods* , for procedures for determining the explosibility of dusts. Historically, explosibility has been described as presenting a flash fire or explosion hazard. It could be understood that potential hazards due to the formation of an explosible mixture when suspended in air at standard atmospheric pressure and temperature would include ignition.

Combustible Gas Detection System.

A protection technique utilizing stationary gas detectors in industrial establishments. (CMP-14)

Commissioning.

The process, procedures, and testing used to set up and verify the initial performance, operational controls, safety systems, and sequence of operation of electrical devices and equipment, prior to it being placed into active service. (CMP-13)

Communications, Data. (Data Communications)

The transfer and reception of information in the form of a digital bitstream or a digitized analog signal transmitted over a point-to-point or point-to-multipoint arrangement. (CMP-16)

Communications Circuit.

A metallic, fiber, or wireless circuit that provides voice/data (and associated power) for communications-related services between communications equipment. (CMP-16)

> Informational Note: Because communications can be carried over conductors with power, meeting both this definition and the definition for a powering circuit is possible (e.g., a power line communications device may be used on a branch circuit). The addition of data to a power line circuit does not change the treatment of the circuit in this code.

Communications Circuit, Network-Powered Broadband. (Network-Powered Broadband Communications Circuit)

The circuit extending from the communications utility's or service provider's serving terminal or tap up to and including the network interface unit (NIU). (830) (CMP-16)

> Informational Note: A typical one-family dwelling network-powered communications circuit consists of a communications drop or communications service cable and an NIU and includes the communications utility's serving terminal or tap where it is not under the exclusive control of the communications utility.

Communications Circuit, Premises. (Premises Communications Circuit)

The circuit that extends voice, audio, video, data, interactive services, telegraph (except radio), and outside wiring for fire alarm and burglar alarm from the service provider's network terminal to the customer's communications equipment. (840) (CMP-16)

Communications Equipment.

The electronic equipment that performs the telecommunications operations for the transmission of audio, video, and data, and includes power equipment (e.g., dc converters, inverters, and batteries), technical support equipment (e.g., computers), and conductors dedicated solely to the operation of the equipment. (CMP-16)

> Informational Note: As the telecommunications network transitions to a more data-centric network, computers, routers, servers, and their powering equipment, are becoming essential to the transmission of audio, video, and data and are finding increasing application in communications equipment installations.

Communications Service Provider.

An organization, business, or individual that offers communications service to others. (CMP-16)

Communications System.

The communications equipment, communication circuits, and manual and machine operations necessary for the transmission, movement, and reception of information (e.g., voice, audio, data). (CMP-16)

Communications Utility.

An organization designated or recognized by an entity such as a public service commission or public utility commission, or recognized as such under federal, state, or local law. (CMP-16)

Community Antenna Television Circuit (CATV).

The circuit that extends community antenna television systems for audio, video, data, and interactive services from the service provider's network terminal to the appropriate customer equipment. (CMP-16)

Concealable Nonmetallic Extension.

A listed assembly of two, three, or four insulated circuit conductors within a nonmetallic jacket, an extruded thermoplastic covering, or a sealed nonmetallic covering. The classification includes surface extensions intended for mounting directly on the surface of walls or ceilings and concealed with paint, texture, joint compound, plaster, wallpaper, tile, wall paneling, or other similar materials. (CMP-6)

Concealed.

Rendered inaccessible by the structure or finish of the building. (CMP-1)

> Informational Note: Wires in concealed raceways are considered concealed, even though they may become accessible by withdrawing them.

Concealed Knob-and-Tube Wiring.

A wiring method using knobs, tubes, and flexible nonmetallic tubing for the protection and support of single insulated conductors. (CMP-6)

Conductor, Bare. (Bare Conductor)

A conductor having no covering or electrical insulation whatsoever. (CMP-6)

Conductor, Copper-Clad Aluminum. (Copper-Clad Aluminum Conductor)

Conductor drawn from a copper-clad aluminum rod, with the copper metallurgically bonded to an aluminum core. (CMP-6)

Conductor, Covered. (Covered Conductor)

A conductor encased within material of composition or thickness that is not recognized by this code as electrical insulation. (CMP-6)

Conductor, Insulated. (Insulated Conductor)

A conductor encased within material of composition and thickness that is recognized by this code as electrical insulation. (CMP-6)

Conductor, Insulated. (Insulated Conductor)

Overhead service conductor encased in a polymeric material adequate for the applied nominal voltage and any conductor types described in 310.4. (396) (CMP-6)

> Informational Note: See ICEA S-76-474-2011, *Standard for Neutral Supported Power Cable Assemblies with Weather-Resistant Extruded Insulation Rated 600 Volts* , for information about overhead service conductors.

Conductors, Outdoor Overhead. (Outdoor Overhead Conductors)

Single conductors, insulated, covered, or bare, installed outdoors on support structures in free air. (395) (CMP-6)

Conduit, Flexible Metal (FMC). (Flexible Metal Conduit)

A raceway of circular cross section made of helically wound, formed, interlocked metal strip. (CMP-8)

Conduit, High Density Polyethylene (HDPE). (High Density Polyethylene Conduit)

A nonmetallic raceway of circular cross section, with associated couplings, connectors, and fittings for the installation of electrical conductors. (CMP-8)

Conduit, Intermediate Metal (IMC). (Intermediate Metal Conduit)

A steel threadable raceway of circular cross section designed for the physical protection and routing of conductors and cables and for use as an equipment grounding conductor when installed with its integral or associated coupling and appropriate fittings. (CMP-8)

Conduit, Liquidtight Flexible Metal (LFMC). (Liquidtight Flexible Metal Conduit)

A raceway of circular cross section having an outer liquidtight, nonmetallic, sunlight-resistant jacket over an inner flexible metal core with associated couplings, connectors, and fittings for the installation of electric conductors. (CMP-8)

Conduit, Liquidtight Flexible Nonmetallic (LFNC). (Liquidtight Flexible Nonmetallic Conduit)

A raceway of circular cross section of various types as follows:

(1) A smooth seamless inner core and cover bonded together and having one or more reinforcement layers between the core and covers, designated as LFNC-A

(2) A smooth inner surface with integral reinforcement within the raceway wall, designated as LFNC-B

(3) A corrugated internal and external surface without integral reinforcement within the raceway wall, designated as LFNC-C

(CMP-8)

Informational Note: FNMC is an alternative designation for LFNC.

Conduit, Nonmetallic Underground with Conductors (NUCC). (Nonmetallic Underground Conduit with Conductors)

A factory assembly of conductors or cables inside a nonmetallic, smooth wall raceway with a circular cross section. (CMP-8)

Conduit, Reinforced Thermosetting Resin (RTRC). (Reinforced Thermosetting Resin Conduit)

A rigid nonmetallic raceway of circular cross section, with integral or associated couplings, connectors, and fittings for the installation of electrical conductors and cables. (CMP-8)

Conduit, Rigid Metal (RMC). (Rigid Metal Conduit)

A threadable raceway of circular cross section designed for the physical protection and routing of conductors and cables and for use as an equipment grounding conductor when installed with its integral or associated coupling and appropriate fittings. (CMP -8)

Conduit, Rigid Polyvinyl Chloride (PVC). (Rigid Polyvinyl Chloride Conduit)

A rigid nonmetallic raceway of circular cross section, with integral or associated couplings, connectors, and fittings for the installation of electrical conductors and cables. (CMP-8)

Conduit Body.

A separate portion of a conduit or tubing system that provides access through a removable cover(s) to the interior of the system at a junction of two or more sections of the system or at a terminal point of the system.

Boxes such as FS and FD or larger cast or sheet metal boxes are not classified as conduit bodies. (CMP-8)

Connector.

An electromechanical fitting. (393) (CMP-18)

Connector, Intercell. (Intercell Connector)

An electrically conductive bar or cable used to connect adjacent cells. (CMP-13)

Connector, Intertier. (Intertier Connector)

An electrical conductor used to connect two cells on different tiers of the same rack or different shelves of the same rack. (CMP-13)

Connector, Load. (Load Connector)

An electromechanical connector used for power from the busbar to utilization equipment. (393) (CMP-18)

Connector, Pendant. (Pendant Connector)

An electromechanical or mechanical connector used to suspend low-voltage luminaire or utilization equipment below the grid rail and to supply power to connect from the busbar to utilization equipment. (393) (CMP-18)

Connector, Power Feed. (Power Feed Connector)

An electromechanical connector used to connect the power supply to a power distribution cable, to connect directly to the busbar, or to connect from a power distribution cable to the busbar. (393) (CMP-18)

Connector, Pressure (Solderless). (Pressure Connector)

A device that establishes a connection between two or more conductors or between one or more conductors and a terminal by means of mechanical pressure and without the use of solder. (CMP-1)

Connector, Rail to Rail. (Rail to Rail Connector)

An electromechanical connector used to interconnect busbars from one ceiling grid rail to another grid rail. (393) (CMP-18)

Connector Strip.

A metal wireway containing pendant or flush receptacles. (520) (CMP-15)

Container (as applied to batteries).

A single-cell or multicell vessel or jar that holds the plates, electrolyte, and other elements of a single unit in a battery. (CMP-13)

Continuous Load.

A load where the maximum current is expected to continue for 3 hours or more. (CMP-2)

Control.

The predetermined process of connecting, disconnecting, increasing, or reducing electric power. (130) (CMP-13)

Control Circuit.

The circuit of a control apparatus or system that carries the electric signals directing the performance of the controller but does not carry the main power current. (CMP-11)

Control Circuits, Fault-Tolerant External. (Fault-Tolerant External Control Circuits)

Those control circuits either entering or leaving the fire pump controller enclosure, which if broken, disconnected, or shorted will not prevent the controller from starting the fire pump from all other internal or external means and may cause the controller to start the pump under these conditions. (695) (CMP-13)

Control Device, Emergency Lighting (ELCD). (Emergency Lighting Control Device)

A separate or integral device intended to perform one or more emergency lighting control functions. (700) (CMP-13)

> Informational Note: See UL 924, *Emergency Lighting and Power Equipment* , for information covering emergency lighting control devices.

Control Drawing.

A drawing or other document provided by the manufacturer of the intrinsically safe or associated apparatus, or of the nonincendive field wiring apparatus or associated nonincendive field wiring apparatus, that details the allowed interconnections between the intrinsically safe and associated apparatus or between the nonincendive field wiring apparatus or associated nonincendive field wiring apparatus. (CMP-14)

Informational Note: See the following standards for additional information:

(1) ANSI/ISA/UL 120202, *Recommendations for the Preparation, Content, and Organization of Intrinsic Safety Control Drawings*

(2) ANSI/UL 913, *Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III, Division 1, Hazardous (Classified) Locations*

(3) ANSI/UL 60079-11, *Explosive Atmospheres — Part 11: Equipment Protection by Intrinsic Safety "i"*

(4) ANSI/UL 121201, *Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations*

(5) ANSI/ISA RP 12.06.01, *Recommended Practice for Wiring Methods for Hazardous (Classified) Locations Instrumentation — Part 1: Intrinsic Safety*

Control Room.

An enclosed control space outside the hoistway, intended for full bodily entry, that contains the elevator motor controller. The room could also contain electrical and/or mechanical equipment used directly in connection with the elevator or dumbwaiter but not the electric driving machine or the hydraulic machine. (620) (CMP-12)

Control Space.

A space inside or outside the hoistway intended to be accessed with or without full bodily entry that contains the elevator motor controller. This space could also contain electrical and/or mechanical equipment used directly in connection with the elevator, dumbwaiter, escalator, moving walk, or platform lift, but not the electrical driving machine or the hydraulic machine. (620) (CMP-12)

Control System.

The overall system governing the starting, stopping, direction of motion, acceleration, speed, and retardation of the moving member. (620) (CMP-12)

Controller.

A device or group of devices that serves to govern, in some predetermined manner, the electric power delivered to the apparatus to which it is connected. (CMP-1)

Controller, Motion. (Motion Controller)

The electrical device(s) for that part of the control system that governs the acceleration, speed, retardation, and stopping of the moving member. (620) (CMP-12)

Informational Note: The motor control function may be integral to the motion controller.

Controller, Motor. (Motor Controller)

Any switch or device that is normally used to start and stop a motor by making and breaking the motor circuit current. (CMP-11)

Controller, Operation. (Operation Controller)

The electrical device(s) for that part of the control system that initiates the starting, stopping, and direction of motion in response to a signal from an operating device. (620) (CMP-12)

Converter, DC-to-DC. (DC-to-DC Converter)

A device that can provide an output dc voltage and current at a higher or lower value than the input dc voltage and current. (CMP-4)

Converter Circuit, DC-to-DC. (DC-to-DC Converter Circuit)

The dc circuit conductors connected to the output of a dc-to-dc converter. (CMP-4)

Converting Device.

That part of the heating equipment that converts input mechanical or electrical energy to the voltage, current, and frequency used for the heating applicator. A converting device consists of equipment using line frequency, all static multipliers, oscillator-type units using vacuum tubes, inverters using solid-state devices, or motor-generator equipment. (665) (CMP-12)

Cooking Unit, Counter-Mounted. (Counter-Mounted Cooking Unit)

A cooking appliance designed for mounting in or on a counter and consisting of one or more heating elements, internal wiring, and built-in or mountable controls. (CMP-2)

Coordination, Selective. (Selective Coordination)

Localization of an overcurrent condition to restrict outages to the circuit or equipment affected, accomplished by the selection and installation of overcurrent protective devices and their ratings or settings for the full range of available overcurrents, from overload to the available fault current, and for the full range of overcurrent protective device opening times associated with those overcurrents. (CMP-10)

Cord, Flexible. (Flexible Cord)

Two or more flexible insulated conductors enclosed in a flexible covering. (CMP-6)

Cord Connector.

A contact device terminated to a flexible cord that accepts an attachment plug or other insertion device. (CMP-6)

Cord Connector [as applied to hazardous (classified) locations].

A fitting intended to terminate a cord to a box or similar device and reduce the strain at points of termination and might include an explosionproof, a dust-ignitionproof, or a flameproof seal. (CMP-14)

Cord Set.

A length of flexible cord having an attachment plug at one end and a cord connector at the other end. (CMP-6)

Corrosive Environment.

Areas or enclosures without adequate ventilation, where electrical equipment is located and pool sanitation chemicals are stored, handled, or dispensed . (680) (CMP-17).

> Informational Note No. 1: See *Advisory: Swimming Pool Chemical: Chlorine* , OSWER 90-008.1, June 1990, available from the EPA National Service Center for Environmental Publications (NSCEP) as sanitation chemicals and pool water are considered to pose a risk of corrosion (gradual damage or destruction of materials) due to the presence of oxidizers (e.g., calcium hypochlorite, sodium hypochlorite, bromine, chlorinated isocyanurates) and chlorinating agents that release chlorine when dissolved in water.
>
> Informational Note No. 2: See ANSI/APSP-11, *Standard for Water Quality in Public Pools and Spas* , ANSI/ASHRAE 62.1, Table 6-4 Minimum Exhaust Rates, and *2021 International Swimming Pool and Spa Code (ISPSC)* , Section 324, including associated definitions and requirements concerning adequate ventilation of indoor spaces such as equipment and chemical storage rooms, which can reduce the likelihood of the accumulation of corrosive vapors. Chemicals such as chlorine cause severe corrosive and deteriorating effects on electrical connections, equipment, and enclosures when stored and kept in the same vicinity.

Counter (Countertop).

A fixed or stationary surface typically intended for food or beverage preparation, food or beverage serving, personal lavation, or laundering or a similar surface that presents a routine risk of spillage of larger quantities of liquids upon outlets mounted directly on or in the surface. (CMP-2)

> Informational Note No. 1: See UL 498, *Receptacles and Attachment Plugs* , and UL 943, *Ground-Fault Circuit Interrupters* , which establish the performance evaluation criteria and construction criteria.
>
> Informational Note No. 2: See 406.14(E) , 406.14(G)(1) , and 406.14(H) for information on receptacles for counters and countertops distinguished from receptacles for work surfaces.

Crane.

A mechanical device used for lifting or moving boats. [**303:** 3.3.6] (555) (CMP-7)

Critical Branch.

A system of feeders and branch circuits supplying power for task illumination, fixed equipment, select receptacles, and select power circuits serving areas and functions related to patient care that are automatically connected to alternate power sources by one or more transfer switches during interruption of the normal power source. [**99:** 3.3.30] (517) (CMP-15)

Critical Operations Areas, Designated (DCOA). (Designated Critical Operations Areas)

Areas within a facility or site designated as requiring critical operations power. (CMP-13)

Critical Operations Data System.

An information technology equipment system that requires continuous operation for reasons of public safety, emergency management, national security, or business continuity. (645) (CMP-12)

Critical Operations Power Systems (COPS).

Power systems for facilities or parts of facilities that require continuous operation for the reasons of public safety, emergency management, national security, or business continuity. (CMP-13)

Current-Limiting (as applied to overcurrent protection devices).

The ability to, when interrupting currents in its current-limiting range, reduce the current flowing in the faulted circuit to a magnitude substantially less than that obtainable in the same circuit if the device were replaced with a solid conductor having comparable impedance. (CMP-10)

Cutout Box.

An enclosure designed for surface mounting that has swinging doors or covers secured directly to and telescoping with the walls of the enclosure. (CMP-8)

Data Center, Modular (MDC). (Modular Data Center)

Prefabricated units, rated 1000 volts or less, consisting of an outer enclosure housing multiple racks or cabinets of information technology equipment (ITE) (e.g., servers) and various support equipment, such as electrical service and distribution equipment, HVAC systems, and the like. (646) (CMP-12)

> Informational Note: A typical construction may use a standard ISO shipping container or other structure as the outer enclosure, racks or cabinets of ITE, service-entrance equipment and power distribution components, power storage such as a UPS, and an air or liquid cooling system. Modular data centers are intended for fixed installation, either indoors or outdoors, based on their construction and resistance to environmental conditions. MDCs can be configured as an all-in-one system housed in a single equipment enclosure or as a system with the support equipment housed in separate equipment enclosures.

DC Plugging Box.

A dc device consisting of one or more 2-pole, 2-wire, nonpolarized, non-grounding-type receptacles intended to be used on dc circuits only. (530) (CMP-15)

Dead-Front.

Without live parts exposed to a person on the operating side of the equipment. (CMP-9)

Demand Factor.

The ratio of the maximum demand of a system, or part of a system, to the total connected load of a system or the part of the system under consideration. (CMP-2)

Dental Office.

A building or part thereof in which the following occur:

(1) Examinations and minor treatments/procedures performed under the continuous supervision of a dental professional;

(2) Use of limited to minimal sedation and treatment or procedures that do not render the patient incapable of self-preservation under emergency conditions; and

(3) No overnight stays for patients or 24-hour operations.

[**99:** 3.3.38] (CMP-15)

Deploy (Deployed).

The use of portable equipment for the duration required by the event or production for which it is used. (CMP-15)

Device.

A unit of an electrical system, other than a conductor, that carries or controls electric energy as its principal function. (CMP-1)

Dielectric Heating.

Heating of a nominally insulating material due to its own dielectric losses when the material is placed in a varying electric field. (665) (CMP-12)

Disconnecting Means.

A device, or group of devices, or other means by which the conductors of a circuit can be disconnected from their source of supply. (CMP-1)

Distribution Point (Center Yard Pole) (Meter Pole).

An electrical supply point from which service drops, service conductors, feeders, or branch circuits to buildings or structures utilized under single management are supplied. (547) (CMP-7)

Informational Note: The service point is typically located at the distribution point.

Diversion Controller (Diversion Charge Controller) (Diversion Load Controller).

Equipment that regulates the output of a source or charging process by diverting power to direct-current or alternating-current loads or to an interconnected utility service. (CMP-13)

Diversion Load.

A load connected to a diversion charge controller or diversion load controller, also known as a dump load. (CMP-4)

Docking Facility.

A covered or open, fixed or floating structure that provides access to the water and to which boats are secured. [**303:** 3.3.7] (555) (CMP-7)

Dormitory.

A building or a space in a building in which group sleeping accommodations are provided for more than 16 persons who are not members of the same family in one room, or a series of closely associated rooms, under joint occupancy and single management, with or without meals, but without individual cooking facilities. (CMP 2) [**101:** 3.3.68]

Informational Note: Rooms within dormitories intended for the use of individuals for combined living and sleeping purposes are guest rooms or guest suites. Examples of dormitories are college dormitories, fraternity and sorority houses, and military barracks. [**101:** A.3.3.68] (CMP 2)

Drop Box.

A box containing pendant- or flush-mounted receptacles attached to a multiconductor cable via strain relief or a multipole connector. (520) (CMP-15)

Dust-Ignitionproof.

Equipment enclosed in a manner that excludes dusts and does not permit arcs, sparks, or heat otherwise generated or liberated inside of the enclosure to cause ignition of exterior accumulations or atmospheric suspensions of a specified dust on or in the vicinity of the enclosure. (CMP-14)

Informational Note No. 1: See ANSI/UL 1203, *Explosion-Proof and Dust-Ignition-Proof Electrical Equipment for Use in Hazardous (Classified) Locations* , for information on dust-ignitionproof enclosures.

