

Synopsis of Significant Changes Applying the 2020 North Carolina State Electrical Code

Because most people in the electrical industry educate and study from national reference material, it has become clear to the State Electrical Division that many changes associate with the progression into the 2020 State Electrical Code (2020 NEC with State Amendments) are not recognized by the users of such material. This appears to be the result of many Amendments being deleted from the 2017 Amendments, which are not highlighted in national reference material because many of those changes were for the 2017 NEC (or previous version).

This document was created to aid those in the electrical industry in identifying the most significant changes from the 2017 to the 2020 State Electrical Code. The 2017 Amendments that were retained without any changes and new 2020 Amendments that delete new requirements in the 2020 NEC are not discussed in this document because the application of the State Code does not change. This document and the 2020 State Electrical Code Amendments should also be incorporated into national reference material.

The text of this document is commentary and shall not be considered official interpretations from the State Electrical Division. This document is not an all-inclusive analysis of changes. *JDS 6/13/2021*

- **Article 10 Administration**

Section 10.1 was updated with the new effective date and list of State Amendment section numbers. A new section 10.10 was added for exempting the inspection of cable ties from the listing requirements, except in plenums. The new section 10.10 replaces the 2017 Amendments to sections 320.30(A), 328.30, and 330.30(A). Except in plenums, the responsibility to ensure cable ties are listed where required by Code falls exclusively on the installer in the 2020 State Electrical Code.

- **110.16 Arc-Flash Hazard Warning**

Part (B) was added in the 2017 NEC and was removed by the 2017 Amendments. The 2017 Amendment to section 110.16 was not retained. Therefore, the labeling required by section 110.16(B) is required in the 2020 State Electrical Code.

- **110.24(A) Field Marking**

The last sentence in subsection (A) of section 110.24 was added in the 2017 NEC and was removed by the 2017 Amendments. The 2017 Amendment to section 110.24(A) was not retained. Therefore, the documentation of available fault current must be documented and available to the inspector in the 2020 State Electrical Code. Similar Amendments associated with providing documentation were also not retained in the 2020 Amendments, including sections:

- **409.22(B)**
- **430.99**
- **440.10**

- **110.41 Inspections and Tests**

Section 110.41 was added in the 2017 NEC and was removed by the 2017 Amendments. The 2017 Amendment to section 110.41 was not retained. Therefore, testing and reports must be coordinated, documented and available to the inspector in the 2020 State Electrical Code. Section 230.95(C) is a similar Amendment associated with testing requirements that were also removed from the 2020 State Electrical Code Amendments.

- **210.8 Ground-Fault Circuit-Interrupter Protection for Personnel**

There is a new amendment to the header section 210.8 in the last sentence of the second paragraph. Doors and doorways were added to the boundaries for measuring the cord path when determining if a receptacle is required by 210.8 to be GFCI protected. Per the 2020 Amendment, cabinet doors do not count as doors and doorways. Therefore, if the disposal or microwave receptacle is in the cabinet and within 6ft from the kitchen sink, then section 210.8(A)(7) requires the receptacles to be GFCI protected in the 2020 State Electrical Code.

- **210.8(A) Dwelling Units**

The requirement for subsection (A) to include 250-volt receptacles was generally adopted for the 2020 State Electrical Code. However, section 210.8(A) has a new Amendment to exempt clothes dryers, stoves and similar large cooking equipment like ovens from the GFCI requirement; and only if such appliances are also 250-volt. Thus, a 120-volt cooktop is not covered by the Amendment's exception, neither is a 250-volt window air conditioner receptacle in a garage.

- **210.8(A)(2) Garages . . .**

An Amendment was added to the 2017 State Electrical Code to allow for two appliances and non-readily accessible receptacles to be exempt from the GFCI requirement in garages. The 2017 Amendment to section 210.8(A)(2) was not retained. However, a new 2020 Amendment was created to allow for a ceiling receptacle that is exclusive for the garage door opener(s) to be exempt from the GFCI requirement.

- **210.8(B) Other than Dwelling Units**

The GFCI requirement for three-phase receptacles was introduced in the 2017 NEC and was removed by the 2017 Amendments. The 2017 Amendment to section 210.8(B) was not retained. Therefore, GFCI protection does apply to three-phase receptacles required by section 210.8(B) in the 2020 State Electrical Code. The 2017 interpretation that address breakers not currently available in certain amperages will be retained and updated in the 2020 Interpretations.

- **210.8(B)(1)-(10) (new locations added for GFCI protection)**

The commercial GFCI locations have expanded in the 2020 NEC, including kitchen type breakrooms (see subsection (2)), laundry areas, and bath/shower areas. There is no 2020 Amendment to this section.

