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WORKING DRAFT OF NEC CODE-MAKING PANEL 13 MEETING OUTPUT

CONTENT NOT FINAL – SUBJECT TO REVISION PRIOR TO LETTER BALLOT AND PUBLICATION OF SECOND DRAFT REPORT

Document: National Electrical Code®

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Panel Activity: Comment Stage

This is a working draft, prepared by NFPA staff, to record the output generated at the Code-Making Panel 13 Second Draft Meeting. It includes draft copies of the Second Revisions and any Global Revisions.

It is being made available to Panel members for the purpose of facilitating early review, particularly for those Panel members who may be seeking input from their respective organizations in preparation for the Second Draft Ballot.

Second Revision No. 8383-NFPA 70-2024 [Global Comment]

[See "CMP 13 8383" word file for revisions]

445.12 Overcurrent Protection.

(A) Constant-Voltage Generators.

Constant-voltage generators, except ac generator exciters, shall be protected from overload by inherent design, circuit breakers, fuses, protective relays, or other identified overcurrent ~~protective~~ protection means suitable for the conditions of use.

(B) Two-Wire Generators.

Two-wire, dc generators shall be permitted to have overcurrent protection in one conductor only if the ~~overcurrent device~~ OCPD is actuated by the entire current generated other than the current in the shunt field. The ~~overcurrent device~~ OC PD shall not open the shunt field.

(C) 65 Volts or Less.

Generators operating at 65 volts or less and driven by individual motors shall be considered as protected by the ~~overcurrent device~~ OCPD protecting the motor if these devices will operate when the generators are delivering not more than 150 percent of their full-load rated current.

(D) Balancer Sets.

Two-wire, dc generators used in conjunction with balancer sets to obtain neutral points for 3-wire systems shall be equipped with ~~overcurrent devices~~ OCPDs that disconnect the 3-wire system in case of excessive unbalancing of voltages or currents.

(E) Three-Wire, Direct-Current Generators.

Three-wire, dc generators, whether compound or shunt wound, shall be equipped with ~~overcurrent devices~~ OCPDs, one in each armature lead, and connected so as to be actuated by the entire current from the armature. Such ~~overcurrent devices~~ OCPDs shall consist either of a double-pole, double-coil circuit breaker or of a 4-pole circuit breaker connected in the main and equalizer leads and tripped by two ~~overcurrent devices~~ OCPDs, one in each armature lead. Such protective devices shall be interlocked so that no one pole can be opened without simultaneously disconnecting both leads of the armature from the system.

Exception to (A) through (E): Where deemed by the authority having jurisdiction that a generator is vital to the operation of an electrical system and the generator should operate to failure to prevent a greater hazard to persons, the overload sensing device(s) shall be permitted to be connected to an annunciator or alarm supervised by authorized personnel instead of interrupting the generator circuit.

445.13 Conductors — Minimum Ampacity and Size.

(B) Overcurrent Protection Provided.

Where the generator set is equipped with a listed ~~overcurrent protective device~~ OCPD or a combination of a current transformer and overcurrent relay, conductors shall be permitted to be tapped from the load side of the protected terminals in accordance with 240.21(B).

Tapped conductors shall not be permitted for portable generators rated 15 kW or less where field wiring connection terminals are not accessible.

695.4(C)(3) Selective Coordination.

Overcurrent protective device(s) shall be selectively coordinated with all supply-side overcurrent protective device(s).

Selective coordination shall be selected by a licensed professional engineer or other qualified persons engaged primarily in the design, installation, or maintenance of electrical systems. The selection shall be documented and made available to those authorized to design, install, maintain, and operate the system.

Exception: Selective coordination shall not be required between two ~~overcurrent devices~~ OCPDs ~~located in series if no loads are connected in parallel with the downstream device.~~

695.4(H) Overcurrent Device Selection.

An instantaneous trip circuit breaker shall be permitted in lieu of the ~~overcurrent devices~~ OCPDs specified in 695.5(B)(2)(a)(1), provided that it is part of a transfer switch assembly listed for fire pump service that complies with 695.5(B)(2)(a)(2).

695.5(B)(2) Overcurrent Device Selection.

~~Overcurrent devices~~ OCPDs shall comply with 695.5(B)(2)(a) or 695.5(B)(2)(b).

(a) *Individual Sources.* Overcurrent protection for individual sources shall comply with the following:

(1) ~~Overcurrent protective device(s)~~ OCPDs shall be rated to carry indefinitely the sum of the locked-rotor current of the largest fire pump motor and the full-load current of all of the other pump motors and accessory equipment. [20:9.2.3.4] Where the locked-rotor current value does not correspond to a standard overcurrent device size, the next standard overcurrent device size shall be used in accordance with 240.6. The requirement to carry the locked-rotor currents indefinitely shall not apply to conductors or devices other than ~~overcurrent devices~~ OCPDs in the fire pump motor circuit(s).

Exception: The requirement to carry the locked-rotor currents indefinitely shall not apply to feeder ~~overcurrent protective devices~~ OCPDs ~~installed in accordance with 695.4(C).~~

(2) Overcurrent protection shall be provided by an assembly listed for fire pump service and complying with the following:

a. The ~~overcurrent protective device~~ OCPD shall not open within 2 minutes at 600 percent of the full-load current of the fire pump motor(s).

b. The ~~overcurrent protective device~~ OCPD shall not open with a re-start transient of 24 times the full-load current of the fire pump motor(s).

c. The ~~overcurrent protective device~~ OCPD shall not open within 10 minutes at 300 percent of the full-load current of the fire pump motor(s).

d. The trip point for circuit breakers shall not be field adjustable. [20:9.2.3.4.1]

(b) *On-Site Standby Generators.* ~~Overcurrent protective devices~~ OCPDs between an on-site standby generator and a fire pump controller shall be selected and sized to allow for instantaneous pickup of the full pump room load, but shall not be larger than the value selected to comply with 430.62to provide short-circuit protection only. [20:9.6.1.1]

695.6 Transformers.

Where the service or system voltage is different from the utilization voltage of the fire pump motor, transformer(s) protected by disconnecting means and ~~overcurrent protective devices~~ OCPDs shall be permitted to be installed between the system supply and the fire pump controller in accordance with 695.6(A) and 695.6(B), or with 695.6(C). Only transformers covered in 695.6(C) shall be permitted to supply loads not directly associated with the fire pump system.

695.6(B) Overcurrent Protection.

The primary ~~overcurrent protective device(s)~~ OCPDs shall be selected or set to carry indefinitely the sum of the locked-rotor current of the fire pump motor(s) and the pressure maintenance pump motor(s) and the full-load current of the associated fire pump accessory equipment when connected to this power supply. Secondary overcurrent protection shall not be permitted. The requirement to carry the locked-rotor currents indefinitely shall not apply to conductors or devices other than ~~overcurrent devices~~ OCPDs in the fire pump motor circuit(s).

695.6(C)(2) Overcurrent Protection.

The transformer size, the feeder size, and the ~~overcurrent protective device(s)~~ OCPDs shall be coordinated such that overcurrent protection is provided for the transformer in accordance with 450.5 and for the feeder in accordance with 215.5, and such that the ~~overcurrent protective device(s)~~ OCPDs is selected or set to carry indefinitely the sum of the locked-rotor current of the fire pump motor(s), the pressure maintenance pump motor(s), the full-load current of the associated fire pump accessory equipment, and 100 percent of the remaining loads supplied by the transformer. The requirement to carry the locked-rotor currents indefinitely shall not apply to conductors or devices other than ~~overcurrent devices~~ OCPDs in the fire pump motor circuit(s).

700.6(E) Documentation.

The short-circuit current rating of the transfer equipment, based on the specific ~~overcurrent protective device~~ OCPD type and settings protecting the transfer equipment, shall be field marked on the exterior of the transfer equipment.

700.10(B) Wiring.

Wiring from an emergency source or emergency source distribution overcurrent protection to emergency loads shall be kept entirely independent of all other wiring and equipment unless otherwise permitted in the following:

(1) Wiring from the normal power source located in transfer or interconnection equipment enclosures

(2) Wiring supplied from two sources in exit or emergency luminaires

(3) Wiring from two sources in a listed automatic load control relay (ALCR) or listed emergency lighting control device (ELCD) supplying exit or emergency luminaires, or in a common junction box, attached to exit or emergency luminaires

(4) Wiring within a common junction box attached to unit equipment, containing only the branch circuit supplying the unit equipment and the emergency circuit supplied by the unit equipment

(5) Wiring within a traveling cable to an elevator

(6) Wiring from an emergency source to supply emergency and other (nonemergency) loads in accordance with the following:

a. Separate vertical switchgear sections or separate vertical switchboard sections, with or without a common bus, or individual disconnects mounted in separate enclosures shall be used to separate emergency loads from all other loads.

b. The common bus of separate sections of the switchgear, separate sections of the switchboard, or the individual enclosures shall be either of the following:

(i) Supplied by single or multiple feeders without overcurrent protection at the source

(ii) Supplied by single or multiple feeders with overcurrent protection, provided that the overcurrent protection that is common to an emergency system and any nonemergency system(s) is selectively coordinated with the next downstream ~~overcurrent protective device~~ OCPD in the nonemergency system(s)

Informational Note: See Figure Informational Note 700.10(B)(1) and Figure Informational Note 700.10(B)(2) for further information.

Figure Informational Note 700.10(B)(1) Single or Multiple Feeders Without Overcurrent Protection.

[See "CMP 13 SR 8383" for Figure]

Figure Informational Note 700.10(B)(2) Single or Multiple Feeders with Overcurrent Protection.

[See "CMP 13 SR 8383" for Figure]

c. Emergency circuits shall not originate from the same vertical switchgear section, vertical switchboard section, panelboard enclosure, or individual disconnect enclosure as other circuits.

d. It shall be permissible to use single or multiple feeders to supply distribution equipment between an emergency source and the point where the emergency loads are separated from all other loads.

e. At the emergency power source, such as a generator, multiple integral ~~overcurrent protective devices~~ OCPDs shall each be permitted to supply a designated emergency or a designated nonemergency load, provided that there is complete separation between emergency and nonemergency loads beginning immediately after the ~~overcurrent protective device~~ OCPD line-side connections.

Wiring of two or more emergency circuits supplied from the same source shall be permitted in the same raceway, cable, box, or cabinet.

700.30 Accessibility.

The ~~branch-circuit overcurrent devices~~ OCPDs in emergency circuits shall be accessible to authorized persons.

701.6(D) Documentation.

The short-circuit current rating of the transfer equipment, based on the specific ~~overcurrent protective device~~ OCPD type and settings protecting the transfer equipment, shall be field marked on the exterior of the transfer equipment.

701.10(B) Wiring.

Wiring from a legally required source to supply legally required and other (nonlegally required) loads shall be in accordance with the following:

(1) The common bus of switchgear, sections of a switchboard, or individual enclosures shall be either of the following:

a. Supplied by single or multiple feeders without overcurrent protection at the source

b. Supplied by single or multiple feeders with overcurrent protection, provided that the overcurrent protection that is common to a legally required system and any nonlegally required system(s) is selectively coordinated with the next downstream ~~overcurrent protective device~~ OCPD in the nonlegally required system(s)

701.30 Accessibility.

The ~~branch-circuit overcurrent devices~~ OCPDs in legally required standby circuits shall be accessible to authorized persons only.

706.15(E)(1) Disconnecting Means.

A disconnecting means shall be provided for all ungrounded conductors. A disconnecting means shall be readily accessible and located within sight of the battery.

Informational Note: See 240.21(H) for information on the location of the OCPD ~~overcurrent device~~ for battery conductors.

706.30(B) Conductor Ampacity.

The ampacity of the output circuit conductors of the ESS(s) connected to the wiring system serving the loads to be serviced by the system shall not be less than the greater of the nameplate(s)-rated circuit current as determined in accordance with 706.30(A)(1) or the rating of the ESS(s)~~overcurrent protective device(s)~~ OCPD s .

706.33(B)(2) Circuits with Diversion Charge Controller and Diversion Load.

Circuits containing a diversion charge controller and a diversion load shall comply with the following:

(1) The current rating of the diversion load shall be less than or equal to the current rating of the diversion load charge controller. The voltage rating of the diversion load shall be greater than the maximum ESS voltage. The power rating of the diversion load shall be at least 150 percent of the power rating of the charging source.

(2) The conductor ampacity and the rating of the ~~overcurrent device~~ OCPD for this circuit shall be at least 150 percent of the maximum current rating of the diversion charge controller.

708.24(E) Documentation.

The short-circuit current rating of the transfer equipment, based on the specific ~~overcurrent protective device~~ OCPD type and settings protecting the transfer equipment, shall be field marked on the exterior of the transfer equipment.

708.50 Accessibility.

The ~~feeder- and branch-circuit overcurrent devices~~ OCPDs shall be accessible to authorized persons only.

708.54(A) General.

Critical operations power system(s) ~~overcurrent protective devices (OCPDs)~~ shall be selectively coordinated with all supply-side and load-side OCPDs.

Selective coordination shall be selected by a licensed professional engineer or other qualified persons engaged primarily in the design, installation, or maintenance of electrical systems. The selection shall be documented and made available to those authorized to d

Supplemental Information

File Name	Description	Approved
CMP_13_SR_8383.docx		

Submitter Information Verification

Committee: NEC-P13

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Committee Statement

Committee Statement: This revision changes various terms to OCPD to align the terminology throughout the standard. Additional locations not identified in PC 1653 were also revised.

Response Message: SR-8383-NFPA 70-2024

Public Comment No. 1653-NFPA 70-2024 [Global Input]

445.12 Overcurrent Protection.

(A) Constant-Voltage Generators.

Constant-voltage generators, except ac generator exciters, shall be protected from overload by inherent design, circuit breakers, fuses, protective relays, or other identified overcurrent ~~protective~~ protection means suitable for the conditions of use.

(B) Two-Wire Generators.

Two-wire, dc generators shall be permitted to have overcurrent protection in one conductor only if the ~~overcurrent device~~OCPD is actuated by the entire current generated other than the current in the shunt field. The ~~overcurrent device~~OCPD shall not open the shunt field.

(C) 65 Volts or Less.

Generators operating at 65 volts or less and driven by individual motors shall be considered as protected by the ~~overcurrent device~~OCPD protecting the motor if these devices will operate when the generators are delivering not more than 150 percent of their full-load rated current.

(D) Balancer Sets.

Two-wire, dc generators used in conjunction with balancer sets to obtain neutral points for 3-wire systems shall be equipped with ~~overcurrent devices~~OCPDs that disconnect the 3-wire system in case of excessive unbalancing of voltages or currents.

(E) Three-Wire, Direct-Current Generators.

Three-wire, dc generators, whether compound or shunt wound, shall be equipped with ~~overcurrent devices~~OCPDs, one in each armature lead, and connected so as to be actuated by the entire current from the armature. Such ~~overcurrent devices~~OCPDs shall consist either of a double-pole, double-coil circuit breaker or of a 4-pole circuit breaker connected in the main and equalizer leads and tripped by two ~~overcurrent devices~~OCPDs, one in each armature lead. Such protective devices shall be interlocked so that no one pole can be opened without simultaneously disconnecting both leads of the armature from the system.

Exception to (A) through (E): Where deemed by the authority having jurisdiction that a generator is vital to the operation of an electrical system and the generator should operate to failure to prevent a greater hazard to persons, the overload sensing device(s) shall be permitted to be connected to an annunciator or alarm supervised by authorized personnel instead of interrupting the generator circuit.

445.13 Conductors — Minimum Ampacity and Size.

(B) Overcurrent Protection Provided.

Where the generator set is equipped with a listed ~~overcurrent protective device~~OCPD or a combination of a current transformer and overcurrent relay, conductors shall be permitted to be tapped from the load side of the protected terminals in accordance with 240.21(B).

Tapped conductors shall not be permitted for portable generators rated 15 kW or less where field wiring connection terminals are not accessible.

695.4(C)(3) Selective Coordination.

Overcurrent protective device(s) shall be selectively coordinated with all supply-side overcurrent protective device(s).

Selective coordination shall be selected by a licensed professional engineer or other qualified persons engaged primarily in the design, installation, or maintenance of electrical systems. The selection shall be documented and made available to those authorized to design, install, maintain, and operate the system.

Exception: Selective coordination shall not be required between two ~~overcurrent devices~~OCPDs located in series if no loads are connected in parallel with the downstream device.

695.4(H) Overcurrent Device Selection.

An instantaneous trip circuit breaker shall be permitted in lieu of the ~~overcurrent devices~~OCPDs specified in 695.5(B)(2)(a)(1), provided that it is part of a transfer switch assembly listed for fire pump service that complies with 695.5(B)(2)(a)(2).

695.5(B)(2) Overcurrent Device Selection.

~~Overcurrent devices~~OCPDs shall comply with 695.5(B)(2)(a) or 695.5(B)(2)(b).

(a) *Individual Sources.* Overcurrent protection for individual sources shall comply with the following:

(1) ~~Overcurrent protective device(s)~~OCPDs shall be rated to carry indefinitely the sum of the locked-rotor current of the largest fire pump motor and the full-load current of all of the other pump motors and accessory equipment. [**20:**9.2.3.4] Where the locked-rotor current value does not correspond to a standard overcurrent device size, the next standard overcurrent device size shall be used in accordance with 240.6. The requirement to carry the locked-rotor currents indefinitely shall not apply to conductors or devices other than ~~overcurrent devices~~OCPDs in the fire pump motor circuit(s).

Exception: The requirement to carry the locked-rotor currents indefinitely shall not apply to feeder ~~overcurrent protective devices~~OCPDs installed in accordance with 695.4(C).

(2) Overcurrent protection shall be provided by an assembly listed for fire pump service and complying with the following:

a. The ~~overcurrent protective device~~OCPD shall not open within 2 minutes at 600 percent of the full-load current of the fire pump motor(s).

b. The ~~overcurrent protective device~~OCPD shall not open with a re-start transient of 24 times the full-load current of the fire pump motor(s).

c. The ~~overcurrent protective device~~OCPD shall not open within 10 minutes at 300 percent of the full-load current of the fire pump motor(s).

d. The trip point for circuit breakers shall not be field adjustable. [**20:**9.2.3.4.1]

(b) *On-Site Standby Generators.* ~~Overcurrent protective devices~~OCPDs between an on-site standby generator and a fire pump controller shall be selected and sized to allow for instantaneous pickup of the full pump room load, but shall not be larger than the value selected to comply with 430.62 to provide short-circuit protection only. [**20:**9.6.1.1]

695.6 Transformers.
Where the service or system voltage is different from the utilization voltage of the fire pump motor, transformer(s) protected by disconnecting means and ~~overcurrent protective devices~~OCPDs shall be permitted to be installed between the system supply and the fire pump controller in accordance with 695.6(A) and 695.6(B), or with 695.6(C). Only transformers covered in 695.6(C) shall be permitted to supply loads not directly associated with the fire pump system.

695.6(B) Overcurrent Protection.
The primary ~~overcurrent protective device(s)~~OCPDs shall be selected or set to carry indefinitely the sum of the locked-rotor current of the fire pump motor(s) and the pressure maintenance pump motor(s) and the full-load current of the associated fire pump accessory equipment when connected to this power supply. Secondary overcurrent protection shall not be permitted. The requirement to carry the locked-rotor currents indefinitely shall not apply to conductors or devices other than ~~overcurrent devices~~OCPDs in the fire pump motor circuit(s).

695.6(C)(2) Overcurrent Protection.
The transformer size, the feeder size, and the ~~overcurrent protective device(s)~~OCPDs shall be coordinated such that overcurrent protection is provided for the transformer in accordance with 450.5 and for the feeder in accordance with 215.5, and such that the ~~overcurrent protective device(s)~~OCPDs is selected or set to carry indefinitely the sum of the locked-rotor current of the fire pump motor(s), the pressure maintenance pump motor(s), the full-load current of the associated fire pump accessory equipment, and 100 percent of the remaining loads supplied by the transformer. The requirement to carry the locked-rotor currents indefinitely shall not apply to conductors or devices other than ~~overcurrent devices~~OCPDs in the fire pump motor circuit(s).

700.6(E) Documentation.
The short-circuit current rating of the transfer equipment, based on the specific ~~overcurrent protective device~~OCPD type and settings protecting the transfer equipment, shall be field marked on the exterior of the transfer equipment.

700.10(B) Wiring.

Wiring from an emergency source or emergency source distribution overcurrent protection to emergency loads shall be kept entirely independent of all other wiring and equipment unless otherwise permitted in the following:

(1) Wiring from the normal power source located in transfer or interconnection equipment enclosures

(2) Wiring supplied from two sources in exit or emergency luminaires

(3) Wiring from two sources in a listed automatic load control relay (ALCR) or listed emergency lighting control device (ELCD) supplying exit or emergency luminaires, or in a common junction box, attached to exit or emergency luminaires

(4) Wiring within a common junction box attached to unit equipment, containing only the branch circuit supplying the unit equipment and the emergency circuit supplied by the unit equipment

(5) Wiring within a traveling cable to an elevator

(6) Wiring from an emergency source to supply emergency and other (nonemergency) loads in accordance with the following:

a. Separate vertical switchgear sections or separate vertical switchboard sections, with or without a common bus, or individual disconnects mounted in separate enclosures shall be used to separate emergency loads from all other loads.

b. The common bus of separate sections of the switchgear, separate sections of the switchboard, or the individual enclosures shall be either of the following:

(i) Supplied by single or multiple feeders without overcurrent protection at the source

(ii) Supplied by single or multiple feeders with overcurrent protection, provided that the overcurrent protection that is common to an emergency system and any nonemergency system(s) is selectively coordinated with the next downstream ~~overcurrent protective device~~OCPD in the nonemergency system(s)

Informational Note: See Figure Informational Note 700.10(B)(1) and Figure Informational Note 700.10(B)(2) for further information.

Figure Informational Note 700.10(B)(1) Single or Multiple Feeders Without Overcurrent Protection.

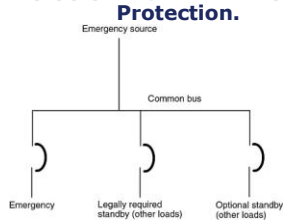
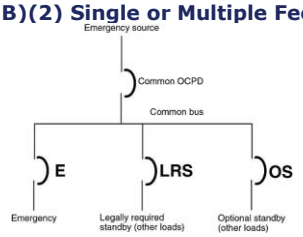


Figure Informational Note 700.10(B)(2) Single or Multiple Feeders with Overcurrent Protection.



c. Emergency circuits shall not originate from the same vertical switchgear section, vertical switchboard section, panelboard enclosure, or individual disconnect enclosure as other circuits.

d. It shall be permissible to use single or multiple feeders to supply distribution equipment between an emergency source and the point where the emergency loads are separated from all other loads.

e. At the emergency power source, such as a generator, multiple integral ~~overcurrent protective devices~~OCPDs shall each be permitted to supply a designated emergency or a designated nonemergency load, provided that there is complete separation between emergency and nonemergency loads beginning immediately after the ~~overcurrent protective device~~OCPD line-side connections.

Wiring of two or more emergency circuits supplied from the same source shall be permitted in the same raceway, cable, box, or cabinet.

700.30 Accessibility.
The ~~branch-circuit overcurrent devices~~OCPDs in emergency circuits shall be accessible to authorized persons only.

701.6(D) Documentation.
The short-circuit current rating of the transfer equipment, based on the specific ~~overcurrent protective device~~OCPD type and settings protecting the transfer equipment, shall be field marked on the exterior of the transfer equipment.

701.10(B) Wiring.
Wiring from a legally required source to supply legally required and other (nonlegally required) loads shall be in accordance with the following:

(1) The common bus of switchgear, sections of a switchboard, or individual enclosures shall be either of the following:

a. Supplied by single or multiple feeders without overcurrent protection at the source

b. Supplied by single or multiple feeders with overcurrent protection, provided that the overcurrent protection that is common to a legally required system and any nonlegally required system(s) is selectively coordinated with the next downstream ~~overcurrent protective device~~OCPD in the nonlegally required system(s)

701.30 Accessibility.
The ~~branch-circuit overcurrent devices~~OCPDs in legally required standby circuits shall be accessible to authorized persons only.

706.15(E)(1) Disconnecting Means.
A disconnecting means shall be provided for all ungrounded conductors. A disconnecting means shall be readily accessible and located within sight of the battery.
Informational Note: See 240.21(H) for information on the location of the OCPD~~overcurrent device~~ for battery conductors.

706.30(B) Conductor Ampacity.
The ampacity of the output circuit conductors of the ESS(s) connected to the wiring system serving the loads to be serviced by the system shall not be less than the greater of the nameplate(s)-rated circuit current as determined in accordance with 706.30(A)(1) or the rating of the ESS(s) ~~overcurrent protective device(s)~~OCPDs.

706.33(B)(2) Circuits with Diversion Charge Controller and Diversion Load.
Circuits containing a diversion charge controller and a diversion load shall comply with the following:

(1) The current rating of the diversion load shall be less than or equal to the current rating of the diversion load charge controller. The voltage rating of the diversion load shall be greater than the maximum ESS voltage. The power rating of the diversion load shall be at least 150 percent of the power rating of the charging source.

(2) The conductor ampacity and the rating of the ~~overcurrent device~~OCPD for this circuit shall be at least 150 percent of the maximum current rating of the diversion charge controller.

708.24(E) Documentation.
The short-circuit current rating of the transfer equipment, based on the specific ~~overcurrent protective device~~OCPD type and settings protecting the transfer equipment, shall be field marked on the exterior of the transfer equipment.

708.50 Accessibility.
The ~~feeder- and branch-circuit overcurrent devices~~OCPDs shall be accessible to authorized persons only.

708.54(A) General.
Critical operations power system(s) ~~overcurrent protective devices (~~OCPDs~~)~~ shall be selectively coordinated with all supply-side and load-side OCPDs.

Selective coordination shall be selected by a licensed professional engineer or other qualified persons engaged primarily in the design, installation, or maintenance of electrical systems. The selection shall be documented and made available to those authorized to design, install, inspect, maintain, and operate the system.

Second Revision No. 8396-NFPA 70-2024 [Global Comment]

[See "CMP SR 8396" word document for revisions]

130.80 Marking and Documentation.

(A) Marking.

The equipment that supplies the branch circuit, feeder, or service shall be marked with the following information:

(1) Current setpoint(s)

(2) In other than one- and two-family dwellings, the date of calculation and identification of qualified personnel determining the settings

(3) Identification of loads and sources managed by the EMS with PCS

(4) The following or equivalent wording: "Circuits within this equipment are controlled by a power control system. The current setpoints shall only be changed by a qualified person."

The markings shall meet the requirements in 110.21(B) and shall be located such that they are clearly visible to qualified persons before examination, adjustment, or servicing~~, or maintenance~~ of the equipment.

480.7(C) Disconnection of Series Battery Circuits.

Battery circuits exceeding 240 volts dc nominal between conductors or to ground and subject to field servicing shall have provisions to disconnect the series-connected strings into segments not exceeding 240 volts dc nominal for ~~maintenance~~ servicing by qualified persons.

480.10(C) Spaces About Stationary Batteries.

Spaces about stationary batteries shall comply with 110.26 and 110.34. Working space shall be measured from the edge of the battery cabinet, racks, or trays.

For battery racks, there shall be a minimum clearance of 25 mm (1 in.) between a cell container and any wall or structure on the side not requiring access for servicing ~~maintenance~~ . Battery stands shall be permitted to contact adjacent walls or structures, provided that the battery shelf has a free air space for not less than 90 percent of its length.

Informational Note: Additional space is often needed to accommodate battery hoisting equipment, tray removal, or spill containment.

480.10(G) Illumination.

