

Uniform Building Code Commission Electrical Technical Committee (ETC) Presentation

Recommendations for modifications to the
2023 National Electrical Code®

Presented by: Larry Buxton

Date: November 14, 2023



OKLAHOMA

Committee Members

Commission Liaisons:

Warren Goldman (Electrical Contractor) and Dee Hays (Electrical Engineer)

Committee Members:

Jesse Benne (Fire Code Official), Jack Bradley (Commercial Electrical Contractor), Larry Buxton (Electrical Contractor), Anthony Clark (Alternate Commercial Contractor), Patrick Deighton (Electrical Code Official), Brett Fields (Alternate Residential Contractor), Jack Graham (Engineer), Jeff Jarvis (Alternate Code Official), Steve Malugani (Electrical Code Official), Derrick Roberts (Residential Electrical Contractor)



General Commentary

The ETC Technical Committee conducted a thorough formal review of the 2023 National Electrical Code®

Public Comment Forms:

10 Public comment forms were reviewed

No public comment forms were revised and resubmitted

No public comment forms were withdrawn by the submitter

No public comment forms were approved as submitted

Two public comment forms were approved as amended

Eight public comment forms were denied



2023 National Electrical Code® Chapter Summary

Chapter 1 – General – Approved as written (10/04/2023)

Chapter 2 – Wiring and Protection – Approved as amended (10/04/2023)

Chapter 3 – Wiring Methods and Materials – Approved as written (10/04/2023)

Chapter 4 – Equipment for General Use – Approved as amended (10/04/2023)

Chapter 5 – Special Occupancies – Approved as written (10/04/2023)

Chapter 6 – Special Equipment – Approved as written (10/04/2023)

Chapter 7 – Special Conditions – Approved as written (10/04/2023)

Chapter 8 – Communication Systems – Approved as written (10/04/2023)

Chapter 9 – Tables – Approved as written (10/04/2023)



Proposed Code Change: ETC-1 – Chapter 1, Article 100 - Definitions

Nationally Recognized Testing Laboratory. A testing facility given this designation from the United States Occupational Safety and Health Administration (OSHA) that provides product safety testing and certification services to manufacturers.

Summary of Change:

This definition was added by the OUBCC Commission after the presentation by the 2014 ETC, based on discussion during the September 16, 2014, meeting. Concerns were expressed regarding adding the definition due to the change approved in Section 110.12 Integrity of Electrical Equipment and Connections. The next two committees to review the NEC voted to keep the language in the code.

Committee Commentary:

The committee noted several natural disasters including Hurricane Katrina had contributed to what could be done for the integrity of electrical equipment. There was discussion regarding the need for the definition; that the code now addressed reconditioned equipment and the ease of finding a list of such testing facilities online. Committee consensus was the definition was no longer needed.

Committee Action Taken:

Unanimous vote to deny comment form ETC-1 and remove the change from the agency's rules (10/04/2023)



Proposed Code Change: ETC-2, Chapter 1, Article 100 Definitions

Plaque. A flat, thin piece of metal, wood, or non-conductive, UV, rain, corrosion, and ice resistant material with a sustainable temperature rating from negative 20 degrees Fahrenheit to 130 degrees Fahrenheit or better. For the ambient temperature of the environment to which it is installed, with engraved writing on it that is used especially as a reminder or warning of something. A plaque shall be designed to be installed by adhesive means or mechanical fasteners, as determined by the environment where to be permanently installed. A plaque shall also be known as a Permanent Plaque, Directory, or substitute for a label, excluding circuit directories.

Summary of Change:

This change was proposed and approved by the 2017 NEC technical review committee. The original submitter stated the addition of the definition would provide clarity of intent, remove interpretation and misunderstandings, and assist the code officials, electric utilities, first responders, structure owners, and service personnel. He stated the power production disconnecting means and power source means were not always grouped together or at the utility's service point, making code required signage critical. He noted if it was critical, it should be durable to the installed environment. He added the language would reduce confusion between plaques and directories with signs, labels, warning signs and markings. The 2020 committee voted to carry the change forward.

Committee Commentary:

The committee discussed concerns with non-permanent labels peeling off equipment; label design; safety of a long-lasting plaque to convey information; that wood was not durable and long lasting; solar labeling that was consolidated in the 2023 codes; and the need for information conveyed on plaques or labels to last the lifetime of the equipment.

Committee Action Taken:

Unanimous vote to deny comment form ETC-2 and remove the change from the agency's rules (10/04/2023)



Proposed Code Change: ETC-3, Section 110.12(B) Integrity of Electrical Equipment and Connections

110.12 (B) Integrity of Electrical Equipment and Connections. Internal parts of electrical equipment, including busbars, wiring terminals, insulators, and other surfaces, shall not be damaged or contaminated by foreign materials such as paint, plaster, cleaners, abrasives, or corrosive residues. There shall be no damaged parts that may adversely affect safe operation or mechanical strength of the equipment such as parts that are broken; bent; cut; or deteriorated by corrosion, chemical action or overheating. Damaged materials, equipment, appliances, and devices shall not be reused unless such elements have been reconditioned, tested, and placed in good and proper working condition and approved by a nationally recognized testing laboratory, or by the manufacturer of the equipment. Electrical equipment damaged by natural or man-made events shall be reused only as recommended by the manufacturer of such equipment.

