



2021 Building- related Codes Training

2020 National Electrical Code (NEC)

Greater San Antonio Builders Association (GSABA)

November 9, 2022

Presented by:

Valerie Gleason, Chief Electrical Inspector

A large, stylized graphic on the right side of the slide. It features a white triangle pointing downwards, overlaid on a blue and purple geometric shape. The year '2021' is written in white at the top. Below it, the text '2021 BUILDING RELATED CODES' and 'CODE UPDATES' are written in blue. At the bottom, 'DEVELOPMENT SERVICES DEPARTMENT' is written in blue. A small red logo for 'SAN ANTONIO DEVELOPMENT SERVICES' is at the bottom right.

2021

2021 BUILDING
RELATED CODES

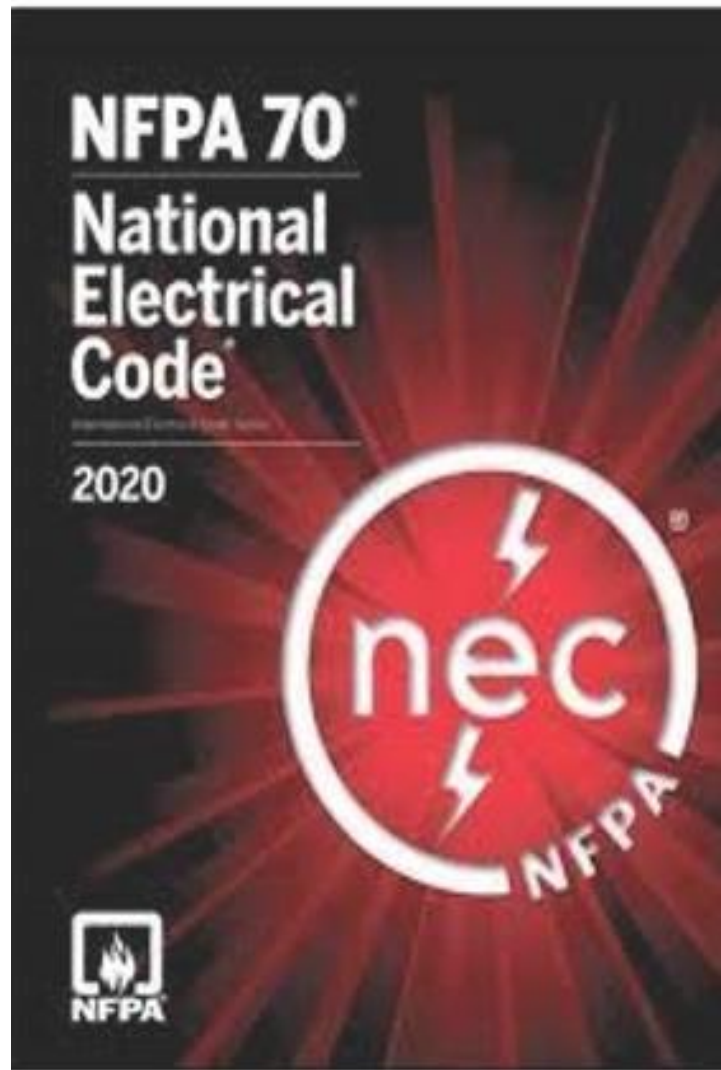
CODE UPDATES

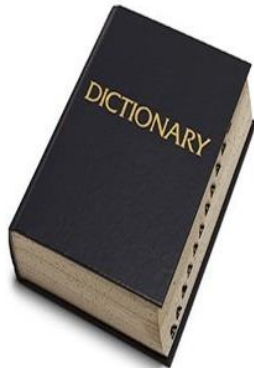
DEVELOPMENT SERVICES
DEPARTMENT



PROCESS OVERVIEW

- Submitted **3,730** public inputs (PI) to NFPA
 - **1,400** first revisions (FR)
 - **1,930** public comments submitted
 - **635** second revision (SR)
 - **5** new articles



