

Welcome Iowa Electricians!

What Does Iowa Require?

18-Hours of Continuing Education Required

- The Iowa electrician must complete no less than 18 Continuing Education Units (CEUs) in each three-year license cycle.
- No less than 6 of those 18 CEUs must focus on the most recent Iowa electrical code.
- JADE Learning's two-hour VILT sessions satisfy ALL of Iowa's requirements for electrical continuing education.
- **9 VILT sessions provides you all 18 hours.**



2023 NEC Changes

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1

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2023 NEC Changes

Important Changes from the 2023 NEC

6:00 PM Eastern Time

← 5 PM in Iowa

5:45 PM – 6:00 PM Eastern	Registration / Check In
6:00 PM – 7:00 PM Eastern	NEC Introduction and Chapter 1 <i>with poll questions</i>
7:00 PM – 7:10 PM Eastern	Break
7:10 PM – 8:00 PM Eastern	NEC Chapter 1 (Continued) <i>with poll questions</i>
8:00 PM Eastern	Questions for the instructor?

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2





3

100 Definitions. Scope.

2023 NEC provides an update to the scope of 100 Definitions.

- *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.*
- It also provides an informational note that discusses 13 different standards from which some of the definitions may be derived.





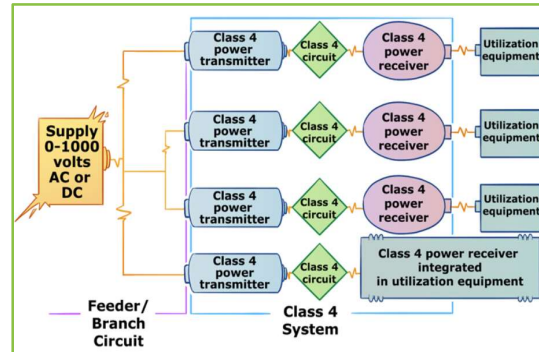
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4

100 Definitions. Class 4.

2023 NEC provides definitions for **Class 4 items**

- Class 4 Circuit
- Class 4 Device
- Class 4 Power system
- Class 4 Receiver
- Class 4 Transmitter
- Class 4 Utilization Equipment



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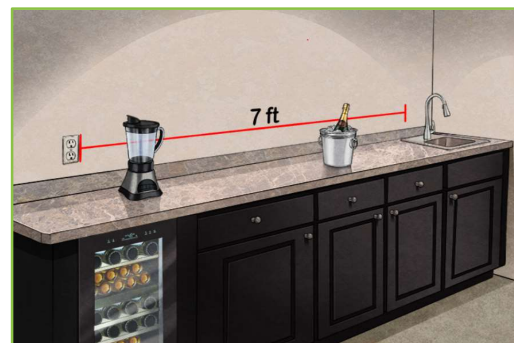
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5

100 Definitions. Counter (Countertop).

2023 NEC provides a new definition for **countertops**.

- This is to help us separate counters and countertops from work surfaces (another new definition is provided later in the presentation)
- ***fixed or stationary surface typically intended for food preparation and serving, personal lavation, or laundering or a similar surface that presents a routine risk of spillage of larger quantities of liquids upon outlets mounted on or in the surface***



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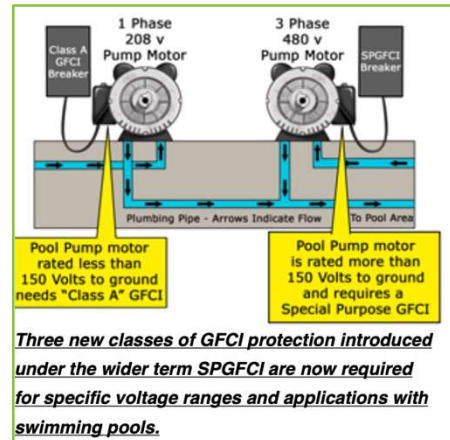
6

100 Definitions.

Ground Fault Circuit Interrupter, Special Purpose

New term for 2023: **Special Purpose Ground-Fault Circuit Interrupter (SPGFCI)**

- **SPGFCI** is not a new term but is new to NEC.
 - originated in 2000 when the Underwriters Laboratory (UL) created new requirements for Ground-Fault Circuit Interrupters (GFCI).
 - includes Class C, Class D, and Class E GFCI devices
- Class C, D, and E devices are for voltages measuring greater than 150V to ground.



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7

100 Definitions.

Ground-Fault Detector-Interrupter, dc (GFDI).

A new term, **GFDI** was originally introduced in Section 690.41(B) Solar PV Systems. Ground Fault Protection in the 2020 code cycle.

- 2023 Code introduces the following definition in Article 100 Definitions
 - **A device that provides protection for PV System DC Circuits by detecting a ground fault and can interrupt the fault path in the DC circuit**
 - Additional note to find more information here in two UL codes.
- GFDI devices are for use in PV solar circuits. Similar to GFCI, they detect the imbalance of current flow and stop the flow by disconnecting the DC circuit conductors.



