



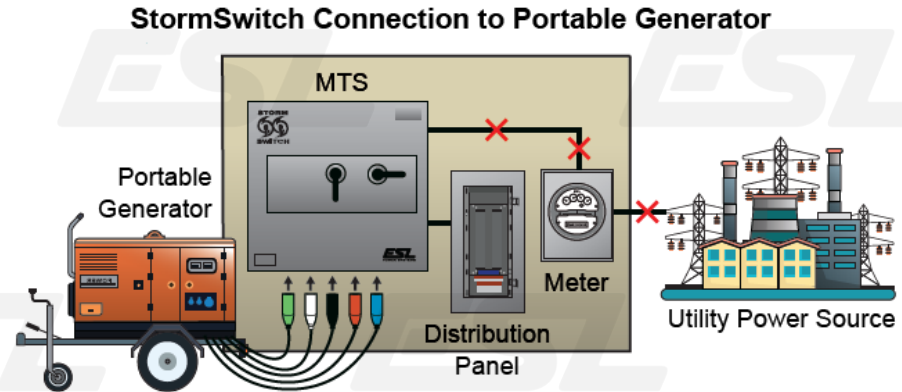
Electrifying a Sustainable Future

Review of 2026 NEC Article 700 Emergency Systems

Part I. General

700.1 Scope

- Electrical safety requirements for emergency systems
- Applies to installation, operation, and servicing
- Covers circuits and equipment that:
 - Supply
 - Distribute
 - Control electricity
- Purpose of Emergency Systems:
 - Provide lighting and/or power
 - Serve required facilities
 - Operate when normal power is interrupted



Article 100 – Definitions

Formally 700.2 (NEC2020)

Emergency Systems:

Those systems **legally** required and classed as emergency by municipal, state, federal, or other codes, or by any governmental agency having jurisdiction. These systems are **intended** to **automatically** supply illumination, power, or both, to designated areas and equipment in the event of failure of the normal supply or in the event of accident to elements of a system intended to supply, distribute, and control power and illumination essential for safety to human life.



700.3 Reconditioned Equipment

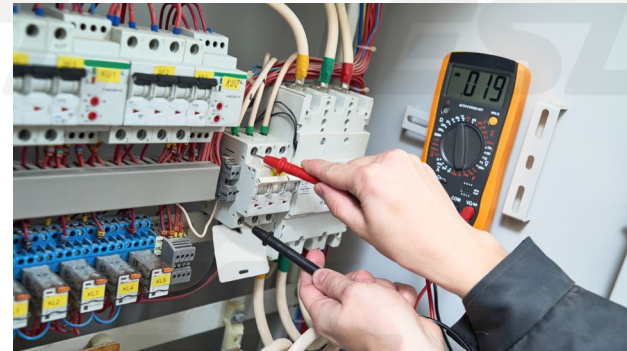
Formerly 700.2 NEC2023

- Reconditioned transfer switches shall not be installed.

700.4 Commissioning and Servicing

Formerly 700.3 NEC2023

- A. Commissioning Witness Test:** The authority having jurisdiction shall conduct or witness a test of the complete system upon installation and periodically thereafter.
- 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 the manufacturer instructions and industry standards.
- D. Record Keeping:** A written or digital record shall be kept of such tests and maintenance.
- E. Testing Under Load.** Means for testing all emergency lighting and power systems during maximum anticipated load conditions shall be provided.



700.4 Tests and Maintenance (continued)

F. Temporary Source of Power for Maintenance or Repair of the Alternate Source of Power.

- If the system relies on a **single** alternate source of power which will be disabled for maintenance or repair, then:
 - (1) Connection of the portable or temporary alternate source of power shall **not** require modification of the permanent wiring.
 - (2) Transfer of power between the normal power source and the alternate power source shall occur in **(10) seconds** or less. (NEC700.12)
 - (3) The connection point for the portable/temporary source shall be marked with phase rotation and system bonding requirements.
 - (4) Switching means must include an interlock. The interlock shall be listed and provided with mechanical or mechanical and electrical interlock.