- **210.8(D) Specific Appliances (formerly known as Kitchen Dishwasher Branch Circuit)**

An Amendment was added to the 2017 State Electrical Code that allowed dishwashers to be exempt from the GFCI requirement in dwellings. The 2017 Amendment to section 210.8(D) was not retained. The 2020 State Electrical Code requires using the rules of section 210.8(D) with section 422.5 for determining GFCI protection of certain appliances regardless of if the appliances are cord-and-plug or hard-wired. Dishwashers in all applications are moved to 422.5(A)(7) and are not exempt from GFCI protection in the 2020 version. Bottle-type water coolers and sump pumps were added to the list of appliances in section 422.5(A). The 2017 Amendment for section 422.5(B) was also not retained in the 2020 version.

- **210.12 Arc-Fault Circuit-Interrupter Protection**

An Amendment was added to the 2017 State Electrical Code to remove the readily accessible requirement of section 210.12 with respect to AFCI devices in lieu of simply accessible. The 2017 Amendment to section 210.12 was not retained. Therefore, AFCI protective devices, whether it be a circuit breaker or receptacle type, must be readily accessible in the 2020 State Electrical Code. Placing a refrigerator in front of an AFCI-type receptacle is accessible but not readily accessible; placing a blender or chair in front of a AFCI-type receptacle is not hindering the readily accessible requirement.

- **210.12(A) Dwelling Units**

An Amendment was added to the 2017 State Electrical Code to exempt kitchens and laundry areas listed in section 210.12(A) from the AFCI requirement in dwellings. The 2017 Amendment to section 210.12(A) was not retained. Therefore, the kitchen and laundry areas of dwellings are subjected to the AFCI requirements of section 210.12(A) in the 2020 State Electrical Code.

- **210.12(B) Dormitory Units**

An Amendment was added to the 2017 State Electrical Code to exempt bathrooms in dormitories listed in section 210.12(B) from the AFCI requirement. The 2017 Amendment to section 210.12(B) was not retained. Therefore, the bathrooms in dormitories are subjected to the AFCI requirements of section 210.12(B) in the 2020 State Electrical Code.

- **210.12(C) Guest Rooms, Guest Suites, and Patient Sleeping Rooms in Nursing Homes and Limited-Care Facilities**

An Amendment was added to the 2017 State Electrical Code to exempt guest rooms and suites in section 210.12(C) from the AFCI requirement. The 2017 Amendment to section 210.12(C) was not retained. Therefore, the guest rooms and suites are subjected to the AFCI requirements of section 210.12(C) in the 2020 State Electrical Code. The new Code has also expanded subsection (C) to include patient sleeping rooms in nursing homes and limited-care facilities.

- **210.52(C)(2) Island and Peninsular Countertops and Work Surfaces**

There is a new Amendment to the 2020 State Electrical Code for section 210.52(C)(2) that rewrites that section completely. Below is the breakdown for each subsection:

- (a) Receptacles requirements for islands is the same language from section 210.52(C)(2) in the 2017 NEC
- (b) Receptacle requirements for peninsulas is the same language from section 210.52(C)(3) in the 2017 NEC, except that the last sentence was added to require a receptacle at the end of the long end of the countertop
- (c) This is a new subsection written to allow receptacles in addition to the ones required by Code to be added on these countertops without adherence to the location rules of section 210.52(C)(3) in the 2020 NEC
- (d) The rules for separate spaces is the same language from section 210.52(C)(4) in the 2017 NEC

- **210.52(I) Foyers**

An Amendment was added to the 2017 State Electrical Code that required only one receptacle in foyers. The 2017 Amendment to section 210.52(I) was not retained. Therefore, the 3ft wall space rules of section 210.52(I) apply in the 2020 State Electrical Code.

- **230.71(B) Maximum Number of Disconnects**

The “six throws of the hand rule” has been revised in the 2020 NEC. The new general rule is one main service disconnect for each enclosure. Subsection (B) was revised to allow for a single or up to six meter bank centers with each individual compartment possessing a main. There is a new 2020 Amendment to this section to exempt most saw services from this rule.

- **230.85 Emergency Disconnects**

The 2020 NEC requires that for one- and two-family dwellings, the main service disconnect(s) must be on the outside where they can be readily accessed. There is a new 2020 Amendment to section 230.85 that clarifies common equipment, like meter/panel combos, are considered an emergency disconnect when applying this section.

- **404.2(C)(8) Switches Controlling Lighting Loads**

An Amendment was added to section 404.2(C)(8) of the 2017 State Electrical Code that exempted requiring the neutral conductor in the same box as a single pole switch that controlled certain lighting outlets in one- and two-family dwellings. Because of increasing number of computerized switches operating at 120-volts, the Amendment to section 404.2(C)(8) was not retained in the 2020 State Electrical Code.

