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.**

1

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 Chapter 2 (Part II)** *with poll questions*
7:00 PM – 7:10 PM Eastern	**Break**
7:10 PM – 8:00 PM Eastern	**NEC Chapter 2 (Part II)** continued *with poll questions*
8:00 PM Eastern	**Questions for the instructor?**

2

2023 NEC Changes
Article 210.

Branch Circuits Not over 1000 Volts AC, 1500 Volts DC, Nominal.

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210.52(D) Bathrooms.

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- **In the 2020 NEC,** Section 210.52(D) used the word "Basin" or "Sink Basin."
- **In the 2023 NEC**, "Basin" has been discarded so that a sink now is just a sink.

4

210.70 Lighting Outlets Required.

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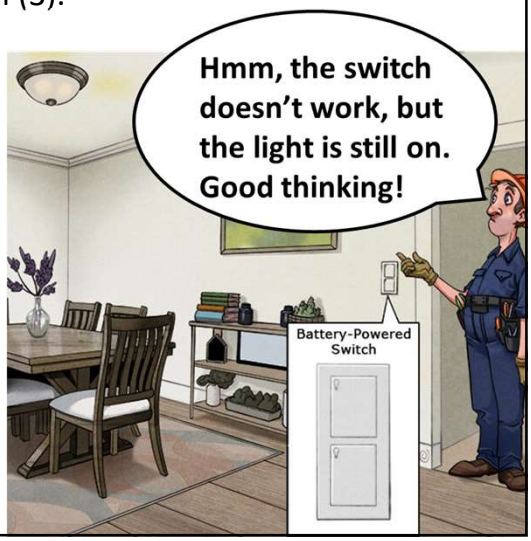
The 2020 NEC doesn't cover battery-operated light switches, but states that lighting outlets are to be installed per 210.70(A)(1) through (3).

NOTE: (A)(1) required at least one lighting outlet controlled by a wall-mounted device to be installed near the entrance in every habitable room, kitchen, and bathroom.

The 2023 NEC adds this NEW rule to 210.70 for using **battery-powered** lighting switches:

The switch or wall-mounted control device shall not rely exclusively on a battery unless a means is provided for automatically energizing the lighting outlets upon battery failure



2023 NEC Changes

5

210.70(A)(1),(2) Dwelling Units. Additional Locations.

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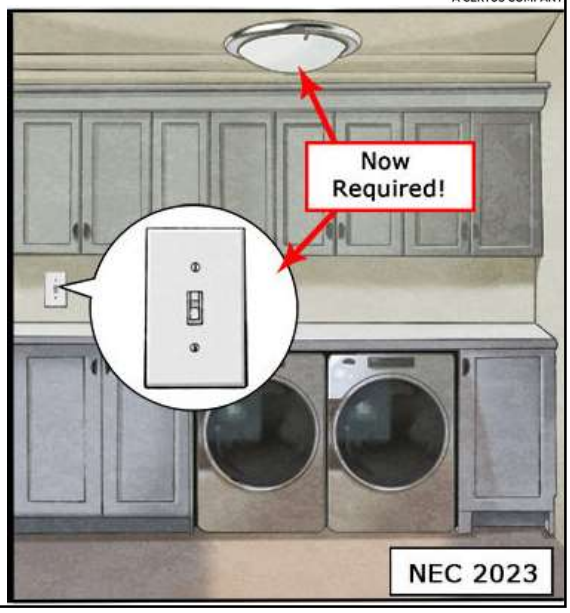
The 2020 NEC did not require a lighting outlet in a dwelling unit laundry room.

The 2023 NEC requires at least one lighting outlet controlled by a listed wall-mounted control device to be located near an entrance to the laundry room

And…210.70(A)(2) contains some verbiage changes and an additional exception for (A)(2)(2) for stairway lighting requirements for an outdoor, sub-grade-level basement.



2023 NEC Changes

6

Article 215. Feeders.