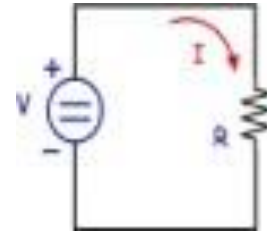


CODE WIDE CHANGES

- Available fault current
 - Terms such as “short circuit current” or “fault current” adjusted for clarity
- Reconditioned equipment
 - Clarified listing/labeling requirements for reconditioned equipment
 - Specifies what equipment is or is not permitted to be reconditioned
 - Circuit breakers
 - (AFCI/GFCI devices, panelboards, luminaires, etc.)
- Definition statements
 - XXX.2 sections of several articles clarifying definitions applicable to that article only

CODE WIDE CHANGES

- GFCI alignment with 210.8
 - Other articles with requirements for GFCI protection added “In addition to requirements of 210.8...”
- Allowable ampacity
 - “Allowable” removed in several locations
- “Grounding conductor”
 - Changed to “equipment grounding conductor” for clarity



ELECTRICAL CHANGES – ART. 110

REQUIREMENTS FOR ELECTRICAL INSTALLATIONS

SECTION		TITLE	DESCRIPTION OF CHANGE
110.14	Deletion	Electrical Connections	• Copper to copper-clad was removed as a dissimilar metallic connection.
110.14D	Revision	Terminal Connection Torque	• New requirement calls for impletion of tightening torque tools where torqueing is specified on the equipment or in installation instructions.

ELECTRICAL CHANGES – CH. 2

BRANCH CIRCUITS

SECTION		TITLE	DESCRIPTION OF CHANGE
200.3	Revision	Connection	The grounded conductor (neutral) is required to be connected to the supply system grounded conductor to ensure a common, continuous grounded system.
210.8	Revision	Ground Fault Circuit Interrupter for personnel	Doors and doorways were removed as items through which the supply cord of an appliance connected to the receptacle shall not pass.
210.8A	Revision	Dwelling Units	Dwelling unit GFCI protection has been expanded to all 125 through 250-volt receptacles supplied by single phase branch circuits rated 150 volts to ground or less.
210.8(A)(11)	New	Indoor damp & wet location	GFCI protection expanded to include receptacles in indoor damp and wet locations such as a mud-room with a sink.

ELECTRICAL CHANGES – CH. 2

BRANCH CIRCUITS

SECTION		TITLE	DESCRIPTION OF CHANGE
210.8(D)	New	Specific appliances	References appliances listed in 422.5 (Appliances) required to have GFCI protection. Dishwasher GFCI protection was relocated to this 422.5.
210.8(E)	New	Equipment requiring servicing.	GFCI protection now required for the receptacles required by 210.63 for equipment servicing, including indoor equipment.
210.8(F)	New	Outdoor outlets	- All outdoor outlets rated 125 through 250 volts, rated 150 volts to ground or less are required to be GFCI protected. - Texas Occupations Code, Section §73.100. Technical requirements. <u>(b) Notwithstanding subsection (a), compliance with Section 210.8(F) of the 2020 National Electrical Code is not required until January 1, 2023.</u>

ELECTRICAL CHANGES – CH. 2

BRANCH CIRCUITS

SECTION		TITLE	DESCRIPTION OF CHANGE
210.15	New	Reconditioned equipment	• GFCI devices, AFCI devices, and ground-fault protection equipment cannot be reconditioned
210.52C	Revised	Countertop and work surfaces	• Reiteration of 210.52(A)(4) - kitchen countertop receptacles shall not serve as wall spacing receptacles; where multi-outlet assemblies are used, each 12" of the assembly containing 2 or more receptacles shall meet requirement of one countertop receptacle.
210.52 (C) (1), (2), & (3)	Revision	Islands and peninsula receptacles	• 2a. At least 1 receptacle shall be provided for the first 9 sq. ft. (.84 sq. meter) of countertop or work surface; another receptacle required for any additional 18 sq. ft. (or fraction thereof) • 2b. At least 1 receptacle shall be within 2 ft. of outer end of a peninsular countertop/work surface. Peninsular measurement shall be from the connected perpendicular wall. • 3. Such receptacles are to be on or no more than 20" above the countertop/work surface, as receptacle outlet assemblies mounted in countertops/work surfaces, or not more than 12" below countertop/work surface, provided overhang of countertop/work surface is not more than 6" beyond support base. Receptacles not readily accessible shall not meet these requirements.