700.4 Commissioning and Servicing (continued)

F. Temporary Source of Power for Maintenance or Repair of the Alternate Source of Power.

- If the system relies on a **single** alternate source of power which will be disabled for maintenance or repair, then:
 - (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 alternative power must be outdoors and shall not have temporary generator cables routed through exterior windows, doors or similar openings.
 - (7) Permanent labels shall be field added to the connection point to indicate system voltage, maximum amperage, short circuit current rating and ungrounded conductor identification.



700.4 Commissioning and Servicing (continued)

F. Temporary Source of Power for Maintenance or Repair of the Alternate Source of Power.

- If the system relies on a **single** alternate source of power which will be disabled for maintenance or repair, then:
 - (8) The Portable or Temporary power source shall have OCPD to provide equivalent protection to the emergency system, and at minimum provide sufficient power to the emergency and other selected loads.
 - (9) If the permanent emergency power is part of a separately derived system that includes a grounded conductor (Typically the Neutral), the switching means for the portable or temporary source shall switch the grounded conductor to meet the grounding requirements of 250.50
 - (10) Section 700.10(D)(4)(b) shall not apply



700.5 Capacity and Rating

Formerly 700.4 NEC2023

Emergency system equipment shall:

- A. **Rating:** Shall be suitable for the available fault current at its terminals
- B. **Capacity:** Have adequate capacity in accordance with Article 120 (Branch-Circuit, Feeder and Service Load Calculations).
- C. **Selective Load Management:** Selective load pickup, load shedding and peak load shedding is permitted to ensure adequate power to:
 - 1. Emergency circuits
 - 2. Legally required standby circuits
 - 3. Optional standby circuits
- D. **Parallel Operation:** Parallel operation of emergency sources shall be specified to:
 - 1. Normal Source: Permitted to operate in parallel when in compliance to Part 1 & 2 of Article 705
 - 2. Emergency Source: Permitted to operate in parallel when proper equipment to maintain a synchronous condition is provided.

700.6 Transfer Equipment

Formerly 700.5 NEC2023

- A. **General:** Automatic, Listed (UL 1008) and Marked for Emergency Use. Prevent interconnection of normal and emergency sources of power unless it meets the requirements of Article 705.2 (Interconnected Electric Power Production Sources). Meter-mounted transfer switches **not** permitted.
- B. **Automatic Transfer Switches:** shall be electrically operated and mechanically held.
- C. **Bypass and Isolation Transfer Equipment:** For occupancies listed in 700.10(D)(1), when emergency loads are supplied by a single feeder, the emergency power system must include equipment that allows safe servicing in accordance with 700.4(C).
 - 1) Power must stay on while bypassing the transfer switch, and two power sources must never connect at the same time.
 - 2) The transfer switch must be able to be completely disconnected from all power sources and loads.
 - 3) If a manual bypass is used, a qualified person must supervise while the automatic transfer switch is out of service
- D. **Use:** Transfer Equipment shall supply only emergency loads.
- E. **Documentation** The short circuit current rating and settings shall be **field** marked on the exterior of the transfer equipment



700.7 Signals

Formerly 700.6 NEC2023

Audible, visual, facility or network remote annunciation shall be provided when applicable

- A. **Malfunction** – To indicate malfunction of the emergency source
- B. **Carrying Load** - To indicate that the emergency source is carrying a load.
- C. **Storage Battery Charging Malfunction** – To indicate that the battery charger is not functioning.
- D. **Ground Fault** – To indicate a ground fault condition. Requirements:
 - Voltage to ground exceeds 150V (for a WYE system) & Amperage is 1000A or more
 - Located at, or ahead of, emergency source main disconnect
 - 1200A maximum ground fault setting
 - Action instructions in event of ground fault (located at or near the ground-fault sensor)

700.8 Signs

Formerly 700.7 NEC2023

- A. **Emergency Sources** – Placed at the Service Equipment, indicating the type and location of each on-site emergency power source.
- B. **Grounding** – If the removal of a grounding or bonding connection in the normal power source equipment interrupts the grounding electrode connection to the alternate power source(s), a warning sign at the normal power source equipment is required stating:

WARNING
SHOCK HAZARD EXISTS IF GROUNDING
ELECTRODE CONDUCTOR OR BONDING JUMPER
CONNECTION IN THIS EQUIPMENT IS REMOVED
WHILE ALTERNATE SOURCE(S) IS ENERGIZED.