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7

215.15 Barriers

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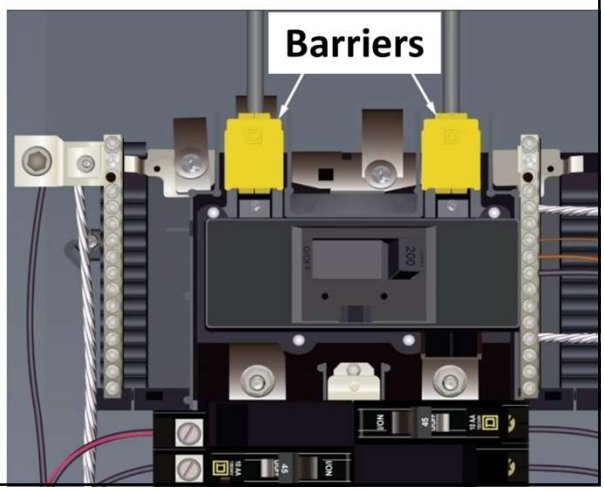
The 2023 NEC adds new section: ***215.15 Barriers,*** which states—.

Barriers shall be placed such that no energized, uninsulated, ungrounded busbar or terminal is exposed to inadvertent contact by persons or maintenance equipment while servicing load terminations in panelboards, switchboards, switchgear, or motor control centers supplied by feeder taps in 240.21(B) or transformer secondary conductors in 240.21(C) when disconnecting the device, to which the tap conductors are terminated, is in the open position



2023 NEC Changes

8

215.18 Surge Protection.

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The 2023 NEC adds ***Section 215.18, Surge Protection*** to Article 215!

215.18(A) Surge Protection (covers the following):

- (A)(1) Dwelling Units
- (A)(2) Dormitory Units
- (A)(3) Guest Rooms and Guest Suites of hotels and motels
- (A)(4) Areas of nursing homes or limited-care facilities used exclusively as patient sleeping rooms

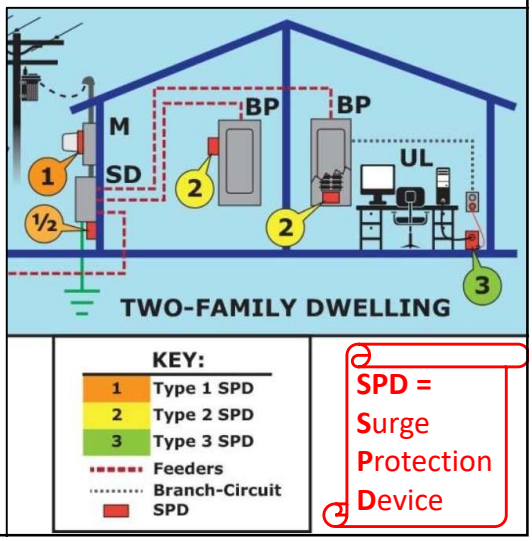
215.18(B) Location

215.18(C) Type

215.18(D) Replacement

215.18(E) Ratings

2023 NEC Changes



SPD =
Surge
Protection
Device

9

Article 220.

Branch-Circuit, Feeder, and Service Load Calculations

JADE LEARNING

10

10

220.41 Dwelling Unit(s), Minimum Unit Load.

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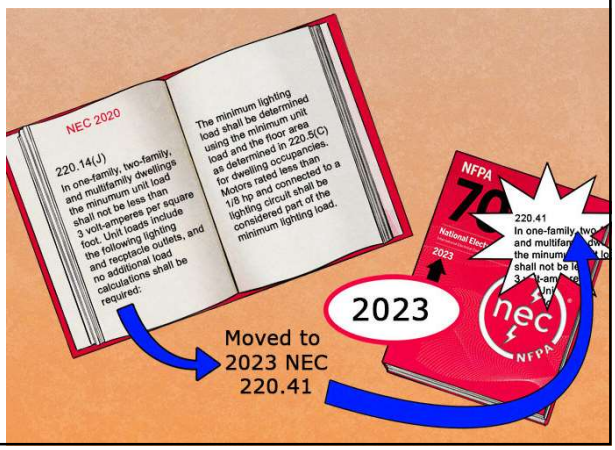
In the 2020 NEC, minimum unit loads for dwellings were a part of 220.14(J).