Informational Note No. 2: See NEMA 250, *Enclosures for Electrical Equipment (1000 Volts Maximum)* , for information on dust-ignitionproof enclosures that are sometimes additionally marked Type 9.

Dusttight.

Enclosures constructed so that dust will not enter under specified test conditions. (CMP-14)

Informational Note No. 1: See ANSI/UL 121201, *Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations* , for additional information.

Informational Note No. 2: See NEMA 250, *Enclosures for Electrical Equipment (1000 Volts Maximum),* and ANSI/UL 50E, *Enclosures for Electrical Equipment, Environmental Considerations* , for additional information on enclosure Types 3, 3X, 3S, 3SX, 4, 4X, 5, 6, 6P, 12, 12K, and 13 that are considered dusttight.

Duty, Continuous. (Continuous Duty)

Operation at a substantially constant load for an indefinitely long time. (CMP-1)

Duty, Intermittent. (Intermittent Duty)

Operation for alternate intervals of (1) load and no load; or (2) load and rest; or (3) load, no load, and rest. (CMP-1)

Duty, Periodic. (Periodic Duty)

Intermittent operation in which the load conditions are regularly recurrent. (CMP-1)

Duty, Short-Time. (Short-Time Duty)

Operation at a substantially constant load for a short and definite, specified time. (CMP-1)

Duty, Varying. (Varying Duty)

Operation at loads, and for intervals of time, both of which may be subject to wide variation. (CMP-1)

Dwelling, One-Family. (One-Family Dwelling)

A building that consists solely of one dwelling unit. (CMP-1)

Dwelling, Two-Family. (Two-Family Dwelling)

A building that consists solely of two dwelling units. (CMP-1)

Dwelling, Multifamily. (Multifamily Dwelling)

A building that contains three or more dwelling units. (CMP-1)

Dwelling Unit.

A single unit, providing complete and independent living facilities for one or more persons, including permanent provisions for living, sleeping, cooking, and sanitation. (CMP-2)

Electric-Discharge Lighting.

Systems of illumination utilizing fluorescent lamps, high-intensity discharge (HID) lamps, or neon tubing. (CMP-18)

Electric Power Production and Distribution Network.

Power production, distribution, and utilization equipment and facilities, such as electric utility systems that are connected to premises wiring and are external to and not controlled by a system that operates in interactive mode. (CMP-13)

Electric Self-Propelled Vehicle (ESV).

A vehicle or marine vessel, other than an EV, such as farm equipment, boats, aircraft, and golf carts, primarily powered by an electric motor that draws current from a rechargeable storage battery, fuel cell, photovoltaic array, or other source of electric current. (627) (CMP-12)

Electric Self-Propelled Vehicle Power Export Equipment (ESVPE).

The equipment, including the outlet on the electric self-propelled vehicle (ESV), that is used to provide electrical power at voltages greater than or equal to 30 Vac or 60 Vdc to loads external to the ESV, using the vehicle as the source of supply. (627) (CMP-12)

> Informational Note: Electric self-propelled vehicle power export equipment and electric self-propelled vehicle supply equipment or wireless power transfer equipment are sometimes contained in one piece of equipment, sometimes referred to as a bidirectional electric self-propelled vehicle supply equipment (ESVSE) or bidirectional wireless power transfer equipment (WPTE).

Electric Self-Propelled Vehicle Supply Equipment (ESVSE).

Equipment for plug-in charging, including the ungrounded, grounded, and equipment grounding conductors, and the electric self-propelled vehicle connectors, attachment plugs, personnel protection system, and all other fittings, devices, power outlets, or apparatus installed specifically for the purpose of transferring energy between the premises wiring and the electric vehicle. (627) (CMP-12)

> Informational Note: Electric self-propelled vehicle power export equipment and electric self-propelled vehicle supply equipment or wireless power transfer equipment (WPTE) are sometimes contained in one piece of equipment, sometimes referred to as a bidirectional ESVSE or bidirectional WPTE.

Electric Supply Stations.

Locations containing the generating stations and substations, including their associated generator, storage battery, transformer, and switchgear areas. (CMP-4)

Electric Vehicle (EV).

An automotive-type vehicle for on-road use, such as passenger automobiles, buses, trucks, vans, neighborhood electric vehicles, and electric motorcycles, primarily powered by an electric motor that draws current from a rechargeable storage battery, fuel cell, photovoltaic array, or other source of electric current. Plug-in hybrid electric vehicles (PHEV) are electric vehicles having a second source of motive power. (CMP-12)

> Informational Note: Off-road, self-propelled electric mobile machines, such as industrial trucks, hoists, lifts, transports, golf carts, airline ground support equipment, tractors, and boats are not considered electric vehicles.

Electric Vehicle Connector.

A device that, when electrically coupled (conductive or inductive) to an electric vehicle inlet, establishes an electrical connection to the electric vehicle for the purpose of power transfer and information exchange. (625) (CMP-12)

> Informational Note: See 625.48 for further information on interactive systems.

Electric Vehicle Power Export Equipment (EVPE).

The equipment, including the outlet on the electric vehicle, that is used to provide electrical power at voltages greater than or equal to 30 Vac or 60 Vdc to loads external to the electric vehicle, using the electric vehicle as the source of supply. (625) (CMP-12)

> Informational Note: Electric vehicle power export equipment and electric vehicle supply equipment or wireless power transfer equipment are sometimes contained in one piece of equipment, sometimes referred to as a bidirectional electric vehicle supply equipment (EVSE) or bidirectional wireless power transfer equipment (WPTE).

Electric Vehicle Supply Equipment (EVSE).

Equipment for plug-in charging, including the ungrounded, grounded, and equipment grounding conductors, and the electric vehicle connectors, attachment plugs, personnel protection system, and all other fittings, devices, power outlets, or apparatus installed specifically for the purpose of transferring energy between the premises wiring and the electric vehicle. (625) (CMP-12)

> Informational Note: Electric vehicle power export equipment and electric vehicle supply equipment or wireless power transfer equipment (WPTE) are sometimes contained in one piece of equipment, sometimes referred to as a bidirectional EVSE or bidirectional WPTE.

Electrical Circuit Protective System.

A system consisting of components and materials intended for installation as protection for specific electrical wiring systems with respect to the disruption of electrical circuit integrity upon exterior fire exposure. (CMP-16)

Electrical Datum Plane.

A specified vertical distance above the normal high-water level at which electrical equipment can be installed and electrical connections can be made. (CMP-7)

Electrical Ducts.

Electrical conduits, or other raceways round in cross section, that are suitable for use underground or embedded in concrete. (CMP-6)

Electrical Life Support Equipment.

Electrically powered equipment whose continuous operation is necessary to maintain a patient's life. [**99** :3.3.45] (517) (CMP-15)

Electrical Resistance Trace Heating "60079-30-1".

Type of protection for the purpose of producing heat on the principle of electrical resistance and typically composed of one or more metallic conductors and/or an electrically conductive material, suitably electrically insulated and protected. (CMP-14)

> Informational Note: See ANSI/UL 60079-30-1, *Explosive Atmospheres — Part 30-1: Electrical Resistance Trace Heating — General and Testing Requirements* , for additional information.

Electrically Connected.

A connection capable of carrying current as distinguished from connection through electromagnetic induction. (668) (CMP-12)

Electrified Truck Parking Space.

A truck parking space that has been provided with an electrical system that allows truck operators to connect their vehicles while stopped and to use off-board power sources in order to operate on-board systems such as air conditioning, heating, and appliances, without any engine idling. (626) (CMP-12)

> Informational Note: An electrified truck parking space also includes dedicated parking areas for heavy-duty trucks at travel plazas, warehouses, shipper and consignee yards, depot facilities, and border crossings. It does not include areas such as the shoulders of highway ramps and access roads, camping and recreational vehicle sites, residential and commercial parking areas used for automotive parking or other areas where ac power is provided solely for the purpose of connecting automotive and other light electrical loads, such as engine block heaters, and at private residences.

Electrified Truck Parking Space Wiring Systems.

All of the electrical wiring, equipment, and appurtenances related to electrical installations within an electrified truck parking space, including the electrified parking space supply equipment. (626) (CMP-12)

Electrolyte.

The medium that provides the ion transport mechanism between the positive and negative electrodes of a cell. (CMP-13)

Electrolytic Cell.

A tank or vat in which electrochemical reactions are caused by applying electric energy for the purpose of refining or producing usable materials. (668) (CMP-12)

Electrolytic Cell Line Working Zone.

The space envelope wherein operation or maintenance is normally performed on or in the vicinity of exposed energized surfaces of electrolytic cell lines or their attachments. (668) (CMP-12)

Electronic Power Converter.

A device that uses power electronics to convert one form of electrical power into another form of electrical power. (CMP-4)

> Informational Note: Examples of electronic power converters include, but are not limited to, inverters, dc-to-dc converters, and electronic charge controllers. These devices have limited current capabilities based on the device ratings at continuous rated power.

Electronically Protected.

A motor provided with electronic control that is an integral part of the motor and protects the motor against dangerous overheating due to failure of the electronic control, overload, and failure to start. (430) (CMP-11)

Emergency Luminaire, Battery-Equipped. (Battery-Equipped Emergency Luminaire)

A luminaire with a rechargeable battery, a battery charging means, and an automatic load control relay. (CMP-13)

Emergency Luminaire, Directly Controlled (DCEL). (Directly Controlled Emergency Luminaire)

A luminaire supplied by the facility emergency power system and with a control input for dimming or switching that provides an emergency illumination level upon loss of normal power. (700) (CMP-13)

> Informational Note: See ANSI/UL 924, *Emergency Lighting and Power Equipment* , for information covering directly controlled emergency luminaires.

Emergency Power Supply (EPS).

The source(s) of electric power of the required capacity and quality for an emergency power supply system (EPSS). (CMP-13)

Emergency Power Supply System (EPSS).

A complete functioning EPS system coupled to a system of conductors, disconnecting means and overcurrent protective devices, transfer switches, and all control, supervisory, and support devices up to and including the load terminals of the transfer equipment needed for the system to operate as a safe and reliable source of electric power. [**110:** 3.3.4] (CMP-13)

Emergency Systems.

Those systems legally required and classed as emergency by municipal, state, federal, or other codes, or by any governmental agency having jurisdiction. These systems are intended to automatically supply illumination, power, or both, to designated areas and equipment in the event of failure of the normal supply or in the event of accident to elements of a system intended to supply, distribute, and control power and illumination essential for safety to human life. (CMP-13)

Encapsulation “m”.

Type of protection where electrical parts that could ignite an explosive atmosphere by either sparking or heating are enclosed in a compound in such a way that this explosive atmosphere cannot be ignited. (CMP-14)

Informational Note: See ANSI/UL 60079-18, *Explosive atmospheres — Part 18: Equipment protection by encapsulation “m”*, for additional information.

Enclosed.

Surrounded by a case, housing, fence, or wall(s) that prevents persons from accidentally contacting energized parts. (CMP-1)

Enclosed-Break.

Having electrical make-or-break contacts such that, if an internal explosion of the flammable gas or vapor that can enter it occurs, the device will withstand the internal explosion without suffering damage and without communicating the internal explosion to the external flammable gas or vapor. (CMP-14)

Informational Note: See ANSI/UL 121201, *Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations* , for additional information.

Enclosure.

The case or housing of apparatus or the fence or walls surrounding an installation to prevent personnel from accidentally contacting energized parts or to protect the equipment from physical damage. (CMP-1)

Informational Note: See Table 110.28 for examples of enclosure types.

Energized.

Electrically connected to, or is, a source of voltage. (CMP-1)

Energized, Likely to Become. (Likely to Become Energized)

Conductive material that could become energized because of the failure of electrical insulation or electrical spacing. (CMP-5)

Energy Management System (EMS).

A system that monitors and controls power within an electrical system. (CMP-13)

Energy Storage System (ESS).

One or more devices, assembled together, capable of storing energy to supply electrical energy at a future time. [**855:** 3.3.9] (CMP-13)

Informational Note No. 1: An ESS(s) can include but is not limited to batteries, capacitors, and kinetic energy devices (e.g., flywheels and compressed air). An ESS(s) can include inverters or converters to change voltage levels or to make a change between an ac or a dc system.

Informational Note No. 2: These systems differ from a stationary standby battery installation where a battery spends the majority of the time on continuous float charge or in a high state of charge, in readiness for a discharge event.

Entertainment Device.

A mechanical or electromechanical device that provides an entertainment experience. (522) (CMP-15)

Informational Note: These devices can include animated props, show action equipment, animated figures, and special effects, coordinated with audio and lighting to provide an entertainment experience.

Equipment.

A general term, including fittings, devices, appliances, luminaires, apparatus, machinery, and the like used as a part of, or in connection with, an electrical installation. (CMP-1)

Equipment, Interconnection. (Interconnection Equipment)

Equipment that performs protective and control functions that enables power sources, or systems supplied by power sources, to operate in parallel with, separate from, and reconnect to systems supplied by other power sources. (CMP-4)

Equipment, Mobile. (Mobile Equipment)

Equipment with electrical components that is suitable to be moved only with mechanical aids or is provided with wheels for movement by a person(s) or powered devices. (513) (CMP-14)

Equipment, Portable. (Portable Equipment)

Equipment fed with portable cords or cables intended to be moved from one place to another. (640) (CMP-12)

Equipment, Portable. (Portable Equipment)

Equipment with electrical components suitable to be moved by a single person without mechanical aids. (511) (CMP-14)

Equipment, Portable. (Portable Equipment)

Equipment fed with portable cords or cables intended to be moved from one place to another. (520) (CMP-15)

Equipment, Portable. (Portable Equipment)

Equipment intended to be moved from one place to another. (530) (CMP-15)

Equipment, Signal. (Signal Equipment)

Includes audible and visual equipment such as chimes, gongs, lights, and displays that convey information to the user. (620) (CMP-12)

Equipment Branch.

A system of feeders and branch circuits arranged for delayed, automatic, or manual connection to the alternate power source and that serves primarily 3-phase power equipment. [**99** :3.3.50] (517) (CMP-15)

Equipment Protection Level (EPL).

Level of protection assigned to equipment based on its likelihood of becoming a source of ignition, and distinguishing the differences between explosive gas atmospheres and explosive dust atmospheres. (CMP-14)

> Informational Note: See ANSI/UL 60079-0, *Explosive Atmospheres — Part 0: Equipment — General Requirements* , for additional information.

Equipment Rack.

A framework for the support, enclosure, or both, of equipment; can be portable or stationary. (640) (CMP-12)

> Informational Note: See EIA/ECA 310-E-2005, *Cabinets, Racks, Panels and Associated Equipment* , for examples of equipment racks.

Equipotential Plane.

Conductive elements that are connected together to minimize voltage differences. (CMP-7)

Essential Electrical System.

A distribution system designed to ensure continuity of electrical power to designated areas and functions of a health care facility upon loss of one of the on-site or off-site sources with reliability and capacity sufficient to provide effective facility operation consistent with the facility's emergency operations plan. [**99:** 3.3.54] (517) (CMP-15)

Explosionproof Equipment.

Equipment enclosed in a case that is capable of withstanding an explosion of a specified gas or vapor that might occur within it, that is capable of preventing the ignition of a specified gas or vapor surrounding the enclosure by sparks, flashes, or explosion of the gas or vapor within, and that operates at such an external temperature that a surrounding flammable atmosphere will not be ignited. (CMP-14)

Informational Note No. 1: See ANSI/UL 1203, *Explosion-Proof and Dust-Ignition-Proof Electrical Equipment for Use in Hazardous (Classified) Locations* , for additional information.

Informational Note No. 2: See NEMA 250, *Enclosures for Electrical Equipment (1000 Volts Maximum)* , for additional information on explosionproof enclosures that are sometimes additionally marked Type 7.

Exposed (as applied to live parts).

Capable of being inadvertently touched or approached nearer than a safe distance by a person. (CMP-1)

Informational Note: This term applies to parts that are not suitably guarded, isolated, or insulated.

Exposed (as applied to wiring methods).

On or attached to the surface or behind panels designed to allow access. (CMP-1)

Exposed (Optical Fiber Cable Exposed to Accidental Contact).

A conductive optical fiber cable in such a position that, in case of failure of supports or insulation, contact between the cable's non–current-carrying conductive members and an electrical circuit might result. (CMP-16)

Exposed (to Accidental Contact).

A circuit in such a position that, in case of failure of supports or insulation, contact with another circuit may result. (CMP-16)

Exposed Conductive Surfaces.

Those surfaces that are capable of carrying electric current and that are unprotected, uninsulated, unenclosed, or unguarded, permitting personal contact. [**99:** 3.3.54] (517) (CMP-15)

Informational Note: Paint, anodizing, and similar coatings are not considered suitable insulation, unless they are listed for such use.

Externally Operable.

Capable of being operated without exposing the operator to contact with live parts. (CMP-1)

Facility, On-Site Power Production. (On-Site Power Production Facility)

The normal supply of electric power for the site that is expected to be constantly producing power. (695) (CMP-13)

Fastened-in-Place (as applied to electric vehicle power transfer systems and electric self-propelled vehicle power transfer systems).

Mounting means of equipment in which the fastening means are specifically designed to permit removal without the use of a tool. (CMP-12)

Fault-Managed Power (FMP).

A powering system that monitors for faults and controls current delivered to ensure fault energy is limited. (726) (CMP-3)

Informational Note No. 1: The monitoring and control systems differentiate fault-managed power from electric light and power circuits; therefore, alternative requirements to those of Chapters 1 through 4 are given regarding minimum wire sizes, ampacity adjustment and correction factors, overcurrent protection, insulation requirements, and wiring methods and materials.

Informational Note No. 2: A fault-managed power circuit is also commonly referred to as a Class 4 circuit.

Fault Current.

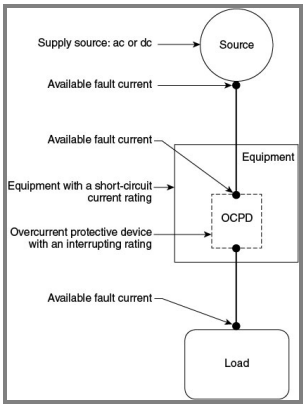
The current delivered at a point on the system during a short-circuit condition. (CMP-10)

Fault Current, Available. (Available Fault Current)

The largest amount of current capable of being delivered at a point on the system during a short-circuit condition. (CMP-10)

Informational Note: A short-circuit can occur during abnormal conditions such as a fault between circuit conductors or a ground fault. See Figure Informational Note 100.1 .

Figure Informational Note 100.1 Available Fault Current.



Fault Protection Device.

An electronic device that is intended for the protection of personnel and functions under fault conditions, such as network-powered broadband communications cable short or open circuit, to limit the current or voltage, or both, for a low-power network-powered broadband communications circuit and provide acceptable protection from electric shock. (830) (CMP-16)

Feeder.

All circuit conductors between the service equipment, the source of a separately derived system, or other power supply source and the final branch-circuit overcurrent protective device. (CMP-10)

Feeder Assembly.

The overhead or under-chassis feeder conductors, including the equipment grounding conductor, together with the necessary fittings and equipment; or the power-supply cord assembly for a mobile home, recreational vehicle, or park trailer, identified for the delivery of energy from the source of electrical supply to the panelboard within the mobile home, recreational vehicle, or park trailer. (CMP-7)

Festoon Lighting.

A string of outdoor lights that is suspended between two points. (CMP-18)

Fibers/Flyings, Combustible. (Combustible Fibers/Flyings)

Fibers/flyings, where any dimension is greater than 500 µm in nominal size, which can form an explosible mixture when suspended in air at standard atmospheric pressure and temperature. [**499:** 3.3.4.1] (CMP-14)

Informational Note No. 1: This definition and Informational Notes No. 2 and No. 3 have been extracted from NFPA 499-2024, *Recommended Practice for the Classification of Combustible Dusts and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas* . The NFPA 499 reference is in brackets. Only editorial changes were made to the extracted text to make it consistent with this code.

