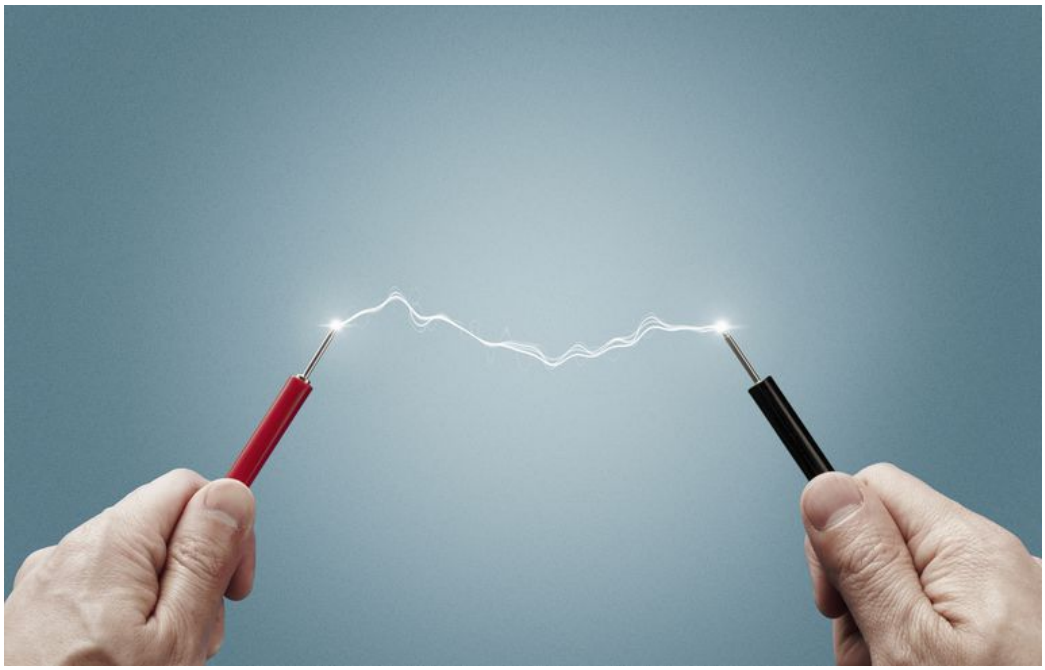
FDA Inc. Course#

NEC 2017 Code Changes in Definitions



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The *National Electrical Code* is updated on a three-year *Code* cycle. The International Association of Electrical Inspectors publishes its *Analysis of Changes* every three years on the same publishing schedule as the *NEC.* This course is based on the revisions to the 2017 *NEC.*

The 2017 *NEC* experienced a change in the revision process. In the past, the first public meeting for the *NEC* revision process was known as the Report on Proposals. This was replaced with the 2017 *NEC* First Draft meeting.

Suggested changes to the *NEC*, which were known as Proposals, were replaced with Public Inputs. The PIs that were acted upon favorably resulted in a First Revision to the First Draft of the 2017 *NEC.*

The second public meeting for the *NEC* revision process was known as the Report on Comments meeting, which was replaced with the 2017 *NEC* Second Draft meeting. Submitted Comments were replaced with Public Comments.

Successful PCs resulted in Second Revisions to the Second Draft of 2017 *NEC.* Appeals will be heard and voting for acceptance of the 2017 *NEC* will take place at the NFPA Annual Conference in June 2016. The NFPA Standards Council will issue the 2017 *NEC* in August 2016 with a publication date of September of 2016.

There were 4102 Public Inputs submitted from interested participants, which resulted in 1233 First Revisions to the First Draft of the 2017 *NEC.* A total of 1513 Public Comments resulted in 559 Second Revisions to the Second Draft of the *NEC.*

In this book, IAEI has reported on the most significant changes to the 2017 *NEC.* The revisions reported on in this publication were based on the Second Draft of the 2017 *NEC.* While IAEI takes every precaution to deliver the most

accurate account of the changes to the latest edition of the *NEC*, these revisions are subject to alterations from the time of publication of the *Analysis of Changes* to the deliverance of the final version of the 2017 *NEC.*

Articles 100 – 110

Articles in **100** Definitions
Articles in **110** Requirements for Electrical Installations

Article 100 — Definitions
Accessible, Readily (Readily Accessible)

Type of Change: Revision

Summary of Change: The use of a key is not considered taking an action such as the use of a "tool" to gain ready access. Crawling under something is not considered readily accessible.

Code Language: Article 100 Definitions

Accessible, Readily (Readily Accessible). Capable of being reached quickly for operation, renewal, or inspections 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.

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*.

What caused the 2017 NEC Change??

Revisions were made to indicate that the use of a key does not fall under the "use of tools." Having to resort to "crawling under" (as well as "climbing over") an obstacle was added to actions that do not meet the definition. This change aligns with the language in 110.26(F), which indicates that electrical rooms or enclosures controlled by a lock are considered accessible to qualified persons.

Article 100 — Definitions
Associated Apparatus

Type of Change: Relocation

Summary of change: The definition of *Associated Apparatus* was relocated to Article 100.