Illumination shall be provided for working spaces containing stationary standby batteries. The lighting outlets shall not be controlled by automatic means only. Additional lighting outlets shall not be required where the work space is illuminated by an adjacent light source. The location of luminaires shall not result in the following:

(1) Expose personnel to energized battery components while ~~performing~~ servicing ~~maintenance on~~ the luminaires in the battery space

(2) Create a hazard to the battery upon failure of the luminaire

695.1(B) Not Covered.

This article does not cover the following:

(1) The performance, servicing ~~maintenance~~ , and acceptance testing of the fire pump system and the internal wiring of the components of the system

(2) The installation of pressure maintenance (jockey or makeup) pumps

(3) Transfer equipment upstream of the fire pump transfer switch(es)

Informational Note No. 1: See NFPA 20-2025, *Standard for the Installation of Stationary Pumps for Fire Protection*, for further information.

(4) Water pumps installed in one- and two-family dwellings and used for fire suppression

Informational Note No. 2: See NFPA 13D-2025, *Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes*, for further information.

695.4(C)(3) Selective Coordination.

Overcurrent protective device(s) shall be selectively coordinated with all supply-side overcurrent protective device(s).

Selective coordination shall be selected by a licensed professional engineer or other qualified persons engaged primarily in the design, installation, or servicing ~~maintenance~~ of electrical systems. The selection shall be documented and made available to those authorized to design, install, maintain, and operate the system.

Exception: Selective coordination shall not be required between two overcurrent devices located in series if no loads are connected in parallel with the downstream device.

700.1 Scope.

This article applies to the electrical safety of the installation, operation, and servicing ~~maintenance~~ of emergency systems consisting of circuits and equipment intended to supply, distribute, and control electricity for illumination, power, or both, to required facilities when the normal electrical supply or system is interrupted.

Informational Note No. 1: Emergency systems are generally installed in places of assembly where artificial illumination is required for safe exiting and for panic control in buildings subject to occupancy by large numbers of persons, such as hotels, theaters, sports arenas, health care facilities, and similar institutions. Emergency systems may also provide power for such functions as ventilation where essential to maintain life, fire detection and alarm systems, elevators, fire pumps, public safety communications systems, industrial processes where current interruption would produce serious life safety or health hazards, and similar functions.

Informational Note No. 2: See Article 517, Health Care Facilities, for further information regarding wiring and installation of emergency systems in health care facilities.

Informational Note No. 3: See NFPA 99-2024, *Health Care Facilities Code*, for further information regarding performance and servicing ~~maintenance~~ of emergency systems in health care facilities.

Informational Note No. 4: See NFPA 101-2024, *Life Safety Code*, for specification of locations where emergency lighting is considered essential to life safety.

Informational Note No. 5: See NFPA 110-2025, *Standard for Emergency and Standby Power Systems*, and NFPA 111-2025, *Standard on Stored Electrical Energy Emergency and Standby Power Systems*, for further information regarding performance of emergency and standby power systems. Emergency systems are considered Level 1 systems when applying NFPA 110.

700.32(A) General.

Emergency system(s) overcurrent protective devices (OCPDs) shall be selectively coordinated with all supply-side and load-side OCPDs.

Selective coordination shall be selected by a licensed professional engineer or other qualified persons engaged primarily in the design, installation, or servicing ~~maintenance~~ of electrical systems. The selection shall be documented and made available to those authorized to design, install, inspect, maintain, and operate the system.

Informational Note: See NECA 700, *Standard for Installing Overcurrent Protection to Achieve Selective Coordination*, for additional information on how to achieve selective coordination.

701.1 Scope.

This article applies to the electrical safety of the installation, operation, and servicing ~~maintenance~~ of legally required standby systems consisting of

circuits and equipment intended to supply, distribute, and control electricity to required facilities for illumination or power, or both, when the normal electrical supply or system is interrupted.

The systems covered by this article consist only of those that are permanently installed in their entirety, including the power source.

Informational Note No. 1: See NFPA 99-2024, *Health Care Facilities Code*, for further information.

Informational Note No. 2: See NFPA 110-2025, *Standard for Emergency and Standby Power Systems*, for further information regarding performance of emergency and standby power systems.

Informational Note No. 3: See ANSI/IEEE 446-1995, *Recommended Practice for Emergency and Standby Power Systems for Industrial and Commercial Applications*, for further information.

Informational Note No. 4: Legally required standby systems are typically installed to serve loads, such as heating and refrigeration systems, communications systems, ventilation and smoke removal systems, sewage disposal systems, lighting systems, and industrial processes that, when stopped during any interruption of the normal electrical supply, could create hazards or hamper rescue or firefighting operations.

Informational Note No. 5: Legally required standby systems are considered level one systems when failure to perform could result in loss of human life or serious injuries and level two systems when failure of legally required standby systems to perform is less critical to human life and safety when applying NFPA 110-2025, *Standard for Emergency Standby Power Systems*.

701.4(D) Record Keeping.

A written record shall be kept on such tests and servicing ~~maintenance~~ and made available upon request to those authorized to design, install, inspect, maintain, and operate the system.

(E) Testing Under Load.

Means for testing legally required standby systems during maximum anticipated load conditions shall be provided.

Informational Note: See NFPA 110-2025, *Standard for Emergency and Standby Power Systems*, for information on testing and servicing ~~maintenance~~ of emergency power supply systems (EPSSs).

701.32(A) General.

Legally required standby system(s) overcurrent protective devices (OCPDs shall be selectively coordinated with all supply-side and load-side OCPDs.

Selective coordination shall be selected by a licensed professional engineer or other qualified persons engaged primarily in the design, installation, or servicing ~~maintenance~~ of electrical systems. The selection shall be documented and made available to those authorized to design, install, inspect, maintain, and operate the system.

702.5(A) General.

Interconnection, interlocking device, or transfer equipment shall be required for all standby systems subject to the requirements of this article. Equipment shall be suitable for the intended use and shall be listed, designed, and installed so as to prevent the inadvertent interconnection of all sources of supply in any operation of the equipment.

Exception: Temporary connection of a portable generator without transfer equipment shall be permitted where conditions of servicing ~~*maintenance and supervision ensure that only qualified persons service the installation and where the normal supply is physically isolated by a lockable disconnecting means or by disconnection of the normal supply conductors.*~~

706.7 Commissioning and ~~Maintenance~~ Servicing ~~.~~

(A) Commissioning.

ESSs shall be commissioned upon installation in accordance with manufacturer's instructions.

Informational Note: See NFPA 855-2026, *Standard for the Installation of Stationary Energy Storage Systems*, for information related to the commissioning of ESSs.

(B) ~~Maintenance~~ Servicing ~~.~~

ESSs shall be maintained in proper and safe operating condition. The required ~~maintenance~~ servicing shall be in accordance with the manufacturer's requirements and industry standards. In other than one- and two-family dwelling units, a written record of the system ~~maintenance~~ servicing shall be kept and shall include records of servicing and replacements necessary to maintain the system in proper and safe operating condition.

Informational Note: See NFPA 70B-2023, *Standard for Electrical Equipment Maintenance*, or ANSI/NETA ATS, *Standard for Acceptance Testing Specifications for Electrical Power Equipment and Systems*, for information

related to general electrical equipment ~~maintenance~~ servicing and developing an effective electrical preventive maintenance (EPM) program.

706.15(E)(2) Disconnection of Series Battery Circuits.

Battery circuits exceeding 240 volts dc nominal between conductors or to ground shall have provisions to disconnect the series-connected strings into segments not exceeding 240 volts dc nominal for servicing ~~maintenance~~ by qualified persons. Non-load-break bolted or plug-in disconnects shall be permitted if covered in the listing.

706.51 Flywheel ESS (FESS).

Flywheel ESS (FESS) using flywheels as the storage mechanism shall also comply with all of the following:

(1) FESS shall not be used for one- or two-family dwelling units.

Informational Note No. 1: FESS are intended for high-power shorter term applications. They contain parts that rotate under high speed with hazardous kinetic energy and include parts such as magnetic bearings that require ongoing monitoring and servicing ~~maintenance~~ and, therefore, are not suitable for residential-type applications.

(2) FESS shall be provided with bearing monitoring and controls that can identify bearing wear or damage to avoid catastrophic failure.

Informational Note No. 2: The bearing monitoring controls should be evaluated as part of the listing evaluation.

(3) FESS shall be provided with a containment means to contain moving parts that could break from the system upon catastrophic failure.

Informational Note No. 3: The containment means should be evaluated as part of the listing evaluation.

(4) The spin-down time of the FESS shall be provided in the servicing ~~maintenance~~ documentation.

708.1 Scope.

This article applies to the installation, operation, monitoring, control, and servicing ~~maintenance~~ of the portions of the premises wiring system intended to supply, distribute, and control electricity to designated critical operations areas (DCOA) in the event of disruption to elements of the normal system.

Critical operations power systems are those systems so classed by municipal, state, federal, or other codes by any governmental agency having jurisdiction or by facility engineering documentation establishing the necessity for such a system. These systems include but are not limited to power systems, HVAC, fire alarm, security, communications, and signaling for designated critical operations areas.

Informational Note No. 1: Critical operations power systems are generally installed in vital infrastructure facilities that, if destroyed or incapacitated, would disrupt national security, the economy, public health or safety; and where enhanced electrical infrastructure for continuity of operation has been deemed necessary by governmental authority.

Informational Note No. 2: See *NFPA 1600*-2025, *Standard on Continuity, Emergency, and Crisis Management*, for further information on disaster and emergency management.

Informational Note No. 3: See NFPA 110-2025, *Standard for Emergency and Standby Power Systems*, for further information regarding performance of emergency and standby power systems.

Informational Note No. 4: See NFPA 101-2024, *Life Safety Code*, or the applicable building code, for specification of locations where emergency lighting is considered essential to life safety.

Informational Note No. 5: See NFPA 730-2023, *Guide for Premises Security*, and ANSI/TIA-5017-2016, *Telecommunications Physical Network Security Standard*, for further information regarding physical security.

Informational Note No. 6: See *NFPA 1600*-2019, *Standard on Continuity, Emergency, and Crisis Management*, A.5.3.2. Threats to facilities that may require transfer of operation to the critical systems include both naturally occurring hazards and human-caused events.

Informational Note No. 7: See Informative Annex F, Availability and Reliability for Critical Operations Power Systems; and Development and Implementation of Functional Performance Tests (FPTs) for Critical Operations Power Systems.

Informational Note No. 8: See Informative Annex G, Supervisory Control and Data Acquisition (SCADA).

Informational Note No. 9: Text that is followed by a reference in brackets has been extracted from *NFPA 1600*-2019, *Standard on Continuity, Emergency, and Crisis Management*. Only editorial changes were made to the extracted text to make it consistent with this code.

708.6(C) Servicing ~~Maintenance~~ .

The authority having jurisdiction shall require a documented preventive maintenance program for critical operations power systems.

Informational Note: See NFPA 70B-2023, *Standard for Electrical Equipment Maintenance*, for information concerning servicing ~~maintenance~~ .

(D) Written Record.

A written record shall be kept of such tests and servicing ~~maintenance~~ and made available to those authorized to design, install, inspect, maintain, and operate the system.

708.6(E) Testing Under Load.

Means for testing all critical power systems during maximum anticipated load conditions shall be provided.

Informational Note: See NFPA 110-2025, *Standard for Emergency and Standby Power Systems*, for information concerning testing and servicing ~~maintenance~~ of emergency power supply systems (EPSSs) that are also applicable to COPS.

708.9(C) Baseline Test Results.

A set of baseline test results shall be documented for comparison with future periodic maintenance testing to identify equipment deterioration.

708.54(A) General.

Critical operations power system(s) overcurrent protective devices (OCPDs) shall be selectively coordinated with all supply-side and load-side OCPDs.

Selective coordination shall be selected by a licensed professional engineer or other qualified persons engaged primarily in the design, installation, or servicing ~~maintenance~~ of electrical systems. The selection shall be documented and made available to those authorized to design, install, inspect, maintain, and operate the system.

Informative Annex F Availability and Reliability for Critical Operations Power Systems; and Development and Implementation of Functional Performance Tests (FPTs) for Critical Operations Power Systems
This informative annex is not a part of the requirements of this NFPA document but is included for informational purposes only.
Part I. Availability and Reliability for Critical Operations Power Systems.
Critical operations power systems may support facilities with a variety of objectives that are vital to public safety. Often these objectives are of such

critical importance that system downtime is costly in terms of economic losses, loss of security, or loss of mission. For those reasons, the availability of the critical operations power system, the percentage of time that the system is in service, is important to those facilities. Given a specified level of availability, the reliability and maintainability requirements are then derived based on that availability requirement.
Availability. Availability is defined as the percentage of time that a system is available to perform its function(s). Availability is measured in a variety of ways, including the following:
[F.1]

[**See "CMP 13 SR 8396" for formula]**
where:
MTBF = mean time between failures
MTTR = mean time to repair
See Table F.1 for an example of how to establish required availability for critical operation power systems:
Table F.1 Availability for Critical Operation Power Systems

See Table F.1 for an example of how to establish required availability for critical operation power systems:

Table F.1 Availability for Critical Operation Power Systems

Availability	Hours of Downtime
0.9	876
0.99	87.6
0.999	8.76
0.9999	0.876
0.99999	0.0876
0.999999	0.00876
0.9999999	0.000876

Note: Based on a year of 8760 hours.

Availability of a system in actual operations is determined by the following:

(1) The frequency of occurrence of failures. Failures may prevent the system from performing its function or may cause a degraded effect on system operation. Frequency of failures is directly related to the system's level of reliability.

(2) The time required to restore operations following a system failure or the time required to perform ~~maintenance~~ servicing to prevent a failure. These times are determined in part by the system's level of maintainability.

(3) The logistics provided to support servicing ~~maintenance~~ of the system. The number and availability of spares, maintenance personnel, and other

logistics resources (refueling, etc.) combined with the system's level of maintainability determine the total downtime following a system failure.

*Reliability.*Reliability is concerned with the probability and frequency of failures (or lack of failures). A commonly used measure of reliability for repairable systems is *MTBF*. The equivalent measure for nonrepairable items is *MTTF*. Reliability is more accurately expressed as a probability over a given duration of time, cycles, or other parameter. For example, the reliability of a power plant might be stated as 95 percent probability of no failure over a 1000-hour operating period while generating a certain level of power. Reliability is usually defined in two ways (the electrical power industry has historically not used these definitions):

(1) The duration or probability of failure-free performance under stated conditions

(2) The probability that an item can perform its intended function for a specified interval under stated conditions [For nonredundant items, this is equivalent to the preceding definition (1). For redundant items, this is equivalent to the definition of mission reliability.]

*Maintainability.*Maintainability is a measure of how quickly and economically failures can be prevented through preventive maintenance, or system operation can be restored following failure through corrective maintenance. A commonly used measure of maintainability in terms of corrective maintenance is the mean time to repair (*MTTR*). Maintainability is not the same thing as maintenance. It is a design parameter, while maintenance consists of actions to correct or prevent a failure event.

*Improving Availability.*The appropriate methods to use for improving availability depend on whether the facility is being designed or is already in use. For both cases, a reliability/availability analysis should be performed to determine the availability of the old system or proposed new system in order to ascertain the hours of downtime (see the preceding table). The AHJ or government agency should dictate how much downtime is acceptable.

Existing facilities: For a facility that is being operated, two basic methods are available for improving availability when the current level of availability is unacceptable: (1) Selectively adding redundant units (e.g., generators, chillers, fuel supply) to eliminate sources of single-point failure, and (2) optimizing maintenance using a reliability-centered maintenance (RCM) approach to minimize downtime. (Refer to NFPA 70B-2019, *Recommended Practice for Electrical Equipment Maintenance*.) A combination of the previous two methods can also be implemented. A third very expensive method is to redesign subsystems or to replace components and subsystems with higher reliability items. *(Refer to NFPA 70B.)*

New facilities: The opportunity for high availability and reliability is greatest when designing a new facility. By applying an effective reliability strategy, designing for maintainability, and ensuring that manufacturing and commissioning do not negatively affect the inherent levels of reliability and maintainability, a highly available facility will result. The approach should be as follows:

(1) *Develop and determine a reliability strategy*(establish goals, develop a system model, design for reliability, conduct reliability development testing,

conduct reliability acceptance testing, design system delivery, maintain design reliability, maintain design reliability in operation).

(2) *Develop a reliability program.* This is the application of the reliability strategy to a specific system, process, or function. Each step in the preceding strategy requires the selection and use of specific methods and tools. For example, various tools can be used to develop requirements or evaluate potential failures. To derive requirements, analytical models can be used, for example, quality function development (a technique for deriving more detailed, lower-level requirements from one level to another, beginning with mission requirements, i.e., customer needs). This model was developed as part of the total quality management movement. Parametric models can also be used to derive design values of reliability from operational values and vice versa. Analytical methods include but are not limited to things such as thermal analysis, durability analysis, and predictions. Finally, one should evaluate possible failures. A failure modes and effects criticality analysis (FMECA) and fault tree analysis (FTA) are two methods for evaluating possible failures. The mission facility engineer should determine which method to use or whether to use both.

(3) *Identify reliability requirements.* The entire effort for designing for reliability begins with identifying the mission critical facility's reliability requirements. These requirements are stated in a variety of ways, depending on the customer and the specific system. For a mission-critical facility, it would be the mission success probability.

Informational Note: For information regarding power system reliability, see IEEE 3006.5-2014, *Recommended Practice for the Use of Probability Methods for Conducting a Reliability Analysis of Industrial and Commercial Power Systems*.

Part II. Development and Implementation of Functional Performance Tests (FPTs) for Critical Operations Power Systems Development of FPT.

(1) Submit Functional Performance Tests (FPTs). System/component tests or FPTs are developed from submitted drawings, systems operating documents (SODs), and systems operation and maintenance manuals (SOMMs), including large component testing (i.e., transformers, cable, generators, UPS), and how components operate as part of the total system. The commissioning authority develops the test and cannot be the installation contractor (or subcontractor).

As the equipment/components/systems are installed, quality assurance procedures are administered to verify that components are installed in accordance with minimum manufacturers' recommendations, safety codes, and acceptable installation practices. Quality assurance discrepancies are then identified and added to a "commissioning action list" that must be rectified as part of the commissioning program. These items would usually be discussed during commissioning meetings. Discrepancies are usually identified initially by visual inspection.

(2) Review FPTs. The tests must be reviewed by the customer, electrical contractors, quality assurance personnel, maintenance personnel, and other key personnel (the commissioning team). Areas of concern include, among others, all functions of the system being tested, all major components included, whether the tests reflect the system operating documents, and verification that the tests make sense.

(3) Make Changes to FPTs as Required. The commissioning authority then implements the corrections, questions answered, and additions.

(4) FPTs Approval. After the changes are made to the FPTs, they are submitted to the commissioning team. When it is acceptable, the customer or the designated approval authority approves the FPTs. It should be noted that even though the FPT is approved, problems that arise during the test (or areas not covered) must be addressed.

Testing Implementation for FPTs. The final step in the successful commissioning plan is testing and proper execution of system-integrated tests.

(1) Systems Ready to Operate. The FPTs can be implemented as various systems become operative (i.e., test for the generator system) or when the entire system is installed. However, the final "pull the plug" test is performed only after all systems are completely installed. If the electrical contractor (or subcontractor) implements the FPTs, a witness must initial each step of the test. The electrical contractor cannot employ the witness directly or indirectly.

(2) Perform Tests (FPTs). If the system fails the test, the problem must be resolved and the equipment or system retested or the testing requirements re-analyzed until successful tests are witnessed. Once the system or equipment passes testing, it is verified by a designated commissioning official.

(3) Customer Receives System. After all tests are completed (including the "pull the plug" test), the system is turned over to the customer.

Informational Note: For information regarding reliability of critical operations power systems, see IEEE 3006.2-2016, *Recommended Practice for Evaluating the Reliability of Existing Industrial and Commercial Power Systems*.

Informative Annex G Supervisory Control and Data Acquisition (SCADA)

This informative annex is not a part of the requirements of this NFPA document, but is included for informational purposes only.

(A) General.

Where provided, the general requirements in the following shall apply to SCADA systems:

(1) The SCADA system for the COPS loads shall be separate from the building management SCADA system.

(2) No single point failure shall be able to disable the SCADA system.

(3) The SCADA system shall be permitted to provide control and monitor electrical and mechanical utility systems related to mission critical loads, including, but not limited to, the following:

a. The fire alarm system

b. The security system

c. Power distribution

d. Power generation

e. HVAC and ventilation (damper position, airflow speed and direction)

f. Load shedding

g. Fuel levels or hours of operation

(4) Before installing or employing a SCADA system, an operations and maintenance analysis and risk assessment shall be performed to provide the maintenance parameter data

(5) A redundant system shall be provided in either warm or hot standby.

(6) The controller shall be a programmable logic controller (PLC).

(7) The SCADA system shall utilize open, not proprietary, protocols.

(8) The SCADA system shall be able to assess the damage and determine system integrity after the "event."

(9) The monitor display shall provide graphical user interface for all major components monitored and controlled by the SCADA system, with color schemes readily recognized by the typical user.

(10) The SCADA system shall have the capability to provide storage of critical system parameters at a 15-minute rate or more often when out-of-limit conditions exist.

(11) The SCADA system shall have a separate data storage facility not located in the same vicinity.

(B) Power Supply.

The SCADA system power supply shall comply with the following:

(1) The power supply shall be provided with a direct-current station battery system, rated between 24 and 125 volts dc, with a 72-hour capacity.

(2) The batteries of the SCADA system shall be separate from the batteries for other electrical systems.

(3) The power supply shall be provided with a listed surge-protective device (SPD). The SPD shall be installed at the line-side terminals of the power supply in accordance with Part II of Article 242, with a direct low-impedance path to ground. Protected and unprotected circuits shall be physically separated to prevent coupling.

(C) Security Against Hazards.

Security against hazards shall be provided in accordance with the following:

(1) Controlled physical access by authorized personnel to only the system operational controls and software shall be provided.

(2) The SCADA system shall be protected against dust, dirt, water, and other contaminants by specifying enclosures appropriate for the environment.

(3) Conduit and tubing shall not violate the integrity of the SCADA system enclosure.

(4) The SCADA system shall be located in the same secure locations as the secured systems that they monitor and control.

(5) The SCADA system shall be provided with dry agent fire protection systems or double interlocked preaction sprinkler systems using cross-zoned detection, to minimize the threat of accidental water discharge into unprotected equipment. The fire protection systems shall be monitored by

the fire alarm system in accordance with *NFPA 72*-2019, *National Fire Alarm and Signaling Code*.

(6) The SCADA system shall not be connected to other network communications outside the secure locations without encryption or use of fiber optics.

(D) ~~Maintenance~~ Servicing and Testing.

SCADA systems shall be maintained and tested in accordance with D(1) and D(2).

(1) Maintenance.

The maintenance program for SCADA systems shall consist of the following components:

(1) A documented preventive maintenance program

(2) Concurrent maintenance capabilities, to allow the testing, troubleshooting, repair, and/or replacement of a component or subsystem while redundant component(s) or subsystem(s) are serving the load

(3) Retention of operational data — the deleted material goes well beyond requirements to ensure proper maintenance and operation

(2) Testing.

SCADA systems shall be tested periodically under actual or simulated contingency conditions.

Informational Note No. 1: Periodic system testing procedures can duplicate or be derived from the recommended functional performance testing procedures of individual components, as provided by the manufacturers.

Informational Note No. 2: See NFPA 70B-2023, *Standard for Electrical Equipment Maintenance*, for more information on ~~maintenance~~ servicing and testing of SCADA.

Supplemental Information

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Committee Statement

Committee Statement: This revision aligns with revisions to the term ‘maintenance’ to the defined term ‘servicing’ which includes maintenance.
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130.80 Marking and Documentation.

(A) Marking.
The equipment that supplies the branch circuit, feeder, or service shall be marked with the following information:

1. Current setpoint(s)
2. In other than one- and two-family dwellings, the date of calculation and identification of qualified personnel determining the settings
3. Identification of loads and sources managed by the EMS with PCS
4. The following or equivalent wording: "Circuits within this equipment are controlled by a power control system. The current setpoints shall only be changed by a qualified person."

The markings shall meet the requirements in 110.21(B) and shall be located such that they are clearly visible to qualified persons before examination, adjustment, or servicing~~, or maintenance~~ of the equipment.

480.7(C) Disconnection of Series Battery Circuits.
Battery circuits exceeding 240 volts dc nominal between conductors or to ground and subject to field servicing shall have provisions to disconnect the series-connected strings into segments not exceeding 240 volts dc nominal for ~~maintenance~~ servicing by qualified persons.

480.10(C) Spaces About Stationary Batteries.
Spaces about stationary batteries shall comply with 110.26 and 110.34. Working space shall be measured from the edge of the battery cabinet, racks, or trays.
For battery racks, there shall be a minimum clearance of 25 mm (1 in.) between a cell container and any wall or structure on the side not requiring access for servicing~~maintenance~~. Battery stands shall be permitted to contact adjacent walls or structures, provided that the battery shelf has a free air space for not less than 90 percent of its length.
Informational Note: Additional space is often needed to accommodate battery hoisting equipment, tray removal, or spill containment.

480.10(G) Illumination.
Illumination shall be provided for working spaces containing stationary standby batteries. The lighting outlets shall not be controlled by automatic means only. Additional lighting outlets shall not be required where the work space is illuminated by an adjacent light source. The location of luminaires shall not result in the following:

(1) Expose personnel to energized battery components while ~~performing~~ servicing ~~maintenance on~~ the luminaires in the battery space

(2) Create a hazard to the battery upon failure of the luminaire

695.1(B) Not Covered.

This article does not cover the following:

(1) The performance, servicing~~maintenance~~, and acceptance testing of the fire pump system and the internal wiring of the components of the system

(2) The installation of pressure maintenance (jockey or makeup) pumps

(3) Transfer equipment upstream of the fire pump transfer switch(es)

Informational Note No. 1: See NFPA 20-2025, *Standard for the Installation of Stationary Pumps for Fire Protection*, for further information.

(4) Water pumps installed in one- and two-family dwellings and used for fire suppression

Informational Note No. 2: See NFPA 13D-2025, *Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes*, for further information.

695.4(C)(3) Selective Coordination.

Overcurrent protective device(s) shall be selectively coordinated with all supply-side overcurrent protective device(s).

Selective coordination shall be selected by a licensed professional engineer or other qualified persons engaged primarily in the design, installation, or servicing ~~maintenance~~ of electrical systems. The selection shall be documented and made available to those authorized to design, install, maintain, and operate the system.

Exception: Selective coordination shall not be required between two overcurrent devices located in series if no loads are connected in parallel with the downstream device.

700.1 Scope.

This article applies to the electrical safety of the installation, operation, and servicing ~~maintenance~~ of emergency systems consisting of circuits and equipment intended to supply, distribute, and control electricity for illumination, power, or both, to required facilities when the normal electrical supply or system is interrupted.

Informational Note No. 1: Emergency systems are generally installed in places of assembly where artificial illumination is required for safe exiting and for panic control in buildings subject to occupancy by large numbers of persons, such as hotels, theaters, sports arenas, health care facilities, and similar institutions. Emergency systems may also provide power for such functions as ventilation where essential to maintain life, fire detection and alarm systems, elevators, fire pumps, public safety communications systems, industrial processes where current interruption would produce serious life safety or health hazards, and similar functions.

Informational Note No. 2: See Article 517, Health Care Facilities, for further information regarding wiring and installation of emergency systems in health care facilities.

Informational Note No. 3: See NFPA 99-2024, *Health Care Facilities Code*, for further information regarding performance and servicing ~~maintenance~~ of emergency systems in health care facilities.