Informational Note No. 2: Section 500.5(D) defines a Class III location. Combustible fibers/flyings can be similar in physical form to ignitible fibers/flyings and protected using the same electrical equipment installation methods. Examples of fibers/flyings include flat platelet-shaped particulate, such as metal flake, and fibrous particulate, such as particle board core material. If the smallest dimension of a combustible material is greater than 500 µm, it is unlikely that the material would be combustible fibers/flyings, as determined by test. Finely divided solids with lengths that are large compared to their diameter or thickness usually do not pass through a 500 µm sieve, yet when tested could potentially be determined to be explosible. [**499:** A.3.3.4.1]

Informational Note No. 3: See ASTM E1226, *Standard Test Method for Explosibility of Dust Clouds* , ISO 6184-1, *Explosion protection systems — Part 1: Determination of explosion indices of combustible dusts in air* , or ISO/IEC/UL 80079-20-2, *Explosive atmospheres — Part 20-2: Material characteristics — Combustible dusts test methods* , for procedures for determining the explosibility of dusts. A material that is found to not present an explosible mixture could still be an ignitible fiber/flying, as defined in this article. Historically, the explosibility condition has been described as presenting a flash fire or explosion hazard. It could be understood that the potential hazard due to the formation of an explosible mixture when suspended in air at standard atmospheric pressure and temperature would include ignition. [**499:** A.3.3.4.1]

Fibers/Flyings, Ignitible. (Ignitible Fibers/Flyings)

Fibers/flyings where any dimension is greater than 500 µm in nominal size, which are not likely to be in suspension in quantities to produce an explosible mixture, but could produce an ignitible layer fire hazard. [**499:** 3.3.4.2] (CMP-14)

Informational Note No. 1: This definition and Informational Note No. 2 have been extracted from NFPA 499-2024, *Recommended Practice for the Classification of Combustible Dusts and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas* . The NFPA 499 reference is in brackets. Only editorial changes were made to the extracted text to make it consistent with this code.

Informational Note No. 2: Section 500.5 of this code prescribes a Class III location as one where ignitible fibers/flyings are present, but not likely to be in suspension in the air in quantities sufficient to produce ignitible mixtures. This description addresses fibers/flyings that do not present a flash-fire hazard or explosion hazard by test. This could be because those fibers/flyings are too large or too agglomerated to be suspended in air in sufficient concentration, or at all, under typical test conditions. Alternatively, this could be because they burn so slowly that, when suspended in air, they do not propagate combustion at any concentration. In this document the zone classification system includes ignitible fibers/flyings as a fire hazard in a layer, which is not addressed in the IEC zone system (see IEC 60079-10-2, *Explosive atmospheres — Part 10-2: Classification of areas — Explosive dust atmospheres*). Where these are present, the user could also consider installation in accordance with Article 503 of this code. [**499:** A.3.3.4.2]

Field Evaluation Body (FEB).

An organization or part of an organization that performs field evaluations of electrical or other equipment. [**790:** 3.3.4] (CMP-1)

> Informational Note: See NFPA 790-2024, *Standard for Competency of Third-Party Field Evaluation Bodies* , provides guidelines for establishing the qualification and competency of a body performing field evaluations of electrical products and assembles with electrical components.

Field Labeled (as applied to evaluated products).

Equipment or materials to which has been attached a label, symbol, or other identifying mark of an FEB indicating the equipment or materials were evaluated and found to comply with requirements as described in an accompanying field evaluation report. [**790:** 3.3.6] (CMP-1)

Fire Alarm Circuit.

The portion of the wiring system between the load side of the overcurrent device or the power-limited supply and the connected equipment of all circuits powered and controlled by the fire alarm system. Fire alarm circuits are classified as either non–power-limited or power-limited. (CMP-3)

Fire Alarm Circuit, Non-Power-Limited (NPLFA). (Non-Power-Limited Fire Alarm Circuit)

A fire alarm circuit powered by a source that is not power limited. (CMP-3)

> Informational Note: See 760.41 and 760.43 for requirements for non-power-limited fire alarm circuits.

Fire Alarm Circuit, Power-Limited (PLFA). (Power-Limited Fire Alarm Circuit)

A fire alarm circuit powered by a power-limited source . (CMP-3)

> Informational Note: See 760.121 for requirements on power-limited fire alarm circuits.

Fitting.

An accessory such as a locknut, bushing, or other part of a wiring system that is intended primarily to perform a mechanical rather than an electrical function. (CMP-1)

Fixed (as applied to equipment).

Equipment that is fastened or otherwise secured at a specific location. (CMP-17)

Fixed-in-Place (as applied to electric vehicle power transfer systems and electric self-propelled vehicle power transfer systems).

Mounting means of equipment using fasteners that require a tool for removal. (CMP-12)

Flameproof “d”.

Type of protection where the enclosure will withstand an internal explosion of a flammable mixture that has penetrated into the interior, without suffering damage and without causing ignition, through any joints or structural openings in the enclosure of an external explosive gas atmosphere consisting of one or more of the gases or vapors for which it is designed. (CMP-14)

> Informational Note: See ANSI/UL 60079-1, *Explosive Atmospheres — Part 1: Equipment Protection by Flameproof Enclosures “d”,* for additional information.

Flammable Anesthetics.

Gases or vapors, such as fluroxene, cyclopropane, divinyl ether, ethyl chloride, ethyl ether, and ethylene, that could form flammable or explosive mixtures with air, oxygen, or reducing gases such as nitrous oxide. (517) (CMP-15)

Flexible Bus Systems.

An assembly of flexible insulated bus, with a system of associated fittings used to secure, support, and terminate the bus. (CMP-8)

> Informational Note: Flexible bus systems are engineered systems for a specific site location and are ordinarily assembled at the point of installation from the components furnished or specified by the manufacturer.

Flexible Insulated Bus.

A flexible rectangular conductor with an overall insulation. (CMP-8)

Flywheel ESS (FESS).

A mechanical ESS composed of a spinning mass referred to as a rotor and an energy conversion mechanism such as a motor-generator that converts the mechanical energy to electrical energy. (706) (CMP-13)

> Informational Note: There are primarily two types of rotor constructions, solid metal mass design and composite fiber design.

Footlight.

A border light installed on or in the stage. (520) (CMP-15)

Forming Shell.

A structure designed to support a wet-niche luminaire assembly and intended for mounting in a pool or fountain structure. (680) (CMP-17)

Fountain.

An ornamental structure or recreational water feature from which one or more jets or streams of water are discharged into the air, including splash pads, ornamental pools, display pools, and reflection pools. The definition does not include drinking water fountains or water coolers. (680) (CMP-17)

Frame.

Chassis rail and any welded addition thereto of metal thickness of 1.35 mm (0.053 in.) or greater. (551) (CMP-7)

Free Air (as applied to conductors).

Open or ventilated environment that allows for heat dissipation and air flow around an installed conductor. (CMP-6)

Fuel Cell.

An electrochemical system that consumes fuel to produce an electric current. In such cells, the main chemical reaction used for producing electric power is not combustion. However, there may be sources of combustion used within the overall cell system, such as reformers/fuel processors. (CMP-4)

Fuel Cell System.

The complete aggregate of equipment used to convert chemical fuel into usable electricity and typically consisting of a reformer, stack, power inverter, and auxiliary equipment. (CMP-4)

Fuse.

An overcurrent protective device with a circuit-opening fusible part that is heated and severed by the passage of overcurrent through it. (CMP-10)

> Informational Note: A fuse comprises all the parts that form a unit capable of performing the prescribed functions. It may or may not be the complete device necessary to connect it into an electrical circuit.

Fuse, Electronically Actuated. (Electronically Actuated Fuse)

An overcurrent protective device that generally consists of a control module that provides current-sensing, electronically derived time–current characteristics, energy to initiate tripping, and an interrupting module that interrupts current when an overcurrent occurs. Such fuses may or may not operate in a current-limiting fashion, depending on the type of control selected. (CMP-10)

Fuse, Expulsion. (Expulsion Fuse)

A vented fuse unit in which the expulsion effect of gases produced by the arc and lining of the fuseholder, either alone or aided by a spring, extinguishes the arc. (CMP-10)

Fuse, Nonvented Power. (Nonvented Power Fuse)

A fuse without intentional provision for the escape of arc gases, liquids, or solid particles to the atmosphere during circuit interruption. (CMP-10)

Fuse, Power. (Power Fuse)

A vented, nonvented, or controlled vented fuse unit in which the arc is extinguished by being drawn through solid material, granular material, or liquid, either alone or aided by a spring. (CMP-10)

Fuse, Vented Power. (Vented Power Fuse)

A fuse with provision for the escape of arc gases, liquids, or solid particles to the surrounding atmosphere during circuit interruption. (CMP-10)

Garage.

A building or portion of a building in which one or more self-propelled vehicles can be kept for use, sale, storage, rental, repair, exhibition, or demonstration purposes. (CMP-1)

Informational Note: See 511.1 for commercial garages, repair and storage.

Garage, Major Repair. (Major Repair Garage)

A building or portions of a building where major repairs, such as engine overhauls, painting, body and fender work, welding or grinding, and repairs that require draining or emptying of the motor vehicle fuel tank are performed on motor vehicles, including associated floor space used for offices, parking, or showrooms. [**30A:** 3.3.12.1] (CMP-14)

Garage, Minor Repair. (Minor Repair Garage)

A building or portions of a building used for lubrication, inspection, and minor automotive maintenance work, such as engine tune-ups, replacement of parts, fluid changes (e.g., oil, antifreeze, transmission fluid, brake fluid, air-conditioning refrigerants), brake system repairs, tire rotation, and similar routine maintenance work, including the associated floor space used for offices, parking, or showrooms. [**30A:** 3.3.12.2] (CMP-14)

General-Purpose Cables, Cable Routing Assemblies, and Raceways.

Cables, cable routing assemblies, and raceways are suitable for general-purpose applications and are resistant to the spread of fire. (722) (CMP-3)

Generating Capacity, Inverter. (Inverter Generating Capacity)

The sum of parallel-connected inverter maximum continuous output power at 40°C in watts, kilowatts, volt-amperes, or kilovolt-amperes. (CMP-4)

Generating Station.

A plant wherein electric energy is produced by conversion from some other form of energy (e.g., chemical, nuclear, solar, wind, mechanical, or hydraulic) by means of suitable apparatus. (CMP-4)

Generator (Generator Set).

A machine that converts mechanical energy into electrical energy by means of a prime mover and alternator. (CMP-13)

Generator, On-Site Standby. (On-Site Standby Generator)

A facility producing electric power on site as the alternate supply of electric power. It differs from an on-site power production facility in that it is not constantly producing power. (695) (CMP-13)

Generator Terminals.

The point of connection for the output conductors on the generator (generator set). (445) (CMP-13)

Grid Bus Rail.

A combination of the busbar, the busbar support, and the structural suspended ceiling grid system. (393) (CMP-18)

Ground.

The Earth. (CMP-5)

Ground Fault.

An unintentional, electrically conductive connection between an ungrounded conductor of an electrical circuit and the normally non-current-carrying conductors, metal enclosures, metal raceways, metal equipment, or earth. (CMP-5)

Ground-Fault Circuit Interrupter (GFCI).

A device intended for the protection of personnel that functions to de-energize a circuit or portion thereof within an established period of time when a ground-fault current exceeds the values established for a Class A device. (CMP-2)

> Informational Note: See UL 943, *Standard for Ground-Fault Circuit Interrupters* , for further information. Class A ground-fault circuit interrupters trip when the ground-fault current is 6 mA or higher and do not trip when the ground-fault current is less than 4 mA.

Ground-Fault Circuit Interrupter, Special Purpose (SPGFCI). (Special Purpose Ground-Fault Circuit Interrupter)

A device intended for the detection of ground-fault currents that functions to de-energize a circuit or portion of a circuit within an established period of time established for Class C, D, or E devices. (CMP-2)

> Informational Note: See UL 943C, *Outline of Investigation for Special Purpose Ground-Fault Circuit Interrupters* , for information on Classes C, D, or E special purpose ground-fault circuit interrupters.

Ground-Fault Current Path.

An electrically conductive path from the point of a ground fault on a wiring system through normally non–current-carrying conductors, grounded conductors, equipment, or the earth to the electrical supply source. (CMP-5)

> Informational Note: Examples of ground-fault current paths are any combination of equipment grounding conductors, metallic raceways, metallic cable sheaths, electrical equipment, and any other electrically conductive material such as metal, water, and gas piping; steel framing members; stucco mesh; metal ducting; reinforcing steel; shields of communications cables; grounded conductors; and the earth itself.

Ground-Fault Current Path, Effective. (Effective Ground-Fault Current Path)

An intentionally constructed, low-impedance electrically conductive path designed and intended to carry current during ground-fault events from the point of a ground fault on a wiring system to the electrical supply source and that facilitates the operation of the overcurrent protective device or ground-fault detectors. (CMP-5)

Ground-Fault Detector-Interrupter, dc (GFDI).

A device that provides protection for PV system dc circuits by detecting a ground fault and could interrupt the fault path in the dc circuit. (690) (CMP-4)

> Informational Note: See UL 1741, *Standard for Inverters, Converters, Controllers and Interconnection System Equipment for Use with Distributed Energy Resources* , and UL 62109, *Standard for Power Converters for use in Photovoltaic Power Systems* , for further information on GFDI equipment.

Ground-Fault Protection of Equipment (GFPE).

A system intended to provide protection of equipment from damaging line-to-ground fault currents by operating to cause a disconnecting means to open all ungrounded conductors of the faulted circuit. This protection is provided at current levels less than those required to protect conductors from damage through the operation of a supply circuit overcurrent device. (CMP-5)

Grounded (Grounding).

Connected (connecting) to ground or to a conductive body that extends the ground connection. (CMP-5)

Grounded, Functionally. (Functionally Grounded)

A system that has an electrical ground reference for operational purposes that is not solidly grounded. (CMP-4)

> Informational Note: A functionally grounded system is often connected to ground through an electronic means internal to an inverter or charge controller that provides ground-fault protection. Examples of operational purposes for functionally grounded systems include ground-fault detection and performance-related issues for some power sources.

Grounded, Solidly. (Solidly Grounded)

Connected to ground without inserting any resistor or impedance device. (CMP-5)

Grounded Conductor.

A system or circuit conductor that is intentionally grounded. (CMP-5)

> Informational Note: Although an equipment grounding conductor is grounded, it is not considered a grounded conductor.

Grounded System, Impedance. (Impedance Grounded System)

An electrical system that is grounded by intentionally connecting the system neutral point to ground through an impedance device. (CMP-5)

Grounding Conductor, Equipment (EGC). (Equipment Grounding Conductor)

A conductive path(s) that is part of an effective ground-fault current path and connects normally non-current-carrying metal parts of equipment together and to the system grounded conductor or to the grounding electrode conductor, or both. (CMP-5)

> Informational Note No. 1: It is recognized that the equipment grounding conductor also performs bonding.
>
> Informational Note No. 2: See 250.118 for a list of acceptable equipment grounding conductors.

Grounding Conductor, Impedance. (Impedance Grounding Conductor)

A conductor that connects the system neutral point to the impedance device in an impedance grounded system. (CMP-5)

Grounding Electrode.

A conducting object through which a direct connection to earth is established. (CMP-5)

Grounding Electrode Conductor (GEC).

A conductor used to connect the system grounded conductor or the equipment to a grounding electrode or to a point on the grounding electrode system. (CMP-5)

Grouped.

Cables or conductors positioned adjacent to one another but not in continuous contact with each other. (520) (CMP-15)

Guarded.

Covered, shielded, fenced, enclosed, or otherwise protected by means of suitable covers, casings, barriers, rails, screens, mats, or platforms to remove the likelihood of approach or contact by persons or objects to a point of danger. (CMP-1)

Guest Room.

An accommodation combining living, sleeping, sanitary, and storage facilities within a compartment. (CMP-2)

Guest Suite.

An accommodation with two or more contiguous rooms comprising a compartment, with or without doors between such rooms, that provides living, sleeping, sanitary, and storage facilities. (CMP-2)

Gutter, Metal Auxiliary. (Metal Auxiliary Gutter)

A sheet metal enclosure used to supplement wiring spaces at meter centers, distribution centers, switchgear, switchboards, and similar points of wiring systems. The enclosure has hinged or removable covers for housing and protecting electrical wires, cable, and busbars. The enclosure is designed for conductors to be laid or set in place after the enclosures have been installed as a complete system. (CMP-8)

Gutter, Nonmetallic Auxiliary. (Nonmetallic Auxiliary Gutter)

A flame-retardant, nonmetallic enclosure used to supplement wiring spaces at meter centers, distribution centers, switchgear, switchboards, and similar points of wiring systems. The enclosure has hinged or removable covers for housing and protecting electrical wires, cable, and busbars. The enclosure is designed for conductors to be laid or set in place after the enclosures have been installed as a complete system. (CMP-8)

Habitable Room.

A room in a building for living, sleeping, eating, or cooking, but excluding bathrooms, toilet rooms, closets, hallways, storage or utility spaces, and similar areas. (CMP-2)

Handhole Enclosure.

An enclosure for use in underground systems, provided with an open or closed bottom, and sized to allow personnel to reach into, but not enter, for the purpose of installing, operating, or maintaining equipment or wiring or both. (CMP-8)

Hazard Current.

For a given set of connections in an isolated power system, the total current that would flow through a low impedance if it were connected between either isolated conductor and ground. [**99:** 3.3.72] (517) (CMP-15)

Hazard Current, Fault. (Fault Hazard Current)

The hazard current of a given isolated power system with all devices connected except the line isolation monitor. [**99:** 3.3.72.1] (517) (CMP-15)

Monitor Hazard Current.

The hazard current of the line isolation monitor alone. [**99:** 3.3.72.2] (517) (CMP-15)

Total Hazard Current.

The hazard current of a given isolated system with all devices, including the line isolation monitor, connected. [**99:** 3.3.72.3] (517) (CMP-15)

Header.

Transverse metal raceways for electrical conductors, providing access to predetermined cells of a precast cellular concrete floor, thereby permitting the installation of electrical conductors from a distribution center to the floor cells. (CMP-8)

Health Care Facilities.

Buildings, portions of buildings, or mobile enclosures in which human medical, dental, psychiatric, nursing, obstetrical, or surgical care is provided. [**99:** 3.3.73] (CMP-15)

> Informational Note: Examples of health care facilities include, but are not limited to, hospitals, nursing homes, limited care facilities, clinics, medical and dental offices, and ambulatory care centers, whether permanent or movable.

Health Care Facility's Governing Body.

The person or persons who have the overall legal responsibility for the operation of a health care facility. [**99:** 3.3.74] (517) (CMP-15)

Heating Equipment.

Any equipment that is used for heating purposes and whose heat is generated by induction or dielectric methods. (665) (CMP-12)

Heating Panel.

A complete assembly provided with a junction box or a length of flexible conduit for connection to a branch circuit. (CMP-17)

Heating Panel Set.

A rigid or nonrigid assembly provided with nonheating leads or a terminal junction assembly identified as being suitable for connection to a wiring system. (CMP-17)

Heating System.

A complete system consisting of components such as heating elements, fastening devices, nonheating circuit wiring, leads, temperature controllers, safety signs, junction boxes, raceways, and fittings. (CMP-17)

Heating System, Impedance. (Impedance Heating System)

A system in which heat is generated in an object, such as a pipe, rod, or combination of such objects serving as a heating element, by causing current to flow through such objects by direct connection to an ac voltage source from an isolating transformer. In some installations the object is embedded in the surface to be heated or constitutes the exposed component to be heated. (CMP-17)

Heating System, Induction. (Induction Heating System)

A system in which heat is generated in a pipeline or vessel wall by inducing current in the pipeline or vessel wall from an external isolated ac field source. (CMP-17)

Heating System, Skin Effect. (Skin-Effect Heating System)

A system in which heat is generated on the inner surface of a ferromagnetic envelope embedded in or fastened to the surface to be heated.

> Informational Note: Typically, an electrically insulated conductor is routed through and connected to the envelope at the other end. The envelope and the electrically insulated conductor are connected to an ac voltage source from an isolating transformer. (CMP-17)

Hermetic Refrigerant Motor-Compressor.

A combination consisting of a compressor and motor, both of which are enclosed in the same housing, with no external shaft or shaft seals, with the motor operating in the refrigerant. (CMP-11)

Hoistway.

Any shaftway, hatchway, well hole, or other vertical opening or space in which an elevator or dumbwaiter is designed to operate. (CMP-12)

Hospital.

A building or portion thereof used on a 24-hour basis for the medical, psychiatric, obstetrical, or surgical care of four or more inpatients. [***101*** : 3.3.152] (CMP-15)

Hydromassage Bathtub.

A permanently installed bathtub equipped with a recirculating piping system, pump, and associated equipment. It is designed so it can accept, circulate, and discharge water upon each use. (680) (CMP-17)

Identified (as applied to equipment).

Recognizable as suitable for the specific purpose, function, use, environment, application, and so forth, where described in a particular code requirement. (CMP-1)

> Informational Note: Some examples of ways to determine suitability of equipment for a specific purpose, environment, or application include investigations by a qualified testing laboratory (listing and labeling), an inspection agency, or other organizations concerned with product evaluation.

Increased Safety “e”.

Type of protection applied to electrical equipment that does not produce arcs or sparks in normal service and under specified abnormal conditions, in which additional measures are applied to give increased security against the possibility of excessive temperatures and of the occurrence of arcs and sparks. (CMP-14)

Informational Note: See ANSI/UL 60079-7, *Explosive Atmospheres — Part 7: Equipment Protection by Increased Safety “e”*, for additional information.

Induction Heating (Induction Melting) (Induction Welding).