- **406.4(D) Replacements**

An Amendment was added to the 2017 State Electrical Code to exempt the readily accessible requirement of section 406.4(D) with respect to replacement receptacles that are AFCI- or GFCI-type in lieu of simply accessible. The 2017 Amendment to section 406.4(D) was not retained. Therefore, AFCI- and GFCI-type receptacles must be readily accessible in the 2020 State Electrical Code. Placing a refrigerator in front of an AFCI- or GFCI-type receptacle is accessible but not readily accessible; placing a blender or chair in front of an AFCI- or GFCI-type receptacle is not hindering the readily accessible requirement. The 2017 Amendment with respect to 406.4(D)(4) was retained concerning an AFCI exemption for certain receptacle replacements.

- **406.9(C) Bathtub and Shower Space**

Section 406.9(C) was revised in the 2020 NEC which further defines a bathtub and shower space with respect to receptacle placement. The new language of section 406.9(C) was adopted without Amendment in the 2020 State Electrical Code.

- **406.12 Tamper-Resistant Receptacles**

An Amendment to section 406.12 was added to the 2017 State Electrical Code to exempt tamper-resistant requirements in several occupancies. The 2017 Amendment to section 406.12 was not retained. The 2020 NEC added several locations not addressed in the 2017 NEC, such as assisted living facilities and common areas of multifamily occupancies. The new 2020 NEC language of section 406.12 was adopted without Amendment in the 2020 State Electrical Code.

- **408.4(B) Source of Supply**

An Amendment to section 408.4(B) was added to the 2017 State Electrical Code that allowed handwriting as an option for labeling switchgears, switchboards, and panelboards. The 2017 Amendment to section 408.4(B) was not retained. Therefore, labeling of this equipment cannot be handwritten in the 2020 State Electrical Code; the exception for one- or two-family dwellings in the NEC remains applicable.

- **430.130(A)(4) Circuits Containing Power Conversion Equipment**

An Amendment to section 430.130(A)(4) was added to the 2017 State Electrical Code that exempted the listing requirement for certain assembly configurations for power conversion equipment. The 2017 Amendment to section 430.130(A)(4) was not retained. Therefore, the assemblies described in subsection (4) cannot be engineered and must be listed as an assembly in the 2020 State Electrical Code.

- **Article 445 Generators**

An Amendment to Article 445 was added to the 2017 State Electrical Code that retained the 2014 NEC version of Article 445. The 2017 Amendment to Article 445 was not retained. Therefore, the 2020 NEC language is the Code governing generator installations in the 2020 State Electrical Code. There are various changes from the 2014 version not discussed in this document.

- **555.1 Scope**

An Amendment to section 555.1 was added to the 2017 State Electrical Code that exempted Article 555 from applying to docking facilities for single-family dwellings. The 2017 Amendment to section 555.1 was not retained. Therefore, Article 555 governs the wiring of docks associated with single-family dwellings in the 2020 State Electrical Code; which then removes the applicability of Article 682 from governing such docks per section 682.1.

- **555.10 Signage**

An Amendment to section 555.24 was added to the 2017 State Electrical Code that included “No Swimming” to the require signage. The intent of the 2017 Amendment was retained; however, the section for signage moved to section 555.10 in the 2020 NEC and State Electrical Code.

- **555.35(A)(3) Feeder and Branch-Circuit Conductors with GFPE**

An Amendment to section 555.3 was added to the 2017 State Electrical Code that allowed the individual branch and feeder circuits serving docks to possess 30 mA or less ground-fault protection as a substitute for providing ground-fault protection for the main. The 2020 NEC was revised by also allowing protection of the branches and feeders as a substitute in the new section 555.35. However, the GFPE rating increased to 100 mA for both branches and feeders. The 2020 Amendment allows the feeders to possess GFPE up to 100 mA; however, branch-circuits must remain protected at 30 mA or less.

- **680.21(D) Existing Pool Pump Motors, Branch-Circuits, and Overcurrent Protection**

An Amendment to section 680.21(C) was added to the 2017 State Electrical Code that required GFCI protection for single-phase pool motor replacements, or branch-circuit and overcurrent device repair. The 2020 NEC adopted the GFCI requirement for motor replacement of 60 amps or less and expanded the application into both single- and three-phase motors. The 2020 Amendment retained the 2020 NEC language for motor replacement in subsection (D)(1) and added subsection (D)(2) to require branch-circuit and overcurrent device repair of both single- and three-phase motors of 60 amps or less to also possess GFCI protection. Thus, the significant change in application of the 2020 State Electrical Code is the inclusion of three-phase and limitation to 60 amps.