Informational Note No. 4: See NFPA 101-2024, *Life Safety Code*, for specification of locations where emergency lighting is considered essential to life safety.

Informational Note No. 5: See NFPA 110-2025, *Standard for Emergency and Standby Power Systems*, and NFPA 111-2025, *Standard on Stored Electrical Energy Emergency and Standby Power Systems*, for further information regarding performance of emergency and standby power systems. Emergency systems are considered Level 1 systems when applying NFPA 110.

700.32(A) General.

Emergency system(s) overcurrent protective devices (OCPDs) shall be selectively coordinated with all supply-side and load-side OCPDs.

Selective coordination shall be selected by a licensed professional engineer or other qualified persons engaged primarily in the design, installation, or servicing ~~maintenance~~ of electrical systems. The selection shall be documented and made available to those authorized to design, install, inspect, maintain, and operate the system.

Informational Note: See NECA 700, *Standard for Installing Overcurrent Protection to Achieve Selective Coordination*, for additional information on how to achieve selective coordination.

701.1 Scope.

This article applies to the electrical safety of the installation, operation, and servicing ~~maintenance~~ of legally required standby systems consisting of circuits and equipment intended to supply, distribute, and control electricity to required facilities for illumination or power, or both, when the normal electrical supply or system is interrupted.

The systems covered by this article consist only of those that are permanently installed in their entirety, including the power source.

Informational Note No. 1: See NFPA 99-2024, *Health Care Facilities Code*, for further information.

Informational Note No. 2: See NFPA 110-2025, *Standard for Emergency and Standby Power Systems*, for further information regarding performance of emergency and standby power systems.

Informational Note No. 3: See ANSI/IEEE 446-1995, *Recommended Practice for Emergency and Standby Power Systems for Industrial and Commercial Applications*, for further information.

Informational Note No. 4: Legally required standby systems are typically installed to serve loads, such as heating and refrigeration systems, communications systems, ventilation and smoke removal systems, sewage disposal systems, lighting systems, and industrial processes that, when stopped during any interruption of the normal electrical supply, could create hazards or hamper rescue or firefighting operations.

Informational Note No. 5: Legally required standby systems are considered level one systems when failure to perform could result in loss of human life or serious injuries and level two systems when failure of legally required standby systems to perform is less critical to human life and safety when applying NFPA 110-2025, *Standard for Emergency Standby Power Systems*.

701.4(D) Record Keeping.

A written record shall be kept on such tests and servicing ~~maintenance~~ and made available upon request to those authorized to design, install, inspect, maintain, and operate the system.

(E) Testing Under Load.

Means for testing legally required standby systems during maximum anticipated load conditions shall be provided.

Informational Note: See NFPA 110-2025, *Standard for Emergency and Standby Power Systems*, for information on testing and servicing ~~maintenance~~ of emergency power supply systems (EPSSs).

701.32(A) General.

Legally required standby system(s) overcurrent protective devices (OCPDs shall be selectively coordinated with all supply-side and load-side OCPDs.

Selective coordination shall be selected by a licensed professional engineer or other qualified persons engaged primarily in the design, installation, or servicing ~~maintenance~~ of electrical systems. The selection shall be documented and made available to those authorized to design, install, inspect, maintain, and operate the system.

702.5(A) General.

Interconnection, interlocking device, or transfer equipment shall be required for all standby systems subject to the requirements of this article. Equipment shall be suitable for the intended use and shall be listed, designed, and installed so as to prevent the inadvertent interconnection of all sources of supply in any operation of the equipment.

Exception: Temporary connection of a portable generator without transfer equipment shall be permitted where conditions of servicing ~~*maintenance*~~ *and supervision ensure that only qualified persons service the installation and where the normal supply is physically isolated by a lockable disconnecting means or by disconnection of the normal supply conductors.*

706.7 Commissioning and ~~Maintenance~~Servicing.

(A) Commissioning.

ESSs shall be commissioned upon installation in accordance with manufacturer's instructions.

Informational Note: See NFPA 855-2026, *Standard for the Installation of Stationary Energy Storage Systems*, for information related to the commissioning of ESSs.

(B) ~~Maintenance~~Servicing.

ESSs shall be maintained in proper and safe operating condition. The required ~~maintenance~~ servicing shall be in accordance with the manufacturer's requirements and industry standards. In other than one- and two-family dwelling units, a written record of the system ~~maintenance~~ servicing shall be kept and shall include records of servicing and replacements necessary to maintain the system in proper and safe operating condition.

Informational Note: See NFPA 70B-2023, *Standard for Electrical Equipment Maintenance*, or ANSI/NETA ATS, *Standard for Acceptance Testing Specifications for Electrical Power Equipment and Systems*, for information related to general electrical equipment ~~maintenance~~ servicing and developing an effective electrical preventive maintenance (EPM) program.

706.15(E)(2) Disconnection of Series Battery Circuits.

Battery circuits exceeding 240 volts dc nominal between conductors or to ground shall have provisions to disconnect the series-connected strings into segments not exceeding 240 volts dc nominal for servicing ~~maintenance~~ by qualified persons. Non-load-break bolted or plug-in disconnects shall be permitted if covered in the listing.

706.51 Flywheel ESS (FESS).

Flywheel ESS (FESS) using flywheels as the storage mechanism shall also comply with all of the following:

(1) FESS shall not be used for one- or two-family dwelling units.

Informational Note No. 1: FESS are intended for high-power shorter term applications. They contain parts that rotate under high speed with hazardous kinetic energy and include parts such as magnetic bearings that require ongoing monitoring and servicing ~~maintenance~~ and, therefore, are not suitable for residential-type applications.

(2) FESS shall be provided with bearing monitoring and controls that can identify bearing wear or damage to avoid catastrophic failure.

Informational Note No. 2: The bearing monitoring controls should be evaluated as part of the listing evaluation.

(3) FESS shall be provided with a containment means to contain moving parts that could break from the system upon catastrophic failure.

Informational Note No. 3: The containment means should be evaluated as part of the listing evaluation.

(4) The spin-down time of the FESS shall be provided in the servicing ~~maintenance~~ documentation.

708.1 Scope.

This article applies to the installation, operation, monitoring, control, and servicing ~~maintenance~~ of the portions of the premises wiring system intended to supply, distribute, and control electricity to designated critical operations areas (DCOA) in the event of disruption to elements of the normal system.

Critical operations power systems are those systems so classed by municipal, state, federal, or other codes by any governmental agency having jurisdiction or by facility engineering documentation establishing the necessity for such a system. These systems include but are not limited to power systems, HVAC, fire alarm, security, communications, and signaling for designated critical operations areas.

Informational Note No. 1: Critical operations power systems are generally installed in vital infrastructure facilities that, if destroyed or incapacitated, would disrupt national security, the economy, public health or safety; and where enhanced electrical infrastructure for continuity of operation has been deemed necessary by governmental authority.

Informational Note No. 2: See *NFPA 1600*-2025, *Standard on Continuity, Emergency, and Crisis Management*, for further information on disaster and emergency management.

Informational Note No. 3: See NFPA 110-2025, *Standard for Emergency and Standby Power Systems*, for further information regarding performance of emergency and standby power systems.

Informational Note No. 4: See NFPA 101-2024, *Life Safety Code*, or the applicable building code, for specification of locations where emergency lighting is considered essential to life safety.

Informational Note No. 5: See NFPA 730-2023, *Guide for Premises Security*, and ANSI/TIA-5017-2016, *Telecommunications Physical Network Security Standard*, for further information regarding physical security.

Informational Note No. 6: See *NFPA 1600*-2019, *Standard on Continuity, Emergency, and Crisis Management*, A.5.3.2. Threats to facilities that may require transfer of operation to the critical systems include both naturally occurring hazards and human-caused events.

Informational Note No. 7: See Informative Annex F, Availability and Reliability for Critical Operations Power Systems; and Development and Implementation of Functional Performance Tests (FPTs) for Critical Operations Power Systems.

Informational Note No. 8: See Informative Annex G, Supervisory Control and Data Acquisition (SCADA).

Informational Note No. 9: Text that is followed by a reference in brackets has been extracted from *NFPA 1600*-2019, *Standard on Continuity, Emergency, and Crisis Management*. Only editorial changes were made to the extracted text to make it consistent with this code.

708.6(C) Servicing~~Maintenance~~.

The authority having jurisdiction shall require a documented preventive maintenance program for critical operations power systems.

Informational Note: See NFPA 70B-2023, *Standard for Electrical Equipment Maintenance*, for information concerning servicing~~maintenance~~.

(D) Written Record.

A written record shall be kept of such tests and servicing ~~maintenance~~ and made available to those authorized to design, install, inspect, maintain, and operate the system.

708.6(E) Testing Under Load.

Means for testing all critical power systems during maximum anticipated load conditions shall be provided.

Informational Note: See NFPA 110-2025, *Standard for Emergency and Standby Power Systems*, for information concerning testing and servicing ~~maintenance~~ of emergency power supply systems (EPSSs) that are also applicable to COPS.

708.54(A) General.

Critical operations power system(s) overcurrent protective devices (OCPDs) shall be selectively coordinated with all supply-side and load-side OCPDs.

Selective coordination shall be selected by a licensed professional engineer or other qualified persons engaged primarily in the design, installation, or servicing ~~maintenance~~ of electrical systems. The selection shall be documented and made available to those authorized to design, install, inspect, maintain, and operate the system.

Informative Annex F Availability and Reliability for Critical Operations Power Systems; and Development and Implementation of Functional Performance Tests (FPTs) for Critical Operations Power Systems

This informative annex is not a part of the requirements of this NFPA document but is included for informational purposes only.

Part I. Availability and Reliability for Critical Operations Power Systems.

Critical operations power systems may support facilities with a variety of objectives that are vital to public safety. Often these objectives are of such critical importance that system downtime is costly in terms of economic losses, loss of security, or loss of mission. For those reasons, the availability of the critical operations power system, the percentage of time that the system is in service, is important to those facilities. Given a specified level of availability, the reliability and maintainability requirements are then derived based on that availability requirement.

Availability. Availability is defined as the percentage of time that a system is available to perform its function(s). Availability is measured in a variety of ways, including the following:

$$\text{Availability} = \frac{MTBF}{MTBF + MTTR} \quad \textbf{[F.1]}$$

where:

MTBF = mean time between failures

MTTR = mean time to repair

See Table F.1 for an example of how to establish required availability for critical operation power systems:

Table F.1 Availability for Critical Operation Power Systems

Availability	Hours of Downtime
0.9	876
0.99	87.6
0.999	8.76
0.9999	0.876
0.99999	0.0876
0.999999	0.00876
0.9999999	0.000876

Note: Based on a year of 8760 hours.
Availability of a system in actual operations is determined by the following:

(1) The frequency of occurrence of failures. Failures may prevent the system from performing its function or may cause a degraded effect on system operation. Frequency of failures is directly related to the system's level of reliability.

(2) The time required to restore operations following a system failure or the time required to perform ~~maintenance~~ servicing to prevent a failure. These times are determined in part by the system's level of maintainability.

(3) The logistics provided to support servicing ~~maintenance~~ of the system. The number and availability of spares, maintenance personnel, and other logistics resources (refueling, etc.) combined with the system's level of maintainability determine the total downtime following a system failure.

Reliability. Reliability is concerned with the probability and frequency of failures (or lack of failures). A commonly used measure of reliability for repairable systems is *MTBF*. The equivalent measure for nonrepairable items is *MTTF*. Reliability is more accurately expressed as a probability over a given duration of time, cycles, or other parameter. For example, the reliability of a power plant might be stated as 95 percent probability of no failure over a 1000-hour operating period while generating a certain level of power. Reliability is usually defined in two ways (the electrical power industry has historically not used these definitions):

(1) The duration or probability of failure-free performance under stated conditions

(2) The probability that an item can perform its intended function for a specified interval under stated conditions [For nonredundant items, this is equivalent to the preceding definition (1). For redundant items, this is equivalent to the definition of mission reliability.]

Maintainability. Maintainability is a measure of how quickly and economically failures can be prevented through preventive maintenance, or system operation can be restored following failure through corrective maintenance. A commonly used measure of maintainability in terms of corrective maintenance is the mean time to repair (*MTTR*). Maintainability is not the same thing as maintenance. It is a design parameter, while maintenance consists of actions to correct or prevent a failure event.
Improving Availability. The appropriate methods to use for improving availability depend on whether the facility is being designed or is already in use. For both cases, a reliability/availability analysis should be performed to determine the availability of the old system or proposed new system in order to ascertain the hours of downtime (see the preceding table). The AHJ or government agency should dictate how much downtime is acceptable.
Existing facilities: For a facility that is being operated, two basic methods are available for improving availability when the current level of availability is unacceptable: (1) Selectively adding redundant units (e.g., generators, chillers, fuel supply) to eliminate sources of single-point failure, and (2) optimizing maintenance using a reliability-centered maintenance (RCM) approach to minimize downtime. (Refer to NFPA 70B-2019, *Recommended Practice for Electrical Equipment Maintenance*.) A combination of the previous two methods can also be implemented. A third very expensive method is to redesign subsystems or to replace components and subsystems with higher reliability items. *(Refer to NFPA 70B.)*
New facilities: The opportunity for high availability and reliability is greatest when designing a new facility. By applying an effective reliability strategy, designing for maintainability, and ensuring that manufacturing and commissioning do not negatively affect the inherent levels of reliability and maintainability, a highly available facility will result. The approach should be as follows:

(1) *Develop and determine a reliability strategy* (establish goals, develop a system model, design for reliability, conduct reliability development testing, conduct reliability acceptance testing, design system delivery, maintain design reliability, maintain design reliability in operation).

(2) *Develop a reliability program.* This is the application of the reliability strategy to a specific system, process, or function. Each step in the preceding strategy requires the selection and use of specific methods and

tools. For example, various tools can be used to develop requirements or evaluate potential failures. To derive requirements, analytical models can be used, for example, quality function development (a technique for deriving more detailed, lower-level requirements from one level to another, beginning with mission requirements, i.e., customer needs). This model was developed as part of the total quality management movement. Parametric models can also be used to derive design values of reliability from operational values and vice versa. Analytical methods include but are not limited to things such as thermal analysis, durability analysis, and predictions. Finally, one should evaluate possible failures. A failure modes and effects criticality analysis (FMECA) and fault tree analysis (FTA) are two methods for evaluating possible failures. The mission facility engineer should determine which method to use or whether to use both.

(3) *Identify reliability requirements.* The entire effort for designing for reliability begins with identifying the mission critical facility's reliability requirements. These requirements are stated in a variety of ways, depending on the customer and the specific system. For a mission-critical facility, it would be the mission success probability.

Informational Note: For information regarding power system reliability, see IEEE 3006.5-2014, *Recommended Practice for the Use of Probability Methods for Conducting a Reliability Analysis of Industrial and Commercial Power Systems*.

Part II. Development and Implementation of Functional Performance Tests (FPTs) for Critical Operations Power Systems Development of FPT.

(1) Submit Functional Performance Tests (FPTs). System/component tests or FPTs are developed from submitted drawings, systems operating documents (SODs), and systems operation and maintenance manuals (SOMMs), including large component testing (i.e., transformers, cable, generators, UPS), and how components operate as part of the total system. The commissioning authority develops the test and cannot be the installation contractor (or subcontractor).

As the equipment/components/systems are installed, quality assurance procedures are administered to verify that components are installed in accordance with minimum manufacturers' recommendations, safety codes, and acceptable installation practices. Quality assurance discrepancies are then identified and added to a "commissioning action list" that must be rectified as part of the commissioning program. These items would usually be discussed during commissioning meetings. Discrepancies are usually identified initially by visual inspection.

(2) Review FPTs. The tests must be reviewed by the customer, electrical contractors, quality assurance personnel, maintenance personnel, and other key personnel (the commissioning team). Areas of concern include, among others, all functions of the system being tested, all major components included, whether the tests reflect the system operating documents, and verification that the tests make sense.

(3) Make Changes to FPTs as Required. The commissioning authority then implements the corrections, questions answered, and additions.

(4) FPTs Approval. After the changes are made to the FPTs, they are submitted to the commissioning team. When it is acceptable, the customer or the designated approval authority approves the FPTs. It should be noted that even though the FPT is approved, problems that arise during the test (or areas not covered) must be addressed.

Testing Implementation for FPTs. The final step in the successful commissioning plan is testing and proper execution of system-integrated tests.

(1) Systems Ready to Operate. The FPTs can be implemented as various systems become operative (i.e., test for the generator system) or when the entire system is installed. However, the final "pull the plug" test is performed only after all systems are completely installed. If the electrical contractor (or subcontractor) implements the FPTs, a witness must initial each step of the test. The electrical contractor cannot employ the witness directly or indirectly.

(2) Perform Tests (FPTs). If the system fails the test, the problem must be resolved and the equipment or system retested or the testing requirements re-analyzed until successful tests are witnessed. Once the system or equipment passes testing, it is verified by a designated commissioning official.

(3) Customer Receives System. After all tests are completed (including the "pull the plug" test), the system is turned over to the customer.

Informational Note: For information regarding reliability of critical operations power systems, see IEEE 3006.2-2016, *Recommended Practice for Evaluating the Reliability of Existing Industrial and Commercial Power System*s.

Informative Annex G Supervisory Control and Data Acquisition (SCADA)

This informative annex is not a part of the requirements of this NFPA document, but is included for informational purposes only.

(A) General.

Where provided, the general requirements in the following shall apply to SCADA systems:

(1) The SCADA system for the COPS loads shall be separate from the building management SCADA system.

(2) No single point failure shall be able to disable the SCADA system.

(3) The SCADA system shall be permitted to provide control and monitor electrical and mechanical utility systems related to mission critical loads, including, but not limited to, the following:

a. The fire alarm system

b. The security system

c. Power distribution

d. Power generation

e. HVAC and ventilation (damper position, airflow speed and direction)

f. Load shedding

g. Fuel levels or hours of operation

(4) Before installing or employing a SCADA system, an operations and maintenance analysis and risk assessment shall be performed to provide the maintenance parameter data

(5) A redundant system shall be provided in either warm or hot standby.

(6) The controller shall be a programmable logic controller (PLC).

(7) The SCADA system shall utilize open, not proprietary, protocols.

(8) The SCADA system shall be able to assess the damage and determine system integrity after the "event."

(9) The monitor display shall provide graphical user interface for all major components monitored and controlled by the SCADA system, with color schemes readily recognized by the typical user.

(10) The SCADA system shall have the capability to provide storage of critical system parameters at a 15-minute rate or more often when out-of-limit conditions exist.

(11) The SCADA system shall have a separate data storage facility not located in the same vicinity.

(B) Power Supply.

The SCADA system power supply shall comply with the following:

(1) The power supply shall be provided with a direct-current station battery system, rated between 24 and 125 volts dc, with a 72-hour capacity.

(2) The batteries of the SCADA system shall be separate from the batteries for other electrical systems.

(3) The power supply shall be provided with a listed surge-protective device (SPD). The SPD shall be installed at the line-side terminals of the power supply in accordance with Part II of Article 242, with a direct low-impedance path to ground. Protected and unprotected circuits shall be physically separated to prevent coupling.

(C) Security Against Hazards.

Security against hazards shall be provided in accordance with the following:

(1) Controlled physical access by authorized personnel to only the system operational controls and software shall be provided.

(2) The SCADA system shall be protected against dust, dirt, water, and other contaminants by specifying enclosures appropriate for the environment.

(3) Conduit and tubing shall not violate the integrity of the SCADA system enclosure.

(4) The SCADA system shall be located in the same secure locations as the secured systems that they monitor and control.

(5) The SCADA system shall be provided with dry agent fire protection systems or double interlocked preaction sprinkler systems using cross-zoned detection, to minimize the threat of accidental water discharge into unprotected equipment. The fire protection systems shall be monitored by the fire alarm system in accordance with *NFPA 72*-2019, *National Fire Alarm and Signaling Code*.

(6) The SCADA system shall not be connected to other network communications outside the secure locations without encryption or use of fiber optics.

(D) ~~Maintenance~~ Servicing and Testing.

SCADA systems shall be maintained and tested in accordance with D(1) and D(2).

(1) Maintenance.

The maintenance program for SCADA systems shall consist of the following components:

(1) A documented preventive maintenance program

(2) Concurrent maintenance capabilities, to allow the testing, troubleshooting, repair, and/or replacement of a component or subsystem while redundant component(s) or subsystem(s) are serving the load

(3) Retention of operational data — the deleted material goes well beyond requirements to ensure proper maintenance and operation

(2) Testing.
SCADA systems shall be tested periodically under actual or simulated contingency conditions.
Informational Note No. 1: Periodic system testing procedures can duplicate or be derived from the recommended functional performance testing procedures of individual components, as provided by the manufacturers.
Informational Note No. 2: See NFPA 70B-2023, *Standard for Electrical Equipment Maintenance*, for more information on ~~maintenance~~ servicing and testing of SCADA.

Second Revision No. 8603-NFPA 70-2024 [Global Comment]

[see attached word document for NFPA 20 extract updates,
NFPA_70_NFPA_20_Extract_Updates_SR-8603]

695.2 Listing Requirements.

Diesel engine fire pump controllers, electric fire pump controllers, electric motors, fire pump power transfer switches, foam pump controllers, and limited service controllers shall be listed for fire pump service. [**20:**9.5.1.1, 10.1.2.1, 12.1.3.1, 10.7.2 , 8.7]

695.4(A)(1) Electric Utility Service Connection.

A fire pump shall be permitted to be supplied by a separate service, or from a connection located ahead of and not within the same cabinet, enclosure, vertical switchgear section, or vertical switchboard section as the service disconnecting means. The connection shall be located and arranged so as to minimize the possibility of damage by fire from within the premises and from exposing hazards. A tap ahead of the service disconnecting means shall comply with 230.82(5). The service equipment shall comply with the labeling requirements in 230.4 and the location requirements in 230.72(B).~~[**20:**9.2.2(1)]~~

(2) On-Site Power Production Facility.

A fire pump shall be permitted to be supplied by an on-site power production facility. The source facility shall be located and protected to minimize the possibility of damage by fire. [**20:**9.2.2(2 ~~3~~)]

695.4(B) Multiple Sources.

If reliable power cannot be obtained from a source described in 695.4(A), power shall be supplied by one of the following: [**20:**9.3.1 ~~2~~]

695.4(2) Individual Source and On-site Standby Generator.

An approved combination of one or more of the sources in 695.4(A) and an on-site standby generator complying with 695.4(D). [**20:**9.3.3 ~~4~~]

Exception to 695.4(B)(1) and (B)(2): An alternate source of power shall not be required where a back-up engine-driven fire pump, back-up steam turbine-driven fire pump, or back-up electric motor-driven fire pump with an independent power source in accordance with 695.4(A) or 695.4(C) is installed.

695.4(G) Power Source Selection.

Selection of power source shall be performed by a transfer switch listed for fire pump service. [**20:**10.8~~.1~~ .3.1]

695.5(B)(2) Overcurrent Device Selection.

Overcurrent devices shall comply with 695.5(B)(2)(a) or 695.5(B)(2)(b).

(a) *Individual Sources.* Overcurrent protection for individual sources shall comply with the following:

(1) Overcurrent protective device(s) shall be rated to carry indefinitely the sum of the locked-rotor current of the largest fire pump motor and the full-load current of all of the other pump motors and accessory equipment. [**20:**9.2.3.4] Where the locked-rotor current value does not correspond to a standard overcurrent device size, the next standard overcurrent device size shall be used in accordance with 240.6. The requirement to carry the locked-rotor currents indefinitely shall not apply to conductors or devices other than overcurrent devices in the fire pump motor circuit(s).

Exception: The requirement to carry the locked-rotor currents indefinitely shall not apply to feeder overcurrent protective devices installed in accordance with 695.4(C).

(2) Overcurrent protection shall be provided by an assembly listed for fire pump service and complying with the following:

a. The overcurrent protective device shall not open within 2 minutes at 600 percent of the full-load current of the fire pump motor(s).

b. The overcurrent protective device shall not open with a re-start transient of 24 times the full-load current of the fire pump motor(s).

c. The overcurrent protective device shall not open within 10 minutes at 300 percent of the full-load current of the fire pump motor(s).

d. The trip point for circuit breakers shall not be field adjustable. [**20:**9.2.3.4.1(4)]

(b) *On-Site Standby Generators.* Overcurrent protective devices between an on-site standby generator and a fire pump controller shall be selected and sized to allow for instantaneous pickup of the full pump room load, but shall not be larger than the value selected to comply with 430.62 to provide short-circuit protection only. [**20:**9.6.5 ~~1~~ .1]

695.5(B)(3) Disconnecting Means.

All disconnecting devices that are unique to the fire pump loads shall comply with items 695.5(B)(3)(a)through 695.5(B)(3)(e).

(a) *Features and Location — Normal Power Source.*The disconnecting means for the normal power source shall comply with all of the following: [**20:**9.2.3.1]

(1) Be identified as suitable for use as service equipment.

(2) Be lockable in the closed position. The provision for locking or adding a lock to the disconnecting means shall be installed on or at the switch or circuit breaker used as the disconnecting means and shall remain in place with or without the lock installed.

(3) Not be located within the same enclosure, panelboard, switchboard, switchgear, or motor control center, with or without common bus, that supplies loads other than the fire pump.

(4) Be located sufficiently remote from other building or other fire pump source disconnecting means such that inadvertent operation at the same time would be unlikely.

Exception to 695.5(B)(3)(a): For a multibuilding campus-style complex(s) installed under the provisions of 695.4(C), only the requirements in 695.5(B)(3)(a)(2) shall apply for normal power source disconnects.

(b) *Features and Location — On-Site Standby Generator.*The disconnecting means for an on-site standby generator(s) used as the alternate power source shall be installed in accordance with 700.10(B)(6)for emergency circuits and shall be lockable in the closed position. The provision for locking or adding a lock to the disconnecting means shall be installed on or at the switch or circuit breaker used as the disconnecting means and shall remain in place with or without the lock installed.

(c) *Disconnect Marking.*The disconnecting means shall be marked "Fire Pump Disconnecting Means." The letters shall be at least 25 mm (1 in.) in height, and they shall be visible without opening enclosure doors or covers. [**20:**9.2.3.1(5)]

(d) *Controller Marking.*A placard shall be placed adjacent to the fire pump controller, stating the location of this disconnecting means and the location of the key (if the disconnecting means is locked). [**20:**9.2.3.2]

(e) *Supervision.*The disconnecting means shall be supervised in the closed position by one of the following methods:

(1) Central station, proprietary, or remote station signal device

(2) Local signaling service that causes the sounding of an audible signal at a constantly attended point

(3) Locking the disconnecting means in the closed position

(4) Sealing of disconnecting means and approved weekly recorded inspections when the disconnecting means are located within fenced enclosures or in buildings under the control of the owner [**20:**9.2.3.3(4)]

695.7(G) Ground-Fault Protection of Equipment.

Ground-fault protection of equipment shall not be installed in any fire pump power circuit. ~~[**20:**9.1.8.1]~~

695.7(I) Junction Boxes.