The heating, melting, or welding of a nominally conductive material due to its own I2R losses when the material is placed in a varying electromagnetic field. (665) (CMP-12)

Industrial Control Panel.

An assembly of two or more components consisting of one of the following: (1) power circuit components only, such as motor controllers, overload relays, fused disconnect switches, and circuit breakers; (2) control circuit components only, such as push buttons, pilot lights, selector switches, timers, switches, and control relays; (3) a combination of power and control circuit components. These components, with associated wiring and terminals, are mounted on, or contained within, an enclosure or mounted on a subpanel. (CMP-11)

Informational Note: The industrial control panel does not include the controlled equipment.

Industrial Installation, Supervised. (Supervised Industrial Installation)

The industrial portions of a facility where all of the following conditions are met:

(1) Conditions of maintenance and engineering supervision ensure that only qualified persons monitor and service the system.

(2) The premises wiring system has 2500 kVA or greater of load used in industrial processes, manufacturing activities, or both, as calculated in accordance with Article 120 , Parts II, III, IV, or V.

(3) The premises has at least one service or feeder that is more than 150 volts to ground and more than 300 volts phase-to-phase.

This definition excludes installations in buildings used by the industrial facility for offices, warehouses, garages, machine shops, and recreational facilities that are not an integral part of the industrial plant, substation, or control center. (240) (CMP-10)

Information Technology Equipment (ITE).

Equipment and systems rated 1000 volts or less, normally found in offices or other business establishments and similar environments classified as ordinary locations, that are used for creation and manipulation of data, voice, video, and similar signals. (CMP-12)

Informational Note: See UL 60950-1-2007, *Information Technology Equipment — Safety — Part 1: General Requirements* , or UL 62368-1-2019, *Audio/Video Information and Communication Technology Equipment Part 1: Safety Requirements* , for information on listing requirements for both information technology equipment and communications equipment.

Information Technology Equipment Room.

A room within the information technology equipment area that contains the information technology equipment. [**75:** 3.3.15] (CMP-12)

Innerduct.

A nonmetallic raceway placed within a larger raceway. (CMP-16)

Insulated Bus Pipe (IBP).

A cylindrical solid or hollow conductor with a solid insulation system, having conductive grading layers and a grounding layer imbedded in the insulation, and provided with an overall covering of insulating or metallic material. IBP is also referred to as tubular covered conductor (TCC). (CMP-8)

Insulated Bus Pipe System.

An assembly that includes bus pipe, connectors, fittings, mounting structures, and other fittings and accessories. (CMP-8)

Insulating End.

An insulator designed to electrically insulate the end of a flat conductor cable (Type FCC). (324) (CMP-6)

Interactive Mode (Interactive).

The operating mode for power production sources or microgrids that operate in parallel with and are capable of delivering energy to an electric power production and distribution network or other primary power source. (CMP-4)

> Informational Note: Interactive mode is an operational mode of both interactive systems and of equipment such as interactive inverters.

Interrupting Rating.

The highest current at rated voltage that a device is identified to interrupt under standard test conditions. (CMP-10)

> Informational Note: Equipment intended to interrupt current at other than fault levels may have its interrupting rating implied in other ratings, such as horsepower or locked rotor current.

Intersystem Bonding Termination (IBT).

A device that provides a means for connecting intersystem bonding conductors for communications systems to the grounding electrode system. (CMP-16)

Intrinsic Safety "i".

Type of protection where any spark or thermal effect is incapable of causing ignition of a mixture of flammable or combustible material in air under prescribed test conditions. (CMP-14)

> Informational Note: See ANSI/UL 913, *Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III, Division 1, Hazardous (Classified) Locations* ; and ANSI/UL 60079-11, *Explosive Atmospheres — Part 11: Equipment Protection by Intrinsic Safety "i"*, for additional information.

Intrinsically Safe Apparatus.

Apparatus in which all the circuits are intrinsically safe. (CMP-14)

> Informational Note No. 1: See ANSI/UL 913, *Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III, Division 1, Hazardous (Classified) Locations* , and ANSI/UL 60079-11, *Explosive Atmospheres — Part 11: Equipment Protection by Intrinsic Safety "i"* , for additional information.
>
> Informational Note No. 2: See ANSI/ISA RP 12.06.01, *Recommended Practice for Wiring Methods for Hazardous (Classified) Locations Instrumentation — Part 1: Intrinsic Safety* , for installation information.

Intrinsically Safe Circuit.

A circuit in which any spark or thermal effect is incapable of causing ignition of a mixture of flammable or combustible material in air under prescribed test conditions. (CMP-14)

> Informational Note: See ANSI/UL 913, *Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III, Division 1, Hazardous (Classified) Locations* , and ANSI/UL 60079-11, *Explosive Atmospheres — Part 11: Equipment Protection by Intrinsic Safety "i"* , for test conditions.

Intrinsically Safe Circuits, Different. (Different Intrinsically Safe Circuits)

Intrinsically safe circuits in which the possible interconnections have not been evaluated and identified as intrinsically safe. (CMP-14)

Informational Note: See ANSI/UL 913, *Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III, Division 1, Hazardous (Classified) Locations* , and ANSI/UL 60079-11, *Explosive Atmospheres — Part 11: Equipment Protection by Intrinsic Safety "i"* , for additional information.

Intrinsically Safe System.

An assembly of interconnected intrinsically safe apparatus, associated apparatus, and interconnecting cables, in which those parts of the system that might be used in hazardous (classified) locations are intrinsically safe circuits. (CMP-14)

Informational Note No. 1: An intrinsically safe system might include more than one intrinsically safe circuit.

Informational Note No. 2: See ANSI/UL 913, *Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III, Division 1, Hazardous (Classified) Locations* ; ANSI/UL 60079-11, *Explosive Atmospheres — Part 11: Equipment Protection by Intrinsic Safety "i"* ; and ANSI/UL 60079-25, *Explosive Atmospheres — Part 25: Intrinsically Safe Electrical Systems* , for additional information.

Informational Note No. 3: See ANSI/ISA RP 12.06.01, *Recommended Practice for Wiring Methods for Hazardous (Classified) Locations Instrumentation — Part 1: Intrinsic Safety* , for installation information.

Invasive Procedure.

Any procedure that penetrates the protective surfaces of a patient's body (i.e., skin, mucous membrane, cornea) and that is performed with an aseptic field (procedural site). [Not included in this category are placement of peripheral intravenous needles or catheters used to administer fluids and/or medications, gastrointestinal endoscopies (i.e., sigmoidoscopies), insertion of urethral catheters, and other similar procedures.] [**99:** 3.3.91] (517) (CMP-15)

Inverter.

Equipment that changes dc to ac. (CMP-4)

Inverter, Interactive. (Interactive Inverter)

Inverter equipment having the capability to operate only in interactive mode. (CMP-13)

Inverter, Multimode. (Multimode Inverter)

Inverter equipment capable of operating in both interactive and island modes. (CMP-4)

Inverter, Stand-alone. (Stand-alone Inverter)

Inverter equipment having the capabilities to operate only in island mode. (CMP-4)

Inverter Input Circuit.

Conductors connected to the dc input of an inverter. (CMP-13)

Inverter Output Circuit.

Conductors connected to the ac output of an inverter. (CMP-13)

Inverter Utilization Output Circuit.

Conductors between the multimode or stand-alone inverter and utilization equipment. (706) (CMP-13)

Irrigation Machine.

An electrically driven or controlled machine, with one or more motors, not hand-portable, and used primarily to transport and distribute water for agricultural purposes. (675) (CMP-7)

Irrigation Machine, Center Pivot. (Center Pivot Irrigation Machine)

A multimotored irrigation machine that revolves around a central pivot and employs alignment switches or similar devices to control individual motors. (675) (CMP-7)

Island Mode.

The operating mode for power production sources or microgrids that allows energy to be supplied to loads that are disconnected from an electric power production and distribution network or other primary power source. (CMP-4)

Isolated (as applied to location).

Not readily accessible to persons unless special means for access are used. (CMP-1)

Isolated Power System.

A system comprising an isolation transformer or its equivalent, a line isolation monitor, and its ungrounded circuit conductors. [**99:** 3.3.93] (517) (CMP-15)

Isolation Transformer.

A transformer of the multiple-winding type, with the primary and secondary windings physically separated, that inductively couples its ungrounded secondary winding to the grounded feeder system that energizes its primary winding. [**99:** 3.3.94] (517) (CMP-15)

Kitchen.

An area with a sink and permanent provisions for food preparation and cooking. (CMP-2)

Labeled.

Equipment or materials to which has been attached a label, symbol, or other identifying mark of an organization that is acceptable to the authority having jurisdiction and concerned with product evaluation, that maintains periodic inspection of production of labeled equipment or materials, and by whose labeling the manufacturer indicates compliance with appropriate standards or performance in a specified manner. (CMP-1)

> Informational Note: If a listed product is of such a size, shape, material, or surface texture that it is not possible to apply legibly the complete label to the product, the complete label may appear on the smallest unit container in which the product is packaged.

Laundry Area.

An area containing or designed to contain a laundry tray, clothes washer, or clothes dryer. (CMP-2)

Leakage-Current Detector-Interrupter (LCDI).

A device provided in a power supply cord or cord set that senses leakage current flowing between or from the cord conductors and interrupts the circuit at a predetermined level of leakage current. (440) (CMP-11)

Legally Required Standby Systems.

Those systems required and so classed as legally required standby by municipal, state, federal, or other codes or by any governmental agency having jurisdiction. These systems are intended to automatically supply power to selected loads (other than those classed as emergency systems) in the event of failure of the normal source. (CMP-13)

Life Safety Branch.

A system of feeders and branch circuits supplying power for lighting, receptacles, and equipment essential for life safety that is automatically connected to alternate power sources by one or more transfer switches during interruption of the normal power source. [**99:** 3.3.97] (517) (CMP-15)

Lighting Assembly, Cord-and-Plug-Connected. (Cord-and-Plug-Connected Lighting Assembly)

A lighting assembly consisting of a luminaire intended for installation in the wall of a spa, hot tub, or storable pool, and a cord-and-plug-connected transformer or power supply. (680) (CMP-17)

Lighting Assembly, Through-Wall. (Through-Wall Lighting Assembly)

A lighting assembly intended for installation above grade, on or through the wall of a pool, consisting of two interconnected groups of components separated by the pool wall. (680) (CMP-17)

Lighting Outlet.

An outlet intended for the direct connection of a lampholder or luminaire. (CMP-18)

Lighting Track. (Track Lighting)

A manufactured assembly designed to support and energize luminaires that are capable of being readily repositioned on the track. Its length can be altered by the addition or subtraction of sections of track. (CMP-18)

Limited Care Facility.

A building or portion of a building used on a 24-hour basis for the housing of four or more persons who are incapable of self-preservation because of age; physical limitation due to accident or illness; or limitations such as intellectual disability/developmental disability, mental illness, or chemical dependency. [***101:*** 3.3.93.2] (CMP-15)

Limited-Energy System.

The equipment and cables of an end-to-end system that are power-restricted to ensure the energy delivered into any fault provides acceptable protection for fire prevention and electric shock. (CMP-3)

Limited Finishing Workstation.

A power-ventilated apparatus that is capable of confining the vapors, mists, residues, dusts, or deposits that are generated by a limited spray application process. Such apparatus is not a spray booth or spray room, as herein defined. [**33:** 3.3.23.1] (CMP-14)

> Informational Note: See NFPA 33-2024, *Standard for Spray Application Using Flammable or Combustible Materials* , Section 14.3 for information on limited finishing workstations.

Line Isolation Monitor.

A test instrument designed to continually check the balanced and unbalanced impedance from each line of an isolated circuit to ground and equipped with a built-in test circuit to exercise the alarm without adding to the leakage current hazard. [**99:** 3.3.99] (517) (CMP-15)

Liquid Immersion “o”.

Type of protection where electrical equipment is immersed in a protective liquid so that an explosive atmosphere that might be above the liquid or outside the enclosure cannot be ignited. (CMP-14)

> Informational Note: See ANSI/UL 60079-6, *Explosive Atmospheres — Part 6: Equipment Protection by Liquid Immersion “o”* , for additional information.

Listed.

Equipment, materials, or services included in a list published by an organization that is acceptable to the authority having jurisdiction and concerned with evaluation of products or services, that maintains periodic inspection of production of listed equipment or materials or periodic evaluation of services, and whose listing states that either the equipment, material, or service meets appropriate designated standards or has been tested and found suitable for a specified purpose. (CMP-1)

> Informational Note: The means for identifying listed equipment may vary for each organization concerned with product evaluation, some of which do not recognize equipment as listed unless it is also labeled. Use of the system employed by the listing organization allows the authority having jurisdiction to identify a listed product.

Live Parts.

Energized conductive components. (CMP-1)

Load Management.

The process within an energy management system that limits the total electrical load on an electrical supply system to a set value by adjusting or controlling the individual loads. (CMP-13)

Location, Anesthetizing. (Anesthetizing Location)

Any space within a facility that has been designated for the administration of any flammable or nonflammable inhalation anesthetic agent during examination or treatment, including the use of such agents for relative analgesia. (517) (CMP-15)

Location, Anesthetizing, Flammable. (Flammable Anesthetizing Location)

Any area of the facility that has been designated to be used for the administration of any flammable inhalation anesthetic agents in the normal course of examination or treatment. (517) (CMP-15)

Location, Damp. (Damp Location)

Locations protected from weather and not subject to saturation with water or other liquids but subject to moderate degrees of moisture. (CMP-1)

> Informational Note: Examples of such locations include partially protected locations under canopies, marquees, roofed open porches, and like locations, and interior locations subject to moderate degrees of moisture, such as some basements, some barns, and some cold-storage warehouses.

Location, Dry. (Dry Location)

A location not normally subject to dampness or wetness. A location classified as dry may be temporarily subject to dampness or wetness, as in the case of a building under construction. (CMP-1)

Location, Remote. (Remote Location)

A location, other than a motion picture or television studio, where a production is filmed or recorded. (530) (CMP-15)

Location, Wet. (Wet Location)

A location that is one or more of the following:

(1) Unprotected and exposed to weather

(2) Subject to saturation with water or other liquids

(3) Underground

(4) In concrete slabs or masonry in direct contact with the earth

(CMP-1)

> Informational Note: A vehicle washing area is an example of a wet location saturated with water or other liquids.

Location, Wet Procedure. (Wet Procedure Location)

The area in a patient care space where a procedure is performed that is normally subject to wet conditions while patients are present, including standing fluids on the floor or drenching of the work area, either of which condition is intimate to the patient or staff. [**99:** 3.3.187] (517) (CMP-15)

> Informational Note: Routine housekeeping procedures and incidental spillage of liquids do not define a wet procedure location. [**99:** A.3.3.187]

Locations, Hazardous (Classified). [Hazardous (Classified) Locations]

Locations where fire or explosion hazards might exist due to flammable gases, flammable liquid–produced vapors, combustible liquid–produced vapors, combustible dusts, combustible fiber/flyings, or ignitible fibers/flyings. (CMP-14)

Locations, Unclassified. (Unclassified Locations)

Locations determined to be neither Class I, Division 1; Class I, Division 2; Zone 0; Zone 1; Zone 2; Class II, Division 1; Class II, Division 2; Class III, Division 1; Class III, Division 2; Zone 20; Zone 21; Zone 22; nor any combination thereof. (CMP-14)

Long-Time Rating .

A rating based on an operating interval of 5 minutes or longer. (CMP-15)

Loudspeaker (Speaker).

Equipment that converts an ac electric signal into an acoustic signal. (640) (CMP-12)

Low-Voltage Contact Limit.

A voltage not exceeding the following values:

(1) 15 volts (RMS) for sinusoidal ac

(2) 21.2 volts peak for nonsinusoidal ac

(3) 30 volts for continuous dc

(4) 12.4 volts peak for dc that is interrupted at a rate of 10 to 200 Hz

(CMP-17)

Low-Voltage Suspended Ceiling Power Distribution System.

A system that serves as a support for a finished ceiling surface and consists of a busbar and busbar support system to distribute power to utilization equipment supplied by a Class 2 power supply. (393) (CMP-18)

Luminaire.

Utilization equipment intended to illuminate a space or object(s), to facilitate visual tasks, activities, aesthetics, or security, or a similar purpose. Light-emitting devices such as lamps or LED modules could be removable or replaceable. The equipment can connect directly to the branch circuit (ac or dc) or be used with a separate power source that regulates the voltage, current, or both from the branch circuit. A lampholder itself is not a luminaire. (CMP-18)

Luminaire, Directly Controlled (DCL).

A luminaire containing a control input for a dimming or switching function. (700) (CMP-13)

Luminaire, Dry-Niche. (Dry-Niche Luminaire)

A luminaire intended for installation in the floor or wall of a pool, spa, or fountain in a niche that is sealed against the entry of water. (680) (CMP-17)

Luminaire, No-Niche. (No-Niche Luminaire)

A luminaire intended for installation above or below the water without a niche. (680) (CMP-17)

Luminaire, Wet-Niche. (Wet-Niche Luminaire)

A luminaire intended for installation in a forming shell mounted in a pool or fountain structure where the luminaire will be completely surrounded by water. (680) (CMP-17)

Machine Room.

An enclosed machinery space outside the hoistway, intended for full bodily entry, that contains the electrical driving machine or the hydraulic machine. The room could also contain electrical and/or mechanical equipment used directly in connection with the elevator or dumbwaiter. (620) (CMP-12)

Machine Room and Control Room, Remote. (Remote Machine Room and Control Room)

A machine room or control room that is not attached to the outside perimeter or surface of the walls, ceiling, or floor of the hoistway. (620) (CMP-12)

Machinery, Industrial (Industrial Machine). (Industrial Machinery)

A power-driven machine (or a group of machines working together in a coordinated manner), not portable by hand while working, that is used to process material by cutting; forming; pressure; electrical, thermal, or optical techniques; lamination; or a combination of these processes. It can include associated equipment used to transfer material or tooling, including fixtures, to assemble/disassemble, to inspect or test, or to package. The associated electrical equipment, including the logic controller(s) and associated software or logic together with the machine actuators and sensors, are considered as part of the industrial machine. (CMP-12)

Machinery Space.

A space inside or outside the hoistway, intended to be accessed with or without full bodily entry, that contains the elevator, dumbwaiter, platform lift, or stairway chairlift equipment and could also contain equipment used directly in connection with the elevator, dumbwaiter, platform lift, or stairway chairlift. (620) (CMP-12)

Machinery Space and Control Space, Remote. (Remote Machinery Space and Control Space)

A machinery space or control space that is not within the hoistway, machine room, or control room and that is not attached to the outside perimeter or surface of the walls, ceiling, or floor of the hoistway. (620) (CMP-12)

Manufactured Home.

A structure, transportable in one or more sections, which in the traveling mode is 2.4 m (8 ft) or more in width or 12.2 m (40 ft) or more in length, or when erected on site is 29.77 m^2 (320 ft^2) or more is built on a permanent chassis and is designed to be used as a dwelling with or without a permanent foundation, whether or not connected to the utilities, and includes plumbing, heating, air conditioning, and electrical systems contained therein. The term includes any structure that meets all the requirements of this paragraph except the size requirements and with respect to which the manufacturer voluntarily files a certification required by the regulatory agency. Calculations used to determine the number of square meters (square feet) in a structure are based on the structure's exterior dimensions and include all expandable rooms, cabinets, and other projections containing interior space, but do not include bay windows. [**501:** 1.2.12] (CMP-7)

Informational Note No. 1: Unless otherwise indicated, the term *mobile home* includes manufactured home and excludes park trailers.

Informational Note No. 2: See the applicable building code for definition of the term *permanent foundation* .

Informational Note No. 3: See 24 CFR Part 3280, *Manufactured Home Construction and Safety Standards, of the Federal Department of Housing and Urban Development* , for additional information on the definition.

Manufactured Wiring System.

A system containing component parts that are assembled in the process of manufacture and cannot be inspected at the building site without damage or destruction to the assembly and used for the connection of luminaires, utilization equipment, continuous plug-in type busways, and other devices. (604) (CMP-7)

Marina.

A facility, generally on the waterfront, that stores and services boats in berths, on moorings, and in dry storage or dry stack storage. [**303:** 3.3.13] (555) (CMP-7)

Maximum Output Power.

The maximum power delivered by an amplifier into its rated load as determined under specified test conditions. (640) (CMP-12)

Informational Note: The maximum output power can exceed the manufacturer’s rated output power for the same amplifier.

Maximum Output Power (as applied to wind electric systems).

The maximum 1-minute average power output a wind turbine produces in normal steady-state operation (instantaneous power output can be higher). (694) (CMP-4)

Maximum Voltage.

The greatest difference in potential produced between any two conductors of a wind turbine circuit. (694) (CMP-4)

Maximum Water Level.

The highest level that water can reach before it spills out. (680) (CMP-17)

Medical Office.

A building or part thereof in which the following occur:

(1) Examinations and minor treatments/procedures performed under the continuous supervision of a medical professional;

(2) The use of limited to minimal sedation and treatment or procedures that do not render the patient incapable of self-preservation under emergency conditions; and

(3) No overnight stays for patients or 24-hour operations.