ELECTRICAL CHANGES – CH. 2

BRANCH CIRCUITS, FEEDERS, & SERVICES

SECTION		TITLE	DESCRIPTION OF CHANGE
210.52(E)(3)	Revision	Balconies, decks, & porches	Required receptacle for balconies, decks, and porches also required at balconies, decks, and porches installed in freestanding manner within 4" of dwelling unit
215.9	Revision/deletion	GFCI protection for feeders	Feeders permitted to be protected by readily accessible GFCI which would provide the necessary GFCI protection required by section 210.8
230.62	Relocation & Revision	Barriers at Service panels	Relocated from 408.3(A)(2); Barriers now required in all service equipment so no uninsulated, ungrounded busbar or terminal is exposed to inadvertent contact.
230.67	New	Surge protection for dwelling units	Surge protective device required for all dwelling services located in service equipment or immediately adjacent. Exception if SPD is provided at each next level distribution equipment downstream; SPD shall be TYPE 1 or II; when service equipment is replaced, all requirements of this section shall apply.

ELECTRICAL CHANGES – CH. 2

SERVICES

SECTION		TITLE	DESCRIPTION OF CHANGE
230.71	Revision	Maximum number of disconnects	Services no longer permitted to be six switches or circuit breakers in single enclosure
230.85	New	Emergency disconnect for 1-, 2-family dwellings	Service disconnect to be identified as “EMERGENCY DISCONNECT, SERVICE DISCONNECT”. (Note: CPS Energy requires exterior service disconnect for dwellings). Other disconnects on supply side of each service disconnect shall be identified as “EMERGENCY DISCONNECT, NOT SERVICE DISCONNECT” (Generators (445.18D), Storage Batteries (480.7A), Wind Electric systems (694.22(C)(1)), & Energy Storage Systems (706.15(A)). Markings to comply w/110.21(B).

ELECTRICAL CHANGES – CH. 3

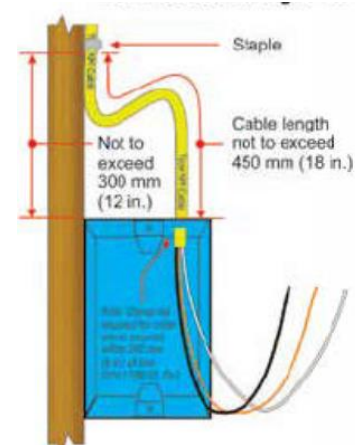
CONDUCTORS FOR GENERAL WIRING

SECTION		TITLE	DESCRIPTION OF CHANGE
310.12 & Table 310.12	Revision	Dwelling Unit Service & Main Power Feeder Conductors	• The dwelling unit service and main power feeder conductor sizing requirements relocated to 310.12; Table added for ampacities of such service conductors or feeders if no adjustment or correction factors are applied.
Table 310.16 – 310.21	Revision		• Table numbering reverted back numbers previously used.