Where fire pump wiring to or from a fire pump controller is routed through a junction box, the following requirements shall be met:

(1) The junction box shall be securely mounted. [**20:**9.7(1)]

(2) Mounting and installing of a junction box shall not violate the enclosure type rating of the fire pump controller(s). [**20:**9.7(2)]

(3) Mounting and installing of a junction box shall not violate the integrity of the fire pump controller(s)[20:9.7(3)]

(4) Mounting and installing of a junction box ~~and~~ shall not affect the short-circuit current rating of the controller(s).[20:9.7(4)]

(5 ~~4~~) As a minimum, a Type 2, drip-proof enclosure (junction box) shall be used where installed in the fire pump room. [20:9.7(5)]

(6) The enclosure shall be listed to match the fire pump controller enclosure type rating. [**20:**9.7(6 ~~4~~)]

(7 ~~5~~) Terminals, junction blocks, wire connectors, and splices, where used, shall be listed. [**20:**9.7(7 ~~5~~)]

(8 ~~6~~) A fire pump controller or fire pump power transfer switch, where provided, shall not be used as a junction box to supply other equipment, including a ~~pressure maintenance (~~ jockey~~)~~ pump(s).[20:9.7(8)]

(9) A fire pump controller or a fire pump power transfer switch shall not be used as a junction box for wire splices. [20:9.7(9)]

695.14(A) Control Circuit Failures.

External control circuits that extend outside the fire pump room shall be arranged so that failure of any external circuit (open or short circuit) shall not prevent the operation of a pump(s) from all other internal or external means. Breakage, disconnecting, shorting of the wires, or loss of power to these circuits could cause continuous running of the fire pump but shall not prevent the controller(s) from starting the fire pump(s) due to causes other than these external control circuits. All

control conductors within the fire pump room that are not fault tolerant shall be protected against physical damage. [**20:**10.5.2.6, 12.7.2.6.2 ~~12.5.2.5~~ , 12.2.7.6.3]

695.14(B) Sensor Functioning.

No undervoltage, phase-loss, frequency-sensitive, or other sensor(s) shall be installed that automatically or manually prohibits actuation of the motor contactor. [**20:**10.3. 4.5.~~6~~ 2]

Exception: A phase-loss sensor(s) shall be permitted only as a part of a listed fire pump controller.

Supplemental Information

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Committee Statement: This revision updates the NFPA 20 extracts in accordance with the Extract Policy. For substantiation on the changes see the first and second draft reports for NFPA 20.

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695.2 Listing Requirements.

Diesel engine fire pump controllers, electric fire pump controllers, electric motors, fire pump power transfer switches, foam pump controllers, and limited service controllers shall be listed for fire pump service. [**20:**9.5.1.1, 10.1.2.1, 12.1.3.1, 10.7.2, 8.7]

695.4(A)(1) Electric Utility Service Connection.

A fire pump shall be permitted to be supplied by a separate service, or from a connection located ahead of and not within the same cabinet, enclosure, vertical switchgear section, or vertical switchboard section as the service disconnecting means. The connection shall be located and arranged so as to minimize the possibility of damage by fire from within the premises and from exposing hazards. A tap ahead of the service disconnecting means shall comply with 230.82(5). The service equipment shall comply with the labeling requirements in 230.4 and the location requirements in 230.72(B). ~~[**20:**9.2.2(1)]~~

(2) On-Site Power Production Facility.

A fire pump shall be permitted to be supplied by an on-site power production facility. The source facility shall be located and protected to minimize the possibility of damage by fire. [**20:**9.2.2(2~~3~~)]

695.4(B) Multiple Sources.

If reliable power cannot be obtained from a source described in 695.4(A), power shall be supplied by one of the following: [**20:**9.3.1~~2~~]

695.4(2) Individual Source and On-site Standby Generator.

An approved combination of one or more of the sources in 695.4(A) and an on-site standby generator complying with 695.4(D). [**20:**9.3.34]

Exception to 695.4(B)(1) and (B)(2): An alternate source of power shall not be required where a back-up engine-driven fire pump, back-up steam turbine-driven fire pump, or back-up electric motor-driven fire pump with an independent power source in accordance with 695.4(A) or 695.4(C) is installed.

695.4(G) Power Source Selection.

Selection of power source shall be performed by a transfer switch listed for fire pump service. [**20:**10.8.~~1~~.3.1]

695.5(B)(2) Overcurrent Device Selection.

Overcurrent devices shall comply with 695.5(B)(2)(a) or 695.5(B)(2)(b).

(a) *Individual Sources.* Overcurrent protection for individual sources shall comply with the following:

(1) Overcurrent protective device(s) shall be rated to carry indefinitely the sum of the locked-rotor current of the largest fire pump motor and the full-load current of all of the other pump motors and accessory equipment. [**20:**9.2.3.4] Where the locked-rotor current value does not correspond to a standard overcurrent device size, the next standard overcurrent device size shall be used in accordance with 240.6. The requirement to carry the locked-rotor currents indefinitely shall not apply to conductors or devices other than overcurrent devices in the fire pump motor circuit(s).

Exception: The requirement to carry the locked-rotor currents indefinitely shall not apply to feeder overcurrent protective devices installed in accordance with 695.4(C).

(2) Overcurrent protection shall be provided by an assembly listed for fire pump service and complying with the following:

a. The overcurrent protective device shall not open within 2 minutes at 600 percent of the full-load current of the fire pump motor(s).

b. The overcurrent protective device shall not open with a re-start transient of 24 times the full-load current of the fire pump motor(s).

c. The overcurrent protective device shall not open within 10 minutes at 300 percent of the full-load current of the fire pump motor(s).

d. The trip point for circuit breakers shall not be field adjustable. [**20:**9.2.3.4.1(4)]

(b) *On-Site Standby Generators.* Overcurrent protective devices between an on-site standby generator and a fire pump controller shall be selected and sized to allow for instantaneous pickup of the full pump room load, but shall not be larger than the value selected to comply with 430.62 to provide short-circuit protection only. [**20:**9.6.~~5~~1.1]

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695.5(B)(3) Disconnecting Means.
All disconnecting devices that are unique to the fire pump loads shall comply with items 695.5(B)(3)(a)through 695.5(B)(3)(e).

(a) *Features and Location — Normal Power Source.* The disconnecting means for the normal power source shall comply with all of the following: [**20:**9.2.3.1]

(1) Be identified as suitable for use as service equipment.

(2) Be lockable in the closed position. The provision for locking or adding a lock to the disconnecting means shall be installed on or at the switch or circuit breaker used as the disconnecting means and shall remain in place with or without the lock installed.

(3) Not be located within the same enclosure, panelboard, switchboard, switchgear, or motor control center, with or without common bus, that supplies loads other than the fire pump.

(4) Be located sufficiently remote from other building or other fire pump source disconnecting means such that inadvertent operation at the same time would be unlikely.

Exception to 695.5(B)(3)(a): For a multibuilding campus-style complex(s) installed under the provisions of 695.4(C), only the requirements in 695.5(B)(3)(a)(2) shall apply for normal power source disconnects.

(b) *Features and Location — On-Site Standby Generator.* The disconnecting means for an on-site standby generator(s) used as the alternate power source shall be installed in accordance with 700.10(B)(6) for emergency circuits and shall be lockable in the closed position. The provision for locking or adding a lock to the disconnecting means shall be installed on or at the switch or circuit breaker used as the disconnecting means and shall remain in place with or without the lock installed.

(c) *Disconnect Marking.* The disconnecting means shall be marked "Fire Pump Disconnecting Means." The letters shall be at least 25 mm (1 in.) in height, and they shall be visible without opening enclosure doors or covers. [**20:**9.2.3.1(5)]

(d) *Controller Marking.* A placard shall be placed adjacent to the fire pump controller, stating the location of this disconnecting means and the location of the key (if the disconnecting means is locked). [**20:**9.2.3.2]

(e) *Supervision.* The disconnecting means shall be supervised in the closed position by one of the following methods:

(1) Central station, proprietary, or remote station signal device

(2) Local signaling service that causes the sounding of an audible signal at a constantly attended point

(3) Locking the disconnecting means in the closed position

(4) Sealing of disconnecting means and approved weekly recorded inspections when the disconnecting means are located within fenced enclosures or in buildings under the control of the owner [**20:**9.2.3.3(4)]

695.7(G) Ground-Fault Protection of Equipment.

Ground-fault protection of equipment shall not be installed in any fire pump power circuit. ~~[**20:**9.1.8.1]~~

695.7(I) Junction Boxes.

Where fire pump wiring to or from a fire pump controller is routed through a junction box, the following requirements shall be met:

(1) The junction box shall be securely mounted. [**20:**9.7(1)]

(2) Mounting and installing of a junction box shall not violate the enclosure type rating of the fire pump controller(s). [**20:**9.7(2)]

(3) Mounting and installing of a junction box shall not violate the integrity of the fire pump controller(s) [20:9.7(3)]

(4) Mounting and installing of a junction box ~~and~~ shall not affect the short-circuit current rating of the controller(s). [20:9.7(4)]

(5~~4~~) As a minimum, a Type 2, drip-proof enclosure (junction box) shall be used where installed in the fire pump room. [20:9.7(5)]

(6) The enclosure shall be listed to match the fire pump controller enclosure type rating. [**20:**9.7(6~~4~~)]

(7~~5~~) Terminals, junction blocks, wire connectors, and splices, where used, shall be listed. [**20:**9.7(7~~5~~)]

(8~~6~~) A fire pump controller or fire pump power transfer switch, where provided, shall not be used as a junction box to supply other equipment, including a ~~pressure maintenance (~~jockey~~)~~ pump(s). [20:9.7(8)]

(9) A fire pump controller or a fire pump power transfer switch shall not be used as a junction box for wire splices. [20:9.7(9)]

695.14(A) Control Circuit Failures.

External control circuits that extend outside the fire pump room shall be arranged so that failure of any external circuit (open or short circuit) shall not prevent the operation of a pump(s) from all other internal or external means. Breakage, disconnecting, shorting of the wires, or loss of power to these circuits could cause continuous running of the fire pump but shall not prevent the controller(s) from starting the fire pump(s) due to causes other than these external control circuits. All control conductors within the fire pump room that are not fault tolerant shall be protected against physical damage. [**20:**10.5.2.6, 12.7.2.6.2~~12.5.2.5~~, 12.2.7.6.3]

695.14(B) Sensor Functioning.

No undervoltage, phase-loss, frequency-sensitive, or other sensor(s) shall be installed that automatically or manually prohibits actuation of the motor contactor. [**20:**10.3.4.5.~~6~~2]

Exception: A phase-loss sensor(s) shall be permitted only as a part of a listed fire pump controller.

Second Revision No. 8228-NFPA 70-2024 [Detail]

[See "CMP 13 Detail SR 8228" for revisions]

706.7 Commissioning and ~~Maintenance~~ Servicing .

(A) Commissioning.

ESSs shall be commissioned upon installation in accordance with the manufacturer's instructions. Where not elsewhere required by this code, the authority having jurisdiction shall not be required to conduct or witness the commissioning of the ESS.

Informational Note: See NFPA 855-2026, *Standard for the Installation of Stationary Energy Storage Systems*, for information related to the commissioning of ESSs in other than one- and two-family dwellings.

(B) ~~Maintenance~~ Servicing .

ESSs shall be maintained in proper and safe operating condition. The required ~~maintenance~~ servicing shall be in accordance with the manufacturer's requirements and industry standards. In other than one- and two-family dwelling units, a written record of the system ~~maintenance~~ servicing shall be kept and shall include records of servicing ~~and replacements~~ necessary to maintain the system in proper and safe operating condition.

Informational Note: See NFPA 70B-2023, *Standard for Electrical Equipment Maintenance*, or ANSI/NETA ATS, *Standard for Acceptance Testing Specifications for Electrical Power Equipment and Systems*, for information related to general electrical equipment maintenance and developing an effective electrical preventive maintenance (EPM) program.

Supplemental Information

File Name	Description	Approved
CMP_13_Detail_SR_8228.docx		

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Mon Oct 21 19:28:23 EDT 2024

Committee Statement

Committee Statement: The term 'maintenance' has been replaced with 'servicing', which is a defined term. Improper servicing can result in a potential hazard. See the informational note related to 'servicing' which indicates servicing includes maintenance.

Response Message: SR-8228-NFPA 70-2024

Public Comment No. 2062-NFPA 70-2024 [Section No. 706.7]

706.7 Commissioning and ~~Maintenance~~Servicing.

(A) Commissioning.

ESSs shall be commissioned upon installation in accordance with the manufacturer's instructions. Where not elsewhere required by this code, the authority having jurisdiction shall not be required to conduct or witness the commissioning of the ESS.

Informational Note: See NFPA 855-2026, *Standard for the Installation of Stationary Energy Storage Systems*, for information related to the commissioning of ESSs in other than one- and two-family dwellings.

(B) ~~Maintenance~~Servicing.

ESSs shall be maintained in proper and safe operating condition. The required ~~maintenance~~ servicing shall be in accordance with the manufacturer's requirements and industry standards. In other than one- and two-family dwelling units, a written record of the system ~~maintenance~~ servicing shall be kept and shall include records of servicing ~~and replacements~~ necessary to maintain the system in proper and safe operating condition.

Informational Note: See NFPA 70B-2023, *Standard for Electrical Equipment Maintenance*, or ANSI/NETA ATS, *Standard for Acceptance Testing Specifications for Electrical Power Equipment and Systems*, for information related to general electrical equipment maintenance and developing an effective electrical preventive maintenance (EPM) program.

Second Revision No. 8370-NFPA 70-2024 [Detail]

[This is action on 700.11(D). See "CMP 13 SR CMP 8370" word document for revisions. CMP 13 wishes to act on this separately from the SR on the rest of 700.11]

[700.11(D)]

(D) Protection.

Wiring shall ~~comply with the requirements of 300.4 and~~ be installed in a raceway, armored or metal-clad cable, or cable tray and if subject to physical damage, comply with the requirements of 300.4 .

Exception: If not sub ject to physical damage, wiring shall not be required to be installed in a raceway, armored or metal-clad cable, or cable tray under the following conditions:

(1) ***The wiring does not exceed 1.83 m (6 ft) in length and termin ates at an emergency luminaire or an emergency lighting control device.***

(2) ***The wiring is installed in locked rooms or locked enclosures that are accessible only t o qualified persons.***

~~Exception No. 1: Section 700.11(D) shall not apply to wiring that does not exceed 1.83 m (6 ft) in length and that terminates at an emergency luminaire or an emergency lighting control device.~~

~~Exception No. 2: Section 700.11(D) shall not apply to locked rooms or locked enclosures that are accessible only to qualified persons.~~

Informational Note No. 1 : Locked rooms accessible only to qualified persons include locked telecommunications rooms, locked electrical equipment rooms, or other access-controlled areas.

Informational Note No. 2: Wiring installed in a raceway, armored or metal-clad cable, or cable tray is to enhance emergency circuit reliability.

Supplemental Information

File Name	Description	Approved
CMP_13_SR_8370.docx		

Submitter Information Verification

Committee: NEC-P13
Submittal Date: Thu Oct 24 12:41:52 EDT 2024

Committee Statement

Committee Statement:	This revision provides clarity, useability and enforceability. The wiring methods will have to comply with 300.4 as written if subject to physical damage. The previous exceptions may have allowed the exemption of class 2 cables from meeting the requirements of 300.4.
Response Message:	SR-8370-NFPA 70-2024

Public Comment No. 1133-NFPA 70-2024 [Section No. 700.11(D)]

Public Comment No. 1065-NFPA 70-2024 [Section No. 700.11(D)]

[700.11(D)]
(D) Protection.
Wiring shall ~~comply with the requirements of 300.4 and~~ be installed in a raceway, armored or metal-clad cable, or cable tray and if subject to physical damage, comply with the requirements of 300.4.

Exception: If not subject to physical damage, wiring shall not be required to be installed in a raceway, armored or metal-clad cable, or cable tray under the following conditions:

(1) The wiring does not exceed 1.83 m (6 ft) in length and terminates at an emergency luminaire or an emergency lighting control device.
(2) The wiring is installed in locked rooms or locked enclosures that are accessible only to qualified persons.

~~*Exception No. 1: Section 700.11(D) shall not apply to wiring that does not exceed 1.83 m (6 ft) in length and that terminates at an emergency luminaire or an emergency lighting control device.*~~
~~*Exception No. 2: Section 700.11(D) shall not apply to locked rooms or locked enclosures that are accessible only to qualified persons.*~~
Informational Note No. 1: Locked rooms accessible only to qualified persons include locked telecommunications rooms, locked electrical equipment rooms, or other access-controlled areas.

Informational Note No. 2: Wiring installed in a raceway, armored or metal-clad cable, or cable tray is to enhance emergency circuit reliability.

Second Revision No. 8454-NFPA 70-2024 [Detail]

[Detail for A.1. See "CMP 13 SR 8454" word document for revisions]

110	UL 10C-2016	Positive Pressure Fire Tests of Door Assemblies
	UL 305-2012	Panic Hardware
	UL 486D-2015	Sealed Wire Connector Systems
	UL 2043-2013	Fire Test for Heat and Visible Smoke Release for Discrete Products and Their Accessories Installed in Air-Handling Spaces
	UL 62275-2021	Cable Management Systems — Cable Ties for Electrical Installations
130	UL ~~60730-1~~ 916	~~Automatic Electrical Controls~~ Energy Management Equipment
	UL 3141	Power Control Systems
210	UL 498-2017	Attachment Plugs and Receptacles
	UL 935-2001	Fluorescent-Lamp Ballasts
	UL 943-2016	Ground Fault Circuit Interrupters
	UL 1029-1994	High-Intensity-Discharge Lamp Ballasts
	UL 1699-2017	Arc-Fault Circuit-Interrupters
	UL 1699A-2010	Outlet Branch Circuit Outlet Branch Circuit Arc-Fault Circuit-Interrupters

Supplemental Information

File Name	Description	Approved
CMP_13_SR_8454.docx	For editorial use only	

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Thu Oct 24 19:39:31 EDT 2024

Committee Statement

Committee Statement: This revision revises the UL reference 60730 to UL 916 Energy Management Equipment because this is the correct reference for Article 130. UL 3141 is added based on the new Part II of Article 130.

Response Message: SR-8454-NFPA 70-2024

Public Comment No. 255-NFPA 70-2024 [Section No. A.1]

Detail to A.1

110	UL 10C-2016	Positive Pressure Fire Tests of Door Assemblies
	UL 305-2012	Panic Hardware
	UL 486D-2015	Sealed Wire Connector Systems
	UL 2043-2013	Fire Test for Heat and Visible Smoke Release for Discrete Products and Their Accessories Installed in Air-Handling Spaces
	UL 62275-2021	Cable Management Systems — Cable Ties for Electrical Installations
130	UL ~~60730-1~~916	~~Automatic Electrical Controls~~Energy Management Equipment
	UL 3141	Power Control Systems
210	UL 498-2017	Attachment Plugs and Receptacles
	UL 935-2001	Fluorescent-Lamp Ballasts
	UL 943-2016	Ground Fault Circuit Interrupters
	UL 1029-1994	High-Intensity-Discharge Lamp Ballasts
	UL 1699-2017	Arc-Fault Circuit-Interrupters
	UL 1699A-2010	Outlet Branch Circuit Outlet Branch Circuit Arc-Fault Circuit-Interrupters

Second Revision No. 8516-NFPA 70-2024 [Detail]

[Remove the word 'standby' from 706.15(E)(4(2)]

706.15(E)(4)(2) Available fault current derived from the stationary ~~standby~~ battery system

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Fri Oct 25 13:21:11 EDT 2024

Committee Statement

Committee Statement: Statement – This revision removes the term ‘standby’ to correlate with the removal of the definition ‘stationary standby battery’ from the code and correlate with Article 480.

Response Message: SR-8516-NFPA 70-2024

Second Revision No. 8260-NFPA 70-2024 [Definition: Battery, Stationary Standby. (Stationary Standb...]

~~**Battery, Stationary Standby. (Stationary Standby Battery)**~~

~~A battery that spends the majority of the time on continuous float charge or in a high state of charge, in readiness for a discharge event. (CMP-13)~~

~~Informational Note: Uninterruptible Power Supply (UPS) batteries are an example that falls under this definition.~~

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Tue Oct 22 14:25:38 EDT 2024

Committee Statement

Committee Statement: Definition has been removed since the term ‘stationary standby battery’ is no longer used in this code. The definition of battery remains Article 100. Requirements for stationary battery installations are found in article 480.

Response Message: SR-8260-NFPA 70-2024

Public Comment No. 1218-NFPA 70-2024 [Definition: Battery, Stationary Standby. (Stationary Standb...]

Second Revision No. 8261-NFPA 70-2024 [Definition: Energy Storage System (ESS).]

[See "CMP 8261" word document for revisions]

Energy Storage System (ESS).

One or more devices, assembled together, capable of storing energy to supply electrical energy at a future time. [**855:**3.3.9] (CMP-13)

Informational Note No. 1: An ESS(s) can include but is not limited to batteries, capacitors, and kinetic energy devices (e.g., flywheels and compressed air). An ESS(s) can include inverters or converters to change voltage levels or to make a change between an ac or a dc system.

Informational Note No.

~~2: These systems differ~~

2: A battery ESS differs from a stationary

~~standby~~

battery installation

~~where a battery spends the majority of the time on continuous float charge or in a high state of charge, in readiness for a discharge event~~

in that they are evaluated and listed as a complete system that can include inverters or converters to change voltage levels or to make a change between an ac or a dc system .

Supplemental Information

File Name	Description	Approved
CMP_13_SR_8261.docx		
CMP_13_SR_8261_Energy_Storage_System.docx	For prod use	

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Tue Oct 22 14:28:37 EDT 2024

Committee Statement

Committee Statement: Informational note was changed to further clarify the distinction between a battery ESS and a stationary battery.

Response Message: SR-8261-NFPA 70-2024

Public Comment No. 1947-NFPA 70-2024 [Definition: Energy Storage System (ESS).]

Energy Storage System (ESS).
One or more devices, assembled together, capable of storing energy to supply electrical energy at a future time. [**855:**3.3.9] (CMP-13)
Informational Note No. 1: An ESS(s) can include but is not limited to batteries, capacitors, and kinetic energy devices (e.g., flywheels and compressed air).
Informational Note No. 2: A~~n~~ battery ESS~~(s)~~ differs from a stationary battery installation in that they are evaluated and listed as a complete system that can include inverters or converters to change voltage levels or to make a change between an ac or a dc system.
~~Informational Note No. 2: These systems differ from a stationary standby battery installation where a battery spends the majority of the time on continuous float charge or in a high state of charge, in readiness for a discharge event.~~

Second Revision No. 8139-NFPA 70-2024 [Definition: Load Management.]

Load Management.

The process within an energy management system that limits the total electrical load on an electrical supply system to a set value by adjusting or controlling circuits supplying the ~~individual~~ load or individual loads. (CMP-13)

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Mon Oct 21 12:56:16 EDT 2024

Committee Statement

Committee Statement: Change made to better recognize that load management can be achieved by the control of circuits feeding loads as well as by controlling the loads themselves

Response Message: SR-8139-NFPA 70-2024

Public Comment No. 1949-NFPA 70-2024 [Definition: Load Management.]

Second Revision No. 8133-NFPA 70-2024 [Definition: Power Control System (PCS).]

Power Control System (PCS).

Equipment that monitors and controls power within an electrical system to prevent overload of ~~an electrical~~ a service, ~~feeder,~~ conductor, or ~~other~~ power distribution equipment. (CMP-13)

~~Informational Note: A power control system may control generation, energy storage, loads, circuit controllers, or other equipment to manage power and may contain additional protective functions relative to EMS or grid interconnection functions.~~

PCS, Multisource (Multisource PCS).

A type of PCS with capability to control power production sources, with or without load management. (CMP-13)

PCS, Single-source (Single-source PCS).

A type of PCS with capability for load management only. (CMP-13)

Supplemental Information

File Name	Description	Approved
NEC_CMP-13_SR-8133_Power_Control_System.docx		

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Mon Oct 21 12:42:11 EDT 2024

Committee Statement

Committee Statement: Redundant and unnecessary language was removed from the definition to improve clarity and applicability. The term ‘feeder’ was removed because the type of conductor that PCS can control is not limited to feeders.

Response Message: SR-8133-NFPA 70-2024

Public Comment No. 583-NFPA 70-2024 [Definition: Power Control System (PCS).]

Public Comment No. 1222-NFPA 70-2024 [Definition: Power Control System (PCS).]

Power Control System (PCS).

Equipment that monitors and controls power within ~~an electrical~~ a system to prevent overload of an electrical service, ~~feeder,~~ conductor, or ~~other~~ power distribution equipment. (CMP-13)

~~Informational Note: A power control system may control generation, energy storage, loads, circuit controllers, or other equipment to manage power and may contain additional protective functions relative to EMS or grid interconnection functions.~~

PCS, Multisource (Multisource PCS).

A type of PCS with capability to control power production sources, with or without load management. (CMP-13)

PCS, Single-source (Single-source PCS).

A type of PCS with capability for load management only. (CMP-13)

Commented [SB1]: New defs are subs to Power Control System

Second Revision No. 8300-NFPA 70-2024 [Definition: Switch, Bypass Isolation. (Bypass Isolation Swi...]

Switch, Bypass Isolation. (Bypass Isolation Switch)

A manual, nonautomatic, or ~~automatic operated device~~ automatic device used in conjunction with a transfer switch to provide a means of bypass that directly connects the load conductors to a power source and allows the transfer switch to be isolated or disconnected. [**110** :3.3.17.2] (CMP-13)

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Tue Oct 22 19:19:20 EDT 2024

Committee Statement

Committee Statement: CS: The definition was updated to extract the definition of bypass isolation switch from NFPA 110.

Response Message: SR-8300-NFPA 70-2024

Public Comment No. 584-NFPA 70-2024 [Definition: Switch, Bypass Isolation. (Bypass Isolation Swi...]

Second Revision No. 8302-NFPA 70-2024 [Definition: Transfer Switch, Bypass Isolation. (Bypass Isol...]

Transfer Switch, Bypass Isolation. (Bypass Isolation Transfer Switch)

~~A transfer switch~~ Equipment that ~~provides~~ includes a ~~means to isolate the~~ transfer switch and bypass isolation functionality . (CMP-13)

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Tue Oct 22 19:23:46 EDT 2024

Committee Statement

Committee Statement: The revised definition clarifies the function of the bypass isolation transfer switch. Both of the terms “bypass isolation switch” and “transfer switch” are currently defined and a “bypass isolation transfer switch” includes both of these. Equipment is used in lieu of assembly as equipment is a defined term in this code.

Response Message: SR-8302-NFPA 70-2024

Public Comment No. 585-NFPA 70-2024 [Definition: Transfer Switch, Bypass Isolation. (Bypass Isol...]

Public Comment No. 1156-NFPA 70-2024 [Definition: Transfer Switch, Bypass Isolation. (Bypass Isol...]

Second Revision No. 8116-NFPA 70-2024 [Section No. 130.2]

130.2 Listing Requirements.

Energy management equipment shall be listed. ~~Equipment~~ Energy management equipment providing overload control as covered in Article 130, Part II shall be listed and labeled as a power control system (PCS).

Informational Note: Evaluations of an energy management ~~equipment~~ system with PCS ~~are~~ functionality is different than ~~evaluations~~ an evaluation of a general energy management ~~equipment~~ system . See UL 916, *Energy Management Equipment*, for information on listed energy management equipment, and UL 3141, *Power Control Systems*, for information on listed PCS equipment.

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Mon Oct 21 11:42:23 EDT 2024

Committee Statement

Committee Statement: The term "Energy Management" was added to the 2nd sentence of the listing requirement to clarify that the equipment being referenced relates to an energy management function. Additionally, the informative note was revised to keep the terminology consistent when referring to an EMS separately from an EMS with PCS functionality.

Response Message: SR-8116-NFPA 70-2024

Public Comment No. 1978-NFPA 70-2024 [Section No. 130.2]

Second Revision No. 8122-NFPA 70-2024 [Section No. 130.60(A)]

(A) Monitoring and Controls.