[**99:** 3.3.110] (CMP-15)

Membrane Enclosure.

A temporary enclosure used for the spraying of workpieces that cannot be moved into a spray booth where open spraying is not practical due to proximity to other operations, finish quality, or concerns such as the collection of overspray. (CMP-14)

Informational Note: See NFPA 33-2024, *Standard for Spray Application Using Flammable or Combustible Materials* , Chapter 18 for information on the construction and use of membrane enclosures.

Messenger-Supported Wiring.

An exposed wiring support system using a messenger wire to support insulated conductors by any one of the following:

(1) A messenger with rings and saddles for conductor support

(2) A messenger with a field-installed lashing material for conductor support

(3) Factory-assembled aerial cable

(4) Multiplex cables utilizing a bare conductor, factory assembled and twisted with one or more insulated conductors, such as duplex, triplex, or quadruplex type of construction

(CMP-6)

Messenger Wire (Messenger).

A wire that is run along with or integral with a cable or conductor to provide mechanical support for the cable or conductor. (CMP-6)

Metal Shield Connections.

Means of connection for flat conductor cables (Type FCC) designed to electrically and mechanically connect a metal shield to another metal shield, to a receptacle housing or self-contained device, or to a transition assembly. (324) (CMP-6)

Metering Centers (Meter Center).

Panelboards in enclosures also containing one or more meter sockets. (CMP-10)

Microgrid.

An electric power system containing interconnected power production sources and capable of acting as a primary source independent of an electric utility. (CMP-4)

Informational Note: Examples of power sources in microgrids include photovoltaic systems, generators, fuel cell systems, wind electric systems, energy storage systems, electric vehicles used as a source of supply, and electrical power conversion from other energy sources.

Microgrid, Health Care (Health Care Microgrid System). (Health Care Microgrid)

A group of interconnected loads and distributed energy resources within clearly defined boundaries that acts as a single controllable entity with respect to the utility. [**99:** 3.3.75] (517) (CMP-15)

Microgrid Control System (MCS).

A structured control system that manages microgrid operations, functionalities for utility interoperability, islanded operations, and transitions. (CMP-4)

Informational Note: MCS differ from multiple standby generators or uninterruptible power supplies that are evaluated and rated to operate as a single source of backup power upon loss of the primary power source. MCS functions include coordination, transitions, and interoperability between multiple power sources.

Microgrid Interconnect Device (MID).

A device that enables a microgrid system to separate from and reconnect to an interconnected primary power source. (CMP-4)

Mixer.

Equipment used to combine and level match a multiplicity of electronic signals, such as from microphones, electronic instruments, and recorded audio. (640) (CMP-12)

Mobile.

X-ray equipment mounted on a permanent base with wheels and/or casters for moving while completely assembled. (660) (CMP-12)

Mobile Home.

A factory-assembled structure or structures transportable in one or more sections that are built on a permanent chassis and designed to be used as a dwelling without a permanent foundation where connected to the required utilities and that include the plumbing, heating, air-conditioning, and electrical systems contained therein. (CMP-7)

Informational Note: Unless otherwise indicated, the term *mobile home* includes manufactured home and excludes park trailers.

Mobile Home Lot.

A designated portion of a mobile home park designed for the accommodation of one mobile home and its accessory buildings or structures for the exclusive use of its occupants. (550) (CMP-7)

Mobile Home Park.

A contiguous parcel of land that is used for the accommodation of mobile homes that are intended to be occupied. (550) (CMP-7)

Module, AC. (AC Module)

A complete, environmentally protected unit consisting of solar cells, inverter, and other components, designed to produce ac power. (690) (CMP-4)

Module System, AC. (AC Module System)

An assembly of ac modules, wiring methods, materials, and subassemblies that are evaluated, identified, and defined as a system. (690) (CMP-4)

Momentary Rating .

A rating based on an operating interval that does not exceed 5 seconds. (CMP-15)

Monitor.

An electrical or electronic means to observe, record, or detect the operation or condition of the electric power system or apparatus. (130) (CMP-13)

Monopole Circuit.

An electrical subset of a PV system that has two conductors in the output circuit, one positive (+) and one negative (−). (690) (CMP-4)

Monorail.

Overhead track and hoist system for moving material around the boatyard or moving and launching boats. [**303:** 3.3.16] (555) (CMP-7)

Mooring(s).

Any place where a boat is wet stored or berthed. [**303:** 3.3.17] (555) (CMP-7)

Motion Picture Studio (Television Studio).

A building, group of buildings, other structures, and outdoor areas designed, constructed, permanently altered, designated, or approved for the purpose of motion picture or television production. (530) (CMP-15)

Motion Picture Sound Stage.

A building or portion of a building, usually insulated from outside noise and natural light, designed, constructed, or altered for the purpose of image capture. (CMP-15)

Motor Control Center.

An assembly of one or more enclosed sections having a common power bus and principally containing motor control units. (CMP-11)

Motor Fuel Dispensing Facility.

That portion of a property where motor fuels are stored and dispensed from fixed equipment into the fuel tanks of motor vehicles or marine craft or into approved containers, including all equipment used in connection therewith. [**30A:** 3.3.11] (CMP-14)

> Informational Note: See 511.1 with respect to electrical wiring and equipment for other areas used as lubritoriums, service rooms, repair rooms, offices, salesrooms, compressor rooms, and similar locations.

Multi-Circuit Cable Outlet Enclosure.

An enclosure containing one or more multi-circuit plugs, receptacles, or both. (520) (CMP-15)

Multioutlet Assembly.

A surface, flush, or freestanding assemblage with a raceway and fittings or other enclosure provided with one or more receptacles, for the purpose of supplying power to utilization equipment. (CMP-18)

Nacelle.

An enclosure housing the alternator and other parts of a wind turbine. (694) (CMP-4)

Neon Tubing.

Electric-discharge luminous tubing, including cold cathode luminous tubing, that is manufactured into shapes to illuminate signs, form letters, parts of letters, skeleton tubing, outline lighting, other decorative elements, or art forms and filled with various inert gases. (600) (CMP-18)

Network Interface Unit (NIU).

A device that converts a broadband signal into component voice, audio, video, data, and interactive services signals and provides isolation between the network power and the premises signal circuits. These devices often contain primary and secondary protectors. (CMP-16)

Network Terminal.

A device that converts network-provided signals (optical, electrical, or wireless) into component signals, including voice, audio, video, data, wireless, optical, and interactive services, and is considered a network device on the premises that is connected to a communications service provider and is powered at the premises. (CMP-16)

Neutral Conductor.

The conductor connected to the neutral point of a system that is intended to carry current under normal conditions. (CMP-5)

Neutral Point.

The common point on a wye-connection in a polyphase system or midpoint on a single-phase, 3-wire system, or midpoint of a single-phase portion of a 3-phase delta system, or a midpoint of a 3-wire, direct-current system. (CMP-5)

Informational Note: At the neutral point of the system, the vectorial sum of the nominal voltages from all other phases within the system that utilize the neutral, with respect to the neutral point, is zero potential.

Nonautomatic.

Requiring human intervention to perform a function. (CMP-1)

Nonincendive Circuit.

A circuit, other than field wiring, in which any arc or thermal effect produced under intended operating conditions of the equipment, is not capable, under specified test conditions, of igniting the flammable gas–air, vapor–air, or dust–air mixture. (CMP-14)

Informational Note: See ANSI/UL 121201, *Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations* , for additional information.

Nonincendive Component.

A component having contacts for making or breaking an incendive circuit and the contacting mechanism is constructed so that the component is incapable of igniting the specified flammable gas–air or vapor–air mixture. The housing of such a component is not intended to exclude the flammable atmosphere or contain an explosion. (CMP-14)

Informational Note: See ANSI/UL 121201, *Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations* , for additional information.

Nonincendive Equipment.

Equipment having electrical/electronic circuitry that is incapable, under normal operating conditions, of causing ignition of a specified flammable gas–air, vapor–air, or dust–air mixture due to arcing or thermal means. (CMP-14)

Informational Note: See ANSI/UL 121201, *Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations* , for additional information.

Nonincendive Field Wiring.

Wiring that enters or leaves an equipment enclosure and, under normal operating conditions of the equipment, is not capable, due to arcing or thermal effects, of igniting the flammable gas–air, vapor–air, or dust–air mixture. Normal operation includes opening, shorting, or grounding the field wiring. (CMP-14)

Informational Note: See ANSI/UL 121201, *Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations* , for additional information.

Nonincendive Field Wiring Apparatus.

Apparatus intended to be connected to nonincendive field wiring. (CMP-14)

Informational Note: See ANSI/UL 121201, *Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations* , for additional information.

Nonlinear Load.

A load where the wave shape of the steady-state current does not follow the wave shape of the applied voltage. (CMP-1)

Informational Note: Electronic equipment, electronic/electric-discharge lighting, adjustable-speed drive systems, and similar equipment may be nonlinear loads.

Nonmetallic Extension.

An assembly of two insulated conductors within a nonmetallic jacket or an extruded thermoplastic covering. The classification includes surface extensions intended for mounting directly on the surface of walls or ceilings. (CMP-6)

Nonsparking.

Constructed to minimize the risk of arcs or sparks capable of creating an ignition hazard during conditions of normal operation. (CMP-14)

Informational Note No. 1: The term nonsparking is also referred to as nonarcing.

Informational Note No. 2: See ANSI/UL 121201, *Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations* , for additional information.

Normal/Emergency Power Source.

A power source on the output side of a transfer switch or uninterruptible power supply that is automatically available upon loss of normal power. (700) (CMP-13).

Normal High-Water Level (as applies to electrical datum plane distances).

Natural or Artificially Made Shorelines: An elevation delineating the highest water level that has been maintained for a sufficient period of time to leave evidence upon the landscape, commonly the point where the natural vegetation changes from predominantly aquatic to predominantly terrestrial.

Rivers and Streams: The elevation of the top of the bank of the channel. Streams, rivers, and tributaries that are prone to flooding and effects of water runoff shall consider the “bankfull stage” where an established gauge height at a given location along a river or stream, above which a rise in water surface will cause the river or stream to overflow the lowest natural stream bank somewhere in the corresponding reach.

Flood Control Bodies of Water: The flood pool maximum water surface elevation of a reservoir, equal to the elevation of the spillway.

Nonflood Control Bodies of Water: The flowage easement boundary in which the highest water surface elevation defined by the area existing between governmental-owned property line(s) and a contour line with perpetual rights to flood the area in connection with the operation of the reservoir. (CMP-7)

Nurses’ Station.

A space intended to provide a center of nursing activity for a group of nurses serving bed patients, where patient calls are received, nurses dispatched, nurses’ notes written, inpatient charts prepared, and medications prepared for distribution to patients. Where such activities are carried on in more than one location within a nursing unit, all such separate spaces are considered a to be parts of the nurses’ station. (517) (CMP-15)

Nursing Home.

A building or portion of a building used on a 24-hour basis for the housing and nursing care of four or more persons who, because of mental or physical incapacity, might be unable to provide for their own needs and safety without the assistance of another person. [***101*** **:** 3.3.150.2] (CMP-15)

Office Furnishing.

Cubicle panels, partitions, study carrels, workstations, desks, shelving systems, and storage units that may be mechanically and electrically interconnected to form an office furnishing system. (CMP-18)

Oil Immersion.

Electrical equipment immersed in a protective liquid so that an explosive atmosphere that might be above the liquid or outside the enclosure cannot be ignited. (CMP-14)

Informational Note: See ANSI/UL 121201, *Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations* , for additional information.

Open Wiring on Insulators.

An exposed wiring method using cleats, knobs, tubes, and flexible tubing for the protection and support of single insulated conductors run in or on buildings. (CMP-6)

Operating Device.

The car switch, pushbuttons, key or toggle switch(s), or other devices used to activate the operation controller. (620) (CMP-12)

Operator.

The individual responsible for starting, stopping, and controlling an amusement ride or supervising a concession. (525) (CMP-15)

Optical Radiation.

Electromagnetic radiation at wavelengths in vacuum between the region of transition to X-rays and the region of transition to radio waves that is approximately between 1 nm and 1000 µm. (CMP-14)

> Informational Note: See ANSI/UL 60079-28, *Explosive Atmospheres — Part 28: Protection of Equipment and Transmission Systems Using Optical Radiation* , for information on types of protection that can be applied to minimize the risk of ignition in explosive atmospheres from optical radiation in the wavelength range from 380 nm to 10 µm.

Optical Radiation, Inherently Safe "op is". (Inherently Safe Optical Radiation "op is")

Type of protection to minimize the risk of ignition in explosive atmospheres from optical radiation where visible or infrared radiation is incapable of producing sufficient energy under normal or specified fault conditions to ignite a specific explosive atmosphere. (CMP-14)

> Informational Note: See ANSI/UL 60079-28, *Explosive Atmospheres — Part 28: Protection of Equipment and Transmission Systems Using Optical Radiation* , for additional information.

Optical Radiation, Protected "op pr". (Protected Optical Radiation "op pr")

Type of protection to minimize the risk of ignition in explosive atmospheres from optical radiation where visible or infrared radiation is confined inside optical fiber or other transmission medium under normal constructions or constructions with additional mechanical protection based on the assumption that there is no escape of radiation from the confinement. (CMP-14)

> Informational Note: See ANSI/UL 60079-28, *Explosive Atmospheres — Part 28: Protection of Equipment and Transmission Systems Using Optical Radiation* , for additional information.

Optical System With Interlock "op sh".

Type of protection to minimize the risk of ignition in explosive atmospheres from optical radiation where visible or infrared radiation is confined inside optical fiber or other transmission medium with interlock cutoff provided to reliably reduce the unconfined beam strength to safe levels within a specified time in case the confinement fails and the radiation becomes unconfined. (CMP-14)

> Informational Note: See ANSI/UL 60079-28, *Explosive Atmospheres — Part 28: Protection of Equipment and Transmission Systems Using Optical Radiation* , for additional information.

Optional Standby Systems.

Those systems intended to supply power to public or private facilities or property where life safety does not depend on the performance of the system. These systems are intended to supply on-site generated or stored power to selected loads either automatically or manually. (CMP-13)

Organ, Electronic. (Electronic Organ)

A musical instrument that imitates the sound of a pipe organ by producing sound electronically. (CMP-12)

> Informational Note: Most new electronic organs produce sound digitally and are called digital organs.

Organ, Pipe. (Pipe Organ)

A musical instrument that produces sound by driving pressurized air (called *wind*) through pipes selected via a keyboard. (CMP-12)

Organ, Pipe Sounding Apparatus. (Pipe Organ Sounding Apparatus) (Pipe Organ Chamber).

The sound-producing part of a pipe organ, including, but not limited to, pipes, chimes, bells, the pressurized air- (wind-) producing equipment (blower), associated controls, and power equipment. (CMP-12)

Outlet.

A point on the wiring system at which current is taken to supply utilization equipment. (CMP-1)

Outlet Box Hood.

A housing shield intended to fit over a faceplate for flush-mounted wiring devices, or an integral component of an outlet box or of a faceplate for flush-mounted wiring devices. The hood does not serve to complete the electrical enclosure; it reduces the risk of water coming in contact with electrical components within the hood, such as attachment plugs, current taps, surge protective devices, direct plug-in transformer units, or wiring devices. (CMP-18)

Outline Lighting.

An arrangement of incandescent lamps, electric-discharge lighting, or other electrically powered light sources to outline or call attention to certain features such as the shape of a building or the decoration of a window. (CMP-18)

Output Cable to the Electric Vehicle.

An assembly consisting of a length of flexible EV cable and an electric vehicle connector (supplying power to the electric vehicle). (625) (CMP-12)

Output Cable to the Primary Pad.

A multiconductor, shielded cable assembly consisting of conductors to carry the high-frequency energy and any status signals between the charger power converter and the primary pad. (625) (CMP-12)

Overcurrent.

Any current in excess of the rated current of equipment or the ampacity of a conductor. It may result from overload, short circuit, or ground fault. (CMP-10)

> Informational Note: A current in excess of rating may be accommodated by certain equipment and conductors for a given set of conditions. Therefore, the rules for overcurrent protection are specific for particular situations.

Overcurrent Protective Device, Branch-Circuit. (Branch-Circuit Overcurrent Protective Device)

A device capable of providing protection for service, feeder, and branch circuits and equipment over the full range of overcurrents between its rated current and its interrupting rating. (CMP-10)

Overcurrent Protective Device, Supplementary. (Supplementary Overcurrent Protective Device)

A device intended to provide limited overcurrent protection for specific applications and utilization equipment such as luminaires and appliances. This limited protection is in addition to the protection provided in the required branch circuit by the branch-circuit overcurrent protective device. (CMP-10)

Overhead Gantry.

A structure consisting of horizontal framework, supported by vertical columns spanning above electrified truck parking spaces, that supports equipment, appliances, raceway, and other necessary components for the purpose of supplying electrical, HVAC, internet, communications, and other services to the spaces. (626) (CMP-12)

Overload.

Operation of equipment in excess of normal, full-load rating, or of a conductor in excess of its ampacity that, when it persists for a sufficient length of time, would cause damage or dangerous overheating. A fault, such as a short circuit or ground fault, is not an overload. (CMP-10)

Packaged Therapeutic Tub or Hydrotherapeutic Tank Equipment Assembly.

A factory-fabricated unit consisting of water-circulating, heating, and control equipment mounted on a common base, intended to operate a therapeutic tub or hydrotherapeutic tank. Equipment can include pumps, air blowers, heaters, lights, controls, sanitizer generators, and so forth. (680) (CMP-17)

Panelboard.

A single panel or group of panel units designed for assembly in the form of a single panel, including buses and automatic overcurrent devices, and equipped with or without switches for the control of light, heat, or power circuits; designed to be placed in a cabinet, enclosure, or cutout box placed in or against a wall, partition, or other support; and accessible only from the front. (CMP-10)

Panelboard, Installed. (Installed Panelboard)

An assembly where a panelboard is installed in a cabinet, cutout box, or enclosure approved for the application. (CMP-1)

Park Electrical Wiring Systems.

All of the electrical wiring, luminaires, equipment, and appurtenances related to electrical installations within a mobile home park, including the mobile home service equipment. (550) (CMP-7)

Park Trailer.

A unit that is built on a single chassis mounted on wheels and has a gross trailer area not exceeding 37 m^2 (400 ft^2) in the set-up mode. (552) (CMP-7)

Part-Winding Motors.

A part-winding start induction or synchronous motor is one that is arranged for starting by first energizing part of its primary (armature) winding and, subsequently, energizing the remainder of this winding in one or more steps. A standard part-winding start induction motor is arranged so that one-half of its primary winding can be energized initially, and, subsequently, the remaining half can be energized, both halves then carrying equal current. (CMP 11)

> Informational Note: A hermetic refrigerant motor-compressor is not considered a standard part-winding start induction motor.

Passenger Transportation Facilities.

Any area open to the public associated with passenger transportation such as an airport, bus terminal, highway rest stop and service area, marina, seaport, ferry slip, subway station, train station, or port of entry. (CMP-18)

Patient Bed Location.

The location of a patient sleeping bed, or the bed or procedure table of a Category 1 space. [**99:** 3.3.138] (CMP-15)

Patient Care–Related Electrical Equipment.

Electrical equipment appliance that is intended to be used for diagnostic, therapeutic, or monitoring purposes in a patient care vicinity. [**99:** 3.3.139] (517) (CMP-15)

Patient Care Space Category.

Any space of a health care facility wherein patients are intended to be examined or treated. [**99:** 3.3.145] (517) (CMP-15)

Informational Note No. 1: The health care facility's governing body designates patient care space in accordance with the type of patient care anticipated.

Informational Note No. 2: Business offices, corridors, lounges, day rooms, dining rooms, or similar areas typically are not classified as patient care spaces. [**99:** A.3.3.145]

Category 1 Space (Category 1).

Space in which failure of equipment or a system is likely to cause major injury or death of patients, staff, or visitors. [**99:** 3.3.140.1] (CMP-15)

Informational Note: These spaces, formerly known as critical care rooms, are typically where patients are intended to be subjected to invasive procedures and connected to line-operated, patient care–related appliances. Examples include, but are not limited to, special care patient rooms used for critical care, intensive care, and special care treatment rooms such as angiography laboratories, cardiac catheterization laboratories, delivery rooms, operating rooms, post-anesthesia care units, trauma rooms, and other similar rooms. [**99:** A.3.3.140.1]

Category 2 Space (Category 2).

Space in which failure of equipment or a system is likely to cause minor injury to patients, staff, or visitors. [**99:** 3.3.140.2] (CMP-15)

Informational Note: These spaces were formerly known as general care rooms. Examples include, but are not limited to, inpatient bedrooms, dialysis rooms, in vitro fertilization rooms, procedural rooms, and similar rooms. [**99:** A.3.3.140.2]

Category 3 Space (Category 3).