ELECTRICAL CHANGES – CH. 3

OUTLET, DEVICE, PULL, AND JUNCTION BOXES; NM CABLE

SECTION		TITLE	DESCRIPTION OF CHANGE
314.16(B)(5)	New	Volume allowances for EGCs & Equipment bonding jumpers	Additional 1/4 volume allowance required for all equipment grounding conductors exceeding 4
314.27 (C)	Revision	Outlet Boxes for Support of Ceiling	All outlet boxes or outlet box system mounted in ceiling of habitable rooms of dwelling units are required to be listed for sole support of ceiling suspended paddle fans
334.30	Revision	Securing and Supporting of NM cable	NM shall still be supported within 12" of entry enclosure to boxes, j-boxes, cabinets, and fittings. However, length of cable between cable entry and closest support shall not exceed 18"



ELECTRICAL CHANGES – CH. 4

RECEPTACLES, CORD CONNECTORS, & ATTACHMENT PLUGS; RECONDITIONING OF PANELBOARDS; APPLIANCES

SECTION		SECTION TITLE	DESCRIPTION OF CHANGE
406.5(G)(2)	New	Receptacle mounting under sinks	• Receptacles below sinks shall not be installed in a face-up position.
406.9(C)	New Revision	Receptacle limitations in bathrooms	• Receptacles now prohibited from being installed within a zone measuring 3 ft. (900 mm) horizontally & 8 ft. (2.5 m) vertically from bathtub rim or shower stall threshold. Space is all-encompassing and includes area above. Exception allows for bathrooms with smaller dimensions to have receptacle on farthest wall within room.
406.12	New Revision	Tamper Resistant Receptacles for Appliances	• For dwelling units, tamper resistant receptacles required for all 15/20 amp, 125 & 250 volt receptacles in attached & detached garages, accessory buildings to dwelling units, and common areas of multi-family dwellings.
408.8	New	Reconditioning of equipment	• While switchboards and switchgear are permitted to be reconditioned, panelboards are not.
408.43	New	Panelboard orientation	• Panelboards are not permitted to be installed in a face-up position.
422.5A	New/ Revision	GFCI Protection for Appliances	• GFCI protection for dishwashers moved to this location. Sump pumps rated 150 volts or less, 60 amps or less also required to be GFCI protected.

ELECTRICAL CHANGES – CH. 4

APPLIANCES, GENERATORS

SECTION		SECTION TITLE	DESCRIPTION OF CHANGE
422.16B	Revision	Flexible cords for dishwashers & trash compactors	• Grommet, bushing, or other protection required where cord passes through cabinet to adjacent space.
445.6	New	Listing of generators	• Generators rated 600 volts or less are required to be listed.
445.18(D)	New	Emergency shutdown	• An emergency shut-down device is required to be located at a readily accessible outdoor location at dwelling units when an optional standby generator is installed.
680.21C&D	New/ Revision	GFCI protection for swimming pool motors & replacement motors	• Outlets supplying all pool motors (and replacement motors) on branch circuits rated 150 volts to ground or less and 60 volts or less shall be provided with Class A GFCI protection.

ELECTRICAL CHANGES – CH. 6

SWIMMING POOLS, FOUNTAINS, AND SIMILAR EQUIPMENT; SOLAR PHOTOVOLTAIC SYSTEMS

SECTION		SECTION TITLE	DESCRIPTION OF CHANGE
680.21C&D	New/ Revision	GFCI protection for swimming pool motors & replacement motors	• Outlets supplying all pool motors (and replacement motors) on branch circuits rated 150 volts to ground or less and 60 volts or less shall be provided with Class A GFCI protection.
680.22(E)	New	Other equipment in close proximity to a pool	• Electrical equipment with ratings exceeds the low voltage contact limit shall be located at least 5 ft. from the inside walls of a pool. Examples are electric power production equipment such as generators or solar production equipment.
690.9(A)	Revision	Overcurrent protection	• Three new methods of providing overcurrent protection have been added
690.12	Revision	Rapid shutdown of PV systems	• Revised to provide additional emphasis the primary existence of the rapid shutdown requirements to reduce shock hazard to fire fighters.

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2021

2021 BUILDING
RELATED CODES

CODE UPDATES

DEVELOPMENT SERVICES
DEPARTMENT