The ~~EMS with~~ PCS shall include monitoring and automatic ~~control devices~~ controls to prevent overload of conductors, power sources, and power distribution equipment associated with the ~~EMS with~~ PCS.

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Mon Oct 21 11:52:24 EDT 2024

Committee Statement

Committee Statement: The term “power sources” is added to this section to align with the allowance for energy management systems covered in Part II to manage sources as well as loads. Terms used in part II of this article have been harmonized to "PCS" to improve usability since this is the term used in the listing process of equipment providing overload control. This is in reference to PC-1096.

Response Message: SR-8122-NFPA 70-2024

Public Comment No. 1997-NFPA 70-2024 [Section No. 130.60(A)]

Second Revision No. 8123-NFPA 70-2024 [Section No. 130.60(B)]

(B) Malfunction.

The ~~EMS with~~ PCS shall transition to a controlled state that prevents overload in response to a failure or malfunction affecting the ability to monitor and control currents within the PCS.- If a PCS is used to control overload conditions in circuits other than branch circuits, a malfunction in the PCS control system shall not result in the opening of the OCPD protecting the circuit.

Informational Note:- ~~Examples of failure~~ Failure or malfunction ~~are operating conditions where~~ due to single fault conditions are when the control system is not able to achieve or maintain the desired ~~setpoint value. Equipment failure, delayed response, or the loss of control or feedback elements are common causes of system malfunction~~ control setting. Responses to malfunctions are addressed by the product listing and associated documentation .

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Mon Oct 21 11:55:46 EDT 2024

Committee Statement

Committee Statement: The opening of the OCPD protecting a feeder or within service equipment could have negative implications in occupied buildings or other processes not related to the PCS. This condition has been addressed in the second issue of UL 3141 and is aligned with this text. Adding this new language in the NEC will ensure that users of this code know to inquire into the suitability of a particular PCS for the application during this adoption phase of this technology. The informational note has been updated with the correct terms used throughout this article and new text has been added so users understand they can verify compliance to this section through the product listing and its documentation. Terms used in Part II of this article have been harmonized to "PCS" to improve usability since this is the term used in the listing process of equipment providing overload control. This is in reference to PC-1096.

Response Message: SR-8123-NFPA 70-2024

Public Comment No. 1903-NFPA 70-2024 [Section No. 130.50]

Public Comment No. 844-NFPA 70-2024 [Section No. 130.60(B)]

Second Revision No. 8126-NFPA 70-2024 [Section No. 130.70(A)]

(A) ~~Current Setpoint~~ PCS Control Settings .

The ~~EMS with~~ PCS shall ~~be~~ include control settings capable of being set ~~to a current setpoint~~ in amperes for each controlled conductor, controlled source, or controlled load.- The PCS control setting shall be considered as a continuous load.

Informational Note: - ~~Current setpoints may be~~ Control settings can be used for calculating the connected load(s) and or source(s). See 120.7 for application ~~of an EMS~~ with a PCS ~~setpoint~~ control setting used in load calculations and 705 .13 if controlling power sources.

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Mon Oct 21 12:10:07 EDT 2024

Committee Statement

Committee Statement: Text was revised to use the term "control settings" rather than "current setpoint" to align with UL 3141. This is in reference to PC-1096. Terms used in Part II of this article have been harmonized to "PCS" to improve usability since this is the term used in the listing process of equipment providing overload control. A new sentence was added to clarify that PCS controlled load(s) shall be considered as continuous loads to align with requirements in 120.7. A requirement has been added that the PCS be identified as either a multisource PCS or single source PCS to align with UL3141. A reference to 705.13 to guide the users to applying PCS applications to source.

Response Message: SR-8126-NFPA 70-2024

Second Revision No. 8128-NFPA 70-2024 [Section No. 130.70(B)]

(B) Adjustable Settings.

Adjustable settings for overload control functions shall be permitted ~~if access to the settings is limited by at least one of the following:~~

(1) ~~Located behind locked doors accessible only to qualified personnel~~

(2) ~~Software that has password protected access to the adjusting means accessible to qualified personnel only~~

(3) ~~Hardware such as dip switches located behind locked doors or areas requiring a tool for access~~

~~Exception: Adjustable trip circuit breakers with restricted access, as allowed in 240.6(C) or 240.6(D) , shall be permitted.~~

to be accessed only by qualified persons through methods specified in accordance with its listing .

Supplemental Information

File Name	Description	Approved
NEC_CMP-13_SR-8128_130.70_B_.docx		

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Mon Oct 21 12:15:26 EDT 2024

Committee Statement

Committee Statement: The list of acceptable methods of restricted access to adjustable settings has been removed since these are addressed within the UL 3141 standard adequately and with better consideration for the specific technology and use than this list. Text to specifically refer to the listing has been added to guide installers and enforcers how to verify compliance to 110.3(B). Terms used in Part II of this article have been harmonized to "PCS" to improve usability since this is the term used in the listing process of equipment providing overload control. This is in reference to PC-1096.

Response Message: SR-8128-NFPA 70-2024

Public Comment No. 19-NFPA 70-2024 [Section No. 130.70(B)]

(B) Adjustable Settings.

Adjustable settings for overload control functions shall be permitted to be accessed only by qualified persons through methods specified in accordance with its listing~~if access to the settings is limited by at least one of the following:~~

~~Located behind locked doors accessible only to qualified personnel~~

1. ~~Software that has password protected access to the adjusting means accessible to qualified personnel only~~
2. ~~Hardware such as dip switches located behind locked doors or areas requiring a tool for access~~

~~*Exception: Adjustable trip circuit breakers with restricted access, as allowed in 240.6(C) or 240.6(D), shall be permitted.*~~

Second Revision No. 8129-NFPA 70-2024 [Section No. 130.80]

130.80 Marking and Documentation.

(A) Marking.

The equipment or circuits that ~~supplies~~ supply the branch circuit, feeder, or service shall be marked with the following information in accordance with its listing :

(1) ~~Current setpoint~~ PCS control setting (s)

(2) In other than one- and two-family dwellings, the date of calculation and identification of the qualified ~~personnel determining~~ person determining the settings

(3) Identification of loads and sources managed by the ~~EMS with~~ PCS

(4) The following or equivalent wording: "Circuits within this equipment are controlled by a power control system. The ~~current setpoints shall~~ control settings shall only be changed by a qualified person."

The markings shall meet the requirements in 110.21(B) and shall be located such that they are clearly visible to qualified persons before examination, adjustment, servicing, or maintenance of the equipment.

(B) Documentation.

A list of the monitoring, control function(s), and control equipment and associated settings that perform the overload control functions shall be documented and readily available to qualified persons . The PCS shall be identified as either a multisource or single source PCS, as applicable..

Informational Note No. 1 : Listed ~~EMS with~~ PCS may include specific hardware and software components that are detailed in the documentation included with the listing.

Informational Note 2: A multisource PCS is rated for source control, or source and load control. A single source PCS is rated for load control only.

(C) Directory.

Where the ~~EMS with~~ PCS control equipment is not located within sight of the ~~overcurrent device(s) for~~ OCPDs for the controlled circuit(s), a directory identifying the controlled device(s) and associated circuit(s) shall be posted on the enclosure of the control device(s), disconnect, or ~~branch-circuit overcurrent device~~ OCPD .

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Mon Oct 21 12:20:02 EDT 2024

Committee Statement

Committee Statement: Text was revised to use the term "control settings" rather than "current setpoint" to align with UL 3141. Terms used in part II of this article have been harmonized to "PCS" to improve usability since this is the term used in the listing process of equipment providing overload control. Changes were made to align references related to overcurrent protective devices with their defined terms and acronyms. A new sentence was added to clarify that PCS controlled load(s) shall be considered as continuous loads to align with requirements in 120.7. A requirement has been added that the PCS be identified as either a multisource PCS or single source PCS to align with UL3141. The suitability of the PCS

for the overload application depends on the PCS type selected. Terms used in Part II of this article have been harmonized to "PCS" to improve usability since this is the term used in the listing process of equipment providing overload control. This is in reference to PC-1096.

Response Message: SR-8129-NFPA 70-2024

Public Comment No. 24-NFPA 70-2024 [Section No. 130.80(A)]

Public Comment No. 1904-NFPA 70-2024 [Section No. 130.80(A)]

Second Revision No. 8265-NFPA 70-2024 [Section No. 445.13]

445.13 Conductors — Minimum Ampacity and Size.

(A) Overcurrent Protection Not Provided.

The ampacity of the conductors from the generator terminals to the first distribution device(s) containing overcurrent protection shall not be less than 115 percent of the nameplate current rating of the generator.

Where the design and operation of the generator prevent overloading, the ampacity of the conductors shall not be less than 100 percent of the nameplate current rating of the generator.

(B) Overcurrent Protection Provided.

Where the generator set is equipped with a listed ~~overcurrent protective device or~~ OCPD or a combination of a current transformer and overcurrent relay, conductors shall be permitted to be tapped from the load side of the protected terminals in accordance with 240.21(B).

Tapped conductors shall not be permitted for portable generators rated 15 kW or less where field wiring connection terminals are not accessible.

(C) Neutral Conductors.

The neutral conductors shall be permitted to be sized in accordance with 120.61. ~~Conductors that carry ground-fault currents shall not be smaller than required by 250.35 . Where neutral~~ If neutral conductors of dc generators carry ground-fault currents, the neutral conductors shall not be smaller than the minimum required size of the largest conductor supplied by the dc system .

(D) Grounding and Bonding Conductors.

Grounding and bonding conductors that carry ground-fault currents shall be sized in accordance with Article 250, Part V and Part VI.

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Tue Oct 22 16:22:51 EDT 2024

Committee Statement

Committee Statement: No change to the reference to 120.61 is needed as it is correct. 220.61 was relocated to 120.61. The reference to 250.35 is not needed as Article 250 applies. (D) was added to separate out the requirements for grounding and bonding conductor requirements and improve clarity. Part V and Part VI is added to expand the scope of the reference.

A reference to the nameplate current rating was added in order to facilitate determining the ampacity of the conductors. OCPD was addressed in reference to Global PC 1653.

Response Message: SR-8265-NFPA 70-2024

Public Comment No. 1633-NFPA 70-2024 [Section No. 445.13]

Public Comment No. 49-NFPA 70-2024 [Section No. 445.13(C)]

Second Revision No. 8264-NFPA 70-2024 [Section No. 455.7 [Excluding any Sub-Sections]]

The single-phase supply conductors and phase converter shall be ~~protected from overcurrent by~~ provided with overcurrent protection in accordance with 455.7(A) or 455.7(B). Where the required fuse or nonadjustable circuit breaker rating or settings of adjustable circuit breakers do not correspond to a standard rating or setting, a higher rating or setting that does not exceed the next higher standard rating shall be permitted.

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Tue Oct 22 15:03:33 EDT 2024

Committee Statement

Committee Statement: This revision changes ‘protected from overcurrent’ to ‘provided with overcurrent protection’ for consistency with changes throughout the code regarding overcurrent protection devices. This is in reference to Global PC 1653.

Response Message: SR-8264-NFPA 70-2024

Second Revision No. 8145-NFPA 70-2024 [Section No. 480.1]

480.1 Scope.

This article applies to all installations of stationary batteries having a capacity greater than 3.6 MJ (1 kWh).

Informational Note No. 1: See Article 706 for listed energy storage systems.

Informational Note No. 2: For batteries rated in ampere hours, kWh is equal to the nominal rated voltage times ampere-hour rating divided by 1000. For batteries rated in watts per cell, kWh equals the nameplate watts per cell multiplied by the number of cells divided by 1000 and multiplied by the nameplate minutes rating divided by 60.

Informational Note No. 3: The following standards are frequently referenced for the installation of stationary batteries:

(1) IEEE 484, *Recommended Practice for Installation Design and Installation of Vented Lead-Acid Batteries for Stationary Applications*

(2) IEEE 485, *Recommended Practice for Sizing Vented Lead-Acid Storage Batteries for Stationary Applications*

(3) IEEE 1115, *Recommended Practice for Sizing of Nickel-Cadmium Batteries for Stationary Applications*

(4) IEEE 1187, *Recommended Practice for Installation Design, and Installation of Valve-Regulated Lead-Acid Batteries for Stationary Applications*

(5) IEEE 1375, *Guide for the Protection of Stationary Battery Systems*

(6) IEEE 1578, *Recommended Practice for Stationary Battery Electrolyte Spill Containment and Management*

(7) IEEE 1635/ASHRAE 21, *Guide for the Ventilation and Thermal Management of Batteries for Stationary Applications*

(8) UL 1973, *Batteries for Use in Stationary, and Motive Auxiliary Power Applications*

(9) UL Subject 2436, *Outline of Investigation for Spill Containment for Stationary Lead Acid Battery Systems*

(10) UL 1989, *Standard for Standby Batteries*

(11) UL 1974, *Standard for Evaluation or Repurposing Batteries*

(12) NFPA 855-2026, *Standard for the Installation of Stationary Energy Storage Systems*

(13) IEEE 1184, *Guide for Batteries for Uninterruptible Power Supply Systems*

(14) ICC IFC, *International Fire Code* (IFC)

(15) NFPA 1-2024, *Fire Code*

(16) IEEE 1106, *Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications*

(17) IEEE 2962, *Recommended Practice for Installation, Operation, Maintenance, Testing, and Replacement of Lithium-ion Batteries for Stationary Applications*

(18) ~~UL 9540, *Energy Storage Systems (ESS) and Equipment*~~

(19) ~~UL 9540A, *Battery Energy Storage System (ESS) Test Method*~~

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Mon Oct 21 13:33:11 EDT 2024

Committee Statement

Committee Statement: UL 9540 is an evaluation of complete ESSs, which differ from the stationary batteries that fall under the scope of Article 480.

Response Message: SR-8145-NFPA 70-2024

Public Comment No. 1951-NFPA 70-2024 [Section No. 480.1]

Second Revision No. 8147-NFPA 70-2024 [Section No. 480.2]

480.2 Listing Requirements.

Stationary batteries and battery management equipment shall be listed. This requirement shall not apply to vented lead-acid or nickel-cadmium batteries.

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Mon Oct 21 13:35:40 EDT 2024

Committee Statement

Committee Statement: This section was revised to align with the proposed requirements in NFPA 855 and clarify the long-standing use of vented lead-acid and vented nickel cadmium batteries.

Response Message: SR-8147-NFPA 70-2024

Public Comment No. 1985-NFPA 70-2024 [Section No. 480.2]

Second Revision No. 8159-NFPA 70-2024 [Section No. 480.7(A)]

(A) Disconnecting Means.

A disconnecting means shall be provided for all ungrounded conductors derived from a stationary battery with a voltage over 60 volts dc. A disconnecting means shall be readily accessible and located within sight of the stationary battery.

Informational Note: See 240.21(H) for information on the location of the ~~overcurrent device for~~ OCPD for battery conductors.

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Mon Oct 21 14:01:45 EDT 2024

Committee Statement

Committee Statement: Changes were made to align references related to overcurrent protective devices with their defined terms and acronyms.

Response Message: SR-8159-NFPA 70-2024

Second Revision No. 8162-NFPA 70-2024 [Section No. 480.7(F)]

See "CMP 13 SR 8162" word document for revisions]

(F) Notification.

The disconnecting means shall be legibly marked in the field. A label with the marking shall be placed in a conspicuous location near the battery if a disconnecting means is not provided. The marking shall be of sufficient durability to withstand the environment involved and shall include the following:

(1) Nominal battery voltage

(2) Available fault current derived from the stationary battery

Informational Note No. 1: Battery equipment suppliers can provide information about available fault current on specific battery models.

(3) An arc flash label in accordance with acceptable industry practice

Informational Note No. 2: See NFPA *70E*-2024, *Standard for Electrical Safety in the Workplace*, for assistance in determining the severity of potential exposure, planning safe work practices, arc flash labeling, and selecting personal protective equipment.

(4) Date the calculation was performed

Exception 1 :- ~~List~~ _ List item (3) shall not apply to installations if the battery voltages are below 150 volts dc.

Exception 2: List items (2), (3), and (4) shall not apply to ~~installations where~~ one- and two-family dwellings if the battery voltages are below 150 volts dc .

Supplemental Information

File Name	Description	Approved
CMP_13_SR_8162.docx		
CMP_13_SR_8162_480.7_F_.docx	For prod use	

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Mon Oct 21 14:06:14 EDT 2024

Committee Statement

Committee Statement: The first draft language exempted all installations from list items 1 through 4. An available fault current calculation and the date it was calculated is needed for all systems as this can impact suitability of equipment with respect to short-circuit current ratings. This revision clarifies that the exemption for list items (2) and (4) specifically apply to one- and two-family dwellings where the battery voltages are below 150 volts.

Response Message: SR-8162-NFPA 70-2024

Public Comment No. 1747-NFPA 70-2024 [Section No. 480.7]

(F) Notification.
The disconnecting means shall be legibly marked in the field. A label with the marking shall be placed in a conspicuous location near the battery if a disconnecting means is not provided. The marking shall be of sufficient durability to withstand the environment involved and shall include the following:

(1) Nominal battery voltage

(2) Available fault current derived from the stationary battery

Informational Note No. 1: Battery equipment suppliers can provide information about available fault current on specific battery models.

(3) An arc flash label in accordance with acceptable industry practice

Informational Note No. 2: See NFPA *70E*-2024, *Standard for Electrical Safety in the Workplace*, for assistance in determining the severity of potential exposure, planning safe work practices, arc flash labeling, and selecting personal protective equipment.

(4) Date the calculation was performed

Exception 1: List item (3) shall not apply to installations where the battery voltages are below 150 volts dc.
Exception 2: List items (2), (3), and (4) shall not apply to one- and two-family dwellings ~~installations where~~ if the battery voltages are below 150 volts dc.

Second Revision No. 8175-NFPA 70-2024 [Section No. 480.8]

480.8 Grounding of Battery Stands and Conductive Cases.

~~Battery systems shall be required to ground conductive~~ Conductive battery stands, racks, cabinets, or ~~cabinets and bond any conductive cases in accordance with Article~~ 250 ~~, Part VIII~~ cases shall be grounded .

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Mon Oct 21 14:51:43 EDT 2024

Committee Statement

Committee Statement: The requirement for grounding of conductive battery stands, racks, cabinets or cases has been revised for clarity to specify that these conductive components must be grounded.

Response Message: SR-8175-NFPA 70-2024

Public Comment No. 760-NFPA 70-2024 [Section No. 480.8]

Second Revision No. 8181-NFPA 70-2024 [Section No. 480.10(F)]

~~(F) Piping in Battery Rooms.~~

~~Gas piping shall not be permitted in dedicated battery rooms.~~

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Mon Oct 21 16:33:42 EDT 2024

Committee Statement

Committee Statement: NFPA 855 addresses battery installations by requiring a site-specific hazard mitigation analysis which would include considerations of gas piping in battery rooms.

Response Message: SR-8181-NFPA 70-2024

Public Comment No. 2002-NFPA 70-2024 [Section No. 480.10(F)]

Second Revision No. 8186-NFPA 70-2024 [Section No. 480.10(G)]

(G) Illumination.

Illumination shall be provided for working spaces containing stationary ~~standby~~ batteries. The lighting outlets shall not be controlled by automatic means only. Additional lighting outlets shall not be required where the work space is illuminated by an adjacent light source. The location of luminaires shall not result in the following:

(1) Expose personnel to energized battery components while performing maintenance on the luminaires in the battery space

(2) Create a hazard to the battery upon failure of the luminaire

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Mon Oct 21 16:41:46 EDT 2024

Committee Statement

Committee Statement: The term ‘standby’ is removed as an editorial change to align with similar changes to the title and use of terms made during the first draft.

Response Message: SR-8186-NFPA 70-2024

Second Revision No. 8203-NFPA 70-2024 [Section No. 480.13]

480.13 Ground-Fault Detection.

Battery circuits exceeding 100 volts between the conductors or to ground shall be permitted to operate with ungrounded or impedance grounded ~~conductors~~ systems , provided a ground-fault detector and indicator is installed to monitor for ground faults.

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Mon Oct 21 17:53:02 EDT 2024

Committee Statement

Committee Statement: The term “conductors” is changed to “systems” to more accurately describe the applications where this requirement applies.

Response Message: SR-8203-NFPA 70-2024

Public Comment No. 761-NFPA 70-2024 [Section No. 480.13]

Second Revision No. 8289-NFPA 70-2024 [Section No. 695.7(A)(1)]

[See "CMP 13 SR 8289" word document for revisions]

(1) Services and On-Site Power Production Facilities.

Service conductors and conductors supplied by on-site power production facilities shall be physically routed outside a building(s) and shall be installed as service-entrance conductors in accordance with 230.~~6~~ ~~,~~ ~~230.~~ 9, and Article 230, Parts III and IV. Where supply conductors cannot be physically routed outside of buildings, the conductors shall be permitted to be routed through the building(s) where installed in accordance with ~~230~~ 695 . ~~6~~(7(A)(2)(d)(1) or ~~230~~ 695 . ~~6~~ 7 (A)(2) (d)(2) . .

Exception: The supply conductors within the fire pump room shall not be required to meet ~~230~~ 695 . ~~6~~ 7 (~~1~~ A) - ~~or 230.6~~ (2) .

Informational Note: See 250.24(D) for routing the grounded conductor to the service equipment.

Supplemental Information

File Name	Description	Approved
CMP_13_SR_8289.docx		

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Tue Oct 22 18:03:19 EDT 2024

Committee Statement

Committee Statement: This revision clarifies that the supply side conductors are subject to the same thermal protection as the feeders routed through the building. Updated reference numbering to reflect the changes made in 695.7(A)(2)(d). These changes are directly related to changes in the first draft related to concrete encasement thickness. The panel thoroughly reviewed all public comments, including the supporting information submitted. Many commenters expressed the belief that laboratory testing of conductors embedded in concrete under fire conditions was necessary to justify the proposed code change. Testing was conducted using three common concrete aggregates to support PC 1839, included in the 2026 NEC Code Making Panel-13 Second Draft Meeting Agenda available at www.nfpa.org/70. The results showed that commercially available insulated building wires did not maintain circuit integrity for two hours when protected by 2 inches of concrete made from siliceous, carbonate, or lightweight aggregate. Given these findings, and acknowledging that not all aggregate types were tested, the panel has allowed for the use of a minimum of 2 inches of concrete, provided that the fire rating is validated by a licensed Professional Engineer qualified in such designs.

Several commenters also referenced the Fire Protection Research Foundation (FPRF) report mentioned in the First Draft. This report included a literature review covering historical NEC actions, building code requirements, and peer-reviewed technical papers. The panel offered the FPRF report as a resource to provide context for the code requirements. Additional laboratory testing was also submitted to support the recommendations made by the FPRF.

While structural evaluations fall outside the NEC's scope, the revision permits the use of alternative concrete thicknesses, as long as they are validated for a 2-hour fire rating by a licensed Professional Engineer qualified in such designs. This flexibility aligns with other allowed protection options. The decision to permit either 5 inches of concrete or a different thickness based on a licensed engineer's analysis was made in response to First Draft comments. To ensure users are aware of the 2-inch option, the panel moved the exception into the code's positive text. These concrete protection options supplement other permitted wiring and building protection methods.

Response Message: SR-8289-NFPA 70-2024

Public Comment No. 1839-NFPA 70-2024 [Section No. 695.7(A)(1)]

Public Comment No. 1551-NFPA 70-2024 [Section No. 695.7(A)(1)]

Second Revision No. 8292-NFPA 70-2024 [Section No. 695.7(A)(2)]

[See "CMP 13 SR 8292" word document for revisions]

(2) Feeders.

Fire pump supply conductors on the load side of the final disconnecting means and overcurrent device(s) permitted by 695.5(B) or conductors that connect directly to an on-site standby generator shall comply with 695.7(A)(2)(a) through 695.7(A)(2)(d).

(a) *Independent Routing.* The conductors shall be kept entirely independent of all other wiring.

(b) *Associated Fire Pump Loads.* The conductors shall supply only loads that are directly associated with the fire pump system.

(c) *Protection from Potential Damage.* The conductors shall be protected from potential damage by fire, structural failure, or operational accident.

(d) *Inside of a Building.* Where routed through a building, the conductors shall be protected from fire for 2 hours using one of the following methods:

(1) The cable or raceway is encased in concrete with a minimum thickness of ~~127~~ 50 mm (~~5 in~~ 2 in .) measured from each point on the surface of the cable or raceway ~~. Exception No. 1: Cables and raceways installed underground shall not be considered to be inside the building. Exception No. 2: Alternative thicknesses of concrete shall be permitted to be selected the installation provides a 2-hour fire rating as documented by a licensed professional engineer qualified in such design. The selection shall be documented and stamped by the professional engineer designs with the documentation available to the AHJ upon request.~~

(2) The cable or raceway is encased in concrete with a minimum thickness of 127mm (5 in.) measured from each point on the surface of the cable or raceway .

Informational Note: See Fire Protection Research Foundation Report FPRF-2018-16, "Fire Resistance of Concrete for Electrical Conductors," for information about concrete fire resistance.

(3) The cable or raceway is part of a listed fire-resistive cable system.

Informational Note No. 1: See UL 2196, *Fire Test for Circuit Integrity of Fire-Resistive Power, Instrumentation, Control and Data Cables*, for one method of defining a fire-resistive cable system.

Informational Note No. 2: See UL *Guide Information for Electrical Circuit Integrity Systems* (FHIT) for identifying the system and its installation limitations to maintain a minimum 2-hour fire-resistive rating.

Informational Note No. 3: The listing organization provides information for fire-resistive cable systems on proper installation requirements to maintain the fire rating.

(4) The cable or raceway is protected by a listed electrical circuit protective system.

Informational Note No. 4: See UL 1724, *Fire Tests for Electrical Circuit Protective Systems*, for one method of defining an electrical circuit protective system.

Informational Note No. 5: See UL *Guide Information for Electrical Circuit Integrity Systems* (FHIT) for identifying the system and its installation limitations to maintain a minimum 2-hour fire-resistive rating.

Informational Note No. 6: The listing organization provides information for electrical circuit protective systems on proper installation requirements to maintain the fire rating.

~~*Exception to (d):*~~

Exception No. 1: Cables and raceways installed underground shall not be considered to be inside the building.

Exception No. 2: The supply conductors located in the electrical equipment room where they originate and in the fire pump room shall not be required to have the minimum 2-hour fire separation or fire-resistance rating unless otherwise required by 700.10(D) of this code.

Supplemental Information

File Name	Description	Approved
CMP_13_SR_8292.docx		

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Tue Oct 22 18:12:27 EDT 2024

Committee Statement

Committee Statement: The panel thoroughly reviewed all public comments, including the supporting information submitted. Many commenters expressed the belief that laboratory testing of conductors embedded in concrete under fire conditions was necessary to justify the proposed code change. Testing was conducted using three common concrete aggregates to support PC 1839, included in the 2026 NEC Code Making Panel-13 Second Draft Meeting Agenda available at www.nfpa.org/70. The results showed that commercially available insulated building wires did not maintain circuit integrity for two hours when protected by 2 inches of concrete made from siliceous, carbonate, or lightweight aggregate. Given these findings, and acknowledging that not all aggregate types were tested, the panel has allowed for the use of a minimum of 2 inches of concrete, provided that the fire rating is validated by a licensed Professional Engineer qualified in such designs.

Several commenters also referenced the Fire Protection Research Foundation (FPRF) report mentioned in the First Draft. This report included a literature review covering historical NEC actions, building code requirements, and peer-reviewed technical papers. The panel offered the FPRF report as a resource to provide context for the code requirements. Additional laboratory testing was also submitted to support the recommendations made by the FPRF.