Space in which the failure of equipment or a system is not likely to cause injury to patients, staff, or visitors but can cause discomfort. [**99:** 3.3.140.3] (517) (CMP-15)

Informational Note: These spaces, formerly known as basic care rooms, are typically where basic medical or dental care, treatment, or examinations are performed. Examples include, but are not limited to, examination or treatment rooms in clinics, medical and dental offices, nursing homes, and limited care facilities. [**99:** A.3.3.140.3]

Category 4 Space (Category 4).

Space in which failure of equipment or a system is not likely to have a physical impact on patient care. [**99:** 3.3.140.4] (517) (CMP-15)

Informational Note: These spaces were formerly known as support rooms. Examples of support spaces include, but are not limited to, anesthesia work rooms, sterile supply, laboratories, morgues, waiting rooms, utility rooms, and lounges. [**99:** A.3.3.140.4]

Patient Care Vicinity.

A space, within a location intended for the examination and treatment of patients, extending 1.8 m (6 ft) beyond the normal location of the bed, chair, table, treadmill, or other device that supports the patient during examination and treatment and extending vertically to 2.3 m (7 ft 6 in.) above the floor. [**99:** 3.3.141] (517) (CMP-15)

Patient Equipment Grounding Point.

A jack or terminal that serves as the collection point for redundant grounding of electric appliances serving a patient care vicinity or for grounding other items in order to eliminate electromagnetic interference problems. [**99:** 3.3.142] (517) (CMP-15)

Performance Area.

The stage and audience seating area associated with a temporary stage structure, whether indoors or outdoors, constructed of scaffolding, truss, platforms, or similar devices, that is used for the presentation of theatrical or musical productions or for public presentations. (520) (CMP-15)

Permanent Amusement Attraction.

A ride device, entertainment device, or a combination of both that is installed such that portability or relocation is impracticable. (522) (CMP-15)

Permanently Installed Decorative Fountains and Reflection Pools.

Those that are constructed in the ground, on the ground, or in a building in such a manner that the fountain cannot be readily disassembled for storage, whether or not served by electrical circuits of any nature. These units are primarily constructed for their aesthetic value and are not intended for swimming or wading. (680) (CMP-17)

Personnel Protection System (as applied to EVSE).

A system of personnel protection devices and constructional features that when used together provide protection against electric shock of personnel. (625) (CMP-12)

Phase, Manufactured. (Manufactured Phase)

The phase that originates at the phase converter and is not solidly connected to either of the single-phase input conductors. (CMP-13)

Phase Converter.

An electrical device that converts single-phase power to 3-phase electric power. (CMP-13)

> Informational Note: Phase converters have characteristics that modify the starting torque and locked-rotor current of motors served, and consideration is required in selecting a phase converter for a specific load.

Phase Converter, Rotary. (Rotary-Phase Converter)

A device that consists of a rotary transformer and capacitor panel(s) that permits the operation of 3-phase loads from a single-phase supply. (455) (CMP-13)

Phase Converter, Static. (Static-Phase Converter)

A device without rotating parts, sized for a given 3-phase load to permit operation from a single-phase supply. (455) (CMP-13)

Photovoltaic Cell (PV). (Solar Cell).

The basic photovoltaic device that generates dc electricity when exposed to light. (CMP-4)

Pier.

A structure extending over the water and supported on a fixed foundation (fixed pier), or on flotation (floating pier), that provides access to the water. [**303:** 3.3.18] (CMP-7)

Pier, Fixed. (Fixed Pier)

Pier constructed on a permanent, fixed foundation, such as on piles, that permanently establishes the elevation of the structure deck with respect to land. [**303:** 3.3.18.2] (CMP-7)

Pier, Floating. (Floating Pier)

Pier designed with inherent flotation capability that allows the structure to float on the water surface and rise and fall with water level changes. [**303:** 3.3.18.3] (CMP-7)

Pinout Configuration.

The assignment of electrical functions to connector pins in a multicircuit connector. (CMP-15)

Pipeline.

A length of pipe including pumps, valves, flanges, control devices, strainers, and/or similar equipment for conveying fluids. (CMP-17)

Plenum.

A compartment or chamber to which one or more air ducts are connected and that forms part of the air distribution system. (CMP-3)

Plenum Cable, Cable Routing Assemblies, and Raceways.

Cables, cable routing assemblies, and raceways that have adequate fire-resistant and low smoke-producing characteristics and are suitable for use in ducts, plenums, and other spaces used for environmental air. (722) (CMP-3)

Point of Entrance.

The point within a building at which a wire or cable emerges from an external wall, the roof, or the floor. (CMP-16)

Pool.

Manufactured or field-constructed equipment designed to contain water and intended for use by persons for swimming, wading, immersion, recreational, or therapeutic purposes, but not including bodies of water incorporated as part of an industrial process, lakes, lagoons, surf parks, or other natural and artificially made bodies of water that could incorporate swimming and swimming areas. (680) (CMP-17)

> Informational Note: Natural and man-made bodies of water, which includes lakes, lagoons, surf parks, or other similar bodies of water, are addressed in Article 682 .

Pool, Immersion. (Immersion Pool)

A pool for ceremonial or ritual immersion of users, which is designed and intended to have its contents drained or discharged. (680) (CMP-17)

Pool, Permanently Installed Swimming, Wading, Immersion, and Therapeutic. (Permanently Installed Swimming, Wading, Immersion, and Therapeutic Pools)

Those that are permanently constructed or installed in the ground, partially in the ground, above ground, inside of a building, or on a building, whether or not served by electrical circuits. (680) (CMP-17)

Pool, Storable (Storable Immersion Pool). (Storable Pool)

Pools of any water depth, used for swimming, wading, or immersion, installed entirely on or above the ground that are intended to be stored when not in use or are designed for ease of relocation. (680) (CMP-17)

> Informational Note: A storable pool that is installed with a permanent deck around all or a portion of its perimeter is considered a permanently installed pool.

Pool Cover, Electrically Operated. (Electrically Operated Pool Cover)

Motor-driven equipment designed to cover and uncover the water surface of a pool by means of a flexible sheet or rigid frame. (680) (CMP-17)

Pool Lift, Electrically Powered. (Electrically Powered Pool Lift)

An electrically powered lift that provides accessibility for people with disabilities to and from a pool or spa. (680) (CMP-17)

Portable.

A device intended for indoor or outdoor use that is designed to be hand-carried from location to location, or easily transported without the use of other devices or equipment. (625) (CMP-12)

Portable.

X-ray equipment designed to be hand-carried. (660) (CMP-12)

Portable (as applied to equipment).

Equipment that is actually moved or can easily be moved from one place to another in normal use. (680) (CMP-17)

Portable Handlamp.

A cord- and plug-connected luminaire with a handle, and a hook for temporary mounting and hands-free operation. (CMP-18)

Portable Power Distribution Unit.

A power distribution box containing receptacles and overcurrent devices. (520) (CMP-15)

Informational Note: See ANSI/UL 1640, *Portable Power-Distribution Equipment* , for information on portable power distribution units.

Portable Structures.

Units designed to be moved including, but not limited to, amusement rides, attractions, concessions, tents, trailers, trucks, and similar units. (525) (CMP-15)

Portable Substation.

A portable assembly, usually mounted on a trailer, containing primary and secondary switchgear and a transformer. (530) (CMP-15)

Powder Filling "q".

Type of protection where electrical parts capable of igniting an explosive atmosphere are fixed in position and completely surrounded by filling material (glass or quartz powder) to prevent the ignition of an external explosive atmosphere. (CMP-14)

Informational Note: See ANSI/UL 60079-5, *Explosive Atmospheres — Part 5: Equipment protection by powder filling "q"* , for additional information.

Power Control System (PCS).

Equipment that monitors and controls power within an electrical system to prevent overload of an electrical service, feeder, conductor, or other power distribution equipment. (CMP-13)

Informational Note: A power control system may control generation, energy storage, loads, circuit controllers, or other equipment to manage power and may contain additional protective functions relative to EMS or grid interconnection functions.

Power Outlet.

An enclosed assembly that may include receptacles, circuit breakers, fuseholders, fused switches, buses, and watt-hour meter mounting means; intended to supply and control power to mobile homes, recreational vehicles, park trailers, or boats or to serve as a means for distributing power required to operate mobile or temporarily installed equipment. (CMP-7)

Power Outlet, Marina. (Marina Power Outlet)

An enclosed assembly that can include equipment such as receptacles, circuit breakers, fused switches, fuses, watt-hour meters, panelboards, and monitoring means identified for marina use. (555) (CMP-7)

Power Production Source (Power Source).

Electrical power production equipment other than a utility service, up to the source system disconnecting means. (CMP-4)

Informational Note: Examples of power production sources include engine and wind generators, solar photovoltaic systems, fuel cells, and energy storage systems.

Power Source Output Conductors.

The conductors between power production equipment and the service or other premises wiring. (CMP-4)

Power Sources.

A system of one or more off-site or one or more on-site power generation or storage components intended to provide power to nonessential electrical loads and the essential electrical system. [**99:** 3.3.155] (517) (CMP-15)

Power Supply (as applied to low-voltage suspended ceiling power distribution systems).

A Class 2 power supply connected between the branch-circuit power distribution system and the busbar low-voltage suspended ceiling power distribution system. (393) (CMP-18)

Power-Supply Cord.

An assembly consisting of an attachment plug and a length of flexible cord connected to utilization equipment. (CMP-6)

Premises.

The land and buildings located on the user's side of the point of demarcation between the communications service provider and the user. (800) (CMP-16)

Premises-Powered.

Using power provided locally from the premises. (CMP-16)

Premises Wiring (System).

Interior and exterior wiring, including power, lighting, control, and signal circuit wiring together with all their associated hardware, fittings, and wiring devices, both permanently and temporarily installed. This includes one of the following:

(1) Wiring from the service point to the outlets

(2) Wiring from and including the power source to the outlets if there is no service point

Such wiring does not include wiring internal to appliances, luminaires, motors, controllers, motor control centers, and similar equipment. (CMP-1)

> Informational Note: Power sources include, but are not limited to, interconnected or stand-alone batteries, solar photovoltaic systems, other distributed generation systems, or generators.

Pressurized.

The process of supplying an enclosure with a protective gas with or without continuous flow at sufficient pressure to prevent the entrance of combustible dust or ignitible fibers/flyings. (CMP-14)

Pressurized Enclosure "p".

Type of protection for electrical equipment that uses the technique of guarding against the ingress of the external atmosphere, which might be explosive, into an enclosure by maintaining a protective gas therein at a pressure above that of the external atmosphere. (CMP-14)

> Informational Note: See ANSI/UL-60079-2, *Explosive Atmospheres — Part 2: Equipment protection by pressurized enclosures "p"*, for additional information.

Pressurized Room "p".

A room volume protected by pressurization and of sufficient size to permit the entry of a person who might occupy the room. (CMP-14)

> Informational Note: See ANSI/UL 60079-13, *Explosive Atmospheres — Part 13: Equipment protection by pressurized room "p" and artificially ventilated room "v"* , for information on the requirements for rooms intended for human entry where pressurization is used as a means of reducing the risk of explosion.

Primary Pad.

A device external to the EV that transfers power via the contactless coupling as part of a wireless power transfer system. (625) (CMP-12)

Primary Source.

An electric utility or another source of power that acts as the main forming and stabilizing source in an electric power system. (CMP-4)

Prime Mover.

The machine that supplies the mechanical horsepower to a generator. (CMP-13)

Process Seal.

A seal between electrical systems and flammable or combustible process fluids where a failure could allow the migration of process fluids into the premises' wiring system. (CMP-14)

Informational Note: See ANSI/UL 122701, *Requirements for Process Sealing Between Electrical Systems and Flammable or Combustible Process Fluids* , for additional information.

Production Areas.

Areas where portable electrical equipment is used to implement the capture of images. (530) (CMP-15)

Projector, Nonprofessional. (Nonprofessional Projector)

Those types of projectors that do not comply with the definition of *Professional-Type Projector* . (540) (CMP-15)

Projector, Professional-Type. (Professional-Type Projector)

A type of projector using 35- or 70-mm film that has a minimum width of 35 mm (1 **3**⁄**8** in.) and has on each edge 212 perforations per meter (5.4 perforations per inch), or a type using carbon arc, xenon, or other light source equipment that develops hazardous gases, dust, or radiation. (540) (CMP-15)

Proscenium.

The wall and arch that separates the stage from the auditorium (i.e., house). (520) (CMP-15)

Protection by Enclosure "t".

Type of protection for explosive dust atmospheres where electrical equipment is provided with an enclosure providing dust ingress protection and a means to limit surface temperatures. (CMP-14)

Informational Note: See ANSI/UL 60079-31, *Explosive Atmospheres — Part 31: Equipment Dust Ignition Protection by Enclosure "t"* , for additional information.

Psychiatric Hospital.

A building used exclusively for the psychiatric care, on a 24-hour basis, of four or more inpatients. (517) (CMP-15)

Purged and Pressurized.

The process of (1) purging, supplying an enclosure with a protective gas at a sufficient flow and positive pressure to reduce the concentration of any flammable gas or vapor initially present to an acceptable level; and (2) pressurization, supplying an enclosure with a protective gas with or without continuous flow at sufficient pressure to prevent the entrance of a flammable gas or vapor, a combustible dust, or an ignitible fiber. (CMP-14)

Informational Note: See NFPA 496-2024, *Standard for Purged and Pressurized Enclosures for Electrical Equipment* , for additional information.

Purpose-Built.

A custom luminaire, a piece of lighting equipment, or an effect that is constructed for a specific purpose and is not serially manufactured or available for general sale. (530) (CMP-15)

PV DC Circuit (PV System DC Circuit).

Any dc conductor in PV source circuits, PV string circuits, and PV dc-to-dc converter circuits. (690) (CMP-4)

PV DC Circuit, Source. (PV Source Circuit)

The PV dc circuit conductors between modules in a PV string circuit, and from PV string circuits or dc combiners, to dc combiners, electronic power converters, or a dc PV system disconnecting means. (690) (CMP-4)

PV DC Circuit, String. (PV String Circuit)

The PV source circuit conductors of one or more series-connected PV modules. (690) (CMP-4)

PV Module (Module) (Solar PV Module).

A complete, environmentally protected unit consisting of solar cells and other components designed to produce dc power. (CMP-4)

PV (Photovoltaic) System (PV System) (Photovoltaic System).

The total components, circuits, and equipment up to and including the PV system disconnecting means that, in combination, convert solar energy into electric energy. (CMP-4)

Qualified Person.

One who has skills and knowledge related to the construction and operation of the electrical equipment and installations and has received safety training to recognize and avoid the hazards involved. (CMP-1)

> Informational Note: See NFPA *70E*-2024, *Standard for Electrical Safety in the Workplace*, for electrical safety training requirements.

Raceway.

An enclosed channel designed expressly for holding wires, cables, or busbars, with additional functions as permitted in this code. (CMP-8)

Raceway Cell.

A single enclosed tubular space in a cellular metal or concrete floor member, the axis of the cell being parallel to the axis of the floor member. (CMP-8)

Raceway, Cellular Metal Floor. (Cellular Metal Floor Raceway)

The hollow spaces of cellular metal floors, together with suitable fittings, that may be approved as enclosed channel for electrical conductors. (CMP-8)

Raceway, Communications. (Communications Raceway)

An enclosed channel of nonmetallic materials designed expressly for holding communications wires and cables; optical fiber cables; data cables associated with information technology and communications equipment; Class 2, Class 3, Class 4, and Type PLTC cables; and power-limited fire alarm cables in plenum, riser, and general-purpose applications. (CMP-3)

Raceway, Strut-Type Channel. (Strut-Type Channel Raceway)

A metal raceway that is intended to be mounted to the surface of or suspended from a structure, with associated accessories for the installation of electrical conductors and cables. (CMP-8)

Raceway, Surface Metal. (Surface Metal Raceway)

A metal raceway that is intended to be mounted to the surface of a structure, with associated couplings, connectors, boxes, and fittings for the installation of electrical conductors. (CMP-8)

Raceway, Surface Nonmetallic. (Surface Nonmetallic Raceway)

A nonmetallic raceway that is intended to be mounted to the surface of a structure, with associated couplings, connectors, boxes, and fittings for the installation of electrical conductors. (CMP-8)

Raceway, Underfloor. (Underfloor Raceway)

A raceway and associated components designed and intended for installation beneath or flush with the surface of a floor for the installation of cables and electrical conductors. (CMP-8)

Rail.

The structural support for the suspended ceiling system typically forming the ceiling grid supporting the ceiling tile and listed utilization equipment, such as sensors, actuators, A/V devices, and low-voltage luminaires and similar electrical equipment. (393) (CMP-18)

Rainproof.

Constructed, protected, or treated so as to prevent rain from interfering with the successful operation of the apparatus under specified test conditions. (CMP-1)

Raintight.

Constructed or protected so that exposure to a beating rain will not result in the entrance of water under specified test conditions. (CMP-1)

Rated-Load Current (RLC).

The current of a hermetic refrigerant motor-compressor resulting when it is operated at the rated load, rated voltage, and rated frequency of the equipment it serves. (440) (CMP-11)

Rated Output Power.

The amplifier manufacturer's stated or marked output power capability into its rated load. (640) (CMP-12)

Rated Power.

The output power of a wind turbine at its rated wind speed. (694) (CMP-4)

> Informational Note: See IEC 61400-12-1, *Power Performance Measurements of Electricity Producing Wind Turbines* , for the method for measuring wind turbine power output.

Receptacle.

A contact device installed at the outlet for the connection of an attachment plug, or for the direct connection of electrical utilization equipment designed to mate with the corresponding contact device. A single receptacle is a single contact device with no other contact device on the same yoke or strap. A multiple receptacle is two or more contact devices on the same yoke or strap. (CMP-18)

> Informational Note: A duplex receptacle is an example of a multiple receptacle that has two receptacles on the same yoke or strap.

Receptacle, Weather-Resistant (WR). (Weather-Resistant Receptacle)

A receptacle constructed to be resistant to the adverse effects of damp, wet, or outdoor locations. (CMP-18)

Receptacle, Weight-Supporting Ceiling (WSCR). (Weight-Supporting Ceiling Receptacle)

A contact device installed at an outlet box for the connection and support of luminaries or ceiling-suspended (paddle) fans using a weight-supporting attachment fitting (WSAF). (CMP-18)

> Informational Note: See ANSI/NEMA WD 6, *American National Standard for Wiring Devices — Dimensional Specifications* , for the standard configuration of weight-supporting ceiling receptacles and related weight-supporting attachment fittings.

Receptacle Outlet.

An outlet where the branch-circuit conductors are connected to one or more receptacles. (CMP-18)

Reconditioned Equipment.

Electromechanical systems, equipment, apparatus, or components that are restored to operating conditions. This process differs from normal servicing of equipment that remains within a facility, or replacement of listed equipment on a one-to-one basis. (CMP-1)

> Informational Note: The term *reconditioned* is frequently referred to as *rebuilt* , *refurbished* , or *remanufactured* .

Recreational Vehicle (RV) (Camping Trailer) (Motor Home) (Travel Trailer) (Truck Camper).

A vehicle or slide-in camper that is primarily designed as temporary living quarters for recreational, camping, or seasonal use; has its own motive power or is mounted on or towed by another vehicle; is regulated by the National Highway Traffic Safety Administration as a vehicle or vehicle equipment; does not require a special highway use permit for operation on the highways; and can be easily transported and set up on a daily basis by an individual. [**1192:** 3.3.52] (551) (CMP-7)

> Informational Note: See NFPA 1192-2026, *Standard on Recreational Vehicles* , Informative Annex A, for product types and definitions for motor homes and towable recreational vehicles.

Recreational Vehicle Park.

Any parcel or tract of land under the control of any person, organization, or governmental entity wherein two or more recreational vehicle, recreational park trailer, and/or other camping sites are offered for use by the public or members of an organization for overnight stays. (551) (CMP-7)

Recreational Vehicle Site.

A specific area within a recreational vehicle park or campground that is set aside for use by a camping unit. (551) (CMP-7)

Recreational Vehicle Site Supply Equipment.

A power outlet assembly located near the point of entrance of supply conductors to a recreational vehicle site and intended to constitute the disconnecting means for connected recreational vehicles. (551) (CMP-7)

Recreational Vehicle Stand.

That area of a recreational vehicle site intended for the placement of a recreational vehicle. (551) (CMP-7)

Reference Grounding Point.

The ground bus of the panelboard or isolated power system panel supplying the patient care room. [**99:** 3.3.158] (517) (CMP-15)

Relative Analgesia.

A state of sedation and partial block of pain perception produced in a patient by the inhalation of concentrations of nitrous oxide insufficient to produce loss of consciousness (conscious sedation). (517) (CMP-15)

Relay, Automatic Load Control (ALCR). (Automatic Load Control Relay)

An emergency lighting control device used to set normally dimmed or normally-off switched emergency lighting equipment to full power illumination levels in the event of a loss of the normal supply by bypassing the dimming/switching controls, and to return the emergency lighting equipment to normal status when the device senses the normal supply has been restored. (700) (CMP-13)

> Informational Note: See ANSI/UL 924, *Emergency Lighting and Power Equipment* , for the requirements covering automatic load control relays.