In 2023 NEC, new ***Section 220.41*** now contains that minimum unit load for dwellings.

We still take the following into account for the calculation:

- Square footage of the home
- Small appliance and laundry branch circuits
- Heat and A/C load
- Fastened-in-place appliance(s) load
- Clothes dryer load
- Cooking equipment load
- 25% of the largest motor



2023 NEC Changes

11

220.42 Lighting Load for Non-Dwelling Occupancies

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A CERTUS COMPANY

In the 2020 NEC, the minimum unit load(s) for non-dwelling occupancies were found in Section 220.12.

The 2023 NEC has moved these to Section 220.42

- AND, the minimum unit loads for Schools/Universities and Sports Arenas dropped from 3 VA each to only 1.5 VA in 2023 NEC, due to more energy-efficient lighting!

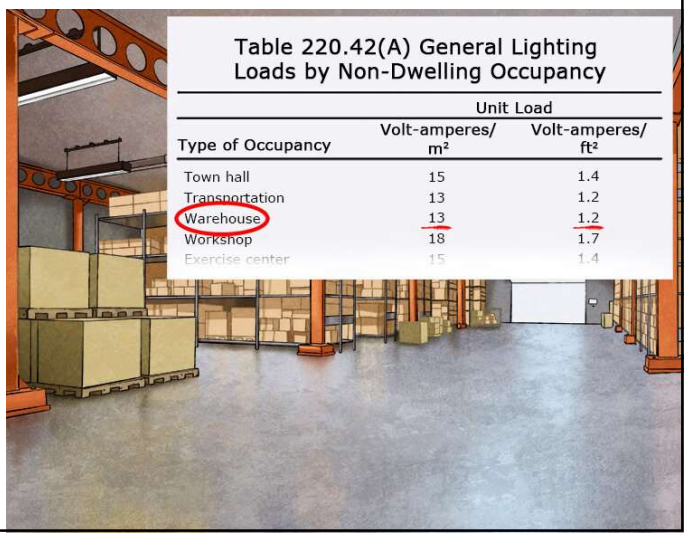

Table 220.42(A) General Lighting Loads by Non-Dwelling Occupancy

Type of Occupancy	Unit Load Volt-amperes/ m²	Unit Load Volt-amperes/ ft²
Town hall	15	1.4
Transportation	13	1.2
Warehouse	13	1.2
Workshop	18	1.7
Exercise center	15	1.4

2023 NEC Changes

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220.57 Electric Vehicle Supply Equipment (EVSE) Load.

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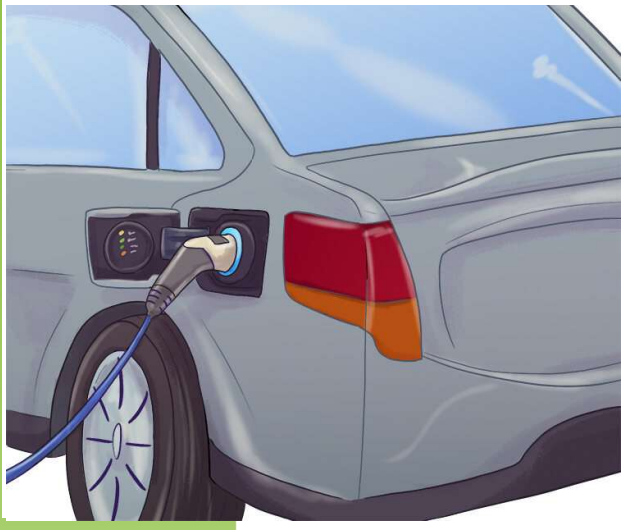


- With the increasing popularity of Electric Vehicles, **the 2023 NEC** has added ***Section 220.57*** to specify load calculation requirements for Electric Vehicle Supply Equipment (EVSE)
  - ***The EVSE Load shall be calculated at either 7200 Watts (Volt-Amperes) or the nameplate rating of the equipment, whichever is larger***