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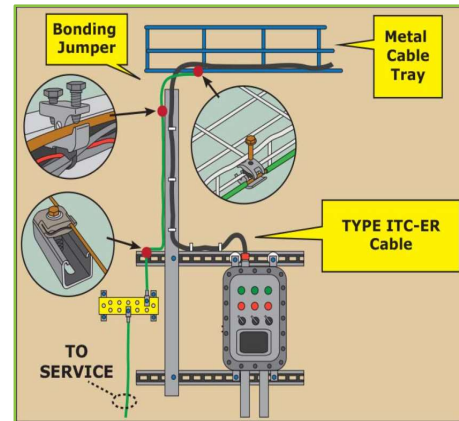
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8

100 Definitions. Grounded System, Impedance. (Impedance Grounded System)

Grounded System, Impedance. (Impedance Grounded System) is another new term in the 2023 NEC.

- **An electrical system that is grounded by intentionally connecting the system neutral point to ground through an impedance device**



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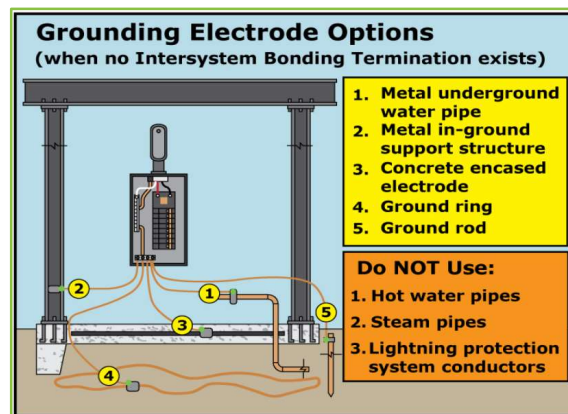
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9

100 Definitions. Grounding Conductor, Impedance. (Impedance Grounding Conductor)

New term for 2023, Grounding Conductor, Impedance. (Impedance Grounding Conductor)

- **An electrical system that is grounded by intentionally connecting the system neutral point to ground through an impedance device**
- Added alongside Grounding Conductor, Equipment (EGC) that is also included in 2020 NEC



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10

100 Definitions. Panelboard, Enclosed. (Enclosed Panelboard)

Panelboard in 2020 NEC referred to the single or group of panel-units that served as a single panel

- This was designed to be placed *inside* a cabinet or cutout box – so, that the cutout box was NOT a part of the panelboard



100 Definitions. Panelboard, Enclosed. (Enclosed Panelboard)

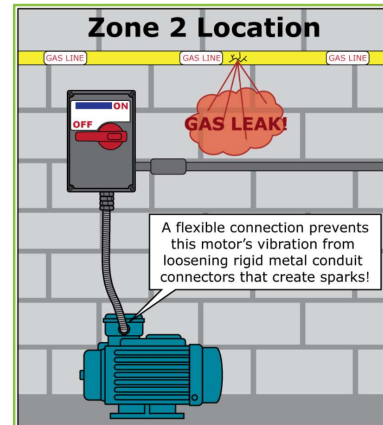
The new definition of **Panelboard, Enclosed. (Enclosed Panelboard)** added to the 2023 NEC is as follows:

- An assembly of some or all of the following:
 - buses and connections,
 - overcurrent devices,
 - control apparatus
 - with or without switches or other equipment,
- Installed in one of the following:
 - A cabinet
 - cutout box
 - enclosure suitable for a panelboard application.
- i.e., this refers to the entire package as one unit.

100 Definitions. Restricted Industrial Establishment

In 2020 Code, **Locations, Hazardous (Classified)** was only referred to as the title to Part III. The Parts no longer exist, and the term is now defined:

- **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 ignitable fibers/flyings**



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13

100 Definitions. Restricted Industrial Establishment

In 2020 Code, the **Restricted Industrial Establishment [as applied to hazardous (classified) locations]** definition was not included. The definition included in 2023 NEC is as follows:

- **Establishment with restricted public access, where the conditions of maintenance and supervision ensure that only qualified persons service the installation**

Important Points:

- The public does not have access
- The qualified personnel will be allowed to perform installations and maintenance on equipment within hazardous locations.



A "Restricted Industrial Establishment" inside a hazardous location is a space where public access is restricted and the condition of maintenance and supervision ensure that only qualified persons service the installation.

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14

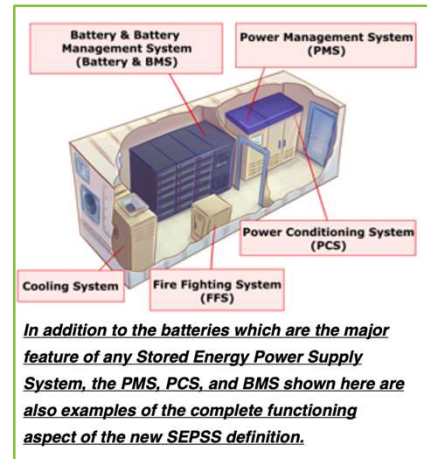
100 Definitions. Stored Energy Power Supply System (SEPSS)

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Stored-Energy Power Supply System (SEPSS) is a newly defined term for 2023.