Remote-Control Circuit.

Any electrical circuit that controls any other circuit through a relay or an equivalent device. (CMP-3)

Remote Disconnect Control.

An electric device and circuit that controls a disconnecting means through a relay or equivalent device. (645) (CMP-12)

Resistance Heating Element.

A specific separate element to generate heat that is stand-alone, externally attached to, embedded in, integrated with, or internal to the object to be heated. (CMP-17)

> Informational Note: Tubular heaters, strip heaters, heating cable, heating tape, heating blankets, immersion heaters, and heating panels are examples of resistance heaters.

Restricted Industrial Establishment [as applied to hazardous (classified) locations].

Establishment with restricted public access, where the conditions of maintenance and supervision ensure that only qualified persons service the installation. (CMP-14)

Retrofit Kit.

A complete subassembly of parts and devices for field conversion of utilization equipment. (CMP-18)

Retrofit Kit, General Use. (General Use Retrofit Kit)

A kit that includes some, but not all, of the necessary parts to replace the illumination system of a host sign and installation instructions that identify the parts required to complete the subassembly in the field. (600) (CMP-18)

Retrofit Kit, Sign Specific. (Sign Specific Retrofit Kit)

A kit that includes all of the necessary parts and hardware to allow for field installation in a host sign, based on the included installation instructions. (600) (CMP-18)

Reverse Polarity Protection (Backfeed Protection).

A system that prevents two interconnected power supplies, connected positive to negative, from passing current from one power source into a second power source. (393) (CMP-18)

Ride Device.

A device or combination of devices that carry, convey, or direct a person(s) over or through a fixed or restricted course within a defined area for the primary purpose of amusement or entertainment. (522) (CMP-15)

Riser Cable, Cable Routing Assemblies, and Raceways.

Cables, cable routing assemblies, and raceways that have fire-resistant characteristics capable of preventing the carrying of fire from floor to floor and are suitable for use in a vertical run in a shaft or from floor to floor. (722) (CMP-3)

Road Show Connection Panel.

A type of patch panel designed to allow for road show connection of portable stage switchboards to fixed lighting outlets by means of permanently installed supplementary circuits. (520) (CMP-15)

Safe Zone.

Low probability of damage other than a slight swelling of the capacitor case, as identified by the case rupture curve of the capacitor. (460) (CMP-11)

Safety Circuit.

The part of a control system containing one or more devices that perform a safety-related function. [**79:** 3.3.95] (CMP-12)

> Informational Note: See NFPA 79-2024, *Electrical Standard for Industrial Machinery. Safety-related control system* and *safety interlock circuit* are common terms that can be used to refer to the safety circuit in other standards. The safety circuit can include hard-wired, communication, and software-related components.

Sealable Equipment.

Equipment enclosed in a case or cabinet that is provided with a means of sealing or locking so that live parts cannot be made accessible without opening the enclosure. (CMP-1)

> Informational Note: The equipment may or may not be operable without opening the enclosure.

Sealed [as applied to hazardous (classified) locations].

Constructed such that equipment is sealed effectively against entry of an external atmosphere and is not opened during normal operation or for any maintenance activities. (CMP-14)

> Informational Note: See ANSI/UL 121201, *Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations* , for additional information.

Sealed, Hermetically. (Hermetically Sealed)

Sealed against the entrance of an external atmosphere, such that the seal is made by fusion of metal to metal, ceramic to metal, or glass to metal. (CMP-14)

> Informational Note: See ANSI/UL 121201, *Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations* , for additional information.

Section Sign.

A sign or outline lighting system, shipped as subassemblies, that requires field-installed wiring between the subassemblies to complete the overall sign. The subassemblies are either physically joined to form a single sign unit or are installed as separate remote parts of an overall sign. (600) (CMP-18)

Selected Receptacles.

A minimal number of receptacles selected by the health care facility's governing body as necessary to provide essential patient care and facility services during loss of normal power. [**99:** 3.3.164] (517) (CMP-15)

Self-Contained Therapeutic Tubs or Hydrotherapeutic Tanks.

A factory-fabricated unit consisting of a therapeutic tub or hydrotherapeutic tank with all water-circulating, heating, and control equipment integral to the unit. Equipment may include pumps, air blowers, heaters, light controls, sanitizer generators, and so forth. (680) (CMP-17)

Separable Power Supply Cable Assembly.

A flexible cord or cable, including ungrounded, grounded, and equipment grounding conductors, provided with a cord connector, an attachment plug, and all other fittings, grommets, or devices installed for the purpose of delivering energy from the source of electrical supply to the truck or transport refrigerated unit (TRU) flanged surface inlet. (626) (CMP-12)

Separately Derived System.

An electrical power supply output, other than a service, having no direct connection(s) to circuit conductors of any other electrical source other than those established by grounding and bonding connections. (CMP-5)

Service.

The conductors and equipment connecting the serving utility to the wiring system of the premises served. (CMP-10)

Service Conductors.

The conductors from the service point to the service disconnecting means. (CMP-10)

Service Conductors, Overhead. (Overhead Service Conductors)

The overhead conductors between the service point and the first point of connection to the service-entrance conductors at the building or other structure. (CMP-10)

Service Conductors, Underground. (Underground Service Conductors)

The underground conductors between the service point and the first point of connection to the service-entrance conductors in a terminal box, meter, or other enclosure, inside or outside the building wall. (CMP-10)

> Informational Note: Where there is no terminal box, meter, or other enclosure, the point of connection is considered to be the point of entrance of the service conductors into the building.

Service Disconnect (Service Disconnecting Means).

A device that is connected to service conductors and disconnects the premises wiring system or equipment from the service conductors. (CMP-10)

Service Drop.

The overhead conductors between the serving utility and the service point. (CMP-10)

Service-Entrance Conductor Assembly.

Multiple single-insulated conductors twisted together without an overall covering, other than an optional binder intended only to keep the conductors together. (CMP-6)

Service-Entrance Conductors.

The service conductors between the terminals of the service equipment to the service drop, overhead service conductors, service lateral, or underground service conductors. (CMP-10)

Informational Note: Where service equipment is located outside the building walls, there could be no service-entrance conductors or they might be entirely outside the building.

Service Equipment.

The necessary equipment, consisting of a circuit breaker(s) or switch(es) and fuse(s) and their accessories, connected to the serving utility and intended to constitute the main control and disconnect of the serving utility. (CMP-10)

Service Equipment, Mobile Home. (Mobile Home Service Equipment)

The equipment containing the disconnecting means, overcurrent protective devices, and receptacles or other means for connecting a mobile home feeder assembly. (550) (CMP-7)

Service Lateral.

The underground conductors between the utility electric supply system and the service point. (CMP-10)

Service Point.

The point of connection between the facilities of the serving utility and the premises wiring. (CMP-10)

Informational Note: The service point can be described as the point of demarcation between where the serving utility ends and the premises wiring begins. The serving utility generally specifies the location of the service point based on the conditions of service.

Service Point, Communications. (Communications Service Point)

The point of connection between the communications service provider's network (outside plant) and the premises wiring (inside plant). (CMP-16)

Servicing.

The process of following a manufacturer's set of instructions or applicable industry standards to analyze, adjust, or perform prescribed actions upon equipment with the intention to preserve or restore the operational performance of the equipment. (CMP-1)

Informational Note: Servicing often encompasses maintenance and repair activities.

Shore Power.

The electrical equipment required to power a floating vessel including, but not limited to, the receptacle and cords. (555) (CMP-7)

Shoreline.

The farthest extent of standing water under the applicable conditions that determine the electrical datum plane for the specified body of water. (682) (CMP-7)

Short Circuit.

An abnormal connection (including an arc) of relatively low impedance, whether made accidentally or intentionally, between two or more points of different potential. (CMP-10)

Short-Circuit Current Rating.

The prospective symmetrical fault current at a nominal voltage to which equipment is able to be connected without sustaining damage exceeding defined acceptance criteria. (CMP-10)

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. (CMP-2)

Sign, Electric. (Electric Sign)

Electrically operated utilization equipment with words, symbols, art, or advertising designed to convey information or attract attention. (CMP-18)

Sign, Host. (Host Sign)

A sign or outline lighting system already installed in the field that is designated by a retroft kit for field conversion of the illumination system. (600) (CMP-18)

Sign, Photovoltaic (PV) Powered (PV Powered Sign). [Photovoltaic (PV) Powered Sign]

A complete sign powered by solar energy consisting of all components and subassemblies for installation either as an off-grid stand-alone, on-grid interactive, or non-grid interactive system. (600) (CMP-18)

Sign Body.

A portion of a sign that can provide protection from the weather and can additionally serve as an electrical enclosure. (600) (CMP-18)

Signaling Circuit.

Any electrical circuit that energizes signaling equipment. (CMP-3)

Simple Apparatus.

An electrical component or combination of components of simple construction with well-defined electrical parameters that does not generate more than 1.5 volts, 100 mA, and 25 mW, or a passive component that does not dissipate more than 1.3 watts and is compatible with the intrinsic safety of the circuit in which it is used. (CMP-14)

Informational Note No. 1: The following are examples of simple apparatus:

(1) Passive components; for example, switches, instrument connectors, plugs and sockets, junction boxes, resistance temperature devices, and simple semiconductor devices such as LEDs

(2) Sources of stored energy consisting of single components in simple circuits with well-defined parameters; for example, capacitors or inductors, whose values are considered when determining the overall safety of the system

(3) Sources of generated energy; for example, thermocouples and photocells, that do not generate more than 1.5 volts, 100 mA, and 25 mW

Informational Note No. 2: See ANSI/UL 913, *Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III, Division 1, Hazardous (Classified) Locations* , and ANSI/UL 60079-11, *Explosive Atmospheres — Part 11: Equipment Protection by Intrinsic Safety "i"* , for additional information.

Single-Pole Separable Connector.

A device that is installed at the ends of portable, flexible, single-conductor cable that is used to establish connection or disconnection between two cables or one cable and a single-pole, panel-mounted separable connector. (CMP-18)

Site-Isolating Device.

A pole-mounted disconnecting means installed at the distribution point for the purposes of isolation, system maintenance, emergency disconnection, or connection of optional standby systems. (547) (CMP-7)

Skeleton Tubing.

Neon tubing that is itself the sign or outline lighting and is not attached to an enclosure or sign body. (600) (CMP-18)

Slip.

A berthing space between or adjacent to piers, wharves, or docks; the water areas associated with boat occupation. [**303:** 3.3.21] (555) (CMP-7)

Informational Note: See the definition of *Berth* for additional information.

Solid-State Phase-Control Dimmer.

A solid-state dimmer where the wave shape of the steady-state current does not follow the wave shape of the applied voltage such that the wave shape is nonlinear. (CMP-15)

Solid-State Sine Wave Dimmer.

A solid-state dimmer where the wave shape of the steady-state current follows the wave shape of the applied voltage such that the wave shape is linear. (CMP-15)

Spa or Hot Tub.

A hydromassage pool, or tub for recreational or therapeutic use, not located in health care facilities, designed for immersion of users, and usually having a filter, heater, and motor-driven blower. It may be installed indoors or outdoors, on the ground or supporting structure, or in the ground or supporting structure. Generally, they are not designed or intended to have its contents drained or discharged after each use. (680) (CMP-17)

Spa or Hot Tub, Packaged Equipment Assembly. (Packaged Spa or Hot Tub Equipment Assembly)

A factory-fabricated unit consisting of water-circulating, heating, and control equipment mounted on a common base, intended to operate a spa or hot tub. Equipment can include pumps, air blowers, heaters, lights, controls, sanitizer generators, and so forth. (680) (CMP-17)

Spa or Hot Tub, Self-Contained. (Self-Contained Spa or Hot Tub)

Factory-fabricated unit consisting of a spa or hot tub vessel with all water-circulating, heating, and control equipment integral to the unit. Equipment can include pumps, air blowers, heaters, lights, controls, sanitizer generators, and so forth. (680) (CMP-17)

Spa or Hot Tub, Storable. (Storable Spa or Hot Tub)

Spas or hot tubs installed entirely on or above the ground that are intended to be stored when not in use and are designed for ease of relocation. (680) (CMP-17)

Space.

A portion of the health care facility designated by the health care facility's governing body that serves a specific purpose. [**99:** 3.3.171] (517) (CMP-15)

Special Permission.

The written consent of the authority having jurisdiction. (CMP-1)

Special Protection “s”.

Type of protection that permits design, assessment, and testing of equipment that cannot be fully assessed within a recognized type of protection or combination of recognized types of protection because of functional or operational limitations, but that can be demonstrated to provide the necessary equipment protection level (EPL). (CMP-14)

Informational Note: See ANSI/UL 60079-33, *Explosive Atmospheres — Part 33: Equipment Protection by Special Protection “s”* , for additional information.

Special-Purpose Multi-Circuit Cable System.

A portable branch-circuit distribution system consisting of one or more trunk cables and optional breakout assemblies or multi-circuit outlet enclosures. (520) (CMP-15)

Spider (Cable Splicing Block).

A device that contains busbars that are insulated from each other for the purpose of splicing or distributing power to portable cables and cords that are terminated with single-pole busbar connectors. (530) (CMP-15)

Spin Down.

A shutdown condition of the FESS, where energy is being dissipated and the flywheel rotor is slowing down to a stop. (706) (CMP-13)

Informational Note: A complete stop of a flywheel rotor cannot occur instantaneously because of the high kinetic energy of the rotor, but rather occurs over time as a result of friction forces acting on the rotor.

Splash Pad.

A fountain intended for recreational use by pedestrians and designed to contain no more than 25 mm (1 in.) of water depth. This definition does not include showers intended for hygienic rinsing prior to use of a pool, spa, or other water feature. (680) (CMP-17)

Spray Area.

Any fully enclosed, partly enclosed, or unenclosed area in which flammable or combustible vapors, mists, residues, dusts, or deposits are present due to the operation of spray processes, including:

(1) any area in the direct path of a spray application process;

(2) the interior of a spray booth, spray room, or limited finishing workstation, as herein defined;

(3) the interior of any exhaust plenum, eliminator section, or scrubber section;

(4) the interior of any exhaust duct or exhaust stack leading from a spray application process;

(5) the interior of any air recirculation path up to and including recirculation particulate filters;

(6) any solvent concentrator (pollution abatement) unit or solvent recovery (distillation) unit; and

(7) the inside of a membrane enclosure.

The following are not part of the spray area:

(1) fresh air make-up units;

(2) air supply ducts and air supply plenums;

(3) recirculation air supply ducts downstream of recirculation particulate filters; and

(4) exhaust ducts from solvent concentrator (pollution abatement) units. [**33:** 3.3.2.3] (CMP-14)

Informational Note No. 1: Unenclosed spray areas are locations outside of buildings or are localized operations within a larger room or space. Such areas are normally provided with some local vapor extraction/ventilation system. In automated operations, the area limits are the maximum area in the direct path of spray operations. In manual operations, the area limits are the maximum area of spray when aimed at 90 degrees to the application surface.

Informational Note No. 2: See definitions for *limited finishing workstation* and *membrane enclosure* for additional information.

Spray Area, Outdoor. (Outdoor Spray Area)

A spray area that is outside the confines of a building or that has a canopy or roof that does not limit the dissipation of the heat of a fire or dispersion of flammable vapors and does not restrict fire-fighting access and control. For the purpose of this standard, an outdoor spray area can be treated as an unenclosed spray area as defined in this code. [**33:** 3.3.2.3.1] (CMP-14)

Spray Area, Unenclosed. (Unenclosed Spray Area)

Any spray area that is not confined by a limited finishing workstation, spray booth, or spray room, as herein defined. [**33:** 3.3.2.3.2] (CMP-14)

Spray Booth.

A power-ventilated enclosure for a spray application operation or process that confines and limits the escape of the material being sprayed, including vapors, mists, dusts, and residues that are produced by the spraying operation and conducts or directs these materials to an exhaust system. [**33:** 3.3.19] (CMP-14)

> Informational Note: A spray booth is an enclosure or insert within a larger room used for spraying, coating, and/or dipping applications. A spray booth can be fully enclosed or have open front or face and can include a separate conveyor entrance and exit. The spray booth is provided with a dedicated ventilation exhaust with supply air from the larger room or from a dedicated air supply.

Spray Room.

A power-ventilated fully enclosed room with a specified fire resistance rating used exclusively for open spraying of flammable or combustible materials. [**33:** 3.3.20] (CMP-14)

Stage Effect (Special Effect).

An electrical or electromechanical piece of equipment used to simulate a distinctive visual or audible effect, such as a wind machine, lightning simulator, or sunset projector. (CMP-15)

Stage Equipment.

Equipment at any location on the premises integral to the stage production including, but not limited to, equipment for lighting, audio, special effects, rigging, motion control, projection, or video. (520) (CMP-15)

Stage Lighting Hoist.

A motorized lifting device that contains a mounting position for one or more luminaires, with wiring devices for connection of luminaires to branch circuits, and integral flexible cables to allow the luminaires to travel over the lifting range of the hoist while energized. (520) (CMP-15)

Stage Property.

An article or object used as a visual element in a motion picture or television production, except painted backgrounds (scenery) and costumes. (530) (CMP-15)

Stage Set.

A specific area set up with temporary scenery and properties designed and arranged for a particular scene in a motion picture or television production. (CMP-15)

Stage Switchboard, Fixed. (Fixed Stage Switchboard)

A permanently installed switchboard, panelboard, or rack containing dimmers or relays with associated overcurrent protective devices, or overcurrent protective devices alone, used primarily to feed stage equipment. (CMP-15)

Stage Switchboard, Portable. (Portable Stage Switchboard)

A portable rack or pack containing dimmers or relays with associated overcurrent protective devices, or overcurrent protective devices alone, used to feed stage equipment. (520) (CMP-15)

Stand Lamp.

A portable stand that contains a general-purpose luminaire or lampholder with guard for the purpose of providing general illumination on a stage, in an auditorium, or in a studio. (520) (CMP-15)

Stand-Alone System.

A system that is not connected to an electric power production and distribution network. (CMP-4)

Storage, Dry Stack. (Dry Stack Storage)

A facility, either covered or uncovered, constructed of horizontal and vertical structural members designed to allow placement of small boats in defined slots arranged both horizontally and vertically. [**303:** 3.3.24.2] (555) (CMP-7)

Stored-Energy Power Supply System (SEPSS).

A complete functioning EPSS powered by a stored-energy electrical source. (CMP-13)

Stranding, Compact. (Compact Stranding)

A conductor stranding method in which each layer of strands is pressed together to minimize the gaps between the strands so the overall diameter of the finished conductor is less than a concentric stranded conductor and less than a compressed stranded conductor. (CMP-6)

Stranding, Compressed. (Compressed Stranding)

A conductor stranding method in which the outer layer of strands is pressed together so the overall diameter of the finished conductor is less than a concentric stranded conductor but greater than a compact stranded conductor. (CMP-6)

Stranding, Concentric. (Concentric Stranding)

A conductor consisting of a straight central strand surrounded by one or more layers of strands, helically laid in a geometric pattern. (CMP-6)

Strip Light.

A luminaire with multiple lamps arranged in a row. (520) (CMP-15)

Structure.

That which is built or constructed, other than equipment. (CMP-1)

Structure, Relocatable. (Relocatable Structure)

A factory-assembled structure or structures transportable in one or more sections that are built on a permanent chassis and designed to be used as other than a dwelling unit without a permanent foundation. (545) (CMP-7)

> Informational Note: Examples of relocatable structures are those units that are equipped for sleeping purposes only, contractor's and other on-site offices, construction job dormitories, studio dressing rooms, banks, clinics, stores, shower facilities and restrooms, training centers, or for the display or demonstration of merchandise or machines.

Subassembly.

Component parts or a segment of a sign, retrofit kit, or outline lighting system that, when assembled, forms a complete unit or product. (600) (CMP-18)

Substation.

An assemblage of equipment (e.g., switches, interrupting devices, circuit breakers, buses, and transformers) through which electric energy is passed for the purpose of distribution, switching, or modifying its characteristics. (CMP-9)

Supervisory Control and Data Acquisition (SCADA).

An electronic system that provides monitoring and controls for the operation of the critical operations power system. (CMP-13)

> Informational Note: This can include the fire alarm system, security system, control of the HVAC, the start/stop/monitoring of the power supplies and electrical distribution system, annunciation and communications equipment to emergency personnel, facility occupants, and remote operators.

Support Areas.

Areas, other than fixed production offices, intended to support production and where image capture will not take place. Such areas include, but are not limited to, mobile production offices, storage, and workspaces; vehicles and trailers for cast, makeup, hair, lighting, grip, wardrobe, props, catering, and craft services; and portable restrooms. (530) (CMP-15)

Surge Arrester.