220.110 Receptacle Loads.

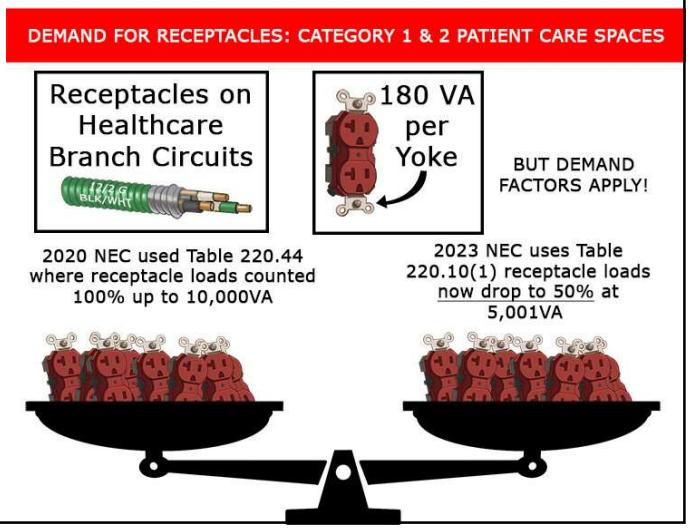
JADE LEARNING
A CERTUS COMPANY

The 2023 NEC adds new ***Part VI, Healthcare facilities*** and new ***Section 220.110.***

New ***Section 220.110, Receptacle Loads***, states:

- *Receptacle Loads calculated in accordance with 220.14(H) and (I) and supplied by branch circuits not exceeding 150 volts to ground shall be subjected to the demand factors provided in table 220.110(1) and table 220.110(2) for healthcare facilities.*

The new section includes two informational notes sending electricians to Article 100 and 220.14(I)



220.120 Receptacle Loads.

JADE LEARNING
A CERTUS COMPANY

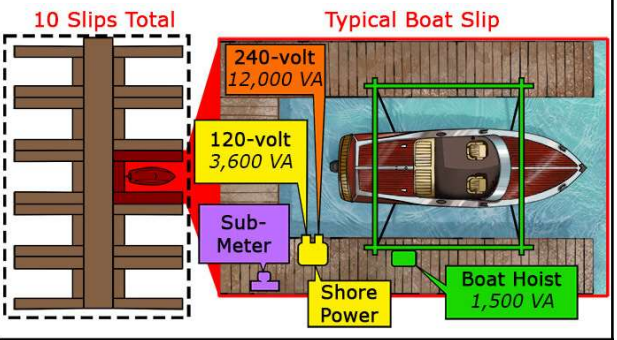
The 2023 NEC adds new ***Part VII*** and ***Section 220.120*** to Article 220.

New Part VII, ***Marinas, Boatyards, Floating Buildings, and Commercial and Noncommercial Docking Facilities***:

New ***Section 220.120, Receptacle Loads*** discusses the following:

- Loads in the aforementioned locations shall be calculated in accordance with Part III of Article 220 and the demand factor of Table 220.120
- The calculations are permitted to be modified as indicated in notes (1) and (2) of Table 220.120

2023 NEC Changes



	SP-120	SP-240	Hoist	Subtotal per Slip
2020 NEC	3.6 kVA	12 kVA	1.5 kVA	13.5 kVA
2023 NEC	3.6 kVA	12 kVA	1.5 kVA	12 kVA

	x 10 Slips	80% Demand	0.9 for Meter	Total Amps
2020 NEC	135 kVA	108 kVA	97.2 kVA	405
2023 NEC	120 kVA	96 kVA	86.4 kVA	360
		(x0.8)	*(x0.9)*	*(÷240x1000)*

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Article 225.
Outside Branch Circuits and Feeders

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16

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225.41 Emergency Disconnects.

Section 225.41, ***Emergency Disconnects*** is new **in the 2023 NEC**.

225.41 focuses on emergency disconnect requirements for one- and two-family dwellings supplied by feeders, as follows:

225.41(A) General
- (A)(1) Location
- (A)(2) Rating
- (A)(3) Grouping

225.41(B) Identification of Other Isolation Disconnects

225.41(C) Marking

New NEC 225.41 rules are just like 230.85 rules, except they apply to feeders!