700.9 Surge Protection

Formerly 700.8 NEC2023

- A listed SPD shall be installed integral to or immediately adjacent to all emergency systems switchgear, switchboards and panelboards

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Part II.

Circuit Wiring

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700.10 Wiring, Emergency Systems

- A. **Identification** – Emergency circuits shall be **permanently marked** so they are readily identified as a component of an emergency circuit:
1. All boxes and enclosures
 2. All exposed cable or raceways at intervals not to exceed 25 ft.
- Receptacles supplied from the emergency system shall have a distinctive color or marking on the receptacle cover plates or the receptacle.



700.10 Wiring, Emergency Systems (continued)

B. Wiring - Emergency wiring shall be kept entirely independent of all other wiring and equipment with the following six exceptions:

- 1) Wiring from normal power source located in transfer equipment enclosures.
- 2) Wiring supplied from two sources in the exit or emergency luminaires.
- 3) Wiring from two sources in a listed load control relay 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.

700.10 Wiring, Emergency Systems (continued)

- 6) Wiring from an emergency source to supply emergency **and** other (non-emergency) loads in accordance with the following:
- a) Separate vertical switchgear sections (with or without common bus) shall be used to separate emergency loads from all other loads.
 - b) For the common bus mentioned above
 - No overcurrent protection at the source
or
 - If provided, selectively coordinated with the next downstream overcurrent device in the **nonemergency** system.
 - c) Emergency wiring shall not originate from the same section as other circuits.
 - d) It is permissible to have feeder(s) supplying distribution equipment between the emergency source and the point where the emergency loads are separated from all other loads.
 - e) At a generator, multiple integral OCPDs may serve emergency and nonemergency loads, but separation must start immediately after the OCPD line side connections.



700.10 Wiring, Emergency Systems (continued)

C. Wiring Design and Location – Emergency wiring circuits shall be designed and located so as to minimize the hazards that might cause failure due to flooding, fire, icing, vandalism, and other adverse conditions.

D. Fire Protection

1. Occupancies – Emergency systems shall meet 2 through 4 of this section for the following types of occupancies:

1. Assembly occupancies of more than 1000 persons
2. Building where the floor of an occupiable story is greater than 75ft above the lowest level of fire department vehicle access
3. Educational occupancies with more than 300 occupants

700.10 Wiring, Emergency Systems (continued)

D. Fire Protection

2. Feeder-Circuit Wiring – shall meet one of the following:

1. Cable or Raceway installed in spaces or areas that are fully protected by an approved automatic fire protection system.
2. Protected by a listed electrical circuit protective system with a minimum 2-hour fire rating.
3. A listed fire-resistive cable system with a minimum 2-hour fire rating.
4. 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 a minimum of 2" of concrete and the installation provides a 2-hour fire rating documented by a licensed Professional Engineer and documentation available to the AHJ upon request.
6. The cable or raceway is encased in a minimum thickness of 127 mm (5 in.) of concrete measured from each point on the surface of the cable or raceway.