Summary of Change:

This change was made in the 2014 adoption of the NEC. The original submitter noted it would allow for the reuse of existing electrical equipment, rather than require new replacement equipment, when specific circumstances and conditions were met. Due to the change made in this section, a definition of a "Nationally Recognized Testing Laboratory" was added to the code adoption process. If this modification is moved forward, the definition should move forward into the adoption of the code.



Committee Commentary:

The committee discussed reconditioned equipment; where the language came from and at the time of the change, the code did not allow a vehicle for reconditioned equipment; and robust language now exists regarding reconditioned equipment as defined in the code.

Committee Action Taken:

Unanimous vote to deny comment form ETC-3 and remove the definition from the agency's rules (10/04/2023)



Proposed Code Changes: ETC-4 and ETC-10, Section 210.8 (F) Outdoor Outlets

ETC-4:

210.8 (F) Outdoor Outlets. For dwellings, all outdoor outlets, other than those covered in 210.8(A), Exception No. 1, including outlets installed in the following locations, and supplied by single-phase branch circuits rated 150 volts or less to ground, 50 amperes or less, shall be provided with GFCI protection:

- (1) Garages that have floors located at or below grade level
- (2) Accessory buildings
- (3) Boathouses

If equipment supplied by an outlet covered under the requirements of this section is replaced, the outlet shall be supplied with GFCI protection.

Exception No. 1: GFCI protection shall not be required on lighting outlets other than those covered in 210.8(C).

Exception No. 2: GFCI protection shall not be required for listed HVAC equipment. ~~This exception shall expire September 1, 2026.~~

ETC-10

As you may remember, I submitted the proposal to delete 210.8(F) from the 2020 Oklahoma Electrical Code, which was subsequently overturned and the exception for mini-split type HVAC equipment was added. Subsequent to that action, the Standards Council for NFPA published 2 Temporary Interim Amendments concerning the unintended consequences of GFCI's with HVAC equipment. TIA 20-19 and TIA 23-03 exempt all listed HVAC equipment from GFCI requirements until September 1, 2026 (as noted in Exception No 2 in 210.8(F) of the 2023 NEC). I would encourage the ETC to adopt these requirements as currently noted in the 2023 NEC rather than keep the earlier amendments in the 2020 Oklahoma Electrical Code.



Summary of Change:

ETC-4: A change to delete the section from the code was submitted to the 2020 ETC, which was approved. At the public hearing on the agency rules, a public comment form was submitted, reviewed and discussed. The Commission voted to overrule the committee recommendation to strike the section from the code and instead modify the code.

ETC-10: The submitter recommended remaining with the code as published as HVAC and GFCI industries had been working to identify the incompatibilities associated with those pieces of equipment. The 2023 language as published allows for time for the issues to be addressed, updating the next edition of standards, and allows manufacturers time to make changes.

Committee Commentary:

The committee discussed the "50 amperes or less" language; whether added ampacity was the purpose of the change; and that the date defined for the expiration of the exception in the code was to allow time for the manufacturers to catch up or create something to avoid nuisance tripping of these circuits while also allowing time to be properly addressed by the next code cycle. There was further discussion on denying the change and using the language in the code but deleting or modifying the expiration date as rulemaking followed behind publication and the exception could expire before an updated code was adopted.

Committee Action Taken:

Unanimous vote to approve comment form ETC-4 as amended by removing the previous change and striking from Section 210.8 (F), Exception No. 2 the language, "This exception shall expire on September 1, 2026" (10/04/2023). ETC-10 failed due to a lack of a motion to approve or disapprove.



Proposed Code Change: ETC-5, Section 422.16(B)(5), Gas fired central furnaces

422.16(B)(5) Gas-fired central furnaces. Gas-fired furnaces supplying dwelling units shall be permitted to be connected by a flexible cord-and-plug. The cord and attachment plug shall have sufficient ampacity for the load and shall be routed or otherwise protected to prevent physical damage to the cord or attachment plug. The cord length shall be not greater than 9 feet.

Summary of Change:

This change was originally made to the 2017 adoption. The submitter stated the code did not specifically permit cord-and-plug connection of gas-fired furnaces supplying dwelling units. He noted utilizing cord-and-plug connections would allow the gas-fired furnace to be temporarily supplied by a portable generator during a power outage for heating purposes.

Committee Commentary:

The committee discussed approval for the amendment but felt it needed to be modified to identify the acceptable length of the cord and the accessibility of the outlet; and that it was used to allow generator power in an effort to heat a home during a power disruption. The committee further discussed options for defining an acceptable length of the cord and the accessibility of the outlet; that the mechanical code addressed issues with tripping hazards with a pathway to the unit; using the general rules on cord sizing that was rated for the appliance and using language found in Section 422.16(B)(4)(1) by amending the cord length to say, "not exceeding 9 feet."