2023 NEC Changes

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225.42 Surge Protection.

Another new section **in 2023 NEC** is ***225.42, Surge Protection.***

It declares where surge protection devices are required as follows:

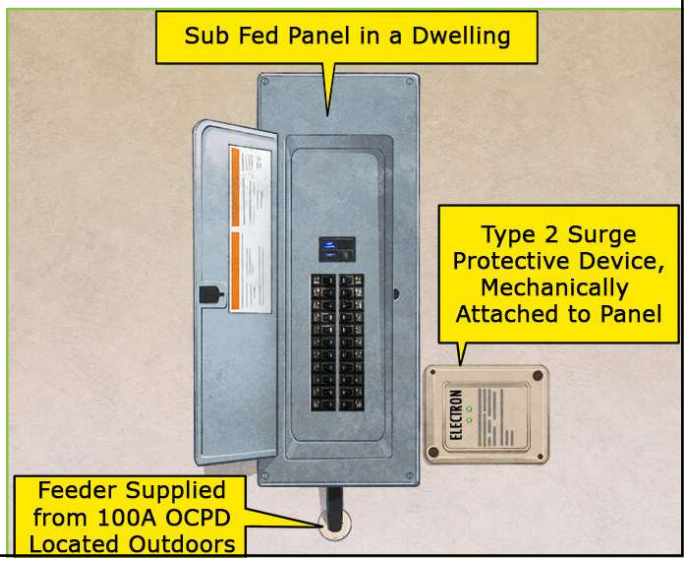
225.42(A) Surge Protection Device—
- (A)(1) Dwelling Units
- (A)(2) Dormitory Units
- (A)(3) Hotel/Motel Guest Rooms
- (A)(4) Areas of nursing homes

225.42(B) Location

225.42(C) Type

225.42(D) Replacement

225.42(E) Ratings



2023 NEC Changes

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Article 230 Services

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230.24(A) Above Roofs.

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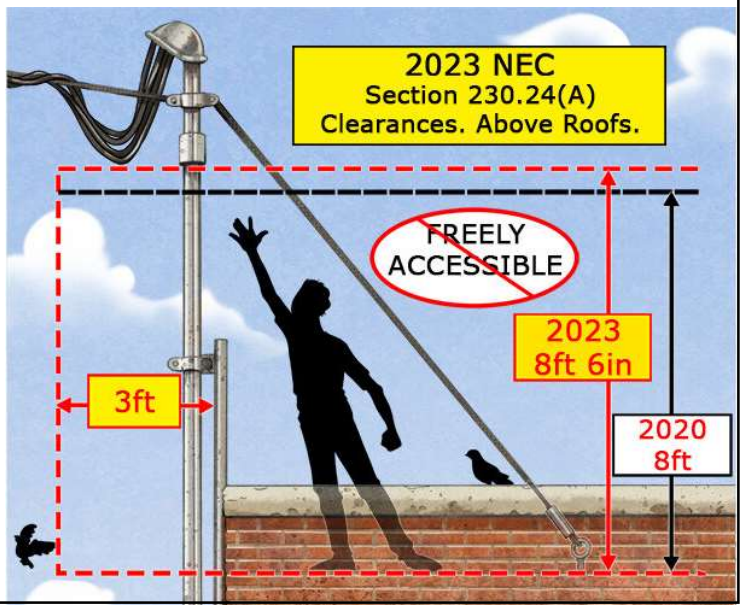
The 2023 NEC changes the vertical clearance required for conductors above a roof.

- The 2020 NEC required 2.5m (8ft)
- The 2023 NEC requires ***2.6m (8ft 6in)***



2023 NEC Changes

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230.67 Surge Protection.

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This section focuses on when a surge protection device shall be installed in Service Equipment with the following sections:

- (A) Surge Protection Device
  - (A)(1) Dwelling Units
  - (A)(2) Dormitory Units **(New)**
  - (A)(3) Guest Rooms and Guest Suites of hotels and motels **(New)**
  - (A)(4) Areas of nursing homes and limited care facilities used exclusively as patient sleeping rooms **(New)**
- (B) through (D) **(Unchanged)**
- (E) Ratings **(New)**

230.71(B) Two to Six Service Disconnecting Means.