700.10 Wiring, Emergency Systems (continued)

D. Fire Protection

3. **Feeder-Circuit Equipment:** Shall be located either in spaces fully protected by an approved automatic fire protection system or in spaces with a 2-hour fire protection rating.
4. **Source Control Wiring:**
 - a) Control conductors installed between the transfer equipment and the emergency power supply shall be kept entirely independent of all other wiring and shall meet the conditions of 700.10(D)(2).
 - b) The integrity of the source control wiring shall be monitored for broken, disconnected, or shorted wires. Loss of integrity results in the following:
 1. **Generator – Shall be started**
 2. **All other sources – shall be considered a system malfunction and initiate the designated signals 700.7(A)**

700.11 Wiring, Class 2 and Class 4 Powered Emergency Lighting Systems

- A. **General** – Line voltage supply wiring of Class 2 & 4 emergency lighting control devices shall comply with 700.10.
- B. **Identification** –
 - 1. All boxes for Class 2 & 4 emergency circuit shall be marked as components of emergency circuit.
 - 2. Exposed cable, cable tray or raceways shall be marked as components of emergency circuit within 3ft of the connector
- C. **Separation of Circuits** – Emergency Class 2 & 4 wiring must be in its own jacket/raceway and not bundled with non-emergency circuits (unless separated by a non-conductive sleeve or barrier)
- D. **Protection** – Wiring shall comply with 300.4 and installed in raceway, metal-clad cable or cable tray.



Part III.

SOURCES OF POWER

700.12 General Requirements

In the event of normal power supply loss, emergency lighting, emergency power, or both shall be available within the time required for the application, but **not to exceed** 10 seconds. The supply system for emergency purposes shall be one or more of the types of systems described in 700.12(B) through (F). Unit equipment in accordance with 700.12(G) shall satisfy the requirements of this article.

700.12 General Requirements (continued)

- A. Equipment Design and Location** – to minimize hazards that might cause complete failure due to flooding, fires, icing, and vandalism. (same as Wiring Design and Location).
Equipment for sources of power as described in 700.12(B) through (G) shall be installed in spaces fully protected by approved automatic fire protection systems or in spaces with 2-hour fire rating where located within:
1. Assembly occupancies for more than 1000 people
 2. Any buildings above 75 feet in height
 3. Educational occupancies with more than 300 occupants

700.12 General Requirements (continued)

B. Supply Duration – Shall have the capacity to supply and maintain the total load for a duration of at least 2 hours.

1. **On-Site Fuel Supply** - sufficient for 2 hours of operation.
2. **Fuel Transfer Pumps** – pump power to be connected to the emergency power system.
3. **Public Gas System, Municipal Water Supply** – shall not be solely dependent for fuel source or cooling means. Exceptions (low probability of failure) with AHJ approval.



700.12 General Requirements (continued)

B. Supply Duration (continued)

4. Storage Battery – shall be of suitable rating and capacity to supply the total load for a minimum of 1-1/2 hours, without the voltage dropping below 87-1/2 % of normal. Automotive type batteries shall **not** be used. An automatic battery charging means shall be provided.

5. Automatic Fuel Transfer – for dual fuel systems, automatic means shall be provided for transfer between fuel supplies.



700.12 General Requirements (continued)

C. Generator Set

1. Prime Mover-Driven

- A prime mover–driven generator approved by the AHJ and sized per 700.5 must automatically start when normal power fails, automatically transfer and operate all required emergency circuits, and include a time delay to prevent retransfer if normal power briefly returns.

2. Battery Power and Dampers

- If storage batteries are used for control, signal power, or means of starting the prime mover, a charger shall be provided and charged from a source other than the generator set.
- If the batteries are required for operation of the generator set (including damper operation) the charger shall also be connected to the emergency system.

700.12 General Requirements (continued)

C. Generator Set (continued)

3. Auxiliary Power Supply – Generator sets that require more than 10 seconds to develop power shall be permitted if an auxiliary power supply energizes the emergency system until the generator can pick up the load.

4. Outdoor Generator Sets:

For outdoor generators with a compliant disconnect 445.18(A), that disconnect may serve as the building disconnect when conductors enter or pass through the structure per 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 per 110.29 or 110.39.
3. Overcurrent protection is provided in accordance with 240.4 or 240.21(G).