Committee Action Taken:

Unanimous vote to accept comment form ETC-5 with amended language (10/04/2023)



Proposed Code Change: ETC-6, Sections 505.7(A) and 506.7(1) both entitled “Implementation of zone classification system”

505.7 (A) Implementation of zone classification system. Classification of areas, engineering and design, selection of equipment and wiring methods, installation, and inspection shall be performed by a Registered Professional Engineer with expertise in Hazardous (Classified) Locations and Zone Systems. The installation of equipment and wiring methods, and inspections shall be performed by qualified persons.

506.7 (A) Implementation of zone classification system. Classification of areas, engineering and design, selection of equipment and wiring methods, installation, and inspection shall be performed by a Registered Professional Engineer with expertise in Hazardous (Classified) Locations and Zone Systems. The installation of equipment and wiring methods, and inspections shall be performed by qualified persons.

Summary of Change:

These sections were modified in the adoption of the 2011 NEC. The submitter noted the NEC defined "qualified persons" as "one who has the skills and knowledge related to construction and operation of electrical equipment and installations and has received safety training to recognize and avoid the hazards involved." The committee at the time felt the definition was vague and didn't take into consideration the acquired level of training and experience of the electrical inspector needed, to conduct those types of inspections without the aid of engineered drawings that were signed and stamped by a Registered Professional Engineer. The language included in both sections has continued to be carried forward and included in each the adoption of the NEC.



Committee Commentary:

The committee discussed if the change to the definition of “qualified persons” was needed; that insurance required plans that were signed off and stamped by a professional engineer; and that just because someone was an engineer, electrician or contractor, it did not infer you were a qualified person as the language referred to the expertise and training of the qualified person.

Committee Action Taken:

Unanimous vote to deny comment form ETC-6 and remove the language from the agency’s rules (10/04/2023)



Proposed Code Change: ETC-7, Section 555.30 Luminaires and other Electrical Equipment and Section 682.10 Electrical Equipment and Transformers

555.30 (D) Luminaires and other Electrical Equipment. Luminaires and electrical connections to luminaires or other electrical equipment shall be located not less than 5 feet horizontally from the nearest normal edge of the water. If a Luminaire within the 5ft horizontal zone it must be 12 ft vertically.

682.10 Electrical Equipment and Transformers. Electrical equipment and transformers, including their enclosures, shall be specifically approved for the intended location. No portion of an enclosure for electrical equipment not identified for operation while submerged shall be located below the electrical datum plane. Luminaires or other electrical connections or equipment shall be located at least 5 feet (1524 mm) horizontally from the nearest edge of the water. If the luminaire is within 5ft horizontally of the water edge it must be 12ft vertically above the nearest edge of water.

Summary of Change:

These sections were modified in the adoption of the 2017 NEC. They were made as a result of the fatal Bricktown Canal electrocution incident in Oklahoma City. The language was modified in the 2020 adoption to require any luminary within the 5-foot horizontal zone to be 12-feet vertical.

Committee Commentary:

The committee discussed the language was added as a safety issue, that the original light fixture was properly grounded, but the base was broken and when the accident happened, the circumstances around the accident and what actually transpired; new design changes in Section 555 of the code covering natural and man-made bodies of water; and current GFCI requirements.

Committee Action Taken:

Unanimous vote to deny comment form ETC-7 and remove the language from the agency's rules (10/04/2023)



Proposed Code Change: ETC-8, Section 680.23(A)(4), Voltage Limitations

680.23(A)(4) Voltage Limitations. No luminaires shall be installed for operation on supply circuits over 150 volts between conductors operate above the low voltage contact limit as defined in Section 680.2. This requirement shall apply to new installations, repair, replacement and modification of underwater luminaires. This section shall not apply to relamping if the line-voltage luminaire is protected by a Class A ground-fault circuit-interrupter.

Summary of Change:

This change was first made in the adoption of the 2014 NEC and prohibits the use of underwater luminaires if they operate above low voltage contact limits as defined in Section 680.2. The purpose was to limit access to luminaires or other electrical connections while standing in either a natural or man-made body of water. The change has been carried forward into the 2017 and 2020 NEC adoptions.

Committee Commentary:

The committee discussed the current code requirements for GFCI language related to underwater luminaires and determined the added language was no longer needed.

Committee Action Taken:

Unanimous vote to deny comment form ETC-8 and remove the definition from the agency's rules (10/04/2023)



Proposed Code Change: ETC-9, Section 700.16(B) System Reliability

700.16 (B) System Reliability. Emergency lighting systems shall be designed and installed so that the failure of any illumination source cannot leave in total darkness any space that requires emergency illumination. Control devices in the emergency lighting system shall be listed for use in emergency systems. Listed unit equipment in accordance with 700.12~~(F)~~ (I) shall be considered as meeting the provisions of this section.

Summary of Change:

This change was made in the 2020 Adoption of the NEC to correct errata issued by NFPA.

Committee Commentary:

The committee acknowledged there was errata published for this chapter but did not believe the minor modification was necessary.

Committee Action Taken:

Unanimous vote to deny comment form ETC-9 and remove the definition from the agency's rules (10/04/2023)