Code Language: Article 100 Definitions

Associated Apparatus [as applied to Hazardous (Classified) Locations]. 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

Informational Note No. 1: Associated apparatus has identified intrinsically safe connections for intrinsically safe apparatus and also may have connections for non-intrinsically 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.

What caused the 2017 NEC Change?
The definition of "Associated Apparatus" was relocated to Article 100 for application across the hazardous location *NEC* articles.

Article 100 — Definitions
Building, Structure

Type of Change: Revision

Summary of change: The definitions for *building* and *structure* were revised to align with current Building Code terms.

Code Language: Article 100 Definitions

Building. A structure that stands alone or that is ~~cut off~~ separated from adjoining structures by fire walls ~~with all openings therein protected by approved fire doors~~.

Structure. That which is built or constructed, other than equipment.

What caused the 2017 NEC Change?
These terms were revised to eliminate Building Code provisions and to clarify that a structure is something other than equipment.

Article 100 — Definitions

Coaxial Cable

Type of Change: Relocation

Summary of change: The definition for *Coaxial Cable* was relocated to Article 100.

Code Language: Article 100 Definitions

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.

What caused the 2017 NEC Change?
The definition of *Coaxial Cable* was relocated to Article 100 to have an application to other articles across the *NEC.*

Article 100 — Definitions

Field Evaluation Body (FEB) and Field Labeled

Type of Change: New

Summary of change: Two new definitions pertaining to field evaluations of electrical equipment were added to Article 100

Code Language: Article 100 Definitions

Field Evaluation Body (FEB). An organization or part of an organization that performs field evaluations of electrical or other equipment. [NFPA 790, 2012]

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.

What caused the 2017 NEC Change?
Two new terms —*Field Evaluation Body(FEB*) and *Field Labeled*— were added to the 2017 *NEC.*

Article 100 — Definitions
Receptacle

Type of Change: Revision

Summary of change: The definition of a *receptacle* has been revised to recognize mating devices used to install luminaires and ceiling-suspended (paddle) fans.

Code Language: Article 100 Definitions

Receptacle. A ~~receptacle is a~~ contact device installed at the outlet for the connection of an attachment plug, or for the direct connection of listed and labeled 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. A multiple receptacle is two or more contact devices on the same yoke.

What caused the 2017 NEC Change?
The definition was modified to accommodate electrical utilization equipment employing a means, other than a traditional attachment plug cap, to connect directly to the corresponding contact device.

110.3(A)(1), Informational Note No. 1
Examination, Identification, Installation, and Use of Equipment

Type of Change: New

Summary of change: New I-Note was added indicating equipment may be new, reconditioned, refurbished or remanufactured.

Code Language: 110.3 Examination, Identification, Installation, and Use of Equipment

(A) Examination. In judging equipment, considerations such as the following shall be evaluated:
(1) Suitability for installation and use in conformity with the provisions of this *Code*

Informational Note No. 1: Equipment may be new, reconditioned, refurbished, or remanufactured.

What caused the 2017 NEC Change?
A new informational note has been added at 110.3(A)(1) indicating that electrical equipment could be either new, reconditioned, refurbished or remanufactured when installed and inspected and examined.

110.3(C)
Examination, Identification, Installation, Use, and Listing (Product Certification) of Equipment

Type of Change: New

Summary of change: New text and Informational Note were added to provide clarification concerning requirements for listing (product certification).

Code Language: 110.3 Examination, Identification, Installation, ~~and~~ Use, and Listing (Product Certification) of Equipment

(C) Listing. Product testing, evaluation, and listing (product certification) shall be performed by recognized qualified electrical testing laboratories and shall be in accordance with applicable product standards recognized as achieving equivalent and effective safety for equipment installed to comply with this *Code*.

Informational Note: The Occupational Safety and Health Administration (OSHA) recognizes qualified electrical testing laboratories that perform evaluations, testing, and certification of certain products to ensure that they meet the requirements of both the construction and general industry OSHA electrical standards. If thelisting (product certification) is done under a qualified electrical testing laboratory program, this listing mark signifies that the tested and certified product complies with the requirements of one or more appropriate product safety test standards.

What caused the 2017 NEC Change?
A new List Item (C) was added at 110.3 requiring the listing process be executed by a qualified third-party electrical testing laboratory and that the product testing and certification process be in accordance with appropriate product standards.

110.14(D)
Electrical Connection Torque Tools

Type of Change: New

Summary of change: New requirements were added for the use of tightening torque tools where torquing is indicated.

Code Language: 110.14 Electrical Connections

(D) **Installation.** Where a tightening torque is indicated as a numeric value on equipment or in installation instructions provided by the manufacturer, a calibrated torque tool shall be used to achieve the indicated torque value, unless the equipment manufacturer has provided installation instructions for an alternative method of achieving the required torque.

What caused the 2017 NEC Change?

The Informational Note that was located after the parent text of 110.14 has been deleted and replaced with enforceable *Code* text at new 110.14(D). This new requirement calls for the implementation of tightening torque tools where torquing is specified on the equipment or in installation instructions provided by the manufacturer.