700.12 General Requirements (continued)

D. Stored-Energy Power Supply Systems (SEPSS) - Stored energy supply shall with 700.12(D)(1) & (2)

1. Type

1. Uninterruptible Power Supplies (UPS)
2. Fuel cell system
3. Energy storage system (ESS)
4. Storage battery
5. Other approved equivalents

2. Fire Protection, Suppression, Ventilation and Separation – Systems in 700.12(D)(1) shall be installed with Fire Protection, Suppression, Ventilation and Separation per manufacture's instructions or equipment listings.

700.12 General Requirements (continued)

E. Separate Service

Where approved by AHJ as suitable for use as an emergency source of power, an additional service shall be permitted in accordance with Article 230 (Services)

1. Separate overhead service conductors, service drops, underground service conductors, or service laterals shall be installed
2. The separate service conductors shall be installed sufficiently remote both electrically and physically from any other service conductors to minimize the possibility of simultaneous failure

700.12 General Requirements (continued)

F. Microgrid Systems – Emergency Power sources are allowed to be connected to a microgrid system.

- The system must be capable of isolating emergency loads from nonemergency loads when the normal electric supply is interrupted.
- Interruption or failure of the normal or nonemergency sources must not impact the availability, capacity, or duration provided by the designated emergency sources.
- Designated stored-energy emergency power sources may remain interconnected to other available power production sources during operation, provided that the failure of these interconnected sources does not affect the operation of the emergency system

700.12 General Requirements (continued)

G. Battery-Equipped Emergency Luminaires

1. **Listing** – All battery equipped emergency luminaires shall be listed. Luminaires that use batteries but not directly wired to a branch circuit shall not be considered emergency luminaires.
2. **Installation**
 1. Shall be permanently fixed in place
 2. Must be wired to Chapter 3 unless otherwise specified in Part II, IV or V of Article 700 & Flexible cord-and-plug permitted but not to exceed 3 feet in length.
 3. Feeding branch circuit shall follow:
 - a. The same branch as normal lighting, before any switches
 - b. Same or a different branch, if it monitors the normal lighting circuit ahead of switches
 - c. Separate branch circuit from same panel as normal lighting with a lock on feature.
 4. Shall be clearly marked on distribution panel
 5. Shall be wired to Article 700 part II, IV, V
 6. Lighting serving the exterior of an exit door can be powered by the unit equipment serving that area.



Part IV.

EMERGENCY SYSTEM

CIRCUITS FOR LIGHTING

AND POWER

700.15 Loads on Emergency Branch Circuits

No appliances or lamps, other than those specified as required for emergency use, shall be supplied by emergency lighting.

700.16 Emergency Illumination

A. General – Emergency illumination shall include

- Egress lighting
- Illuminated exit signs
- All other lighting specified as necessary to provide required illumination

B. System Reliability

- Designed and installed so that failure of any illumination source cannot leave in total darkness any space that requires emergency lighting.
- Control devices shall be listed (UL 924) for use in emergency systems
- Listed unit equipment in accordance with 700.12(G) meets the provisions of this section.



700.16 Emergency Illumination (continued)

C. Discharge Lighting

- For high intensity discharge lighting such as high/low pressure sodium, mercury Vapor, and metal halide is used as sole source of normal illumination. The emergency light shall operate until normal illumination has been resorted.

D. Disconnection Means

- Where disconnections means are installed indoors, they need to follow the requirements in 225.31 and 230.70.

700.17 Branch Circuits for Emergency Lighting

Branch circuits shall provide service from a source complying with 700.12. and must be one of the following:

1. Independent of the normal lighting supply, with automatic transfer of the power source in the event of normal source power failure.

OR

2. Two or more supplied from separate **and** complete systems with independent power sources. One of the power sources shall be part of the emergency system, the other shall be permitted to be part of the normal system. Unless both systems are used for regular lighting purposes **and** both are kept lighted, then must have provision to automatically energize the other if either fail.

700.18 Circuits for Emergency Power

For branch circuits that supply equipment classed as emergency, transfer to emergency power shall be automatic upon failure of the normal source.

700.19 Multiwire Branch Circuits

The branch circuit serving emergency lighting and power circuits shall not be part of a multiwire branch circuit.