- Several articles refer to alternate sources of electrical power, specifically, stored energy power.
- Energy can be stored in many ways (the most simple example being batteries) and then can be released as needed to power normal and/or emergency systems.

Emergency, Stand-by, uninterruptible, and other types of power-producing systems incorporate stored energy as an additional power source.



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15

100 Definitions. Work Surface

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2023 NEC also added the definition of Work Surface to help distinguish from countertops.

- ***A fixed, stationary, or portable surface typically intended for dry use and for tasks other than food preparation, 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.***



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16



17

110.3(A)(8) Cybersecurity.


As is the case with all internet or network-connected devices, **electrical backup generators can be hacked.**

- This could lead to:
 - generator to be disabled
 - preventing life safety, critical, and equipment branch circuits in locations such as hospitals from receiving much-needed power.


So, a new subsection has been added to NEC **Section 110.3(A), Examination**

- This is meant to help electricians choose life safety equipment with the ability to withstand hacking or malicious software attacks.

New Subsection **110.3(A)(8)** in 2023 NEC aims at promoting cybersecurity protection for these life safety circuits



Electricians must consider cybersecurity to prevent unauthorized hackers from taking control of life safety equipment.



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18

110.3(B) Installation and Use

2023 NEC expanded section 110.3(B) to include equipment that is identified as well as listed or labeled.

- **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.**



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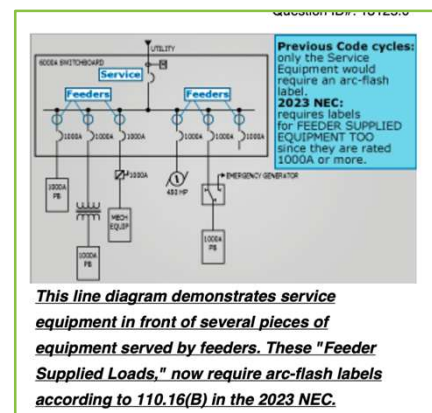
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19

110.16(B) Service Equipment and Feeder Supplied Equipment

Section 110.16(B) has expanded to include **feeder supplied equipment** for 2023 NEC.

- Feeder supplied equipment could be, a transformer, motor control center, or second distribution panel (aka "sub-panel") fed using a feeder cable from the main service panel.
- **Also new to 2023 NEC**, Labels are now required for equipment **rated 1000 Amps or more** instead of 1200 Amps or more
 - The arc flash label must now be prepared in accordance with applicable industry practices
 - The label must still include the date the label was applied, and all labels must comply with general label requirements from Section 110.21(B)



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20

110.17 Servicing and Maintenance of Equipment

Section 110.17 **Servicing and Maintenance of Equipment** did not exist in the **2020 NEC**

- This section requires electrical service and maintenance work to be performed by qualified persons, trained in the proper servicing and maintenance of electrical equipment.

Complying with Section 110.17 means using identified replacement parts during any service work or maintenance. Parts must meet at least one of the following standards

- Be provided by the original manufacturer
- Be designed by an engineer experienced in the design of replacement parts for the type of equipment being serviced or maintained
- Be approved by the authority having jurisdiction



New to the 2023 NEC, Section 110.17 provides strict requirements for who is permitted to perform service and maintenance work on electrical equipment.

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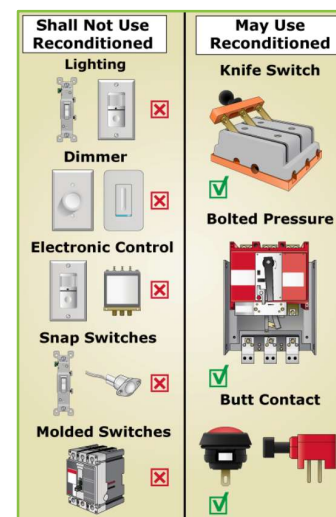
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21

110.20 Reconditioned Equipment

2023 NEC adds another new Section, 110.20. Reconditioned Equipment.

- Reconditioned equipment shall be permitted except where prohibited elsewhere in this code. Equipment that is restored to operating condition shall be reconditioned with identified replacement parts, verified under applicable standards, that are either provided by the original manufacturer or that are designed by an engineer experienced in the design of replacement parts for the type of equipment being reconditioned.**
 - (A) Equipment Required to be listed
 - (B) Equipment not required to be listed
 - (C) Approved Equipment



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22

110.26 Spaces About Electrical Equipment

Article 110.26 is expanded in the 2023 NEC to include access and egress to the electrical equipment.

- **Working space, and access and egress from the 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 24in wide and 6.5ft tall.**



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23

110.26(A)(6) Grade, Floor, or Working Platform

Section 110.26(A) was expanded to include subsection (6), Grade, Floor, or Working Platform.

- **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 required depth and width of the working space.**



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24

THANK YOU FOR ATTENDING!

Questions?

For additional instructor support, please contact
instructor@jadelearning.com

For questions about your continuing education, please
contact registrar@jadelearning.com

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25