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In 2020 NEC, Section 230.71(B) allowed up to as many as six service disconnect switches [as permitted in Section 230.2], and [as permitted in Section 230.40] to turn on/off electrical service equipment.
Those six switches could be any combination of the switches and switch scenarios presented in 230.71(B)(1)-(4)

The 2023 NEC adds two NEW switch scenarios to 230.71(B)(1)-(4)

- ***(B)(5) Metering centers with a main service disconnecting means in each metering center***
- ***(B)(6) Motor Control Center(s) where there is only one service disconnect in a motor control center unit and a maximum of two service disconnects provided in a single motor control center with barriers provided between each motor control center unit or compartment containing a service disconnect to maintain the inadvertent contact protection required in 230.62 based on access from adjacent motor control center unit(s) or compartment(s)***

230.85 Emergency Disconnects

While section 230.85 ***Emergency Disconnects*** was previously included in the 2020 NEC, it has received an overhaul for **the 2023 NEC** to include much more information.

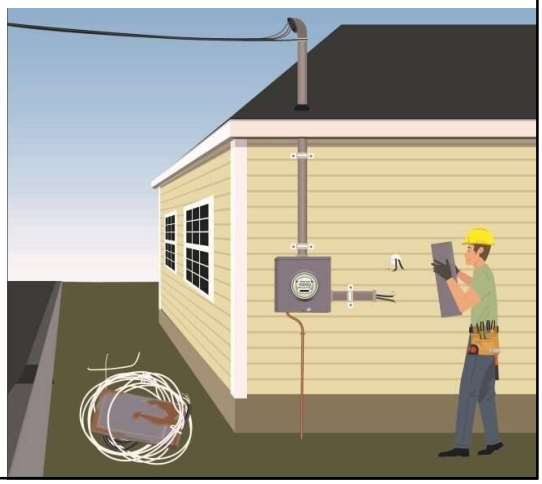
230.85 now includes the following sections (new sections ***bold and italicized***):

230.85(A) General
- ***(A)(1) Location***
- ***(A)(2) Rating***
- ***(A)(3) Grouping***

230.85(B) Disconnects
- ***(B)(1) Service Disconnect***
- ***(B)(2) Meter Disconnect …***
- ***(B)(3) Other listed Disconnect …***

230.85(C) Replacement

230.85(D) Identification of Other Isolation Disconnects



2023 NEC Changes

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Article 240. Overcurrent Protection.

24

24

Table 240.6(A) Standard Ampere Ratings for Fuses and Inverse Time Circuit Breakers.

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In 2020 NEC, the 10-amp overcurrent device was not included in Table 240.6(A).

- Previously, the smallest branch circuit rating was 15 amperes

The 2023 NEC revises the Table to include 10-amp circuit breakers and fuses!

Table 240.6 A

Standard Ampere Ratings for Fuses and Inverse Time Circuit Breakers

Standard Ampere Ratings				
10	15	20	25	30
35	40	45	50	60
70	80	90	100	110
125	150	175	200	225
250	300	350	400	450
500	600	700	800	1000
1200	1600	2000	2500	3000
4000	5000	6000	—	—

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Article 242
Overvoltage Protection

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242.9 Indicating.

Section 242.9 was not a part of 2020 NEC requirements.

The 2023 NEC introduces Section 242.9, requiring all surge-protection devices (SPDs) permanently installed on premises wiring systems rated not more than 1000 volts to have ***an indication*** **[indicator]** ***that it is functioning properly.***

2023 NEC Changes

27

Article 250
Grounding and Bonding

28

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250.64(G) Enclosures with Ventilation Openings.

2020 NEC did not include Section 250.64(G).

2023 NEC adds 250.64(G), and it makes it clear regarding transformer heat dissipation vents:

> ***Grounding Electrode Conductors shall not be installed through a ventilation opening of an enclosure***

2023 NEC Changes

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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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