Part V.
**CONTROL – EMERGENCY
LIGHTING CIRCUITS**

700.20 Switch Requirements

- Arranged so that only authorized person(s) have control of the emergency lighting.
- Switches connected in series or 3- and 4-way switches shall not be used.

700.21 Switch Location

- In locations convenient to authorized person(s)
- In facilities covered by Articles 518 (Assembly Occupancies) and 520 (Theaters, Performance Areas), to be located in a lobby or a place conveniently accessible from the lobby.
- Shall **not** be located in a motion picture projection booth, on a stage, or platform

700.22 Exterior Lights

If not required for illumination when there is sufficient daylight, can be controlled by an automatic light-actuated device.

700.23 Dimmer and Relay Systems

- Containing more than one dimmer or relay and listed (UL 924) for use in an emergency system, can be used as the control device for emergency lighting
- Is permitted to selectively energize only those circuits required to provide minimum emergency illumination.
- All branch circuit fed from the dimmers or relays shall comply with the wiring methods of Article 700

700.24 Luminaires

Luminaires with control inputs that provide emergency illumination shall comply with the following:

A. Directly Controlled Emergency Luminaire (DCEL)

Directly Controlled emergency luminaires (DCELs) that rely on a listed emergency lighting control device (ELCD) to activate upon loss of normal power must be listed for use in emergency systems.

B. Directly Controlled Luminaire (DCL)

When emergency lighting is provided by disconnecting the control input of DCLs using a listed ELCD upon loss of normal power, the DCLs do not need to be listed for emergency use, but any configurable DCLs must be set to go to full output when the control input is disconnected.

700.25 Branch Circuit Emergency Lighting Transfer Switch

Allows a listed branch circuit emergency lighting transfer switch to transfer emergency lighting loads (on branch circuits rated at 20 amperes or less) from a normal branch circuit to an emergency branch circuit and the 700.6(B) mechanically held requirement does not apply.

700.26 Automatic Load Control Relay

If an emergency lighting load is automatically energized upon loss of normal power, a listed automatic load control relay is permitted. The load control relay shall not be used as the transfer equipment.

700.27 Class 2 Powered Emergency Lighting Systems

Devices that combine control signals with Class 2 emergency Power on a single circuit shall be listed.

700.28 Class 4 Powered Emergency Lighting Systems

A. Class 4 Fault-Managed Power (FMP) Transmitters and Receivers:

Class 4 FMP transmitters and receivers must be listed as emergency power equipment

B. Class 4 ELCDs.

Devices that combine control signals and Class 4 emergency power must be listed as emergency lighting control devices.

Part VI.
OVERCURRENT PROTECTION

700.30 Accessibility

Overcurrent devices in the emergency circuits shall be accessible to authorized persons only.

700.31 Ground-Fault Protection of Equipment

- The alternate source of power for the emergency system shall **not** be required to provide ground fault protection of equipment with automatic disconnecting means.
- Ground-fault **indication** shall be provided in accordance with 700.7(D), if ground fault protection is not provided.

700.32 Selective Coordination

A. General

- Emergency overcurrent devices shall be selectively coordinated with all supply-side overcurrent protective devices.
- The coordination shall be done by a licensed professional engineer or a qualified person specializing in such studies.
- The selection shall be documented and made available to authorized personnel.

B. Replacements

- If OCPDs are replaced they shall be reevaluated to ensure the selective coordination is maintained.

C. Modifications

- If modifications, additions or deletions to the emergency system occur the selective coordination shall be reevaluated.



Past Q&A

Q1: What is the purpose of the annunciator contact within the emergency system?

A1: To notify personnel when the permanent emergency source is not connected

Q2: Are Bypass Isolation Switches permitted to isolate the transfer equipment?

A2: Yes — if part of a listed bypass/isolation transfer switch assembly or installed per the NEC and manufacturer instructions.

Q3: For Storage Battery Applications, are automotive type batteries allowed?

A3: No — automotive-type batteries are not permitted for storage battery applications in emergency systems.

Q&A

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