A protective device for limiting surge voltages by discharging or bypassing surge current; it also prevents continued flow of follow current while remaining capable of repeating these functions. (CMP-10)

Surge-Protective Device (SPD).

A protective device for limiting transient voltages by diverting or limiting surge current; it also prevents continued flow of follow current while remaining capable of repeating these functions and is designated as follows:

(1) Type 1: Permanently connected SPDs intended for installation between the secondary of the service transformer and the line side of the service disconnect overcurrent device

(2) Type 2: Permanently connected SPDs intended for installation on the load side of the service disconnect overcurrent device, including SPDs located at the branch panel

(3) Type 3: Point of utilization SPDs

(4) Type 4: Component SPDs, including discrete components, as well as assemblies. (CMP-10)

Informational Note: See UL 1449, *Standard for Surge Protective Devices* , for further information on SPDs.

Suspended Ceiling Grid.

A system that serves as a support for a finished ceiling surface and other utilization equipment. (393) (CMP-18)

Switch, Bypass Isolation. (Bypass Isolation Switch)

A manual, nonautomatic, or automatic operated device used in conjunction with a transfer switch to provide a means of bypass that directly connects the load conductors to a power source and allows the transfer switch to be isolated or disconnected. (CMP-13)

Switch, General-Use. (General-Use Switch)

A switch intended for use in general distribution and branch circuits. It is rated in amperes, and it is capable of interrupting its rated current at its rated voltage. (CMP-10)

Switch, General-Use Snap. (General-Use Snap Switch)

A form of general-use switch constructed so that it can be installed in device boxes or on box covers, or otherwise used in conjunction with wiring systems recognized by this code. (CMP-18)

Switch, Isolating. (Isolating Switch)

A switch intended for isolating an electrical circuit from the source of power. It has no interrupting rating, and it is intended to be operated only after the circuit has been opened by some other means. (CMP-10)

Switch, Motor-Circuit. (Motor-Circuit Switch)

A switch rated in horsepower that is capable of interrupting the maximum operating overload current of a motor of the same horsepower rating as the switch at the rated voltage. (CMP-11)

Switchboard.

A large single panel, frame, or assembly of panels on which are mounted on the face, back, or both, switches, overcurrent and other protective devices, buses, and usually instruments.(CMP-10)

Informational Note: These assemblies can be accessible from the rear or side as well as from the front and are not intended to be installed in cabinets.

Switchgear.

An assembly completely enclosed on all sides and top with sheet metal (except for ventilating openings and inspection windows) and containing primary power circuit switching, interrupting devices, or both, with buses and connections. The assembly may include control and auxiliary devices. Access to the interior of the enclosure is provided by doors, removable covers, or both. (CMP-10)

Informational Note: All switchgear subject to *NEC* requirements is metal enclosed. Switchgear rated below 1000 V or less may be identified as “low-voltage power circuit breaker switchgear.” Switchgear rated over 1000 V may be identified as “metal-enclosed switchgear” or “metal-clad switchgear.” Switchgear is available in non–arc-resistant or arc-resistant constructions.

Switching Device (as applied to equipment rated over 1000 volts ac, 1500 volts dc, nominal).

A device designed to close, open, or both, one or more electrical circuits. (CMP-9)

Cutout.

An assembly of a fuse support with either a fuseholder, fuse carrier, or disconnecting blade. The fuseholder or fuse carrier may include a conducting element (fuse link) or may act as the disconnecting blade by the inclusion of a nonfusible member.

Disconnecting Switch (or Isolating Switch).

A mechanical switching device used for isolating a circuit or equipment from a source of power.

Interrupter Switch.

A switching device capable of making, carrying, and interrupting specified currents.

Oil-Filled Cutout.

A cutout in which all or part of the fuse support and its fuse link or disconnecting blade is mounted in oil with complete immersion of the contacts and the fusible portion of the conducting element (fuse link) so that arc interruption by severing of the fuse link or by opening of the contacts will occur under oil.

Oil Switch.

A switching device having contacts that operate under oil (or askarel or other suitable liquid).

Regulator Bypass Switch.

A switching device or combination of switching devices designed to bypass equipment used to control voltage levels or related circuit characteristics.

System Isolation Equipment.

A redundantly monitored, remotely operated contactor-isolating system, packaged to provide the disconnection/isolation function, capable of verifiable operation from multiple remote locations by means of lockout switches, each having the capability of being padlocked in the “off” (open) position. (430) (CMP-11)

Tap Conductor.

A conductor, other than a service conductor, that has overcurrent protection ahead of its point of supply that exceeds the value permitted for similar conductors that are protected as described elsewhere in 240.4 . (240) (CMP-10)

Task Illumination.

Provisions for the minimum lighting required to carry out necessary tasks in the areas described in 517.34(A) , including safe access to supplies and equipment and access to exits. [**99:** 3.3.177] (517) (CMP-15)

Technical Power System.

An electrical distribution system where the equipment grounding conductor is isolated from the premises grounded conductor and the premises equipment grounding conductor except at a single grounded termination point within a branch-circuit panelboard, at the originating (main breaker) branch-circuit panelboard or at the premises grounding electrode. (640) (CMP-12)

Temporary Equipment.

Portable wiring and equipment intended for use with events of a transient or temporary nature where all equipment is presumed to be removed at the conclusion of the event. (640) (CMP-12)

Terminal (as applied to batteries).

That part of a cell, container, or battery to which an external connection is made (commonly identified as post, pillar, pole, or terminal post). (CMP-13)

Thermal Protector (as applied to motors).

A protective device for assembly as an integral part of a motor or motor-compressor that, when properly applied, protects the motor against dangerous overheating due to overload and failure to start. (CMP-11)

Informational Note: The thermal protector may consist of one or more sensing elements integral with the motor or motor-compressor and an external control device.

Thermal Resistivity.

The heat transfer capability through a substance by conduction. (CMP-6)

Informational Note: Thermal resistivity is the reciprocal of thermal conductivity and is designated Rho, which is expressed in the units °C-cm/W.

Thermally Protected (as applied to motors).

A motor or motor-compressor that is provided with a thermal protector. (CMP-11)

Top Shield.

A grounded metal shield covering under-carpet components of the flat conductor cable (Type FCC) system for the purposes of providing protection against physical damage. (324) (CMP-6)

Tower.

A pole or other structure that supports a wind turbine. (694) (CMP-4)

Transfer Switch.

An automatic or nonautomatic device for transferring one or more load conductor connections from one power source to another. (CMP-13)

Transfer Switch, Branch-Circuit Emergency Lighting (BCELTS). (Branch-Circuit Emergency Lighting Transfer Switch)

A device connected on the load side of a branch-circuit overcurrent protective device that transfers only emergency lighting loads from the normal power source to an emergency power source. (700) (CMP-13)

Informational Note: See ANSI/UL 1008, *Transfer Switch Equipment* , for information covering branch-circuit emergency lighting transfer switches.

Transfer Switch, Bypass Isolation. (Bypass Isolation Transfer Switch)

A transfer switch that provides a means to isolate the transfer switch. (CMP-13)

Transfer Switch, Meter-Mounted. (Meter-Mounted Transfer Switch)

A transfer switch connected between the utility meter and the meter base. (CMP-13)

Informational Note: Meter-mounted transfer switches can plug into the meter base. Transfer switches that incorporate the meter base in the transfer equipment assembly are not considered meter-mounted transfer switches.

Transformer.

Equipment, either single-phase or polyphase, that uses electromagnetic induction to convert current and voltage in a primary circuit into current and voltage in a secondary circuit. (CMP-9)

Transformer Secondary Conductor.

A conductor, other than a service conductor, that originates at the secondary winding terminals of a transformer. (CMP-10)

Transition Assembly.

An assembly to facilitate connection of the flat conductor cable (Type FCC) system to other wiring systems, incorporating (1) a means of electrical interconnection and (2) a suitable box or covering for providing electrical safety and protection against physical damage. (324) (CMP-6)

Transport Refrigerated Unit (TRU).

A trailer or container, with integrated cooling or heating, or both, used for the purpose of maintaining the desired environment of temperature-sensitive goods or products. (626) (CMP-12)

Transportable.

X-ray equipment that is to be installed in a vehicle or that may be readily disassembled for transport in a vehicle. (660) (CMP-12)

Truck.

A motor vehicle designed for the transportation of goods, services, and equipment. (626) (CMP-12)

Truck Coupler.

A truck flanged surface inlet and mating cord connector. (626) (CMP-12)

Truck Flanged Surface Inlet.

The device(s) on the truck into which the connector(s) is inserted to provide electric energy and other services. This device is part of the truck coupler. The truck flanged surface inlet is considered to be part of the truck and not part of the electrified truck parking space supply equipment. (626) (CMP-12)

Trunk Cable.

A portable extension cable containing six or more branch circuits, a male multipole plug, and a female multipole receptacle. (520) (CMP-15)

Tubing, Electrical Metallic (EMT). (Electrical Metallic Tubing)

An unthreaded thinwall raceway of circular cross section designed for the physical protection and routing of conductors and cables and for use as an equipment grounding conductor when installed utilizing appropriate fittings. (CMP-8)

Tubing, Electrical Nonmetallic (ENT). (Electrical Nonmetallic Tubing)

A nonmetallic, pliable, corrugated raceway of circular cross section with integral or associated couplings, connectors, and fittings for the installation of electrical conductors. It is composed of a material that is resistant to moisture and chemical atmospheres and is flame retardant.

A pliable raceway is a raceway that can be bent by hand with a reasonable force but without other assistance. (CMP-8)

Tubing, Flexible Metallic (FMT). (Flexible Metallic Tubing)

A metal raceway that is circular in cross section, flexible, and liquidtight without a nonmetallic jacket. (CMP-8)

Twofer.

An assembly containing one male plug and two female cord connectors used to connect two loads to one branch circuit. (520) (CMP-15)

Type of Protection “n”.

Type of protection where electrical equipment, in normal operation, is not capable of igniting a surrounding explosive gas atmosphere and a fault capable of causing ignition is not likely to occur. (CMP-14)

> Informational Note: See ANSI/UL 60079-15, *Explosive Atmospheres — Part 15: Equipment Protection by Type of Protection “n”*, for additional information.

Ungrounded.

Not connected to ground or to a conductive body that extends the ground connection. (CMP-5)

Uninterruptible Power Supply (UPS).

A device or system that provides quality and continuity of ac power through the use of a stored-energy device as the backup power source for a period of time when the normal power supply is incapable of performing acceptably. (CMP-13)

Unit Equipment.

A battery-equipped emergency luminaire that illuminates only as part of the emergency illumination system and is not illuminated when the normal supply is available. (CMP-13)

Utilization Equipment.

Equipment that utilizes electric energy for electronic, electromechanical, chemical, heating, lighting, or similar purposes. (CMP-1)

Valve Actuator Motor (VAM) Assemblies.

A manufactured assembly, used to operate a valve, consisting of an actuator motor and other components such as motor controllers, torque switches, limit switches, and overload protection. (430) (CMP-11)

Informational Note: VAMs typically have short-time duty and high-torque characteristics.

Ventilated.

Provided with a means to permit circulation of air sufficient to remove an excess of heat, fumes, or vapors. (CMP-14)

Vessel.

A container such as a barrel, drum, or tank for holding fluids or other material. (CMP-17)

Volatile Flammable Liquid.

A flammable liquid having a flash point below 38°C (100°F), or a flammable liquid whose temperature is above its flash point, or a Class II combustible liquid that has a vapor pressure not exceeding 276 kPa (40 psia) at 38°C (100°F) and whose temperature is above its flash point. (CMP-14)

Voltage (of a circuit).

The greatest root-mean-square (rms) (effective) difference of potential between any two conductors of the circuit concerned. (CMP-1)

Informational Note: Some systems, such as 3-phase 4-wire, single-phase 3-wire, and 3-wire direct current, may have various circuits of various voltages.

Voltage, High. (High Voltage)

A potential difference over 1000 volts ac, 1500 volts dc, nominal. (CMP-9)

Informational Note: Circuits and equipment rated at potential differences of more than 1000 volts ac, 1500 volts dc, and up to 52 kV, are also commonly referred to as medium voltage.

Voltage, Low. (Low Voltage)

An electromotive force rated 24 volts, nominal, or less. (552) (CMP-7)

Voltage, Nominal. (Nominal Voltage)

A nominal value assigned to a circuit or system for the purpose of conveniently designating its voltage class (e.g., 120/240 volts, 480Y/277 volts, 600 volts). (CMP-1)

Informational Note No. 1: The actual voltage at which a circuit operates can vary from the nominal within a range that permits satisfactory operation of equipment.

Informational Note No. 2: See ANSI C84.1-2011, *Voltage Ratings for Electric Power Systems and Equipment (60 Hz).*

Voltage, Nominal (as applied to battery or cell).(Nominal Voltage)

The value assigned to a cell or battery of a given voltage class for the purpose of convenient designation. The operating voltage of the cell or battery may vary above or below this value. (CMP-13)

Informational Note: The most common nominal cell voltages are 2 volts per cell for the lead-acid batteries, 1.2 volts per cell for alkali batteries, and 3.2 to 3.8 volts per cell for Li-ion batteries. Nominal voltages might vary with different chemistries.

Voltage to Ground.

For grounded circuits, the voltage between the given conductor and that point or conductor of the circuit that is grounded; for ungrounded circuits, the greatest voltage between the given conductor and any other conductor of the circuit. (CMP-1)

Watertight.

Constructed so that moisture will not enter the enclosure under specified test conditions. (CMP-1)

Weatherproof.

Constructed or protected so that exposure to the weather will not interfere with successful operation. (CMP-1)

> Informational Note: Rainproof, raintight, or watertight equipment can fulfill the requirements for weatherproof where varying weather conditions other than wetness, such as snow, ice, dust, or temperature extremes, are not a factor.

Wharf.

A structure at the shoreline that has a platform built along and parallel to a body of water with either an open deck or a superstructure. [**307:** 3.3.28] (555) (CMP-7)

Wind Turbine.

A mechanical device that converts wind energy to electrical energy. (CMP-4)

Wind Turbine Output Circuit. (Turbine Output Circuit)

The circuit conductors between the internal components of a wind turbine (which might include an alternator, integrated rectifier, controller, and/or inverter) and other equipment. (694) (CMP-4)

Wire.

A factory assembly of one or more insulated conductors without an overall covering. (805) (CMP-3)

Wireless Power Transfer (WPT).

The transfer of electrical energy from a power source to an electrical load via magnetic fields by a contactless means between a primary device and a secondary device. (625) (CMP-12)

Wireless Power Transfer Equipment (WPTE).

Equipment installed specifically for the purpose of transferring energy between the premises wiring and the electric vehicle without physical electrical contact. (625) (CMP-12)

> Informational Note No. 1: The general form of WPTE consists of two physical packages: a control box and a primary pad.
>
> Informational Note No. 2: Electric vehicle power export equipment and wireless power transfer equipment are sometimes contained in one set of equipment, sometimes referred to as a bidirectional WPTE.

Wireways, Metal. (Metal Wireways)

Sheet metal troughs with hinged or removable covers for housing and protecting electrical wires and cable and in which conductors are laid in place after the raceway has been installed as a complete system. (CMP-8)

Wireways, Nonmetallic. (Nonmetallic Wireways)

Flame-retardant, nonmetallic troughs with removable covers for housing and protecting electrical wires and cables in which conductors are laid in place after the raceway has been installed as a complete system. (CMP-8)

Wiring Device.

An electrical device that serves as either a connection point to facilitate the flow of current or as a control device in general distribution and branch circuits. (CMP-18)

> Informational Note: Examples of wiring devices include attachment plugs, receptacles, general-use snap switches, pendant switches, surface switches, dimmers, and electronic control switches and lighting control switches.

Work Surface.

A fixed, stationary, or portable surface typically intended for dry use and for tasks other than food or beverage preparation, food or beverage serving, personal lavation, or laundering that presents an incidental risk of spillage of smaller quantities of beverages and other liquids upon outlets mounted directly on or recessed in the surface. (CMP-2)

Informational Note No. 1: See UL 111, *Outline of Investigation for Multioutlet Assemblies*, and UL 962A, *Furniture Power Distribution Units*, which establish the performance evaluation criteria and construction criteria.

Informational Note No. 2: See 406.14(F), 406.14(G)(1), and 406.14(H) for information on receptacles for work surfaces distinguished from receptacles for counters and countertops.

Yoke (Strap).

The structural frame of a wiring device, such as a receptacle or switch, that serves as the mounting means. (CMP-18)

Zone.

A physically identifiable area (such as barriers or separation by distance) within an information technology equipment room, with dedicated power and cooling systems for the information technology equipment or systems. (645) (CMP-12)

Statement of Problem and Substantiation for Public Comment

A panelboard is a defined term and is defined as follows: “A single panel or group of panel units designed for assembly in the form of a single panel, including buses and automatic overcurrent devices, and equipped with or without switches for the control of light, heat, or power circuits; designed to be placed in a cabinet, enclosure, or cutout box placed in or against a wall, partition, or other support; and accessible only from the front.” Accordingly, what a panelboard is does not need to be restated within the definition of panelboard. Note that a key phrase in the definition of panelboard is “…designed to be placed in…” Accordingly, once the panelboard is actually “placed in” or “installed in” “a cabinet, enclosure, or cutout box” per this definition, it is no longer a panelboard which is, by definition, “…designed to be placed in a cabinet, enclosure, or cutout box…” – it is then something other than a panelboard. The phrase “an assembly” recognizes that this panelboard is actually assembled by installing the panelboard in a cabinet, enclosure, or cutout box. Notably, the panelboard is no longer stand-alone – it is now two distinct pieces of electrical equipment; a panelboard and either a cabinet, enclosure, or cutout box. Further, the defined term “approved” was used rather than the possibly unenforceable and vague term “suitable” per Table 3.2.1 in the NEC Style Manual. Importantly, this definition of “installed panelboard” differs significantly from, and is not in conflict with, the defined term “enclosed panelboard” in UL 67 for a number of reasons including, but not limited to, that “installed panelboard” rather than “enclosed panelboard” is being defined and that “suitable” is replaced with “approved” (a defined term) to comply with Table 3.2.1 of the NEC Style Manual to remove this possibly vague and unenforceable word.

Related Item

• FR-8903

Submitter Information Verification

Submitter Full Name: Palmer Hickman
Organization: Electrical Training Alliance
Street Address:
City:
State:
Zip:

Submittal Date: Tue Aug 06 17:44:40 EDT 2024
Committee: NEC-P10

Copyright Assignment

I, Palmer Hickman, hereby irrevocably grant and assign to the National Fire Protection Association (NFPA) all and full rights in copyright in this Public Comment (including both the Proposed Change and the Statement of Problem and Substantiation). I understand and intend that I acquire no rights, including rights as a joint author, in any publication of the NFPA in which this Public Comment in this or another similar or derivative form is used. I hereby warrant that I am the author of this Public Comment and that I have full power and authority to enter into this copyright assignment.

☑ By checking this box I affirm that I am Palmer Hickman, and I agree to be legally bound by the above Copyright Assignment and the terms and conditions contained therein. I understand and intend that, by checking this box, I am creating an electronic signature that will, upon my submission of this form, have the same legal force and effect as a handwritten signature

Public Comment No. 1990
Assigned to CMP-17, Referred to CMP-1

Public Comment No. 1990-NFPA 70-2024 [Global Input]

Make the Definition of Portable (as applied to equipment) applicable through the Code, assign to CMP-1, and revise definition as follows:

Portable (as applied to equipment)

Equipment that is moved from one place to another in normal use. (CMP-1)

Statement of Problem and Substantiation for Public Comment

This comment is in support of the Correlating Committee Note No. 145 which directed CMP-17 to consider revising the definition "Portable (as applied to equipment)" to be applicable throughout the Code. The text of the definition is revised to be general, yet specific enough to address one particular concern: equipment with wheels attached. Just because equipment has wheels does not mean it should be considered portable by default. Wheels may be used solely for positioning, or manufacturers may add wheels to list equipment to UL standards for portable equipment, while the equipment is not truly meant to be portable nor do the installations instructions allow actual portability. This may create an illusion for enforcement that code requirements should not apply, for example Article 480 Stationary Batteries. Attaching wheels to a 1500lb battery and inverter stack which is hardwired into premises wiring doesn't make that equipment truly portable (even if listed to UL 2743 as a portable power pack).

FCR-155 stated that the term “stationary” is a commonly used adjective and can be applied in requirements without the need for a unique definition in Article 100 - and has thus been deleted. That makes it even more important to define portable adequately and correctly for equipment. This comment is made globally to draw attention to the question of whether Article-specific definitions of portable and/or stationary might be needed for additional clarity.

Related Item

• FCR 155, CN145

Submitter Information Verification

Submitter Full Name: Rebekah Hren
Organization: IPPNC LLC
Street Address:
City:
State:
Zip:

Submittal Date: Wed Aug 28 14:23:55 EDT 2024
Committee: NEC-P17