While structural evaluations fall outside the NEC's scope, the revision permits the use of alternative concrete thicknesses, as long as they are validated for a 2-hour fire rating by a licensed Professional Engineer qualified in such designs. This flexibility aligns with other allowed protection options. The decision to permit either 5 inches of concrete or a different thickness based on a licensed engineer's analysis was made in response to First Draft comments. To ensure users are aware of the 2-inch option, the panel moved the exception into the code's positive text. These concrete protection options supplement other permitted wiring and building protection methods.

Response Message: SR-8292-NFPA 70-2024

Public Comment No. 1563-NFPA 70-2024 [Section No. 695.7(A)(2)]

Public Comment No. 1818-NFPA 70-2024 [Section No. 695.7(A)(2)]

Public Comment No. 1578-NFPA 70-2024 [Section No. 695.7(A)(2)]

Public Comment No. 1059-NFPA 70-2024 [Section No. 695.7(A)(2)]

Second Revision No. 8275-NFPA 70-2024 [Section No. 695.12(C)]

(C) Stationary ~~Standby~~ Batteries.

Stationary ~~standby~~ batteries for fire pump engine drives shall be supported above the floor, secured against displacement, and located where they are not subject to physical damage, flooding with water, excessive temperature, or excessive vibration.

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Tue Oct 22 17:02:42 EDT 2024

Committee Statement

Committee Statement: This revision correlates changing the term ‘stationary standby batteries’ to ‘stationary batteries’ with removal of the definition of stationary standby batteries.

Response Message: SR-8275-NFPA 70-2024

Public Comment No. 1948-NFPA 70-2024 [Section No. 695.12(C)]

Second Revision No. 8278-NFPA 70-2024 [Section No. 695.14(F)]

[see "CMP 13 SR 8278" word document for revisions]

(F) Generator Control Wiring Methods.

Control conductors installed between the fire pump power transfer switch and the standby generator supplying the fire pump during normal power loss shall be kept entirely independent of all other wiring. The integrity of the generator remote start circuit shall be monitored for broken, disconnected, or shorted wires. Loss of integrity shall start the generator(s).

Informational Note No. 1: See NFPA 20-2025, *Standard for the Installation of Stationary Pumps for Fire Protection*, 3.3.7.2 for more information on fault-tolerant external control circuits.

The control conductors shall be protected to resist potential damage by fire or structural failure. Where routed through a building, the conductors shall be protected from fire for 2 hours using one of the following methods:

(1) The cable or raceway is encased in concrete with a minimum thickness of ~~127~~ 50 mm (~~5 in~~ 2 in .) measured from each point on the surface of the cable or raceway ~~. Exception No. 1: Cables and raceways installed underground shall not be considered to be inside the building. Exception No. 2: Alternative thicknesses of concrete shall be permitted to be selected by a licensed professional engineer qualified in such design. The selection shall be documented and stamped by the professional engineer the installation provides a 2-hour fire rating as documented by a registered design professional qualified in such design with the documentation available to the AHJ upon request.~~

(2) The cable or raceway is encased in concrete with a minimum thickness of 127 mm (5 in) measured from each point on the surface of the cable or raceway .

Informational Note No. 2: See Fire Protection Research Foundation Report FPRF-2018-16, "Fire Resistance of Concrete for Electrical Conductors" for information about concrete fire resistance.

(3) The cable or raceway is part of a listed fire-resistive cable system.

Informational Note No. 3: See UL 2196-2017, *Standard for Fire Test for Circuit Integrity of Fire-Resistive Power, Instrumentation, Control and Data Cables*, for testing requirements for fire-resistive cables.

Informational Note No. 4: The listing organization provides information for fire-resistive cable systems on proper installation requirements to maintain the fire rating.

(4) The cable or raceway is protected by a listed electrical circuit protective system.

Informational Note No. 5: See UL 1724, *Fire Tests for Electrical Circuit Protection Systems*, for testing requirements for circuit protective systems.

Informational Note No. 6: Electrical circuit protective systems could include, but are not limited to, thermal barriers or a protective shaft.

Informational Note No. 7: The listing organization provides information for electrical circuit protective systems on proper installation requirements to maintain the fire rating.

Exception: Cables and raceways installed underground shall not be considered to be inside the building.

Supplemental Information

File Name	Description	Approved
CMP_13_SR_8278.docx		
NEC_CMP-13_SR-8278_695.14_F_.docx	For prod use	

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Tue Oct 22 17:21:57 EDT 2024

Committee Statement

Committee Statement: The panel thoroughly reviewed all public comments, including the supporting information submitted. Many commenters expressed the belief that laboratory testing of conductors embedded in concrete under fire conditions was necessary to justify the proposed code change. Testing was conducted using three common concrete aggregates to support PC 1839, included in the 2026 NEC Code Making Panel-13 Second Draft Meeting Agenda available at www.nfpa.org/70. The results showed that commercially available insulated building wires did not maintain circuit integrity for two hours when protected by 2 inches of concrete made from siliceous, carbonate, or lightweight aggregate. Given these findings, and acknowledging that not all aggregate types were tested, the panel has allowed for the use of a minimum of 2 inches of concrete, provided that the fire rating is validated by a licensed Professional Engineer qualified in such designs.

Several commenters also referenced the Fire Protection Research Foundation (FPRF) report mentioned in the First Draft. This report included a literature review covering historical NEC actions, building code requirements, and peer-reviewed technical papers. The panel offered the FPRF report as a resource to provide context for the code requirements. Additional laboratory testing was also submitted to support the recommendations made by the FPRF.

While structural evaluations fall outside the NEC's scope, the revision permits the use of alternative concrete thicknesses, as long as they are validated for a 2-hour fire rating by a licensed Professional Engineer qualified in such designs. This flexibility aligns with other allowed protection options. The decision to permit either 5 inches of concrete or a different thickness based on a licensed engineer's analysis was made in response to First Draft comments. To ensure users are aware of the 2-inch option, the panel moved the exception into the code's positive text. These concrete protection options supplement other permitted wiring and building protection methods.

Response Message: SR-8278-NFPA 70-2024

Public Comment No. 1829-NFPA 70-2024 [Section No. 695.14(F)]

Public Comment No. 1600-NFPA 70-2024 [Section No. 695.14(F)]

Public Comment No. 1055-NFPA 70-2024 [Section No. 695.14(F)]

Public Comment No. 1847-NFPA 70-2024 [Section No. 695.14(F)]

Second Revision No. 8321-NFPA 70-2024 [Section No. 700.4]

700.4 Commissioning and ~~Maintenance~~ Servicing .

(A) Commissioning Witness Test.

The authority having jurisdiction shall conduct or witness the commissioning of the ~~complete~~ completed system upon installation and periodically afterward.

Informational Note: See NECA 90, *Standard for Commissioning Building Electrical Systems for commissioning of building electrical systems* .

(B) Tested Periodically.

Systems shall be tested periodically on a schedule approved by the authority having jurisdiction to ensure the systems are maintained in proper operating condition.

(C) Servicing.

Emergency system equipment shall be maintained in accordance with manufacturer instructions and industry standards.

(D) Record Keeping.

A written or digital record shall be kept of such tests and maintenance and made available to those authorized to design, install, inspect, maintain, and operate the system.

(E) Testing Under Load.

Means for testing all emergency lighting and power systems during maximum anticipated load conditions shall be provided.

Informational Note: See NFPA 110-2025, *Standard for Emergency and Standby Power Systems*, for information on testing and maintenance of emergency power supply systems (EPSSs).

(F) Temporary Source of Power for Servicing of the Alternate Source of Power.

If the emergency system relies on a single alternate source of power, which will be disabled for servicing, the emergency system shall include permanent switching means to connect a portable or temporary alternate source of power that shall be available for the duration of the servicing. The permanent switching means to connect a portable or temporary alternate source of power shall comply with the following:

(1) Connection to the portable or temporary alternate source of power shall not require modification of the permanent system wiring.

(2) Transfer of power between the normal power source and the emergency power source shall be in accordance with 700.12.

(3) The connection point for the portable or temporary alternate source shall be marked with the phase rotation and system bonding requirements.

(4) The switching means, including the interlocks, shall be listed and provided with mechanical or mechanical and electrical interlocking to prevent inadvertent interconnection of power sources.

(5) The switching means shall include a contact point that shall annunciate at a location remote from the generator or at another facility monitoring system to indicate that the permanent emergency source is disconnected from the emergency system.

(6) The permanent connection point for the temporary generator shall be located outdoors and shall not have cables from the connection point to the temporary generator routed through exterior windows, doors, or similar openings.

(7) A permanent label shall be field applied at the permanent connection point to identify the system voltage, maximum amperage, short-circuit current rating of the load side of equipment supplied, and ungrounded conductor identification in accordance with 210.5.

(8) The installation of a portable or temporary power source shall include an ~~overcurrent protective device (OCPD) to~~ OCPD to provide equivalent protection for the emergency system and, at a minimum, provide sufficient power to emergency and other selected loads served.

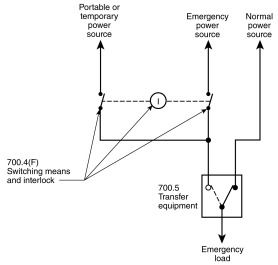
(9) If the permanent emergency power source is part of a separately derived system that includes a grounded conductor, the switching means for the portable or temporary alternate source of power shall switch the grounded conductor to meet the grounding requirements of 250.30.

(10) Section 700.10(D)(4)(b) shall not apply.

It shall be permissible to use manual switching to switch from the permanent source of power to the portable or temporary alternate source of power and to use the switching means for connection of a load bank.

Informational Note: See Figure Informational Note 700.4(F) for one example of many possible methods to achieve the requirements of 700.4(F).

Figure Informational Note 700.4(F) Example of Portable or Temporary Alternate Power Source Connection.



Exception: The permanent switching means to connect a portable or temporary alternate source of power for the duration of the maintenance or repair shall not be required where any of the following conditions exists:

(1) All processes that rely on the emergency system source are capable of being disabled during maintenance or repair of the emergency source of power.

(2) The building or structure is unoccupied and fire protection systems are fully functional and do not require an alternate power source.

(3) Other temporary means can be substituted for the emergency system.

(4) A permanent alternate emergency source, such as but not limited to a second on-site standby generator or separate electric utility service connection, capable of supporting the emergency system exists.

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Wed Oct 23 13:32:49 EDT 2024

Committee Statement

Committee Statement: The revision changes “maintenance” to “servicing” to correlate with the definition of “servicing” as it includes maintenance. Digital record keeping was added to the requirement for clarity and enforceability to remove the ambiguity that record keeping is not only manual writing of records. The change from “complete” to “completed” to add clarity and enforceability of when to witness the system commissioning. The informational note was expanded to provide more information. List item (F)(9) was added to provide clarity of the switching means and grounding requirements of the permanent and temporary generator set.

Response Message: SR-8321-NFPA 70-2024

Public Comment No. 1134-NFPA 70-2024 [Section No. 700.4(A)]

Public Comment No. 648-NFPA 70-2024 [Section No. 700.4(F)]

Public Comment No. 577-NFPA 70-2024 [Section No. 700.4(D)]

Public Comment No. 999-NFPA 70-2024 [Section No. 700.4(D)]

Public Comment No. 2055-NFPA 70-2024 [Section No. 700.4]

Public Comment No. 837-NFPA 70-2024 [Section No. 700.4(A)]

Public Comment No. 1135-NFPA 70-2024 [Section No. 700.4]

Public Comment No. 1138-NFPA 70-2024 [Section No. 700.4(D)]

Second Revision No. 8322-NFPA 70-2024 [Section No. 700.6(C)]

[See "CMP 8322" word document for revisions]

(C) ~~Redundant~~ Bypass and Isolation of Transfer Equipment.

~~If~~

For occupancies listed in 700.10(D)(1), if the emergency loads are supplied by a single feeder, the emergency power system shall include

~~redundant transfer~~

equipment

~~or a bypass isolation transfer switch~~

to facilitate

~~maintenance as~~

servicing as required in 700.4(C)

~~without jeopardizing~~

that complies with the following:

(1) A means to bypass the transfer equipment shall be provided while maintaining the continuity of power.

~~If the redundant transfer equipment or bypass isolation switch is~~

(1) Inadvertent parallel operation shall be prevented.

(2) Means shall be provided to isolate the transfer equipment from all supply side and load side sources.

(3) If the equipment used to bypass the transfer equipment is manual (or nonautomatic), then it shall be actively supervised by a qualified person when the primary (automatic) transfer equipment is disabled for servicing

~~and maintenance. When redundant transfer equipment is used, a means shall be provided to disconnect the transfer switch from all supply side sources. Inadvertent parallel operation shall be prevented.~~

~~*Exception: The requirement for redundancy with the transfer equipment shall not apply where any of the following conditions exist:*~~

~~*(1) All processes that rely on the emergency system source are capable of being disabled during servicing and maintenance activities without jeopardizing the safety to human life.*~~

~~*(2) The building or structure is unoccupied and fire protection systems are fully functional and do not require an alternate power source.*~~

~~*(3) Other temporary means shall be permitted to be substituted for the emergency system.*~~

~~*(4) A written emergency plan that includes mitigation actions and responsibilities for qualified persons to address the recognized site hazards for the duration of the servicing and maintenance or repair activities shall be developed and implemented. The emergency plan shall be made available to the authority having jurisdiction.*~~

(1) .

Informational Note: Bypass isolation switches and bypass isolation transfer switches are examples of such means.

Supplemental Information

File Name	Description	Approved
CMP_13_SR_8322.docx		

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Wed Oct 23 13:41:23 EDT 2024

Committee Statement

Committee Statement: Redundant transfer equipment accomplishes the necessary functions, bypass, isolation, and supervision, required, and eliminating these limits installations to specific, combination equipment. The section has been reformatted to emphasize necessary functions instead of specific equipment. The informational note assists the user in understanding that equipment that combines bypass isolation transfer equipment meets all of the required functions. The exceptions have been eliminated as they are vague and may lead to unsafe conditions. The application of this section has been limited to those occupancies in which continuity of power is most vital for life safety.

Response Message: SR-8322-NFPA 70-2024

Public Comment No. 1772-NFPA 70-2024 [Section No. 700.6(C)]

Public Comment No. 1205-NFPA 70-2024 [Section No. 700.6(C)]

Public Comment No. 2056-NFPA 70-2024 [Section No. 700.6(C)]

Second Revision No. 8323-NFPA 70-2024 [Section No. 700.9]

700.9 Surge Protection.

A listed SPD shall be installed ~~in or on~~ integral or immediately adjacent to all emergency system switchgear, switchboards, and panelboards.

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Wed Oct 23 14:00:30 EDT 2024

Committee Statement

Committee Statement: The change was made to correlate the use of the terms ‘in or on’ for consistency throughout the code. This is reference to PC-520.

Response Message: SR-8323-NFPA 70-2024

Second Revision No. 8335-NFPA 70-2024 [Section No. 700.10(D)(2)]

[See attached word document CMP 13 SR 8335]

(2) Feeder-Circuit Wiring.

Feeder-circuit wiring shall meet one of the following conditions:

(1) The cable or raceway is installed in spaces or areas that are fully protected by an approved automatic fire protection system.

(2) The cable or raceway is protected by a listed electrical circuit protective system with a minimum 2-hour fire rating.

Informational Note No. 1: See UL 1724, *Fire Tests for Electrical Circuit Protection Systems,* for one method of defining an electrical circuit protective system. The UL *Guide Information for Electrical Circuit Integrity Systems* (FHIT) contains information to identify the system and its installation limitations to maintain a minimum 2-hour fire-resistive rating and is available from the certification body.

(3) The cable or raceway is a listed fire-resistive cable system with a minimum 2-hour fire rating.

Informational Note No. 2: See UL 2196-2017, *Standard for Fire Test for Circuit Integrity of Fire-Resistive Power, Instrumentation, Control and Data Cables*, for one method of defining a fire-resistive cable system.

(4) The cable or raceway is protected by a listed fire-rated assembly that has a minimum fire rating of 2 hours and contains only emergency circuits.

(5) The cable or raceway is encased in concrete with a minimum thickness of ~~127 mm~~ 50 mm (~~5 in~~ 2 in .) measured from each point on the surface of the cable or racewa y and the installation provides a 2-hour fire rating as documented by a licensed professional engineer qualified in such design with the documentation available to the AHJ upon request.

(6) The cable or raceway is encased in a minimum thickness of 127 mm (5 in .

~~Exception No. 1~~

(1)) of concrete measured from each point on the surface of the cable or raceway.

Exception : Cables and raceways installed underground shall not be considered to be inside the building.

~~*Exception No. 2: Alternative thicknesses of concrete shall be permitted to be selected by a licensed professional engineer qualified in such design. The selection shall be documented and stamped by the professional engineer.*~~

Informational Note No. 3: See Fire Protection Research Foundation Report FPRF-2018-16, "Fire Resistance of Concrete for Electrical Conductors," for information about concrete fire resistance.

Supplemental Information

File Name	Description	Approved
CMP_13_SR_8335.docx		

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Wed Oct 23 16:22:37 EDT 2024

Committee Statement

Committee Statement: The panel thoroughly reviewed all public comments, including the supporting information submitted. Many commenters expressed the belief that laboratory testing of conductors embedded in concrete under fire conditions was necessary to justify the proposed code change. Testing was conducted using three common concrete aggregates to support PC 1839, included in the 2026 NEC Code Making Panel-13 Second Draft Meeting Agenda available at www.nfpa.org/70. The results showed that commercially available insulated building wires did not maintain circuit integrity for two hours when protected by 2 inches of concrete made from siliceous, carbonate, or lightweight aggregate. Given these findings, and acknowledging that not all aggregate types were tested, the panel has allowed for the use of a minimum of 2 inches of concrete, provided that the fire rating is validated by a licensed Professional Engineer qualified in such designs.

Several commenters also referenced the Fire Protection Research Foundation (FPRF) report mentioned in the First Draft. This report included a literature review covering historical NEC actions, building code requirements, and peer-reviewed technical papers. The panel offered the FPRF report as a resource to provide context for the code requirements. Additional laboratory testing was also submitted to support the recommendations made by the FPRF.

While structural evaluations fall outside the NEC's scope, the revision permits the use of alternative concrete thicknesses, as long as they are validated for a 2-hour fire rating by a licensed Professional Engineer qualified in such designs. This flexibility aligns with other allowed protection options. The decision to permit either 5 inches of concrete or a different thickness based on a licensed engineer's analysis was made in response to First Draft comments. To ensure users are aware of the 2-inch option, the panel moved the exception into the code's positive text. These concrete protection options supplement other permitted wiring and building protection methods.

Response Message: SR-8335-NFPA 70-2024

Public Comment No. 1565-NFPA 70-2024 [Section No. 700.10(D)(2)]

Public Comment No. 1836-NFPA 70-2024 [Section No. 700.10(D)(2)]

Public Comment No. 1601-NFPA 70-2024 [Section No. 700.10(D)(2)]

Public Comment No. 1060-NFPA 70-2024 [Section No. 700.10(D)(2)]

Public Comment No. 1832-NFPA 70-2024 [Section No. 700.10(D)(2)]

Second Revision No. 8373-NFPA 70-2024 [Section No. 700.11]

[See "CMP 13 SR 8373" word document for revisions]

700.11 Wiring, Class-2 and Class -4- Powered Emergency Lighting Systems.

(A) General.

Line voltage supply wiring and installation of Class 2 and Class 4 emergency lighting control devices shall comply with 700.10. Class 2 and Class 4 emergency circuits shall comply with 700.11(B) through 700.11(D).

(B) Identification.

Emergency circuits shall be permanently marked so they will be readily identified as a component of an emergency circuit or system by the following methods:

(1) All boxes and enclosures for Class 2 and Class 4 emergency circuits shall be permanently marked as a component of an emergency circuit or system.

(2) Exposed cable, cable tray, or raceway systems shall be permanently marked to be identified as a component of an emergency circuit or system, within 900 mm (3 ft) of each connector and at intervals not to exceed 7.6 m (25 ft).

(C) Separation of Circuits.

~~Class 2~~ Class 2 and Class 4 emergency circuits shall be wired in a listed, jacketed cable or with one of the wiring methods of Chapter 3. If installed alongside nonemergency Class 2 ~~circuits that~~ and Class 4 circuits that are bundled, Class 2 and Class 4 emergency circuits shall be bundled separately from non-emergency circuits . If installed alongside nonemergency Class 2 and Class 4 circuits that are not bundled, Class 2 and Class 4 emergency circuits shall be separated from non-emergency circuits by a nonconductive sleeve or nonconductive barrier from all other ~~Class 2~~ non-emergency circuits. Separation from other circuits shall comply with 725.136 and 726 . 136 .

(D) Protection.

Wiring shall comply with the requirements of 300.4 and be installed in a raceway, armored or metal-clad cable, or cable tray.

Exception No. 1: Section 700.11(D) shall not apply to wiring that does not exceed 1.83 m (6 ft) in length and that terminates at an emergency luminaire or an emergency lighting control device.

Exception No. 2: Section 700.11(D) shall not apply to locked rooms or locked enclosures that are accessible only to qualified persons.

Informational Note: Locked rooms accessible only to qualified persons include locked telecommunications rooms, locked electrical equipment rooms, or other access-controlled areas.

Supplemental Information

File Name	Description	Approved
CMP_13_SR_8373.docx		

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Thu Oct 24 13:00:35 EDT 2024

Committee Statement

Committee Statement:	This revision specifies the conditions for using Class 4 circuits for emergency lighting systems. Class 4 circuits provide equivalent reliability to Class 2 circuits and are subject to the same restrictions as Class 2 circuits when used for emergency lighting systems.
Response Message:	SR-8373-NFPA 70-2024

Public Comment No. 1841-NFPA 70-2024 [Section No. 700.11]

Second Revision No. 8308-NFPA 70-2024 [Section No. 700.12(A)]

~~(A) Power Source Duration.~~

~~Power source duration shall be selected based upon the type of occupancy.~~

~~Informational Note: Considerations of the duration for an emergency power source include the following:~~

(1) ~~For minimum duration, as for evacuation of a theater~~

(2) ~~For longer duration, as for supplying emergency power and lighting due to an indefinite period of current failure from trouble either inside or outside the building~~

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Wed Oct 23 11:37:08 EDT 2024

Committee Statement

Committee Statement: This revision deletes this section because as written it is not enforceable. The supply duration is already required by 700.12(C).

Response Message: SR-8308-NFPA 70-2024

Public Comment No. 517-NFPA 70-2024 [Section No. 700.12(A)]

Public Comment No. 839-NFPA 70-2024 [Section No. 700.12(A)]

Second Revision No. 8310-NFPA 70-2024 [Section No. 700.12(D)(4)]

[See "CMP 13 SR 8310" word document for revisions]

(4) Outdoor Generator Sets.

~~An~~
If an outdoor

~~-~~
housed generator set

~~shall be~~
is equipped with a disconnecting means in accordance

~~with~~
445.18

~~. When the disconnecting means is not readily accessible or is not located within sight of~~
(A) and the supply conductors serve or pass through the building or structure

~~supplied~~
,

~~an additional~~
the generator disconnecting means shall be

~~required where ungrounded conductors serve or pass through~~
permitted to be the building or structure

~~supplied. The disconnecting means shall meet the requirements of 225.36 .~~

~~Exception:~~

disconnect required by 225.31 or 267.31, in accordance with the following:

(1) The disconnect is readily accessible.

(2) This disconnect is located within sight of the building or structure in accordance with 110.29 or 110.39.

Exception to 2: For installations under single management, where conditions of maintenance and supervision ensure that only qualified persons will monitor and service the installation and where documented safe switching procedures are established and maintained for disconnection, the generator set disconnecting means shall not be required to be located within sight of the building or structure served.

(1) Overcurrent protection is provided in accordance with 240.4 or 240.21(G). **[Number as (3)]**

Supplemental Information

File Name	Description	Approved
CMP_13_SR_8310.docx		
CMP_13_SR_8310_700.12_D_4_.docx	For prod use	

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Wed Oct 23 11:57:17 EDT 2024

Committee Statement

Committee Statement: This revision reorganizes the section to clarify that the conditions listed need to be met to permit the disconnect required at the building to be relocated to the generator set.

Response Message: SR-8310-NFPA 70-2024

Public Comment No. 776-NFPA 70-2024 [Section No. 700.12(D)(4)]

Public Comment No. 518-NFPA 70-2024 [Section No. 700.12(D)(4)]

Public Comment No. 1406-NFPA 70-2024 [Section No. 700.12(D)(4)]

Second Revision No. 8312-NFPA 70-2024 [Section No. 700.12(H)]

(H) Battery-Equipped Emergency Luminaires.

(1) Listing.

All battery-equipped emergency luminaires shall be listed. Luminaires that use battery equipped lamps that are not directly wired to the branch circuit shall not be considered battery-equipped emergency luminaires.

Informational Note No. 1: See ANSI/UL 924, *Emergency Lighting and Power Equipment*, for the requirements covering battery-equipped emergency luminaires and emergency battery packs. A listed emergency battery pack installed in a listed luminaire will provide similar functionality as a listed battery-equipped emergency luminaire.

Informational Note No. 2: Unit equipment is a type of battery-equipped emergency luminaire.

Informational Note No. 3: See ANSI/UL 1598C for the requirements for lamps that are directly wired as luminaire retrofit kits and to ANSI/UL 924 for emergency lighting equipment provided with lead wires or wiring terminals for direct connection to the branch circuit.

(2) Installation.

Battery-equipped emergency luminaires shall be installed in accordance with the following:

(1) Battery-equipped emergency ~~luminaires shall~~ luminaires shall be permanently fixed in place (i.e., not portable). Listed lamps that contain batteries and battery packs used in emergency luminaires shall be directly wired to the branch circuit.

(2) Wiring to each luminaire shall be installed in accordance with the requirements of any of the wiring methods in Chapter 3 unless otherwise specified in Part II, IV, or V of this article. Flexible cord-and-plug connection shall be permitted for unit equipment, provided that the cord does not exceed 900 mm (3 ft) in length. Flexible cord, with or without a plug, shall also be permitted for battery-equipped emergency luminaires installed in accordance with 410.62(C)(1).

(3) The branch circuit feeding the battery-equipped emergency luminaire shall be one of the following:

a. The same branch circuit as that serving the normal lighting in the area and connected ahead of any local switches.

b. The same or a different branch circuit as that serving the normal lighting in the area if that circuit is equipped with means to monitor the status of that area's normal lighting branch circuit ahead of any local switches.

c. A separate branch circuit originating from the same panelboard as one or more normal lighting circuits. This separate branch circuit disconnecting means shall be provided with a lock-on feature.

(4) The branch circuit that feeds battery-equipped emergency luminaires shall be clearly identified at the distribution panel.

(5) Emergency luminaires that obtain power from a battery-equipped emergency luminaire shall be wired to the battery-equipped emergency luminaires as required in Part II, IV, or V of this article.

(6) Remote luminaires providing lighting for the exterior of an exit door shall be permitted to be supplied by the battery-equipped emergency luminaire serving the area immediately inside the exit door.

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Wed Oct 23 12:15:30 EDT 2024

Committee Statement

Committee Statement: This revision clarifies that there are lamps that contain batteries and charging/transfer circuits in addition to just a light source. Such battery equipped lamps can be used where they are not easily removed. The proposed informational note was modified to comply with the NEC Style Manual.

Response Message: SR-8312-NFPA 70-2024

Public Comment No. 1150-NFPA 70-2024 [Section No. 700.12(H)]

Second Revision No. 8304-NFPA 70-2024 [New Section after 700.27]

700.28 Class 4 Powered Emergency Lighting Systems.

(A) Class 4 Fuault-Managed Power (FMP) Transmitters and Receivers.