110.16(B)

Arc-Flash Hazard Warning, Service Equipment

Type of Change: New

Summary of change: Non-dwelling unit service equipment rated 1200 amperes or more is required to be labeled with the normal system voltage, available fault current, clearing times, and date the label was applied.

Code Language: 110.16 Arc-Flash Hazard Warning (B) Service Equipment. In other than dwelling units, in addition to the requirements in (A), a permanent label shall be field or factory applied to service equipment rated 1200 amps or more. The label shall meet the requirements of 110.21(B) and contain the following information:

(1) Nominal system voltage
(2) Available fault current at the service overcurrent protective devices
(3) The clearing time of service overcurrent protective devices based on the available fault current at the service equipment
(4) The date the label was applied

Exception: *Service equipment labeling shall not be required if an arc flash label is applied in accordance with acceptable industry practice.*

Informational Note No. 1: NFPA 70E-~~2012~~ 2015, *Standard for Electrical Safety in the Workplace*, provides guidance, such as determining the severity of potential exposure, planning safe work practices, arc flash labeling, and selecting personal protective equipment.

Informational Note No. 2: ANSI Z535.4-~~1998~~ 2011, *Product Safety Signs and Labels*, provides guidelines for the design of safety signs and labels for application to products.

Informational Note No. 3: Acceptable industry practices for equipment labeling are described in NFPA 70E-2015 *Standard for Electrical Safety in the Workplace.* 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.

What caused the 2017 NEC Change?

A new List Item (B) was added requiring non-dwelling unit service equipment rated 1200 amperes or more to be labeled with the normal system voltage, available fault current, clearing times, and date the label was applied.

110.21(A)(2)
Marking, Reconditioned Equipment

Type of Change: New

Summary of change: New rules provide traceability and other additional information to manufacturers, owners, installers, and AHJs related to reconditioned equipment.

Code Language: 110.21 Marking.

(A) ~~Manufacturer's~~ Equipment Markings.

(2) Reconditioned Equipment. Reconditioned equipment shall be marked with the name, trademark, or other descriptive marking by which the organization responsible for reconditioning the electrical equipment can be identified, along with the date of the reconditioning. Reconditioned equipment shall be identified as "reconditioned" and 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* ***1*** *0.21(A)(2) shall not be required.*

Informational Note: Industry standards are available for application of reconditioned and refurbished equipment. Normal servicing of equipment that remains within a facility should not be considered reconditioning or refurbishing.

What caused the 2017 NEC Change?

New requirements were added at 110.21(A)(2) to require refurbished, reconditioned, or remanufactured equipment to be marked with the name, trademark, or other descriptive marking by which the organization responsible for reconditioning the electrical equipment can be identified. The date of the reconditioning must also be established on the nameplate or marking.

110.26(A)(4)

Spaces About Electrical Equipment, Working Space

Type of Change: New

Summary of change: New requirements were added concerning working space for equipment located in a space with limited access (above suspended ceiling, crawl spaces, etc.).

Code Language: 110.26 Spaces About Electrical Equipment (A) Working Space. Working space for equipment operating at 600 1000 volts, nominal, or less to ground and likely to require examination, adjustment, servicing, or maintenance while energized shall comply with the dimensions of 110.26(A) (1), (A) (2), ~~and~~ (A)(3), and (A)(4) or as required or permitted elsewhere in this *Code.*

Informational Note: NFPA 70E-2015, *Standard for Electrical Safety in the Workplace*, provides guidance, such as determining severity of potential exposure, planning safe work practices, arc flash labeling, and selecting personal protective equipment.

(4) **Limited Access.** Where equipment operating at 1000 volts, nominal, or less to ground and 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:

(a) 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.).

(b) 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.

(c) All enclosure doors or hinged panels shall be capable of opening a minimum of 90 degrees.

(d) The space in front of the enclosure shall comply with the depth requirements of Table 110.26(A)(1). 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.

What caused the 2017 NEC Change?

The same basic limited access working space requirements at 424.66(B) were relocated to 110.26(A)(4) to broaden this requirement to more than just duct heaters. Provisions for limited access to crawl spaces were added to this requirement as well.

110.41(A) and (B)
Inspections and Tests

Type of Change: New

Summary of change: New requirements were added for the performance and reporting of pre-energization testing of electrical equipment rated over 1000 volts upon request by the AHJ.

Code Language: 110.41 Inspections and Tests

(A) **Pre-energization and Operating Tests.** Where required elsewhere in this *Code*, the complete electrical system design, including settings for protective, switching, and control circuits, shall be prepared in advance and made available on request to the authority having jurisdiction and shall be tested when first installed on-site.

(B) **Test Report.** A test report covering the results of the tests required in 110.41(A) shall be available to the authority having jurisdiction prior to energization and made available to those authorized to install, operate, test, and maintain the system.

What caused the 2017 NEC Change?

New requirements were added at 110.41 for pre-energization testing and reporting of electrical equipment (over 1000 volts) upon request by the AHJ. Since it is located in Article 110, this will apply to all equipment rated over 1000 volts regardless of its location.