Class 4 FMP transmitters and Class 4 FMP receivers installed as a component of an emergency lighting system shall be listed as emergency power equipment.

(B) Class 4 ELCDs.

Devices that combine control signals with Class 4 emergency power on a single circuit shall be listed as ELCDs.

Informational Note: An example of a device combining control signals with Class 4 emergency power sources is a Class 4 FMP transmitter capable of supplying power and communications on the same conductors.

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Tue Oct 22 19:43:59 EDT 2024

Committee Statement

Committee Statement: This revision specifies the conditions for using Class 4 equipment as an emergency lighting control device. Class 4 circuits provide sufficient reliability for use as emergency lighting control devices (ELCD) when listed for the purpose.

Response Message: SR-8304-NFPA 70-2024

Public Comment No. 1844-NFPA 70-2024 [New Section after 700.27]

Second Revision No. 8315-NFPA 70-2024 [Section No. 700.32]

[See "CMP 13 SR 8315" word document for revisions]

700.32 Selective Coordination.

(A) General.

Emergency system(s) overcurrent ~~protective devices (OCPDs) shall~~ OCPDs shall be selectively coordinated with all supply-side and load-side OCPDs.

Selective coordination shall be selected by a licensed professional engineer or other qualified persons engaged primarily in the design, installation, or maintenance of electrical systems. The selection shall be documented and made available to those authorized to design, install, inspect, maintain, and operate the system.

~~Informational Note: See NECA 700, *Standard for Installing Overcurrent Protection to Achieve Selective Coordination* , for additional information on how to achieve selective coordination.~~

(B) Replacements.

~~Where emergency system(s) OCPDs or normal system~~

Selective Coordination shall be reevaluated if replacement OCPDs that supply emergency

~~load(s) are replaced, they shall be reevaluated to ensure selective coordination of the emergency system(s) is maintained with all supply-side and load-side OCPDs~~

system loads are not replaced with the same manufacturer and type of OCPDs, and with the same ratings or settings .

(C) Modifications.

If modifications, additions, or deletions to the emergency system(s) or the normal system supplying the emergency load(s) occur, selective coordination of the emergency system(s) OCPDs with all supply-side and load-side OCPDs shall be reevaluated.

Exception: Selective coordination shall not be required between two overcurrent devices located in series if no loads are connected in parallel with the downstream device.

Informational Note 1 : See NECA 700, Standard for Installing Overcurrent Protection to Achieve Selective Coordination, for additional information on how to achieve selective coordination.

Informational Note 2: . See Figure Informational Note 700.32 for an example of how emergency system OCPDs selectively coordinate with all supply-side OCPDs.

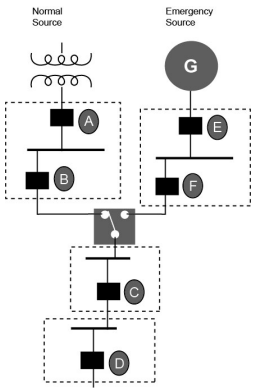
OCPD D selectively coordinates with OCPDs C, F, E, B, and A.

OCPD C selectively coordinates with OCPDs F, E, B, and A.

OCPD F selectively coordinates with OCPD E.

OCPD B is not required to selectively coordinate with OCPD A because OCPD B is not an emergency system OCPD.

Figure Informational Note 700.32 Emergency System Selective Coordination.



Supplemental Information

File Name	Description	Approved
CMP_13_SR_8315.docx		

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Wed Oct 23 13:12:10 EDT 2024

Committee Statement

Committee Statement: This was an editorial change made to have the informational note in the correct location and to correlate with section 701.32. The revision clarifies that if an OCPD is replaced with the same manufacturer, type, ratings and settings, then selective coordination would not have to be reevaluated. Overcurrent devices is corrected to OCPD to correlate with terminology throughout the code. This is in reference to Global PC 1653.

Response Message: SR-8315-NFPA 70-2024

Public Comment No. 1945-NFPA 70-2024 [Section No. 700.32]

Public Comment No. 998-NFPA 70-2024 [Section No. 700.32(B)]

Second Revision No. 8324-NFPA 70-2024 [Section No. 701.4]

701.4 Commissioning and ~~Maintenance~~ Servicing .

(A) Commissioning Witness Test.

The authority having jurisdiction shall conduct or witness the commissioning of the ~~complete~~ completed system upon installation.

Informational Note: See NECA 90, *Standard for Commissioning Building Electrical Systems for commissioning of building electrical systems* .

(B) Tested Periodically.

Systems shall be tested periodically on a schedule and in a manner approved by the authority having jurisdiction to ensure the systems are maintained in proper operating condition.

(C) Servicing.

Legally required standby system equipment shall be maintained in accordance with manufacturer instructions and industry standards.

(D) Record Keeping.

A written or digital record shall be kept on such tests and maintenance and made available upon request to those authorized to design, install, inspect, maintain, and operate the system.

(E) Testing Under Load.

Means for testing legally required standby systems during maximum anticipated load conditions shall be provided.

Informational Note: See NFPA 110-2025, *Standard for Emergency and Standby Power Systems*, for information on testing and maintenance of emergency power supply systems (EPSSs).

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Wed Oct 23 14:07:52 EDT 2024

Committee Statement

Committee Statement: The revision changes “maintenance” to “servicing” to correlate with the definition of “servicing” as it includes maintenance. Digital record keeping was added to the requirement for clarity and enforceability to remove the ambiguity that record keeping is not only manual writing of records. The change from “complete” to “completed” to add clarity and enforceability of when to witness the system commissioning. The informational note was expanded to provide more information. The term ‘commissioning’ is retained as it is a defined term and appropriate for this section.

Response Message: SR-8324-NFPA 70-2024

Public Comment No. 1137-NFPA 70-2024 [Section No. 701.4]

Public Comment No. 1136-NFPA 70-2024 [Section No. 701.4(A)]

Public Comment No. 2060-NFPA 70-2024 [Section No. 701.4(D)]

Public Comment No. 578-NFPA 70-2024 [Section No. 701.4(D)]

Public Comment No. 519-NFPA 70-2024 [Section No. 701.4(A)]

Public Comment No. 1139-NFPA 70-2024 [Section No. 701.4(D)]

Public Comment No. 840-NFPA 70-2024 [Section No. 701.4(A)]

Public Comment No. 1003-NFPA 70-2024 [Section No. 701.4(D)]

Second Revision No. 8325-NFPA 70-2024 [Section No. 701.6(C)]

(C) ~~Redundant~~ Bypass and Isolation of Transfer Equipment.

If

~~redundant transfer equipment is used, a means shall be provided to disconnect the transfer switch from all supply and load side sources. Inadvertent parallel operation shall be prevented.~~

the legally required standby loads are supplied by a single feeder, the legally required standby power system shall be permitted to include equipment to facilitate servicing as required in 701.4(C) that complies with the following:

(1) A means to bypass the transfer equipment shall be provided while maintaining the continuity of power. Inadvertent parallel operation shall be prevented.

(2) Means shall be provided to isolate the transfer equipment from all supply side and load side sources.

(3) If the equipment used to bypass the transfer equipment is manual (or nonautomatic), then it shall be actively supervised by a qualified person when the primary (automatic) transfer equipment is disabled for servicing.

Informational Note: Bypass isolation switches and bypass isolation transfer switches are examples of such means.

Supplemental Information

File Name	Description	Approved
NEC_CMP-13_SR-8325_701.6_C_.docx		

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Wed Oct 23 14:20:03 EDT 2024

Committee Statement

Committee Statement: Redundant transfer equipment accomplishes the necessary functions, bypass, isolation, and supervision, required, and eliminating these limits installations to specific, combination equipment. The section has been reformatted to emphasize necessary functions instead of specific equipment. The informational note assists the user in understanding that equipment that combines bypass isolation transfer equipment meets all of the required functions. The application of this section has been limited to those loads in which continuity of power is most vital for life safety.

Response Message: SR-8325-NFPA 70-2024

Public Comment No. 1206-NFPA 70-2024 [Section No. 701.6(C)]

Public Comment No. 1943-NFPA 70-2024 [Section No. 701.6(C)]

Second Revision No. 8326-NFPA 70-2024 [Section No. 701.9]

701.9 Surge Protection.

A listed SPD shall be installed ~~in or on all~~ integral or immediately adjacent to all legally required standby system switchgear, switchboards, and panelboards.

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Wed Oct 23 14:27:58 EDT 2024

Committee Statement

Committee Statement: The change was made to correlate the use of the terms ‘in or on’ for consistency throughout the code.

Response Message: SR-8326-NFPA 70-2024

Public Comment No. 520-NFPA 70-2024 [Section No. 701.9]

Second Revision No. 8327-NFPA 70-2024 [Section No. 701.12(A)]

~~(A) Power Source Duration.~~

~~Power source duration shall be selected based upon the type of occupancy.~~

~~Informational Note: Considerations of the duration of an emergency power source include the following:~~

(1) ~~For minimum duration, as for evacuation of a theater~~

(2) ~~For longer duration, as for supplying emergency power and lighting due to an indefinite period of current failure from trouble either inside or outside the building~~

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Wed Oct 23 14:30:51 EDT 2024

Committee Statement

Committee Statement: The requirement as written is not enforceable. The supply duration is already required by 701.12(C).

Response Message: SR-8327-NFPA 70-2024

Public Comment No. 521-NFPA 70-2024 [Section No. 701.12(A)]

Public Comment No. 841-NFPA 70-2024 [Section No. 701.12(A)]

Second Revision No. 8328-NFPA 70-2024 [Section No. 701.12(D)(3)]

[See "CMP 13 SR 8328" for revisions]

(3) Outdoor Generator Sets.

~~An~~
If an outdoor

~~-~~
housed generator set

~~shall be~~
is equipped with a disconnecting means in accordance with 445.18

~~. If the disconnecting means is not readily accessible or is not~~
(A) and the supply conductors serve or pass through the building or structure, the generator disconnecting means shall be permitted to be the building or structure disconnect required by 225.31 or 267.31, in accordance with the following:

(1) The disconnect is readily accessible

(2) The disconnect is located within sight of the building or structure

~~supplied, an additional~~

(1) in accordance with 110.29 or 110.39

Exception to 2: For installations under single management, where conditions of maintenance and supervision ensure that only qualified persons will monitor and service the installation and where documented safe switching procedures are established and maintained for disconnection, the generator set disconnecting means shall not be required

~~where ungrounded conductors serve or pass through~~
to be located within sight of the building or structure

~~supplied. The disconnecting means shall meet the requirements of 225.36 .~~
served.

(1) Overcurrent protection is provided in accordance with 240.4 or 240.21(G) **[number this as (3)]**

Supplemental Information

File Name	Description	Approved
CMP_13_SR_8328.docx		

Submitter Information Verification

Committee: NEC-P13
Submittal Date: Wed Oct 23 14:35:37 EDT 2024

Committee Statement

Committee Statement:	This revision reorganizes the section to clarify that the conditions listed need to be met to permit the disconnect required at the building to be relocated to the generator set.
Response Message:	SR-8328-NFPA 70-2024

Public Comment No. 1408-NFPA 70-2024 [Section No. 701.12(D)(3)]

Second Revision No. 8329-NFPA 70-2024 [Section No. 701.12(F)]

(F) Separate Service.

~~Where~~ If approved by the ~~authority having jurisdiction~~ AHJ as suitable for use as a legally required standby source of power, an additional service shall be permitted in accordance with the following~~- additional requirements~~ :

(1) Separate overhead service conductors, service drops, underground service conductors, or service laterals shall be installed.

(2) The service conductors for the separate service shall be installed sufficiently remote electrically and physically from any other service conductors to minimize the possibility of simultaneous interruption of supply.

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Wed Oct 23 14:50:00 EDT 2024

Committee Statement

Committee Statement: This revision changes 'where' to 'if' to comply with the NEC Style Manual. The revision also includes editorial changes for readability.

Response Message: SR-8329-NFPA 70-2024

Public Comment No. 522-NFPA 70-2024 [Section No. 701.12(F)]

Second Revision No. 8331-NFPA 70-2024 [Section No. 701.32(B)]

[See "CMP 13 SR 8331" word document for revisions]

(B) Replacements.

~~Where legally required standby OCPDs or normal system~~

Selective Coordination shall be reevaluated if replacement OCPDs that supply

~~legally required standby load(s) are replaced, they shall be reevaluated to ensure selective coordination of the legally required standby system is maintained with all supply-side and load-side OCPDs~~

emergency system loads are not replaced with the same manufacturer and type of OCPDs, and with the same ratings or settings .

Supplemental Information

File Name	Description	Approved
CMP_13_SR_8331.docx		
CMP_13_SR_8331_701.32_B_.docx	For prod use	

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Wed Oct 23 14:58:16 EDT 2024

Committee Statement

Committee Statement: This revision correlates with changes made to 700.32. The revision clarifies that if an OCPD is replaced with the same manufacturer, type, ratings and settings, then selective coordination would not have to be reevaluated.

Response Message: SR-8331-NFPA 70-2024

Public Comment No. 1008-NFPA 70-2024 [Section No. 701.32(B)]

Second Revision No. 8431-NFPA 70-2024 [Section No. 702.4(A)(2)]

[See "CMP 13 SR 8431" word document for revisions.]

(2) Automatic Load Connection.

If the connection of load is automatic, an optional standby system shall comply with 702.4(A)(2)(a) or 702.4(A)(2)(b) in accordance with Article 120, Parts I through IV or by another approved method.

(a) *Full Load.* The standby source shall be capable of supplying the full load that is automatically connected.

(b) *Energy Management System (EMS).* ~~Where a system is~~ The standby source capacity using an EMS shall automatically manage the connected load and comply with one of the following:

(1) A System employed in accordance with 130.30

~~that will automatically manage the connected load, the standby source shall have a capacity sufficient to supply the maximum load that will be connected by the EMS.~~

.

(2) A System with a PCS control setting in accordance with 130.70

(3) Multimode Inverter-based Systems in One- and Two-Family Dwellings

For one- and two-family dwellings multi-mode inverter based systems listed as a PCS for overload control shall have a minimum capacity equal to the PCS control setting of the standby source in accordance with Article 130 Part II and no less than the load posed by the largest single utilization equipment connected to the system. If a shutdown occurs in response to an overloaded condition, reconnection of the supply shall only be performed nonautomatically.

Informational Note No. 1: Multimode-inverter based systems often function primarily as interactive systems and are capable of providing standby supply continuity within their capacity. Multimode inverters are listed to control the voltage and frequency within prescribed limits and ratings. Multimode inverters with PCS cease operation safely in an overload condition.

Informational Note No. 2: PCS functionality is typically used to control loads at the branch circuit, feeder distribution level, or combination of both to prevent branch circuits, feeders, standby sources, and equipment from being overloaded upon connection of the load onto the standby source ~~.~~

Supplemental Information

File Name	Description	Approved
CMP_13_SR_8431.docx		
CMP_13_SR_8431_702.4_A_2_.docx	For prod use	

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Thu Oct 24 18:28:39 EDT 2024

Committee Statement

Committee Statement: This revision provides a third option under System Capacity for listed multi-mode inverter-based systems that are nominally grid-interactive but can be capable of transitioning to standby operation. Specific requirements for overload control through a PCS listing are added to ensure safe overload response. A further requirement is added to ensure that the system cannot be automatically reconnected to loads after shutting down in an overload condition.

702.4(B)(2)(b) is editorially modified to provide clarity on the requirement that the optional source have a minimum capacity that is equal to the setpoint of the PCS. The requirements for prevention of overload is handled through the appropriate standards. A new informational note provides clarity about PCS functionality.

Response Message: SR-8431-NFPA 70-2024

Public Comment No. 1204-NFPA 70-2024 [Section No. 702.4(A)(2)]

Public Comment No. 1944-NFPA 70-2024 [Section No. 702.4(A)]

Second Revision No. 8442-NFPA 70-2024 [Section No. 702.5(A)]

(A) General.

Interconnection, interlocking device, or transfer equipment shall be required for all standby systems subject to the requirements of this article. Equipment shall be suitable for the intended use and shall be listed, designed, and installed so as to prevent the inadvertent interconnection of all sources of supply in any operation of the equipment.

Exception: Temporary connection of a portable ~~generator~~ alternate power source without transfer equipment shall be permitted where conditions of maintenance and supervision ensure that only qualified persons service the installation and where the normal supply is physically isolated by a lockable disconnecting means or by disconnection of the normal supply conductors.

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Thu Oct 24 18:59:02 EDT 2024

Committee Statement

Committee Statement: This revision changes the term from 'generator' to alternate power source to align with the scope of Article 702.

Response Message: SR-8442-NFPA 70-2024

Public Comment No. 1954-NFPA 70-2024 [Section No. 702.5(A)]

Second Revision No. 8443-NFPA 70-2024 [Sections 702.7(A)(1), 702.7(A)(2)]

Sections 702.7(A)(1), 702.7(A)(2)

(1) One- and Two-Family Dwelling Units.

~~For one- and two-family dwelling units, a sign shall be placed~~ Permanent placards, labels, or directories shall be installed at the disconnecting means required in 225.41 and 230.70(A)(2) or at an approved readily visible location that indicates the location of each permanently installed on-site optional standby power source disconnect or means to shut down the prime mover as required in 445.19(C).

(2) Other Than One- and Two-Family Dwelling Units.

~~A sign~~ Permanent placards, labels, or directories shall be ~~placed~~ installed at the service equipment ~~for other than one- and two-family dwellings that~~ or at an approved readily visible location that indicates the type and location of each on-site optional standby power source.

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Thu Oct 24 19:10:35 EDT 2024

Committee Statement

Committee Statement: The phrases of “one- and two-family dwelling units” and “other than one- and two-family dwelling units” were removed due to redundancy with the titles in the list items (1) and (2). The term “sign” was changed to “placards, labels or directories” to align with other parts of the code that is being referenced. Also, the phrase “approved readily visible location” was provided for flexibility when installing placards, labels or directories either on or near the equipment.

Response Message: SR-8443-NFPA 70-2024

Public Comment No. 1630-NFPA 70-2024 [Section No. 702.7(A)]

Second Revision No. 8446-NFPA 70-2024 [Section No. 702.12(A)]

[See "CMP 13 SR 8446" word document for revisions]

(A) Portable Generators Greater Than 15 kW and Permanently Installed Generators.

~~An~~

If an outdoor housed generator set

~~shall be~~

is equipped with a disconnecting means in accordance with 445.18

~~. When the disconnecting means is not readily accessible or is not~~

(A) and the supply conductors serve or pass through the building or structure, the generator disconnecting means shall be permitted to be the building or structure disconnect required by 225.31 or 267.31, in accordance with the following conditions:

(1) The disconnect is readily accessible

(2) The disconnect is located within sight of the

~~building~~

(1) build or structure

~~supplied, an additional~~

(1) in accordance with 110.29 or 110.39

Exception to 2: For installations under single management, where conditions of maintenance and supervision ensure that only qualified persons will monitor and service the installation and where documented safe switching procedures are established and maintained for disconnection, the generator set disconnecting means shall not be required

~~where ungrounded conductors serve or pass through~~

to be located within sight of the building or structure

~~supplied. The disconnecting means shall meet the requirements of 225.36 .~~

served.

(1) Overcurrent protection is provided in accordance with 240.40 or 240.21(G)

Supplemental Information

File Name	Description	Approved
CMP_13_SR_8446.docx		
CMP_13_SR_8446_702.12_A_.docx	For prod use	

Submitter Information Verification

Committee: NEC-P13
Submittal Date: Thu Oct 24 19:18:40 EDT 2024

Committee Statement

Committee Statement:	This revision reorganizes the section to clarify that the conditions listed need to be met to permit the disconnect required at the building to be relocated to the generator set.
Response Message:	SR-8446-NFPA 70-2024

Public Comment No. 1410-NFPA 70-2024 [Section No. 702.12(A)]

Public Comment No. 523-NFPA 70-2024 [Section No. 702.12(A)]

Second Revision No. 8204-NFPA 70-2024 [Section No. 706.1]

706.1 Scope.

This article applies to all energy storage systems (ESS) having a capacity greater than 3.6 MJ (1 kWh) that may be stand-alone or interactive with other electric power production sources.

Informational Note No. 1: See Article 480 for installations of stationary batteries.

Informational Note No. 2: For batteries rated in ampere hours, kWh is equal to the nominal rated voltage times ampere-hour rating divided by 1000.

Informational Note No. 3: The following standards are frequently referenced for the installation of ESSs:

(1) NFPA 1-2024, *Fire Code*

(2) NFPA 111-2025, *Standard on Stored Electrical Energy Emergency and Standby Power Systems*

(3) NECA 416-2016, *Recommended Practice for Installing Energy Storage Systems (ESS)*

(4) UL 810A, *Electrochemical Capacitors*

(5) NFPA 855-2026, *Standard for the Installation of Stationary Energy Storage Systems*

(6) ~~UL 9540, *Standard for Safety Energy Storage Systems and Equipment*~~

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Mon Oct 21 17:56:03 EDT 2024

Committee Statement

Committee Statement: Reference to UL9540 is removed as redundant with a new 706.2 informational note.

Response Message: SR-8204-NFPA 70-2024

Second Revision No. 8208-NFPA 70-2024 [Section No. 706.2]

706.2 Listing Requirements .

Energy storage systems shall be listed.

Informational Note: See UL 9540, *Energy Storage Systems and Equipment* , for more information.

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Mon Oct 21 18:02:07 EDT 2024

Committee Statement

Committee Statement: Reference to UL9540 is added to collocate listing requirements with informational material applicable to this listing. The title of 706.2 was revised to comply with the NEC Style Manual for parallel construction. This parallels actions taken in the first draft.

Response Message: SR-8208-NFPA 70-2024

Public Comment No. 1953-NFPA 70-2024 [Section No. 706.2]

Second Revision No. 8215-NFPA 70-2024 [New Section after 706.4]

706.5 Qualified Persons.

The installation and servicing of ESS equipment and all associated wiring and interconnections shall be performed by qualified persons.

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Mon Oct 21 18:34:22 EDT 2024

Committee Statement

Committee Statement: Restoring the text removed from the 2023 edition during the first draft. The installation of energy storage systems must be performed by persons trained specifically in the unique requirements and hazards of these systems. Improper installation and servicing can result in a potential hazard. See the informational note related to 'servicing' which indicates servicing includes maintenance.

Response Message: SR-8215-NFPA 70-2024

Public Comment No. 823-NFPA 70-2024 [New Section after 706.3]

Public Comment No. 824-NFPA 70-2024 [New Part after I.]

Second Revision No. 8230-NFPA 70-2024 [Section No. 706.7(A)]

(A) Commissioning.

ESSs shall be commissioned upon installation in accordance with manufacturer's instructions. Unless required elsewhere in this code, the AHJ shall not be required to conduct or witness the commissioning of the ESS.

Informational Note: See NFPA 855-2026, *Standard for the Installation of Stationary Energy Storage Systems*, for information related to the commissioning of ESSs in other than one-and two- family dwellings .

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Mon Oct 21 19:34:54 EDT 2024

Committee Statement

Committee Statement: Language is added to clarify that commissioning does not need to be witnessed by the AHJ unless otherwise required. This change ensures users are not confused as to the general requirements for ESS commissioning, while not preventing other articles from requiring witness testing. The informational note is modified to align with NFPA-855, which does not offer any information in Chapter 15 for commissioning ESS installed at one- and two-family dwellings, but does address ESS installations for other applications.

Response Message: SR-8230-NFPA 70-2024

Public Comment No. 1281-NFPA 70-2024 [Section No. 706.7(A)]

Public Comment No. 1958-NFPA 70-2024 [Section No. 706.7(A)]

Second Revision No. 8237-NFPA 70-2024 [Section No. 706.15]

[See "CMP 13 SR 8237" word document for revisions]

706.15 Disconnecting Means.

~~(A) ESS Disconnecting~~

Means

~~.Means~~

shall be provided to disconnect the ESS from all wiring systems, including other power

~~systems~~

production sources , utilization equipment, and

~~its associated~~

other premises wiring in accordance with 705 . 20 and 706.15(A) through 706.15(D).

(A) Type of Disconnect.

ESS disconnecting means shall simultaneously disconnect the ungrounded conductors of an ESS.

(B) Location and Control.

The disconnecting means shall be readily accessible and ~~shall~~ comply with one or more of the following:

(1) ~~Located~~ Be located within the ESS

~~Located within sight~~

(2) Be visible and within 3 m (10 ft) from the ESS

~~Where not located within sight of the ESS, the disconnecting means shall be lockable~~

Informational Note: See Article 100 and 90.4(C) for information on special permission.

(1) Be lockable open in accordance with 110.25, or the enclosure providing access to the disconnecting means ~~shall~~ be capable of being locked closed.

Where controls to activate the disconnecting means of an ESS are used and are not located within sight of the ESS, the disconnecting means shall be lockable in accordance with 110.25, and the location of the controls shall be marked on the disconnecting means.

For one- and two-family dwellings, an ESS shall include an emergency shutdown function to cease the export of power from the ESS to premises wiring of other systems. An initiation device(s) shall be located at a readily accessible location outside the building and shall plainly indicate whether in the "off" or "on" position. The "off" position of the device(s) shall perform the ESS emergency shutdown function.

(C) Notification and Marking.

~~(E)~~

Each ESS disconnecting means shall ~~plainly indicate whether it is in the open (off) or closed (on) position and~~ be permanently marked as follows:

"ENERGY STORAGE SYSTEM DISCONNECT"

The disconnecting means shall be legibly marked in the field to indicate the following:

(1) Nominal ESS output voltage

(2) Available fault current derived from the ESS

(3) An arc-flash label applied in accordance with acceptable industry practice

(4) Date the calculation was performed

Exception: List items (2), (3), and (4) shall not apply to one- and two-family dwellings.

Informational Note No. 1: See NFPA *70E*-2024, *Standard for Electrical Safety in the Workplace*, for industry practices for equipment labeling. This standard provides specific criteria for developing arc-flash labels for equipment that provides nominal system voltage, incident energy levels, and arc-flash boundaries, as well as minimum required levels of personal protective equipment.

~~Informational Note No. 2: ESS electronics could include inverters or other types of power conversion equipment.~~

For ESS disconnecting means where the line and load terminals could be energized in the open position, the device shall be marked with the following words or equivalent:

WARNING

~~ELECTRIC – SHOCK – HAZARD~~

~~TERMINALS – ON – THE – LINE – AND – LOAD – SIDES – MAY – BE – ENERGIZED – IN – THE – OPEN – POS~~

~~The notification(s) and marking(s) shall comply with 110.21(B) .~~

~~**(D)**~~

~~Partitions Between Components.~~

~~Where circuits from the input or output terminals of energy storage components in an ESS pass through a wall, floor, or ceiling, a readily accessible disconnecting means shall be provided within sight of the energy storage component. Fused disconnecting means or circuit breakers shall be permitted to be used.~~

~~**Disconnecting Means for Batteries.**~~

In cases where the battery is separate from the ESS electronics and is subject to field servicing, 706.15(E)(1) through 706.15(E)(4) shall apply.

Informational Note: Batteries could include an enclosure, battery monitoring and controls, or other related battery components.

(1) Disconnecting Means.

A disconnecting means shall be provided for all ungrounded conductors. A disconnecting means shall be readily accessible and located within sight of the battery.

Informational Note: See 240.21(H) for information on the location of the ~~overcurrent device for~~ OCPD for battery conductors.

(2) Disconnection of Series Battery Circuits.

Battery circuits exceeding 240 volts dc nominal between conductors or to ground shall have provisions to disconnect the series-connected strings into segments not exceeding 240 volts dc nominal for maintenance by qualified persons. Non-load-break bolted or plug-in disconnects shall be permitted ~~if covered~~ in accordance with the listing.

(3) Remote Activation.

Where a disconnecting means is provided with remote controls to activate the disconnecting means and the controls for the disconnecting means are not located within sight of the battery, the disconnecting means shall be lockable open in accordance with 110.25, and the location of the controls shall be field marked on the disconnecting means.

(4) Notification.

The disconnecting means shall be legibly marked in the field. The marking shall be of sufficient durability to withstand the environment involved and shall include the following:

(1) Nominal battery voltage

(2) Available fault current derived from the stationary standby battery system

Informational Note No. 1: Battery equipment suppliers can provide information about available fault current on any particular battery model.

(3) An arc-flash label in accordance with acceptable industry practice

Informational Note No. 2: See NFPA *70E*-2024, *Standard for Electrical Safety in the Workplace*, for assistance in determining the severity of potential exposure, planning safe work practices, determining arc-flash labeling, and selecting personal protective equipment.

(4) Date the calculation was performed

Exception: List items (2), (3), and (4) shall not apply to one- and two-family dwellings.

Supplemental Information

File Name	Description	Approved
CMP_13_SR_8237.docx		

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Tue Oct 22 11:08:16 EDT 2024

Committee Statement

Committee Statement: The general requirement for an ESS disconnecting means is moved to the charging paragraph of this section. The reference to power sources is corrected to use the defined term. A reference to 705.20 is added to ensure alignment with requirements for other power sources to eliminate inconsistency as much as practical.

A general requirement for the disconnecting means to simultaneously disconnect all ungrounded conductors has been added in (A) for clarity to best align with general rules for system disconnecting means.

List items in 706.15(B) have been edited for readability and compliance with the NEC Style Manual for parallel construction. The use of the phrase “within sight” was revised to visible in reference to Global PC 327. It was noted in some cases, the fire service requested that the disconnecting means be located more than 10 feet from the ESS. The new informational note was added to provide guidance to the users of the Code that special permission could be used to address this type of situation.

Section (D) has been removed since all parts of an EMS will be included in the EMS listing, along with their installation requirements. Since the term “energy storage component” is not defined the inclusion of this text from previous editions has created confusion so is removed to prevent any conflicts with installation requirements included in the product’s listing.

Changes were made in (D)(1) to align references related to overcurrent protective devices with their defined terms and acronyms. This is in reference to Global PC 1653.

The reference to the product listing has been reworded in (D)(2). Since these types of disconnecting means are not generally permitted in other applications, it is important to maintain a reference to them here provided they are used in accordance with the ESS listing.

Statement specific to PC-1749: Changes in 705.15(A) address a portion of the submitter’s concerns along with the new reference to 705.20. Requiring identification as interactive is already covered under the listing requirements in 705.2.

Response Message: SR-8237-NFPA 70-2024

Public Comment No. 1906-NFPA 70-2024 [Section No. 706.15(D)]

Public Comment No. 1749-NFPA 70-2024 [New Section after 706.15]

Public Comment No. 1956-NFPA 70-2024 [Section No. 706.15(B)]

Public Comment No. 525-NFPA 70-2024 [Section No. 706.15(E)(2)]

Second Revision No. 8248-NFPA 70-2024 [Section No. 706.20]

706.20 General.

(A) Ventilation.

~~Provisions appropriate to the energy storage technology shall be made for sufficient diffusion and ventilation of any possible gases from the storage device, if present, to prevent the accumulation of an explosive mixture.~~ Ventilation of an ESS shall be ~~permitted to be~~ provided where required in accordance with the ~~manufacturer's recommendations and~~ listing ~~for the system~~ .

Informational Note No. 1: See NFPA 855-2026, *Standard for the Installation of Stationary Energy Storage Systems*, for technology-specific guidance. Not all ESS technologies require ventilation.

Informational Note No. 2: See IEEE 1635-2018/ASHRAE Guideline 21-2018, *Guide for the Ventilation and Thermal Management of Batteries for Stationary Applications*, as a source for design of ventilation of batteries.

(B) Space Between Components.

ESSs shall be permitted to have space between components in accordance with the manufacturer's instructions and listing.

Informational Note: Additional space may be needed to accommodate ESS hoisting equipment, tray removal, or spill containment.

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Tue Oct 22 13:06:20 EDT 2024

Committee Statement

Committee Statement: Requirements in this section that are covered under the listing requirements in 706.2 and related product safety standards are deleted from this section to prevent conflicts or confusion. Text to specifically refer to the listing has been added to guide installers and AHJs how to verify compliance to 110.3(B).

Response Message: SR-8248-NFPA 70-2024

Public Comment No. 524-NFPA 70-2024 [Section No. 706.20]

Second Revision No. 8252-NFPA 70-2024 [Section No. 706.31]

706.31 Overcurrent Protection.

(A) Circuits and Equipment.

Protection devices for ESS circuits shall be in accordance with 706.31(B) through (F). Circuits shall be protected provided with overcurrent protection at the source ~~from overcurrent~~ . A circuit conductor connected at one end to a supply with integral fault protection, where the conductor is rated for the maximum circuit current from that supply, and also connected to sources having an available maximum circuit current greater than the ampacity of the conductor, shall be ~~protected from~~ provided with overcurrent protection at the point of connection to the higher current source.

Informational Note: Listed electronic power converter circuits powered by an ESS have integral fault protection. Where these circuits are connected to higher current sources such as a utility service, the ~~overcurrent device is~~ OCPD is more appropriately installed at the higher current source end of the circuit conductor.

(B) ~~Overcurrent~~ Overcurrent Protective Device Ampere Ratings.

~~Overcurrent protective devices~~ OCPDs , where required, shall be not less than 125 percent of the maximum currents calculated in 706.30(A).

Exception: Where the assembly, including the ~~overcurrent protective devices~~ OCPDs , is listed for operation at 100 percent of its rating, the ampere rating of the ~~overcurrent devices shall~~ OCPDs shall be permitted to be not less than the maximum currents calculated in 706.30(B).

(C) Direct Current Rating.

Overcurrent protective devices, either fuses or circuit breakers, used in any dc portion of an ESS shall be listed for dc and shall have the appropriate voltage, current, and interrupting ratings for the application.

(D) Fuses.

Means shall be provided to disconnect any fuses associated with ESS equipment and components when the fuse is energized from both directions and is accessible to other than qualified persons. Switches, pullouts, or similar devices that are rated for the application shall be permitted to serve as a means to disconnect fuses from all sources of supply.

(E) Location.

Where circuits from the input or output terminals of energy storage components in an ESS pass through a wall, floor, or ceiling, overcurrent protection shall be provided at the energy storage component end of the circuit.

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Tue Oct 22 13:38:31 EDT 2024

Committee Statement

Committee Statement: Changes were made to align references related to overcurrent protective devices with their defined terms and acronyms. This is in reference to Global PC 1653.

Response Message:	SR-8252-NFPA 70-2024

Second Revision No. 8253-NFPA 70-2024 [Section No. 706.33(B)(2)]

(2) Circuits with Diversion Charge Controller and Diversion Load.

Circuits containing a diversion charge controller and a diversion load shall comply with the following:

(1) The current rating of the diversion load shall be less than or equal to the current rating of the diversion load charge controller. The voltage rating of the diversion load shall be greater than the maximum ESS voltage. The power rating of the diversion load shall be at least 150 percent of the power rating of the charging source.

(2) The conductor ampacity and the rating of the ~~overcurrent device for~~ OCPD for this circuit shall be at least 150 percent of the maximum current rating of the diversion charge controller.

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Tue Oct 22 13:42:40 EDT 2024

Committee Statement

Committee Statement: Changes were made to align references related to overcurrent protective devices with their defined terms and acronyms. This is in reference to Global PC 1653.

Response Message: SR-8253-NFPA 70-2024

Second Revision No. 8256-NFPA 70-2024 [Section No. 706.51]

[See "CMP 13 SR 8256" word document for revisions]

706.51 Flywheel ESS (FESS).

Flywheel ESS (FESS) using flywheels as the storage mechanism shall also comply with ~~all of~~ the following:

(1) FESS shall not ~~be used for one- or two-family~~ located inside dwelling units.

Informational Note~~:~~ ~~No. 1:~~ ~~FESS are intended for high-power shorter term applications. They contain parts that rotate under high speed with hazardous kinetic energy and include parts such as magnetic bearings that require ongoing monitoring and maintenance and, therefore, are not suitable for residential-type applications.~~

(2) ~~FESS shall be provided with bearing monitoring and controls that can identify bearing wear or damage to avoid catastrophic failure.~~

~~Informational Note No. 2:~~ ~~The bearing monitoring controls should be evaluated as part of the listing evaluation.~~

~~FESS shall be provided with a containment means to contain moving parts that could break from the system upon catastrophic failure.~~ ~~Informational Note No. 3:~~ ~~The containment means should be evaluated as part of the listing evaluation.~~

(3)

~~:~~ ~~See NFPA-855-2026, Standard for the Installation of Stationary Energy Storage Systems, for installation requirements for ESS, including requirements for flywheels~~

(4) ~~The spin-down time of the FESS shall be provided in the maintenance documentation.~~

Supplemental Information

File Name	Description	Approved
CMP_13_SR_8256.docx		
CMP_13_SR_8256_706.51.docx	For prod use	

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Tue Oct 22 14:07:46 EDT 2024

Committee Statement

Committee Statement:	Requirements in this section that are covered under the listing requirements in 706.2 and related product safety standards are deleted from this section to prevent conflicts or confusion. Language addressing the use of FESS within dwellings has been updated for clarity with regards to the permitted installation location.
Response Message:	SR-8256-NFPA 70-2024

Public Comment No. 1995-NFPA 70-2024 [Section No. 706.51]

Second Revision No. 8356-NFPA 70-2024 [Section No. 708.6]

708.6 Testing and ~~Maintenance~~ Servicing .

(A) Conduct or Witness Test.

The authority having jurisdiction shall conduct or witness a test of the ~~complete~~ completed system upon installation and periodically afterward.

Informational Note: See NECA 90, *Standard for Commissioning Building Electrical Systems* , for commissioning of building electrical systems.

(B) Tested Periodically.

Systems shall be tested periodically on a schedule approved by the authority having jurisdiction to ensure the systems are maintained in proper operating condition.

(C) Maintenance.

The authority having jurisdiction shall require a documented preventive maintenance program for critical operations power systems.

Informational Note: See NFPA 70B-2023, *Standard for Electrical Equipment Maintenance*, for information concerning maintenance.

(D) ~~Written~~ Record Keeping .

A written ~~record~~ or digital record shall be kept of such tests and maintenance and made available to those authorized to design, install, inspect, maintain, and operate the system.

(E) Testing Under Load.

Means for testing all critical power systems during maximum anticipated load conditions shall be provided.

Informational Note: See NFPA 110-2025, *Standard for Emergency and Standby Power Systems*, for information concerning testing and maintenance of emergency power supply systems (EPSSs) that are also applicable to COPS.

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Thu Oct 24 11:52:26 EDT 2024

Committee Statement

Committee Statement: CS: The revision changes “maintenance” to “servicing” to correlate with the definition of “servicing” as it includes maintenance. Digital record keeping was added to the requirement for clarity and enforceability to remove the ambiguity that record keeping is not only manual writing of records. The change from “complete” to “completed” to add clarity and enforceability of when to witness the system commissioning. The informational note was expanded to provide more information.

Response Message: SR-8356-NFPA 70-2024

Public Comment No. 579-NFPA 70-2024 [Section No. 708.6]

Public Comment No. 2064-NFPA 70-2024 [Section No. 708.6]

Public Comment No. 1132-NFPA 70-2024 [Section No. 708.6(D)]

Second Revision No. 8340-NFPA 70-2024 [Section No. 708.7]

[See "CMP 13 SR 8340" word document for revisions]

708.7 Cybersecurity.

COPS that are connected to a communication network and have the capability to permit control of any portion of the premises COPS shall comply with either of the following:

(1) The ability to control the system is limited to a direct connection through a local nonnetworked interface.

(2) It is connected through a networked interface complying with one of the following methods:

(3) The system and associated software are identified as being evaluated for cybersecurity.

(4) A cybersecurity assessment is conducted on the connected system to determine vulnerabilities to cyberattacks.

~~The cybersecurity assessment shall be conducted when the system configuration changes and at not more than 5-year intervals.~~

~~Documentation of the evaluation, assessment, and certification shall be made available to those authorized to inspect, operate, and maintain the system.~~

Informational Note No. 1: See ANSI/ISA 62443, Cybersecurity Standards series; UL 2900, Cybersecurity Standards series; or the NIST Framework for Improving Critical infrastructure Cybersecurity, Version 1.1, for assessment requirements.

Informational Note No. 2: Examples of the commissioning certification used to demonstrate the system has been investigated for cybersecurity vulnerabilities could be one of the following:

(1) The ISA Security Compliance Institute (ISCI) conformity assessment program

(2) Certification of compliance by a nationally recognized test laboratory

(3) Manufacturer certification for the specific type and brand of system provided

Informational Note No. 3: Cybersecurity may require constant attention to security vulnerabilities that could arise due to software defects, system configuration changes, or user interactions.

Informational Note No. 4: See NEMA CY

~~10000~~

70001-2023 *Cybersecurity Implementation Guidance for Connected Electrical Infrastructure* , for recommendations on how to meet this requirement.

Supplemental Information

File Name	Description	Approved
CMP_13_SR_8340.docx		

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Wed Oct 23 17:35:35 EDT 2024

Committee Statement

Committee Statement: This revision updates the reference in Informational Note No. 4.

The time interval requirement was removed as the appropriate interval for a cybersecurity assessment will vary by user and application.

Response Message: SR-8340-NFPA 70-2024

Public Comment No. 1544-NFPA 70-2024 [Section No. 708.7]

Public Comment No. 1148-NFPA 70-2024 [Section No. 708.7]

Public Comment No. 1131-NFPA 70-2024 [Section No. 708.7]

Public Comment No. 1465-NFPA 70-2024 [Section No. 708.7]

Public Comment No. 1591-NFPA 70-2024 [Section No. 708.7]

Second Revision No. 8346-NFPA 70-2024 [Section No. 708.8]

708.8 Surge Protection.

A listed SPD shall be installed ~~in or on all~~ intergral or immediately adjacent to all critical operations power systems switchgear, switchboards, and panelboards.

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Wed Oct 23 18:06:27 EDT 2024

Committee Statement

Committee Statement: The change was made to correlate the use of the terms ‘in or on’ for consistency throughout the code. This is in reference to PC-520.

Response Message: SR-8346-NFPA 70-2024

Second Revision No. 8350-NFPA 70-2024 [Section No. 708.10(C)(1)]

[See "CMP 13 SR 8350" word document for revisions]

(1) Protection Against Physical Damage.

The wiring of the COPS system shall be protected against physical damage. Only the following wiring methods shall be permitted:

(1) Rigid metal conduit, intermediate metal conduit, Type MI, or non-interlocked Type MC cable

(2) ~~Where encased in not less than~~ If encased by a minimum cover of 50 mm (2 in.) of concrete, any of the following wiring methods:

(3) Schedule 40 or Schedule 80 rigid polyvinyl chloride conduit (PVC)

(4) Reinforced thermosetting resin conduit (RTRC)

(5) Electrical metallic tubing (EMT)

(6) Flexible nonmetallic or jacketed metallic raceways

(7) Jacketed metallic cable assemblies listed for installation in concrete

(8) ~~Where~~ If provisions must be made for flexibility at equipment connection, one or more of the following:

(9) Flexible metal fittings

(10) Flexible metal conduit with listed fittings

(11) Liquidtight flexible metal conduit with listed fittings

Supplemental Information

File Name	Description	Approved
CMP_13_SR_8350.docx		

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Wed Oct 23 19:50:17 EDT 2024

Committee Statement

Committee Statement: This revision clarifies that the indicated wiring methods require a minimum cover of 2 inches of concrete. The terms ‘where’ were changed to ‘if’ to comply with the NEC Style Manual.

Response Message: SR-8350-NFPA 70-2024

Public Comment No. 1635-NFPA 70-2024 [Section No. 708.10(C)(1)]

Second Revision No. 8348-NFPA 70-2024 [Section No. 708.10(C)(2)]

[See "CMP 13 SR 8348" word document for revisions]

(2) Fire Protection for Feeders.

Feeders shall meet one of the following conditions:

(1) The cable or raceway is protected by a listed electrical circuit protective system with a minimum 2-hour fire rating.

Informational Note No. 1: See UL 1724, *Fire Tests for Electrical Circuit Protective Systems*, for one method of defining an electrical circuit protective system, by establishing a rating when tested. UL *Guide Information for Electrical Circuit Integrity Systems* (FHIT) contains information to identify the system and its installation limitations to maintain a minimum 2-hour fire resistive rating.

(2) The cable or raceway is a listed fire-resistive cable system with a minimum 2-hour fire rating.

Informational Note No. 2: See UL 2196-2017, *Standard for Fire Test for Circuit Integrity of Fire-Resistive Power, Instrumentation, Control and Data Cables*, for testing requirements for fire-resistive cables.

Informational Note No. 3: The listing organization provides information for fire-resistive cable systems on proper installation requirements to maintain the fire rating.

(3) The cable or raceway is protected by a listed fire-rated assembly that has a minimum fire rating of 2 hours.

(4) The cable or raceway is encased in concrete with a minimum thickness of 127 mm (5 in.) measured from each point on the surface of the cable or ~~raceway~~ racew ay and the installation provides a 2-hour fire rating as documented by a licensed professional engineer qualified in such design with the documentation available to the AHJ upon request .

Exception No. 1:

~~Cables~~

Cables and raceways installed underground shall not be considered to be inside the building.

~~Exception No. 2: Alternative thicknesses of concrete shall be permitted to be selected by a licensed professional engineer qualified in such design. The selection shall be documented and stamped by the professional engineer.~~

Informational Note No. 4: See Fire Protection Research Foundation Report FPRF-2018-16, "Fire Resistance of Concrete for Electrical Conductors," for information about concrete fire resistance.

Supplemental Information

File Name	Description	Approved
CMP_13_SR_8348.docx		

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Wed Oct 23 18:18:01 EDT 2024

Committee Statement

Committee Statement: The panel thoroughly reviewed all public comments, including the supporting information submitted. Many commenters expressed the belief that laboratory testing of conductors embedded in concrete under fire conditions was necessary to justify the proposed code change. Testing was conducted using three common concrete aggregates to support PC 1839, included in the 2026 NEC Code Making Panel-13 Second Draft Meeting Agenda available at www.nfpa.org/70. The results showed that commercially available insulated building wires did not maintain circuit integrity for two hours when protected by 2 inches of concrete made from siliceous, carbonate, or lightweight aggregate. Given these findings, and acknowledging that not all aggregate types were tested, the panel has allowed for the use of a minimum of 2 inches of concrete, provided that the fire rating is validated by a licensed Professional Engineer qualified in such designs.

Several commenters also referenced the Fire Protection Research Foundation (FPRF) report mentioned in the First Draft. This report included a literature review covering historical NEC actions, building code requirements, and peer-reviewed technical papers. The panel offered the FPRF report as a resource to provide context for the code requirements. Additional laboratory testing was also submitted to support the recommendations made by the FPRF.

While structural evaluations fall outside the NEC's scope, the revision permits the use of alternative concrete thicknesses, as long as they are validated for a 2-hour fire rating by a licensed Professional Engineer qualified in such designs. This flexibility aligns with other allowed protection options. The decision to permit either 5 inches of concrete or a different thickness based on a licensed engineer's analysis was made in response to First Draft comments. To ensure users are aware of the 2-inch option, the panel moved the exception into the code's positive text. These concrete protection options supplement other permitted wiring and building protection methods.

Response Message: SR-8348-NFPA 70-2024

Public Comment No. 1848-NFPA 70-2024 [Section No. 708.10(C)(2)]

Public Comment No. 1838-NFPA 70-2024 [Section No. 708.10(C)(2)]

Public Comment No. 1835-NFPA 70-2024 [Section No. 708.10(C)(2)]

Public Comment No. 1061-NFPA 70-2024 [Section No. 708.10(C)(2)]

Public Comment No. 1602-NFPA 70-2024 [Section No. 708.10(C)(2)]

Second Revision No. 8342-NFPA 70-2024 [Section No. 708.20(E)(5)]

[See "CMP 13 SR 8342" word document for revisions]

(5) Outdoor Generator Sets.

(a) *Permanently Installed Generators and Portable Generators Greater Than 15 kW.* Where an outdoor housed generator set is equipped with a readily accessible disconnecting means in accordance with 445.18, and the disconnecting means is located within sight of the building or structure supplied, an additional disconnecting means shall not be required where ungrounded conductors serve or pass through the building or structure. Where the generator supply conductors terminate at a disconnecting means in or on a building or structure, the disconnecting means shall meet the requirements of 225.36.

(b) *Portable Generators 15 kW or Less.* Where a portable generator, rated 15 kW or less, is installed using a flanged inlet or other cord-and plug-type connection, a disconnecting means shall not be required where ungrounded conductors serve or pass through a building or structure.

Supplemental Information

File Name	Description	Approved
CMP_13_SR_8342.docx		
CMP_13_SR_8342_708.20_E_5_.docx	For prod use	

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Wed Oct 23 17:45:42 EDT 2024

Committee Statement

Committee Statement: This revision reorganizes the section to clarify that the conditions listed need to be met to permit the disconnect required at the building to be relocated to the generator set.

Response Message: SR-8342-NFPA 70-2024

Public Comment No. 1405-NFPA 70-2024 [Section No. 708.20(E)(5)]

Second Revision No. 8344-NFPA 70-2024 [Section No. 708.22(A)]

(A) Capacity and Rating.

A COPS shall have capacity and rating for all loads to be operated simultaneously for continuous operation with variable load for an unlimited number of hours, except for required ~~maintenance~~ servicing of the power source. A portable, temporary, or redundant alternate power source shall be available for use whenever the COPS power source is out of service for servicing~~ or maintenance~~ .

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Wed Oct 23 17:51:01 EDT 2024

Committee Statement

Committee Statement: The revision changes “maintenance” to “servicing” to correlate with the definition of “servicing” as it includes maintenance.

Response Message: SR-8344-NFPA 70-2024

Public Comment No. 2065-NFPA 70-2024 [Section No. 708.22(A)]

Second Revision No. 8345-NFPA 70-2024 [Section No. 708.24(C)]

[See "CMP 13 SR 8345" word document for revisions]

(C) ~~Redundant~~ Bypass and Isolation of Transfer Equipment.

If

~~COPS~~

the loads are supplied by a single feeder, the COPS shall include

~~redundant transfer~~

equipment

~~or a bypass isolation transfer switch~~

to facilitate

~~maintenance as~~

servicing as required in 708.6(C)

~~without jeopardizing~~

that complies with the following.

(1) A means to bypass the transfer equipment shall be provided while maintaining the continuity of power.

~~If the redundant transfer equipment or bypass isolation switch~~

(1) Inadvertent parallel operation shall be prevented.

(2) Means shall be provided to isolate the transfer equipment from all supply side and load side sources.

(3) If the equipment used to bypass the transfer equipment is manual (or nonautomatic), then it shall be actively supervised by a qualified person when the primary (automatic) transfer equipment is disabled for servicing

~~and maintenance. When redundant transfer equipment is used, a means shall be provided to disconnect the transfer switch from all supply side sources. Inadvertent parallel operation shall be prevented.~~

(1) .

Informational Note: Bypass isolation switches and bypass isolation transfer switches are examples of such means.

Supplemental Information

File Name	Description	Approved
CMP_13_SR_8345.docx		
CMP_13_SR_8345_708.24_C_.docx	For prod use	

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Wed Oct 23 17:54:32 EDT 2024

Committee Statement

Committee Statement: Redundant transfer equipment accomplishes the necessary functions, bypass, isolation, and supervision, required, and eliminating these limits installations to specific, combination equipment. The section has been reformatted to emphasize necessary functions instead of specific equipment. The informational note assists the user in understanding that equipment that combines bypass isolation transfer equipment meets all of the required functions. The application of this section has been limited to those loads in which continuity of power is most vital for life safety.

Response Message: SR-8345-NFPA 70-2024

Public Comment No. 2067-NFPA 70-2024 [Section No. 708.24(C)]

Public Comment No. 1207-NFPA 70-2024 [Section No. 708.24(C)]

Second Revision No. 8347-NFPA 70-2024 [Section No. 708.54]

708.54 Selective Coordination.

(A) General.

Critical operations power system(s) ~~overcurrent protective devices (OCPDs) shall~~ OCPDs shall be selectively coordinated with all supply-side and load-side OCPDs.

Selective coordination shall be selected by a licensed professional engineer or other qualified persons engaged primarily in the design, installation, or maintenance of electrical systems. The selection shall be documented and made available to those authorized to design, install, inspect, maintain, and operate the system.

(B) Replacements.

~~Where critical operations power system(s) OCPDs or normal system OCPDs that supply critical operations power system load(s) are replaced, they shall be reevaluated to ensure selective coordination of the critical operations power system(s) is maintained with all supply-side and load-side OCPDs~~

Selective Coordination shall be reevaluated if replacement OCPDs that supply emergency system loads are not replaced with the same manufacturer and type of OCPDs, and with the same ratings or settings .

(C) Modifications.

If modifications, additions, or deletions to the critical operations power system(s) or the normal system supplying the critical operations power system load(s) occur, selective coordination of the critical operations power system(s) OCPDs with all supply-side and load-side OCPDs shall be reevaluated.

Exception: Selective coordination shall not be required between two overcurrent devices located in series if no loads are connected in parallel with the downstream device.

Informational Note: See Figure Informational Note 708.54 for an example of how critical operations power system OCPDs selectively coordinate with all supply-side OCPDs.

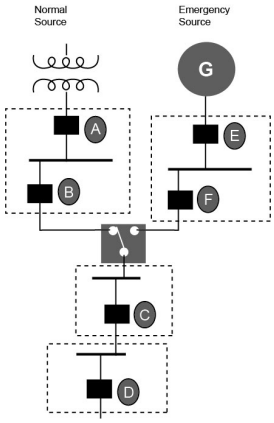
OCPD D selectively coordinates with OCPDs C, F, E, B, and A.

OCPD C selectively coordinates with OCPDs F, E, B, and A.

OCPD F selectively coordinates with OCPD E.

OCPD B is not required to selectively coordinate with OCPD A because OCPD B is not a critical operations power system OCPD.

Figure Informational Note 708.54 Critical Operations Power System Selective Coordination.



Submitter Information Verification

Committee: NEC-P13

Submittal Date: Wed Oct 23 18:08:53 EDT 2024

Committee Statement

Committee Statement: This revision correlates with changes made to 700.32. The revision clarifies that if an OCPD is replaced with the same manufacturer, type, ratings and settings, then selective coordination would not have to be reevaluated. This is in reference to PC-998.

Response Message: SR-8347-NFPA 70-2024

Second Revision No. 8121-NFPA 70-2024 [Sections Part II., 130.50]

Sections Part II., 130.50

Part II. ~~EMS for Overload Control~~ Power Control Systems (PCS)

130.50 General.

Part II contains additional requirements for PCS, which are EMS that provide controls required to prevent the overloading of conductors and equipment~~ through the use of a PCS~~ .

Submitter Information Verification

Committee: NEC-P13

Submittal Date: Mon Oct 21 11:48:25 EDT 2024

Committee Statement

Committee Statement: Terms used in part II of this article have been harmonized to "PCS" to improve usability since this is the term used in the listing process of equipment providing overload control.

Response Message: SR-8121-NFPA 70-2024

Public Comment No. 1096-NFPA 70-2024 [Sections Part II., 130.50, 130.60, 130.70, 130.80]